

Service Manual

iR2422/2420/2320/2318 Series

Canon

Application

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

Symbols Used

This documentation uses the following symbols to indicate special information:

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

The following rules apply throughout this Service Manual:

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

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

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

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

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

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

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

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Chapter 1 Introduction

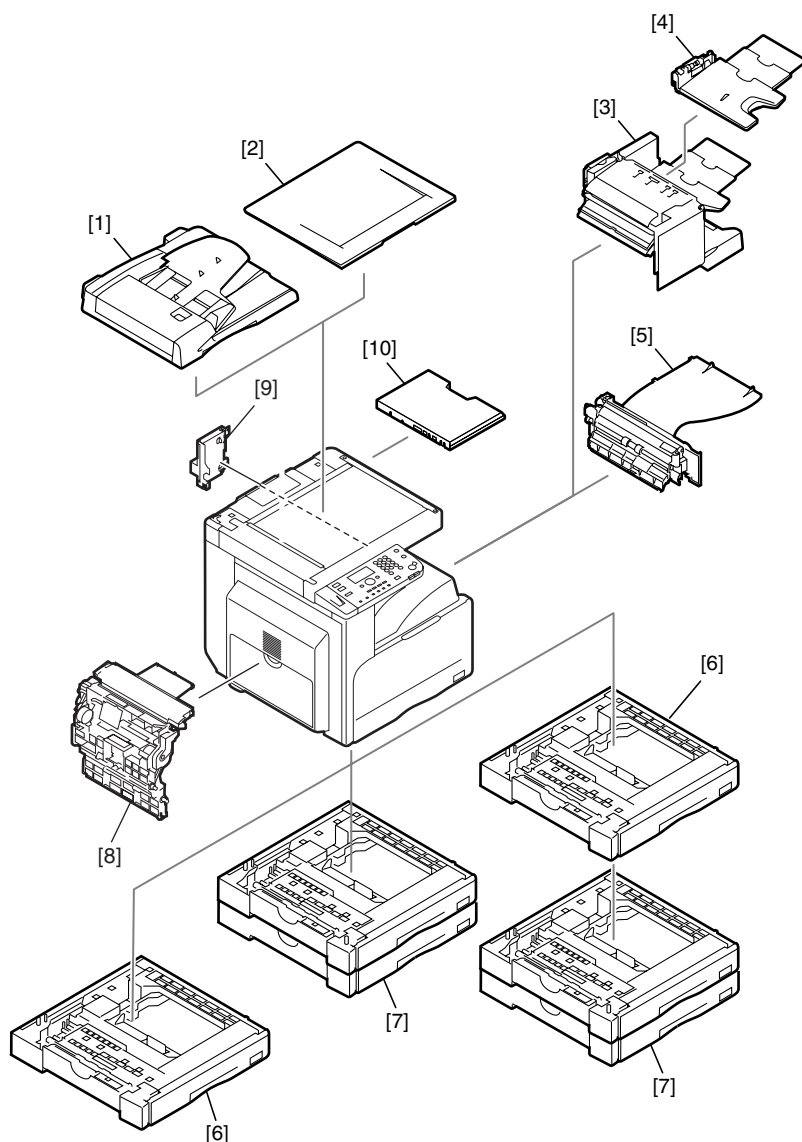
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1.1 System Construction

1.1.1 Pickup/ Delivery /Original Handling Accessories System Configuration (1-cassette/Platen cover (option) model)

The configuration is as shown in the following figure:



F-1-1

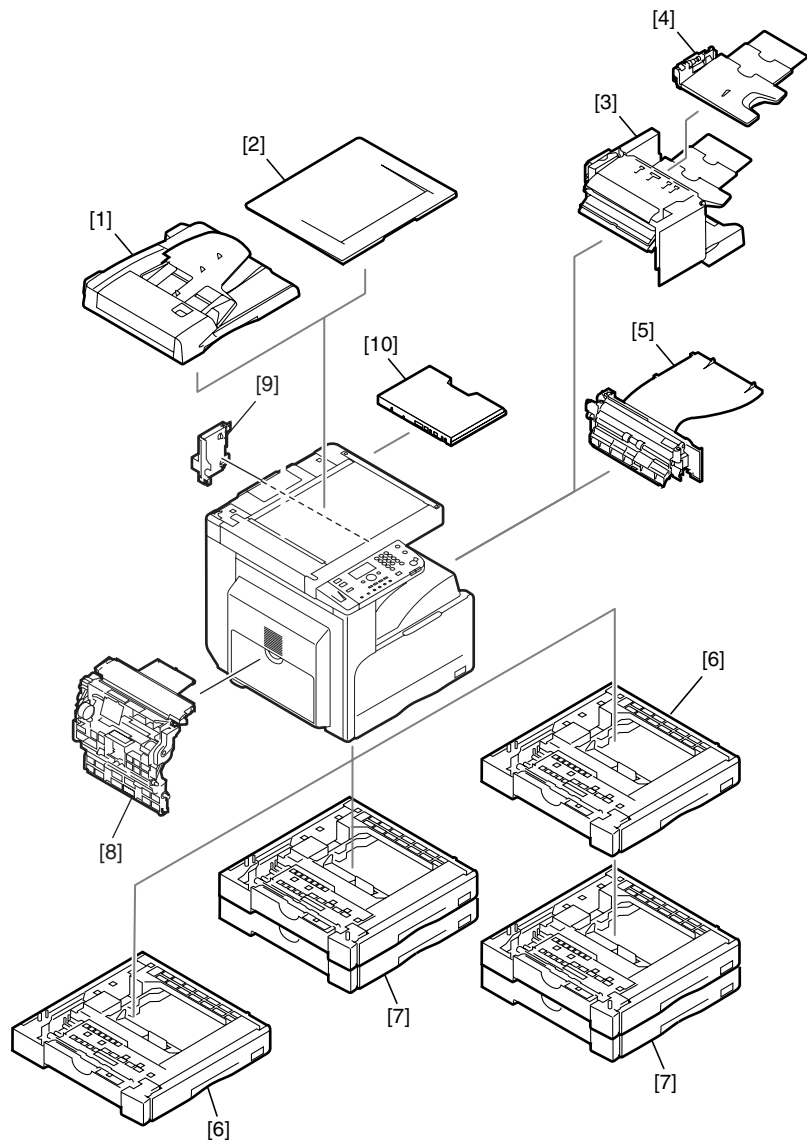
[1]	DADF-P2	
[2]	Platen Cover Type J	
[3]	Finisher-U2	
[4]	Additional Finisher Tray-C1	
[5]	Inner 2-way Tray-E2	
[6]	Cassette Feeding Module-S1	*1
[7]	Cassette Feeding Module-T1	*1
[8]	Duplex Unit-A1	
[9]	Power Supply Kit-Q1	*2
[10]	Document Tray-J1	

*1: A Cassette feeding module-S1 can be placed on the Cassette feeding module-T1 to use these cassette units as a 3-stage cassette unit.

*2: This accessory is required when the Finisher-U2, Cassette feeding module-T1 is installed.

1.1.2 Pickup/ Delivery /Original Handling Accessories System Configuration (1-cassette/Platen cover (standard) model)

The configuration is as shown in the following figure:



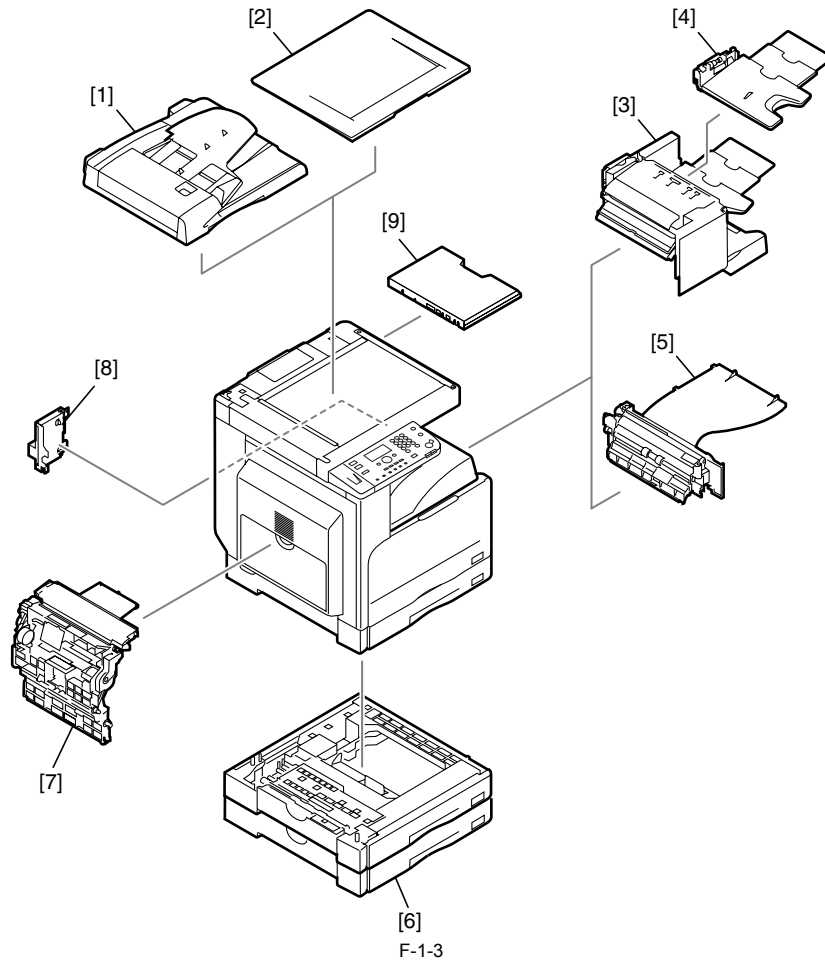
F-1-2

[1]	DADF-P2	
[2]	Platen Cover Type J	*1
[3]	Finisher-U2	
[4]	Additional Finisher Tray-C1	
[5]	Inner 2-way Tray-E2	
[6]	Cassette Feeding Module-S1/S2*2	*3
[7]	Cassette Feeding Module-T1/T2*2	*3
[8]	Duplex Unit-A1	
[9]	Power Supply Kit-Q1	*4
[10]	Document Tray-J1	

*1: This accessory comes standard.
*2: Only for China, this machine uses the cassette feeding module-S2 and the cassette feeding module-T2.
*3: A Cassette feeding module-S1 can be placed on the Cassette feeding module-T1 (A Cassette feeding module-S2 can be placed on the Cassette feeding module-T2) to use these cassette units as a 3-stage cassette unit.
*4: This accessory is required when the Finisher-U2, Cassette feeding module-T1/T2 is installed.

1.1.3 Pickup/ Delivery /Original Handling Accessories System Configuration (2-cassette/Duplex unit (option) model)

The configuration is as shown in the following figure:



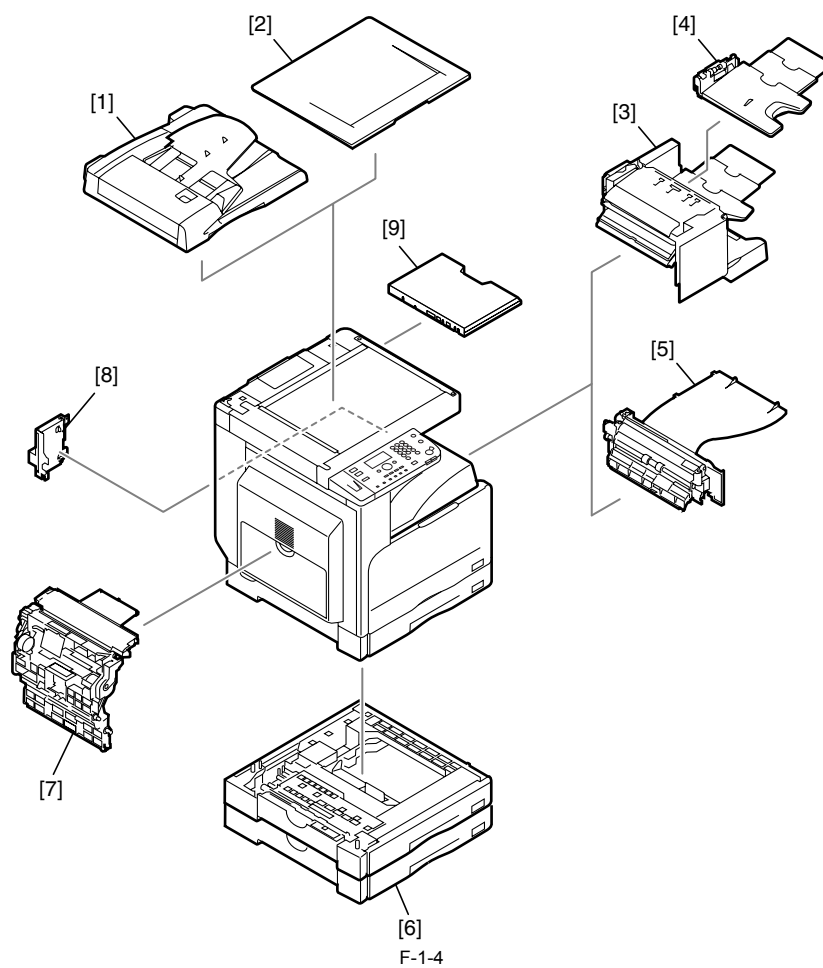
[1]	DADF-P2	
[2]	Platen Cover Type J	*1
[3]	Finisher-U2	
[4]	Additional Finisher Tray-C1	
[5]	Inner 2-way Tray-E2	
[6]	Cassette Feeding Module-T2	
[7]	Duplex Unit-A1	*1
[8]	Power Supply Kit-Q1	*2
[9]	Document Tray-J1	

*1: This accessory comes standard.

*2: This accessory is required when the Finisher-U2, Cassette feeding module-T2 is installed.

1.1.4 Pickup/ Delivery /Original Handling Accessories System Configuration (2-cassette/Duplex unit (standard) model)

The configuration is as shown in the following figure:



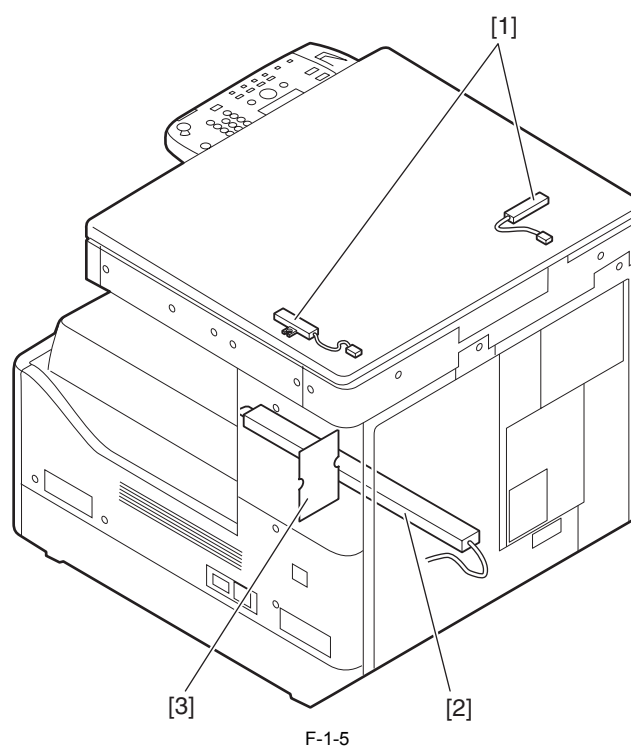
- [1] DADF-P2
- [2] Platen Cover Type J
- [3] Finisher-U2
- [4] Additional Finisher Tray-C1
- [5] Inner 2-way Tray-E2
- [6] Cassette Feeding Module-T1
- [7] Duplex Unit-A1
- [8] Power Supply Kit-Q1
- [9] Document Tray-J1

*1

*1: This accessory is required when the Finisher-U2, Cassette feeding module-T1 is installed.

1.1.5 Reader Heater/ Cassette Heater System Configuration

The configuration is as shown in the following figure:



- | | | |
|-----|-----------------|----|
| [1] | Reader Heater | *1 |
| [2] | Cassette Heater | *1 |
| [3] | Heater PCB | |

*1: To operate the heaters, a heater PCB is required. These parts are supplied as service parts, not the standard items.

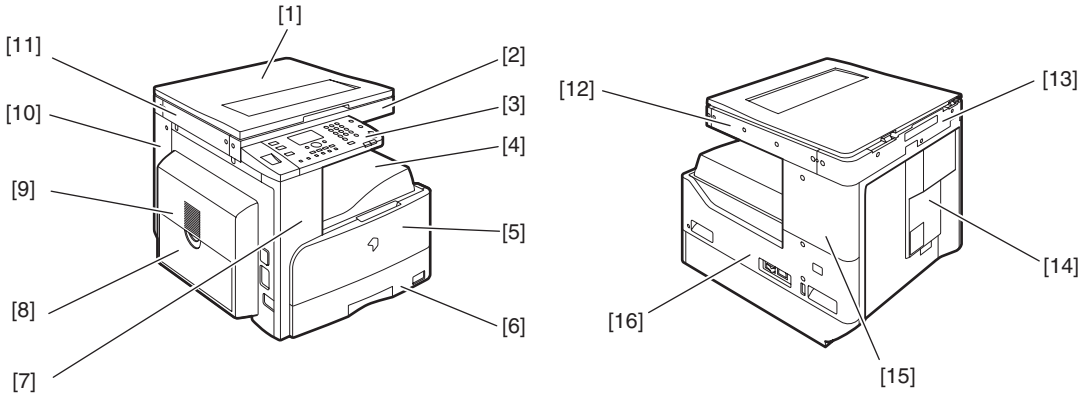
1.1.6 Printing/Transmitting Accessories System Configuration

This machine does not allow the print function and the transmission function to be added.

1.2 Product Specifications

1.2.1 Names of Parts

1.2.1.1 External View (1-cassette model)

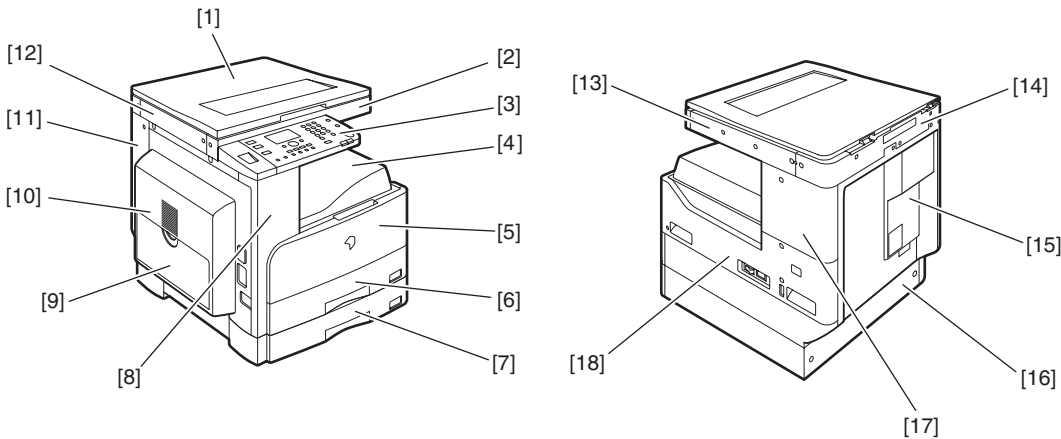


F-1-6

- | | | | |
|-----|----------------------|------|---------------------|
| [1] | Copyboard cover (*1) | [9] | Left door |
| [2] | Reader front cover | [10] | Left cover (rear) |
| [3] | Control panel | [11] | Reader left cover |
| [4] | Delivery tray | [12] | Reader right cover |
| [5] | Front cover | [13] | Reader rear cover |
| [6] | Cassette 1 | [14] | Rear cover |
| [7] | Left cover (front) | [15] | Right cover (upper) |
| [8] | Manual feed tray | [16] | Right cover (lower) |

*1: This accessory comes optionally with the iR2320L (Latin American countries model), iR2318L (Korean model). Other models are standard.

1.2.1.2 External View (2-cassette model)

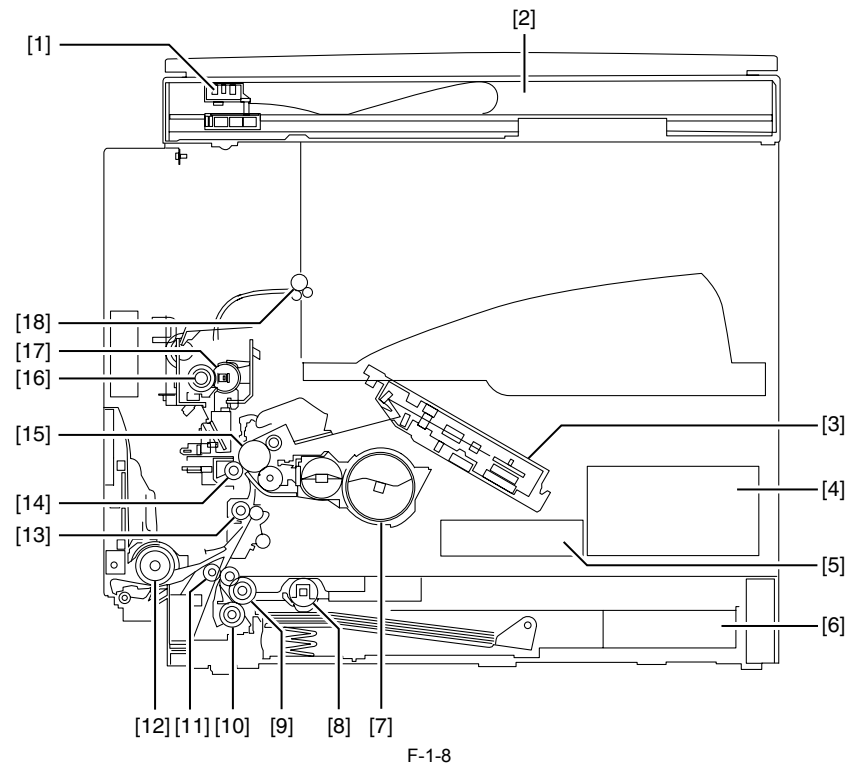


F-1-7

- | | | | |
|-----|--------------------|------|--------------------|
| [1] | Copyboard cover | [9] | Left door |
| [2] | Reader front cover | [10] | Left cover (rear) |
| [3] | Control panel | [11] | Reader left cover |
| [4] | Delivery tray | [12] | Reader right cover |
| [5] | Front cover | [13] | Reader rear cover |
| [6] | Cassette 1 | [14] | Rear cover |

- | | | | |
|-----|--------------------|------|---------------------|
| [7] | Left cover (front) | [15] | Right cover (upper) |
| [8] | Manual feed tray | [16] | Right cover (lower) |

1.2.1.3 Cross-Section

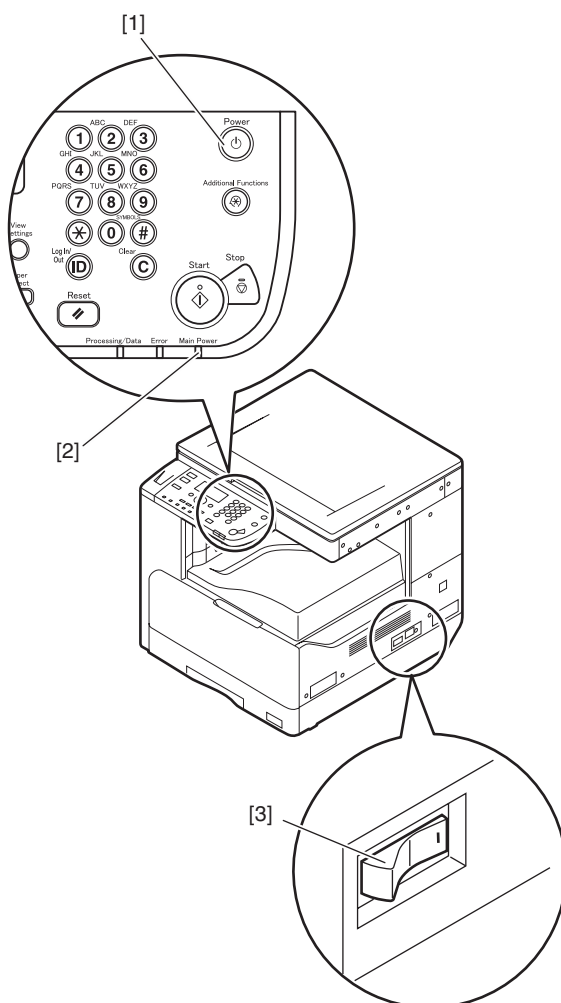


- | | | | |
|-----|---------------------|------|---------------------------|
| [1] | CIS unit | [10] | Separation roller |
| [2] | Reader unit | [11] | Vertical path roller |
| [3] | Laser scanner unit | [12] | Manual feed pickup roller |
| [4] | DC power supply PCB | [13] | Registration roller |
| [5] | HVT PCB | [14] | Transfer roller |
| [6] | Cassette | [15] | Drum unit |
| [7] | Toner bottle | [16] | Pressure roller |
| [8] | Pickup roller | [17] | Fixing film unit |
| [9] | Feed roller | [18] | Delivery roller |

1.2.2 Using the Machine

1.2.2.1 Turning On the Power Switch (1-cassette model)

The machine possesses 2 power switches: main power switch and control power switch. Normally (i.e., unless the machine is in a sleep state), the machine will be supplied with power when you turn on its main power switch.

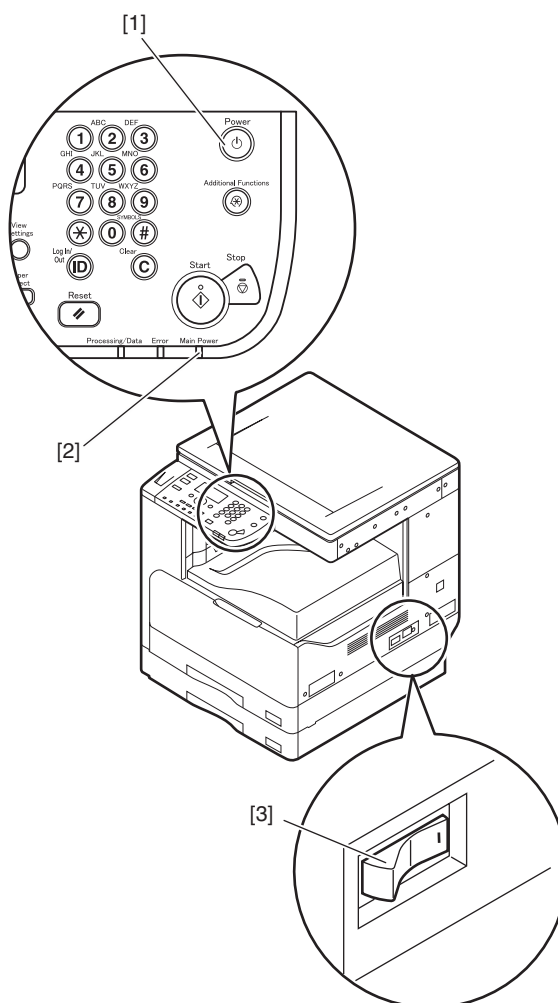


F-1-9

- [1]Control panel power switch
- [2]Main power lamp
- [3]Main power switch

1.2.2.2 Turning On the Power Switch (2-cassette model)

The machine possesses 2 power switches: main power switch and control power switch. Normally (i.e., unless the machine is in a sleep state), the machine will be supplied with power when you turn on its main power switch.



F-1-10

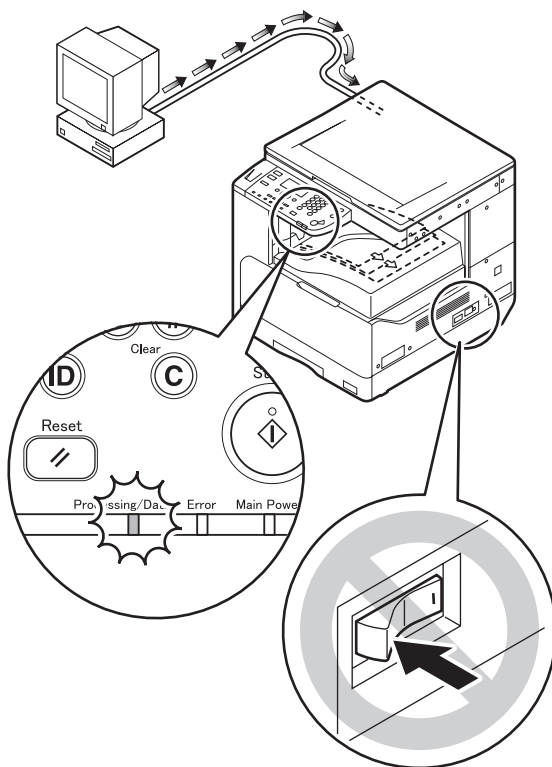
- [1]Control panel power switch
- [2]Main power lamp
- [3]Main power switch

1.2.2.3 When Turning Off the Main Power Switch (1-cassette model)

<During printing or fax data transmission/reception>



Be sure to operate the main power switch while the Processing/Data lamp on the control panel is not lit.
(Turning off the main switch during printing or fax data transmission/reception can erase the data being processed.)

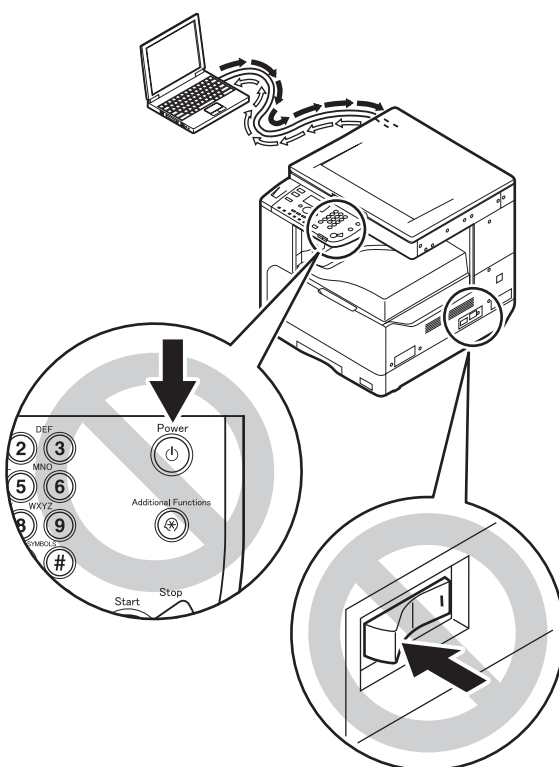


F-1-11

<During downloading>



Do not turn off the power switch or ON/OFF switch on the control panel.
(Turning off the main power switch during downloading can make this machine inoperative.)



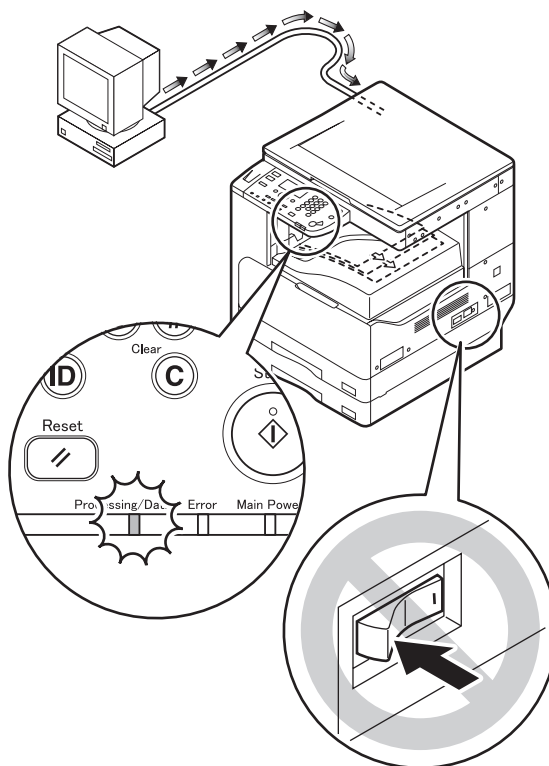
F-1-12

1.2.2.4 When Turning Off the Main Power Switch (2-cassette model)

<During printing or fax data transmission/reception>



Be sure to operate the main power switch while the Processing/Data lamp on the control panel is not lit.
(Turning off the main switch during printing or fax data transmission/reception can erase the data being processed.)

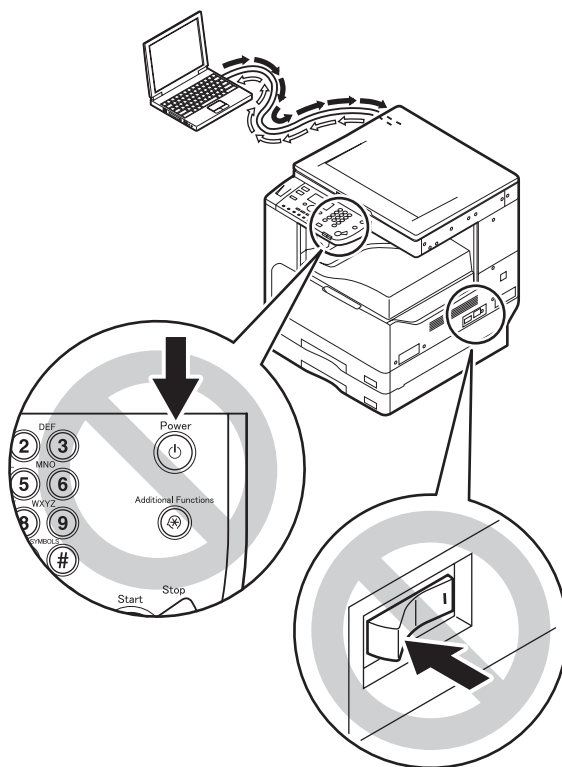


F-1-13

<During downloading>

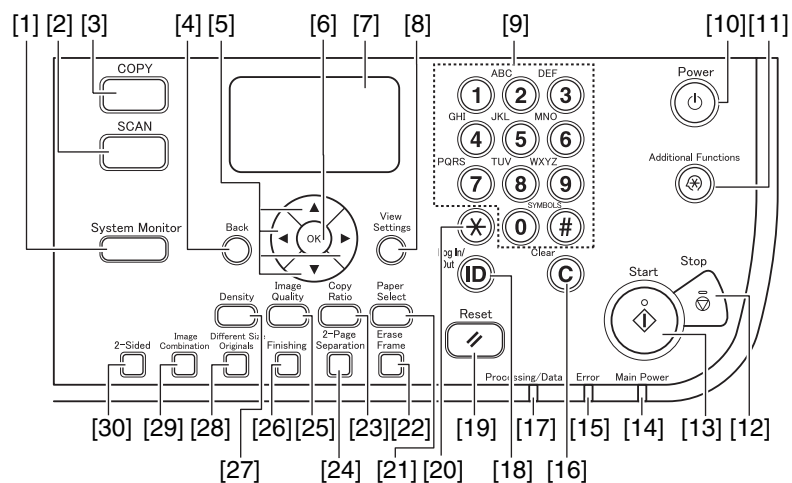


Do not turn off the power switch or ON/OFF switch on the control panel.
(Turning off the main power switch during downloading can make this machine inoperative.)



F-1-14

1.2.2.5 Control Panel



F-1-15

- | | |
|--------------------------------------|--------------------------------|
| [1] System Monitor key | [16] Clear key |
| [2] SCAN key | [17] Processing/Date Indicator |
| [3] COPY key | [18] ID key |
| [4] Back key | [19] Reset key |
| [5] Upper/Lower/Left/Right arrow key | [20] Tone key |
| [6] OK key | [21] Paper Select key |
| [7] LCD display | [22] Frame Erase key |
| [8] View Settings key | [23] Copy Ratio key |
| [9] Numeric keys | [24] 2-Page Separation key |
| [10] Control Panel Power Switch | [25] Image Quality key |
| [11] Additional Functions key | [26] Finishing key |

[12] Stop key	[27] Density key
[13] Start key	[28] Different Size Originals key
[14] Main Power Indicator	[29] Image Combination key
[15] Error Indicator	[30] 2-Sided key



Key names may be different depending on the countries or area of destination.

1.2.3 User Mode Items

1.2.3.1 Audible Tones

Additional Functions	Settings
Entry Tone	Off, ON(*)
Error Tone	Off, ON(*)
Scan Done Tone	Off, ON, For Error Only(*)
Print Done Tone	Off, ON, For Error Only(*)

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.2 Common Settings

Additional Functions	Settings
Initial Function	Copy(*), Scan
Contrast	-2 to +2; -/+0(*)
Invert Screen Colors	Off(*), On
Auto Clear Setting	Initial Function(*), Selected Function
Toner Save Mode	Off(*), Low, High
Print Density	-4 to +4; -/+0(*)
Auto Drawer Select.	Copy: Stack Bypass (Off(*), On), Drawer 1 (Off, On(*)), Drawer 2 (Off, On(*)), Drawer 3 (Off, On(*)), Drawer 4 (Off, On(*)) Printer: Drawer 1 (Off, On(*)), Drawer 2 (Off, On(*)), Drawer 3 (Off, On(*)), Drawer 4 (Off, On(*)) Other: Stack Bypass (Off(*), On), Drawer 1 (Off, On(*)), Drawer 2 (Off, On(*)), Drawer 3 (Off, On(*)), Drawer 4 (Off, On(*))
Register Paper Type	Drawer 1: Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1 Drawer 2: Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1 Drawer 3: Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1 Drawer 4: Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1
Tray Designation	Tray A: Copy (Off, On(*)), Printer (Off, On(*)), Other (Off, On(*)) Tray B: Copy (Off, On(*)), Printer (Off, On(*)), Other (Off, On(*))
Stand. Stack Bypass.	Off(*), On: Paper Size (LTR(*), LTRR, LGL, STMT, STMTR, EXEC, 11 x 17, Custom Size, COM10, Monarch, DL, ISO-C5, ISO-B5, A4, A4R, A3, A5, A5R, B4, B5, B5R) Paper Type (Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1, Heavy Paper 2, Heavy Paper 3, Transparency, Labels) Paper Size (LTR(*), LTRR, LGL, STMT, STMTR, EXEC, 11 x 17, Custom Size, COM10, Monarch, DL, ISO-C5, ISO-B5, A4, A4R, A3, A5, A5R, B4, B5, B5R) Paper Type (Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper 1, Heavy Paper 2, Heavy Paper 3, Transparency, Labels)
Paper Feed Switch	Stack Bypass (Speed Priority(*), Print Side), Drawer 1 (Speed Priority(*), Print Side), Drawer 2 (Speed Priority(*), Print Side), Drawer 3 (Speed Priority(*), Print Side), Drawer 4 (Speed Priority(*), Print Side)
Language Switch	Chinese (Simplified), English(*), French, Japanese, Korean, Portuguese, Spanish
Dirty Feeder Error	Off, On(*)
Remote Scan Compress	High Ratio, Normal(*), Low Ratio
Remote Scan Gamma	1.0, 1.4, 1.8(*), 2.2
K/B Size Originals*1	Use 8K/16K Format, Use B4/B5 Format(*)

Additional Functions	Settings
Inch/Millimeter Switch	mm, inch(*)
Paper Size Group	AB, Inch(*), A
Initialize Common	Select <Yes> or <No>.

* Factory setting (It may be different depending on the countries or region of destination.)

*1 This item may be omitted depending on the countries or area of destination.

1.2.3.3 Copy Settings

Additional Functions	Settings
Image Orientation	Off(*), On
Auto Orientation	Off, On(*)
Standard Settings	
No. of Copies	1(*) - 99
Density	Auto(*), Manual (-4 to +4)
Image Quality	Text(*), Text/Photo, Photo
2-Sided	Off(*), 1 -> 2-Sided, 2 -> 2-Sided, 2 -> 1-Sided, Book -> 2-Sided, Layout Settings
Copy Ratio	Zoom (25 - 400%), MAX. (400%), STMT -> 11 x 17 (200%), LTR -> 11 x 17 (129%), LGL -> 11 x 17 (121%), 1:1 (100%)(*), LGL -> LTR (78%), 11 x 17 -> LGL (73%), 11 x 17 -> LTR (64%), 11 x 17 -> STMT (50%), MIN. (25%)
Paper Select	Auto(*), Stack Bypass, Drawer 1, Drawer 2, Drawer 3, Drawer 4
Image Combination	Off(*), 2 on 1, 4 on 1, ID Card Copy
Differ. Size Orig	AB/inch Size group selected: Off(*), Same Width, Different Width A Size group selected: Off(*), On
Finishing	Collate, Rotate + Collate, Group(*), Rotate + Group, Offset + Collate, Offset + Group, Staple
2-Page Separation	Off(*), On
Frame Erase	Off(*), Org. Frame Erase, Book Frame Erase, Binding Erase, Options
Sharpness	Lowest (leftmost) to Highest (rightmost), Middle (center)(*)
Initialize Copy Set.	Yes(*), No

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.4 Printer Settings

Additional Functions	Settings
Default Papersize	LTR(*), LTRR, LGL, STMTR, EXEC, A4, A4R, A3, A5R, B4, B5, B5R, COM10, Monarch, DL, ISO-C5, ISO-B5
Default Papertype	Plain(*), Recycled, Color, 3-hole punch, Bond, Heavy Paper, Tracing Paper, Transparency, Labels
2-Sided	Off(*), On
Print Quality	
Image Refinement	On(*), Off
Density	-4 to +4; +/-0(*)
Toner Saver	Off(*), On
Page Layout	
Binding	Long Edge(*), Short Edge
Margin	Inch: -01.97" to +01.97"; 00.00" mm: -50.0 mm to +50.0 mm; 0.0 mm
Finishing	Collate, Rotate + Collate, Group(*), Rotate + Group, Offset + Collate, Offset + Group, Staple
Error Time Out	On(*) (1 to 300 sec), Off; 15 sec(*)
Auto Size Detection	Off(*), On
Initialize Printer	Select <Yes> or <No>.

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.5 Timer Settings

Additional Functions	Settings
Auto Sleep Time	Off, On (3 to 30 minutes; 5 min(*) in one minute increments)
Auto Clear Time	Off, On (1 to 9 minutes; 2 min(*) in one minute increments)

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.6 Adjustment/Cleaning

Additional Functions	Settings
Clean Trans. Roller	Select <Yes> or <No>.
Drum Cleaning	Select <Yes> or <No>.
Fixing Unit Cleaning	Select <Yes> or <No>.
Feeder Cleaning	Select <Yes> or <No>.
Bond Sp. Processing	Off(*), On
Special Mode M	Low, Standard(*), High
Special Mode N	Off(*), On
Special Mode O	Stack Bypass: Off(*), On Drawer: Off(*), On
Special Mode P	Off(*), On
Special Mode S	Off(*), Speed Priority1, Speed Priority 2
Rotate Collate Adj.	Speed Priority 1(*), Speed Priority 2, Image Priority
Dirty Feeder Adj.	Off(*), On

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.7 Report Settings

Additional Functions	Settings
Print List	User's Data List: Select <Yes> or <No>.

1.2.3.8 System Settings

Additional Functions	Settings
System Manager Set.	System Manager ID, System Manager
Device Info Settings	Device Name, Location
Dept. ID Management	Off(*), On: Reg./Edit Dept. ID: Department ID, Password, Limit Settings, Erase Page Totals: View Page Totals, Clear All Totals, Print List Allow Unkn. ID Print: Off, On(*) Allow Unkn. ID Scan: Off, On(*)
User ID Management	Off(*), On
Network Settings	TCP/IP Settings, SNMP Settings, Ethernet Driver, Startup Time Set.
Remote UI On/Off	Off, On(*)
Job Log Display	Off, On(*)
Use USB Device	Off, On(*)
Update Firmware	This function is only used when the firmware needs to be updated.

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.3.9 Network Settings

Item	Setting Description	Default Setting
TCP/IP Settings		
IPv4 Settings: IP Address Settings		
IP Address Auto.		
DHCP	On/Off	Off
BOOTP	On/Off	Off
RARP	On/Off	Off
IP Address	IP address	0.0.0.0
Subnet Mask	IP address	0.0.0.0
Gateway Address	IP address	0.0.0.0
IPv4 Settings		
PING Command	IP address	0.0.0.0
IPv4 Settings		
IP Address Range	On/Off Up to four IPv4 addresses or ranges of IPv4 addresses can be stored. (Permit/Reject)	Off
IPv4 Settings: DNS Settings		
DNS Server Settings		
Primary DNS Server	IP address	0.0.0.0
Secondary DNS Server	IP address	0.0.0.0
DNS Host/Domain		
Host Name	47 Characters maximum	('Canon' + the last six digits of the machine's MAC address)
Domain Name	47 Characters maximum	(NULL)
DNS Dynamic Update	On/Off	Off
IPv6 Settings		
Use IPv6	On/Off	Off
Stateless Address	On/Off	On
IPv6 Settings: Manual Address Set.		
Use Manual Address	On/Off	Off
Manual Address	39 Characters maximum	0:0:0:0:0:0:0
Prefix Length	0 to 128	64
Default Router Addr.	39 Characters maximum	0:0:0:0:0:0:0
IPv6 Settings		
Use DHCPv6	On/Off	Off
IPv6 Settings: PING Command		
IPv6 Address	39 Characters maximum	0:0:0:0:0:0:0
Host Name	48 Characters maximum	(NULL)
IPv6 Settings		
IP Address Range	On/Off Up to 4 IPv6 addresses, ranges of IPv6 addresses, or IPv6 address prefixes can be stored. (Permit/Reject)	Off
IPv6 Settings: DNS Settings		
DNS Server Settings		
Primary DNS Server	IP address	0.0.0.0
Secondary DNS Server	IP address	0.0.0.0
DNS Host/Domain		
Use IPv4 Host/Domain	On/Off	Off
Host Name	47 Characters maximum	('Canon' + the last six digits of the machine's MAC address)
Domain Name	47 Characters maximum	(NULL)
DNS Dynamic Update	On/Off	Off
Reg. Manual Address	On/Off	Off
Register Stateful	On/Off	Off
WINS Configuration		
WINS Configuration	On/Off	Off 0.0.0.0
LPD Print Settings		

Item	Setting Description	Default Setting
LPD Print Settings	On/Off	On
RAW Print Settings		
RAW Print Settings	On/Off	On
Use Bidirectional	On/Off	Off
Use HTTP		
Use HTTP	On/Off	On
Port Number Settings		
LPD	Port Number	515
RAW	Port Number	9100
HTTP	Port Number	80
SNMP	Port Number	161
RX MAC Address Set.		
RX MAC Address Set.	On/Off MAC addresses (A maximum of five addresses can be registered)	Off
SNMP Settings		
SNMP Settings	On/Off	On
Community Name 1	Community Name	public
Community Name 2	Community Name	(NULL)
Writable SNMP 1	On/Off	On
Writable SNMP 2	On/Off	Off
Print Manage. Info	On/Off	On
Ethernet Driver		
Auto Detect	On/Off	On
Communication Mode	Full Duplex/Half Duplex	Full Duplex
Ethernet Type	10 Base-T/100 Base-TX	
Startup Time Settings		
Startup Time Settings	0 to 300 sec	0 sec

* Factory setting (It may be different depending on the countries or region of destination.)

1.2.4 Maintenance by the User

1.2.4.1 User Maintenance Items

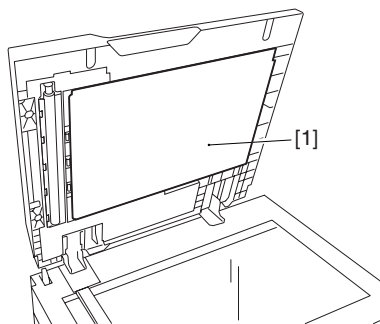
No.	Item	Maintenance cycle	Remarks
[1]	Pressure plate cleaning	As required	
[2]	Copyboard glass(large/small*1) cleaning	As required	
[3]	Copyboard holder*1 (jump board)	As required	
[4]	Fixing pressure roller cleaning	As required	Clean every 10000 sheets
[5]	Exterior cleaning	As required	
[6]	Transfer roller cleaning	As required	
[7]	Drum cleaning	As required	
[8]	Toner replenishment (toner bottle replacement)	When the relevant error code appears	
*1 Only for ADF equipped model			

1.2.4.2 Cleaning

The parts that should be cleaned by the customer to maintain the design performance and the cleaning method are described below.
The service engineer should instruct the customer to clean the machine at regular intervals (once a month).

1. Pressure Plate

Clean the pressure plates [1] with a cloth dampened with water or neutral detergent and squeezed hard, and then wipe it with a dry soft cloth.

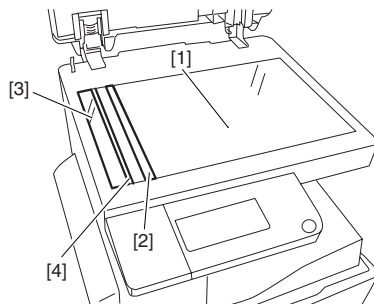


F-1-16

2. Document Glass/Vertical Size Plate

Clean the document glass [1] and vertical size plate [2] with a cloth dampened with water or neutral detergent and squeezed hard, and then wipe them with a dry soft cloth.

When an ADF is installed, clean is document glass (small) [3] and glass holder [4] in the same manner.



F-1-17

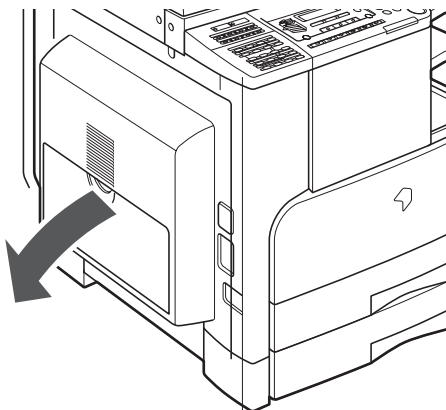
3. Cleaning the Fixing Pressure Roller

If white streaks are seen on the printed paper, the fixing pressure roller can be dirty. If white streaks are seen on the printed paper, clean the fixing pressure roller in the user mode. Be sure to clean the fixing pressure roller after replacing the toner bottle.

⚠ When cleaning the fixing pressure roller, manually feed A4/LTR paper.

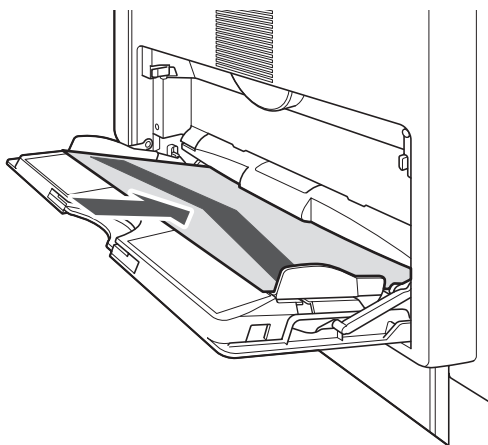
MEMO:
The time required for cleaning is about 100 seconds.

- 1) Press the Additional Functions key to enter the user mode.
- 2) Using the arrow keys, display the "Adjustment/Cleaning" menu.
- 3) Press the OK key.
- 4) Using the arrow keys, select "Fixing Unit Cleaning". Select "Yes" and then press the OK key.
- 5) Press the OK key. A cleaning pattern will be printed.
- 6) Open the manual feed tray.



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- 7) Place the cleaning pattern printed in step 5 in the manual feed tray with "V" up.



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8) The LCD display returns "Start Cleaning".

9) Select "Yes" and then press the OK key. Cleaning will start.

4. Cleaning the Transfer Roller

If the reverse side of the printed paper is stained, the transfer roller can be dirty. If the reverse side of the printed paper is stained, clean the transfer roller in the user mode.

1) Press the Additional Functions key to enter the user mode.

2) Using the arrow keys, display the "Adjustment/Cleaning".

3) Press the OK key.

4) Using the arrow keys, select "Clean Trans. Roller". Next, press the OK key. Cleaning will start.

5. Cleaning the Drum

If the quality of the printer image is poor, the drum can be dirty. If this symptom occurs, clean the drum in the user mode.

1) Press the Additional Functions key to enter the user mode.

2) Using the arrow keys, display the "Adjustment/Cleaning" menu.

3) Press the OK key.

4) Using the arrow keys, select "Drum Cleaning". Next, press the OK key. Cleaning will start.

1.2.5 Safety

1.2.5.1 Safety of the Laser Light

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

1.2.5.2 CDRH Regulations

The Center for Devices and Radiological Health of the US Food and Drug Administration put into force regulations concerning laser products on August 2, 1976. These regulations apply to laser products manufactured on and after August 1, 1976, and the sale of laser products not certified under the regulations is banned within the United States. The label shown here indicates compliance with the CDRH regulations, and its attachment is required on all laser products that are sold in the United States.

CANON

30-2, SHIMOMARUKO, 3-CHOME, OHTAKU, TOKYO,
146, JAPAN.

MANUFACTURED:

THIS PRODUCT CONFORMS WITH DHHS RADIATION
PERFORMANCE STANDARD 21CFR CHAPTER 1
SUBCHAPTER J.

F-1-20

1.2.5.3 Handling the Laser Unit

The laser scanner unit emits invisible laser light. Do not look directly at the laser scanner unit. (It is not designed for service.)
Warning labels are affixed to the top cover of the machine.

DANGER
Do not look directly at the laser scanner unit.
(It is not designed for service.)

1.2.5.4 Safety of Toner

The machine's toner is a non-toxic powder.



Do not throw toner into the trash.

Toner on Clothing or Skin

1. If your clothing or skin gets toner on it, wash it off with water.
2. Do not use warm water.
3. Do not bring toner into your mouth.

1.2.5.5 Point to Remember

It is dangerous to touch the toner. The toner must be disposed of properly.

1.2.6 Product Information

1.2.6.1 Environmental Information

Photosensitive medium	OPC drum (30-mm dia.)
Image reading method	CCD (CIS)
Reproduction method	indirect electrostatic
Exposure method	by laser light
Charging method	by AC charging roller
Development method	1-component toner projection
Transfer method	by transfer roller
Separation method	by curvature + static eliminator
Cassette pickup method	retard
Multifeeder pickup method	dual processing
Drum cleaning method	by cleaning blade
Fixing method	on-demand
Delivery method	face-down
Reproduction ratio	25% to 400%
Warm-up time	approx. 13sec
Image margin (leading edge)	3.0 +/-1.5 mm
Image margin (trailing edge)	5.0 +/-2.0 mm
Image margin (left/right)	left edge: 3.0 +/-2.0 mm right edge: 0.5 mm or more
Non-image width (leading edge)	3.0 +/-2.0 mm
Non-image width (trailing edge)	5.0 +/-2.0mm
Non-image width (left/right)	3.0 +/-2.0mm(left side only)
Number of gradations	256 gradations
Reading resolution	600 x 600 dpi
Printing resolution	600dpi x 600dpi
First print time	Book mode: 7.9 sec or less
Cassette capacity	250sheets (80 g/m2)
Multifeeder tray capacity	100 sheets (80 g/m2) (B4/LGL or less, 64 g/m2) 80 sheets (80 g/m2) (B4/LGL or less, 80 g/m2) 50 sheets (B4/LGL or more, 64 g/m2, 80 g/m2) 50 sheets (heavy paper (105 g/m2), OHP) 10 sheets (envelope) 1 sheet (label)
Continuous reproduction	1 to 99 sheets
Toner type	magnetic negative toner
Original type	sheet, book
Maximum original size	A3/LDR
Original size detection function	by reflection type sensor (if equipped with original detection function)
Sleep mode	yes
Option	See the system configuration chart.
Operating environment (temperature range)	15 to 27.5 deg C
Operating environment (humidity range)	25% to 75%
Operating environment (atmospheric pressure)	0.6 to 1.0 atm
Noise	iR2422 series: 66.7 dB or less iR2420/2320 series: 66.0 dB or less iR2318 series: 65.3 dB or less
Power supply rating	120/230 V
Power consumption (maximum)	120V model: 1406 W or less 230V model: 1348 W or less
Power consumption	120V model (full option): sleep mode: 3.0 W (reference only) / continuous printing: 527 W(reference only) 230V model (full option): sleep mode: 3.3 W (reference only) / continuous printing: 509 W (reference only)
Ozone	1.5mg/h
Dimensions	[Copyboard cover type] 1-stage cassette model: 622mm x 638mm x 580.4mm (W x D x H) 2-stage cassette model: 622mm x 638mm x 665.4mm (W x D x H)
Weight	[Copyboard cover type] 1-stage cassette model: approx. 37.9 kg 2-stage cassette model (standard equipment with Duplex unit): approx. 46.2 kg

1.2.7 Function List

1.2.7.1 Printing Speed (iR2422series)

	Paper size	Single-sided	
		Casette feed	Manual feed
Plain paper	A4	22	22
	A5	23	23
	A5R	-	13
	B5	20	20
	B5R	12	12
	A4R	11	11
	B4	9	9
	A3	10	10
	STMT	15	15
	STMTR	-	13
	EXE	-	21
	LTR	22	22
	LTRR	11	11
	LGL	10	10
	LDR	10	10
	8K	9	9
	16KR	10	10
	16K	20	20
Heavy paper 1/2 (Heavy paper 3)	A4	12(10)	12(10)
	A5	13(11)	13(11)
	A5R	-	10(7)
	B5	12(10)	12(10)
	B5R	9(6)	9(6)
	A4R	10(8)	10(8)
	B4	8(6)	8(6)
	A3	8(7)	8(7)
	STMT	11(7)	11(7)
	STMTR	-	9(6)
	EXE	-	12(10)
	LTR	11(10)	11(10)
	LTRR	9(8)	9(8)
	LGL	8(5)	8(5)
	LDR	8(7)	8(7)
	8K	7(5)	7(5)
	16KR	8(6)	8(6)
	16K	12(10)	12(10)
Bond paper	A4	7	7
	A5	5	5
	A5R	-	4
	B5	6	6
	B5R	4	4
	A4R	4	4
	B4	5	5
	A3	5	5
	STMT	4	4
	STMTR	-	4
	EXE	-	6
	LTR	7	7
	LTRR	4	4
	LGL	3	3
	LDR	5	5
	8K	5	5
	16KR	3	3
	16K	6	6
OHP	A4	-	20
	LTR	-	20
Envelope	Monarch	-	4
	COM10	-	4
	ISO-B5	-	4
	ISO-C5	-	4
	DL	-	4

i,è'ÁF
 ÁEãŽéÛÇÔãŽéÛ1ÇyãŽéÛ2ÇãlÇsë¶ÇμÁA()i†CÔãŽéÛ3ÇãlÇsë¶Ç²ÁB
 ÁEÉJÉZÉbÉgããéÛÁAéÈç²ÇμããéÛÁAÉIÉvÉVÉãÉiÇAÉJÉZÉbÉgÉUÉjÉbÉgC©ÇACÁÇçC³ÇfÇAããéÛèšãéÇYÇ†ÁAÉRÉsÁ[ÉXÉsÁ[ÉhÇÔè,,ãLÇ...iØÇ¹ÁB
 ÁEiÉiÖãlÇAã²xÁAóþéÜÉTÉCEYÇ...ÇÈÇÈÉRÉsÁ[ÉXÉsÁ[ÉhÇTMiçã²Ç²ÉÁB

1.2.7.2 Printing Speed (iR2420/iR2320series)

	Paper size	Single-sided	
		Cassette feed	Manual feed
Plain paper	A4	20	20
	A5	23	23
	A5R	-	13
	B5	20	20
	B5R	12	12
	A4R	11	11
	B4	9	9
	A3	10	10
	STMT	15	15
	STMTR	-	13
	EXE	-	21
	LTR	20	20
	LTRR	11	11
	LGL	10	10
	LDR	10	10
	8K	9	9
	16KR	10	10
	16K	20	20
Heavy paper 1/2 (Heavy paper 3)	A4	12(10)	12(10)
	A5	13(11)	13(11)
	A5R	-	10(7)
	B5	12(10)	12(10)
	B5R	9(6)	9(6)
	A4R	10(8)	10(8)
	B4	8(6)	8(6)
	A3	8(7)	8(7)
	STMT	11(7)	11(7)
	STMTR	-	9(6)
	EXE	-	12(10)
	LTR	11(10)	11(10)
	LTRR	9(8)	9(8)
	LGL	8(5)	8(5)
	LDR	8(7)	8(7)
	8K	7(5)	7(5)
	16KR	8(6)	8(6)
	16K	12(10)	12(10)
Bond paper	A4	7	7
	A5	5	5
	A5R	-	4
	B5	6	6
	B5R	4	4
	A4R	4	4
	B4	5	5
	A3	5	5
	STMT	4	4
	STMTR	-	4
	EXE	-	6
	LTR	7	7
	LTRR	4	4
	LGL	3	3
	LDR	5	5
	8K	5	5
	16KR	3	3
	16K	6	6
OHP	A4	-	20
	LTR	-	20

	Paper size	Single-sided	
		Casette feed	Manual feed
Envelope	Monarch	-	4
	COM10	-	4
	ISO-B5	-	4
	ISO-C5	-	4
	DL	-	4

Supplement:

- The above copy speed does not change irrespective of whether paper is supplied from the upper/lower cassette, the manual feed tray, or from the cassette feeding module.
- The copy speed may become down when the copies make continuously one minutes or more with the narrow width paper.

1.2.7.3 Printing Speed (iR2318series)

	Paper size	Single-sided	
		Casette feed	Manual feed
Plain paper	A4	18	18
	A5	23	23
	A5R	-	13
	B5	20	20
	B5R	12	12
	A4R	11	11
	B4	9	9
	A3	10	10
	STMT	15	15
	STMTR	-	13
	EXE	-	21
	LTR	18	18
	LTRR	11	11
	LGL	10	10
	LDR	10	10
	8K	9	9
	16KR	10	10
	16K	20	20
Heavy paper 1/2 (Heavy paper 3)	A4	12(10)	12(10)
	A5	13(11)	13(11)
	A5R	-	10(7)
	B5	12(10)	12(10)
	B5R	9(6)	9(6)
	A4R	10(8)	10(8)
	B4	8(6)	8(6)
	A3	8(7)	8(7)
	STMT	11(7)	11(7)
	STMTR	-	9(6)
	EXE	-	12(10)
	LTR	11(10)	11(10)
	LTRR	9(8)	9(8)
	LGL	8(5)	8(5)
	LDR	8(7)	8(7)
	8K	7(5)	7(5)
	16KR	8(6)	8(6)
	16K	12(10)	12(10)

	Paper size	Single-sided	
		Cassette feed	Manual feed
Bond paper	A4	7	7
	A5	5	5
	A5R	-	4
	B5	6	6
	B5R	4	4
	A4R	4	4
	B4	5	5
	A3	5	5
	STMT	4	4
	STMTR	-	4
	EXE	-	6
	LTR	7	7
	LTRR	4	4
	LGL	3	3
	LDR	5	5
	8K	5	5
	16KR	3	3
	16K	6	6
OHP	A4	-	20
	LTR	-	20
Envelope	Monarch	-	4
	COM10	-	4
	ISO-B5	-	4
	ISO-C5	-	4
	DL	-	4

Supplement:

- The above copy speed does not change irrespective of whether paper is supplied from the upper/lower cassette, the manual feed tray, or from the cassette feeding module.
- The copy speed may become down when the copies make continuously one minutes or more with the narrow width paper.

Chapter 2 Installation

Contents

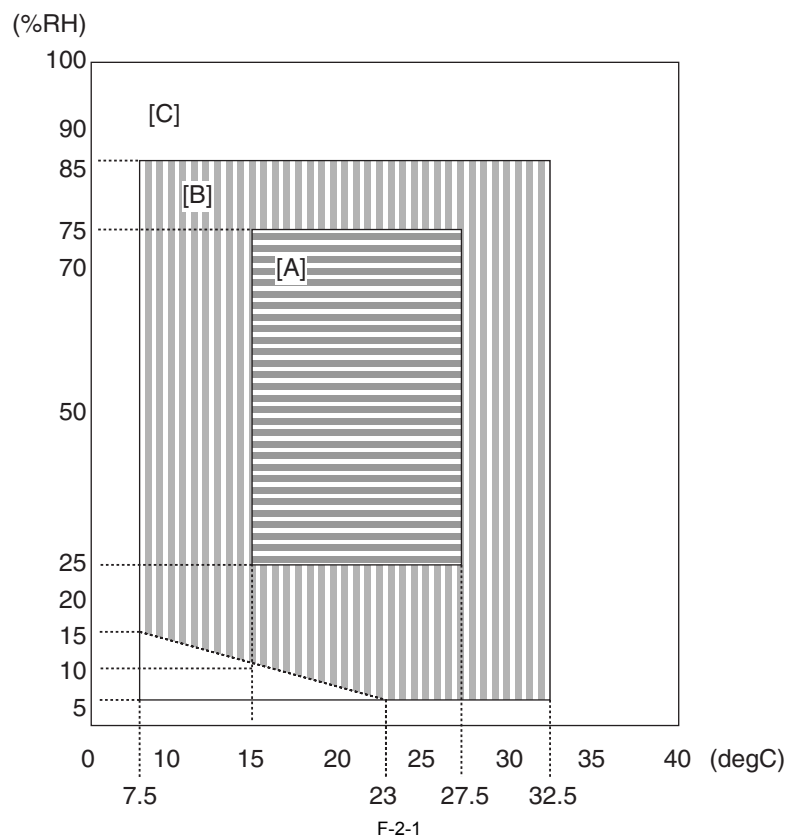
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2.1 Making Pre-Checks

2.1.1 Selecting the Site of Installation

Select the site of installation against the following requirements; if possible, visit the user's before delivery of the machine:

- 1) There must be a power outlet properly grounded and rated as indicated (-/+10%) for exclusive use by the machine.
- 2) The environment of the room must be as indicated in the following diagram, and the machine must not be installed near a water faucet, water boiler, humidifier, or refrigerator:



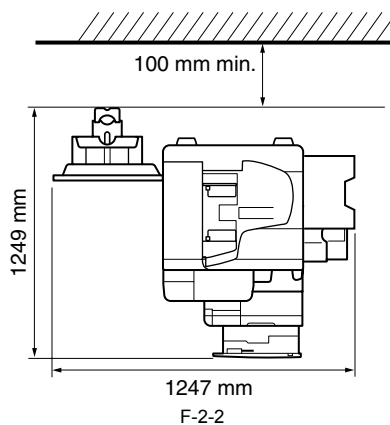
<Environmental zone assured>

[A]: Zone A: Satisfies all the conditions of the standard image quality and paper feed performance.

[B]: Zone B: Inferior to Zone A in terms of the standard image quality and paper feed performance, or may not apply.

[C]: Zone C: Problems associated with safety, malfunctions, or incorrect message display do not occur, but image quality and paper feed performance are not guaranteed.

- 3) The machine must not be installed near a source of fire or in an area subject to dust or ammonium gas.
If the area is exposed to direct rays of the sun, provide curtains to the window.
- 4) The level of ozone generated by the machine will not affect the health of individuals around it. Some, however, may find its odor unpleasant as while remaining in contact with it for long hours. Be sure that the room is well ventilated.
- 5) The floor of the machine must be level so that the feet of the machine will remain in contact and the machine will remain level.
- 6) The machine must be at least 10 cm away from any wall, permitting unobstructed use.



- 7) The machine must be placed in a well ventilated area. It is important to make sure, however, that the machine is not near the air vent (for suction) of the room.

2.1.2 Before Starting the Work (120VCLA)

1-1 Points to Make Before Installation

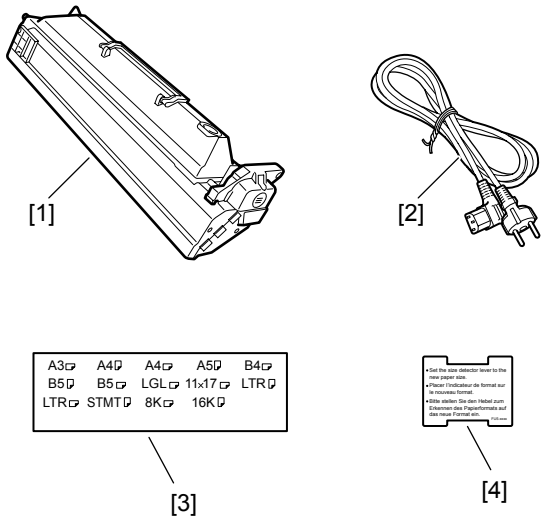
Be sure to go through the following before starting the work:

- 1) If you are installing the machine after moving it from a cold to warm location, be sure to leave the machine unpacked for at least 2 hours so that the machine is

- fully used to the site temperature, thus avoiding image faults caused by condensation. (The term "condensation" refers to the formation of droplets of water on the surface of a metal object brought in from a cold to warm place, i.e., as the result of the rapid cooling of the moisture (vapor) around the object.)
- 2) The machine weighs a maximum of about 37.9 kg. Be sure to work in a group of 2 persons when lifting it.
- 3) The machine is manufactured considering that it would be connected to IT Power Distribution System in Norway.

1-2 Checking the Contents

Check to be sure that none of the following contents is missing:



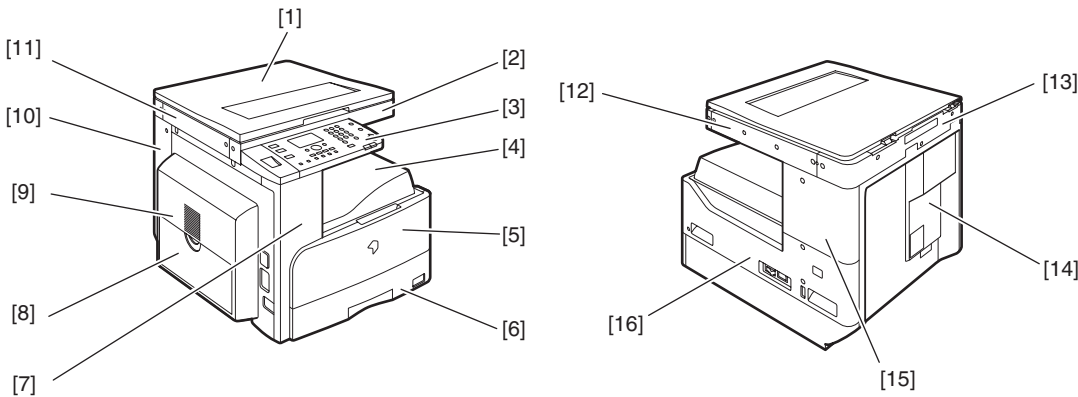
F-2-3

[1]	Drum unit	---	[3]	Cassette size label	---
[2]	Power cable	---	[4]	Caution sheet	---

Check the documentation and CD against the following table:

Driver/Utility CD-ROM
User Manual CD-ROM
Operators manual: Users Guide
Operators manual: Easy Operation Guide

1-3 Names of Parts



F-2-4

[1]	Copyboard cover	[9]	Left door
[2]	Reader front cover	[10]	Left cover (rear)
[3]	Control panel	[11]	Reader left cover
[4]	Delivery tray	[12]	Reader right cover
[5]	Front cover	[13]	Reader error cover
[6]	Cassette 1	[14]	Rear cover
[7]	Left cover (front)	[15]	Right cover (upper)
[8]	Manual feed tray	[16]	Right cover (lower)

2.1.3 Before Starting the Work (230VCLA)

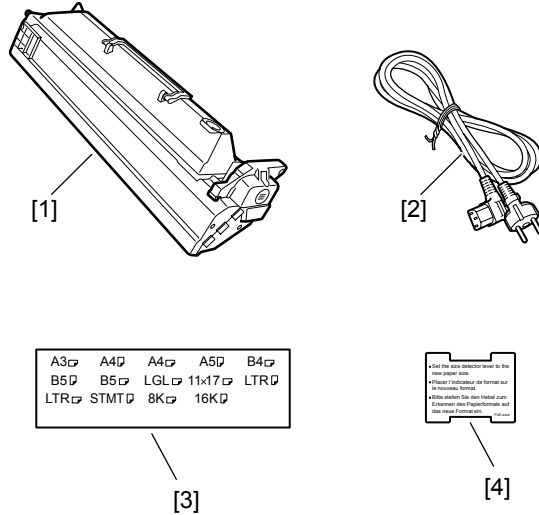
1-1 Points to Make Before Installation

Be sure to go through the following before starting the work:

- 1) If you are installing the machine after moving it from a cold to warm location, be sure to leave the machine unpacked for at least 2 hours so that the machine is fully used to the site temperature, thus avoiding image faults caused by condensation. (The term "condensation" refers to the formation of droplets of water on the surface of a metal object brought in from a cold to warm place, i.e., as the result of the rapid cooling of the moisture (vapor) around the object.)
- 2) The machine weighs a maximum of about 37.9 kg. Be sure to work in a group of 2 persons when lifting it.
- 3) The machine is manufactured considering that it would be connected to IT Power Distribution System in Norway.

1-2 Checking the Contents

Check to be sure that none of the following contents is missing:



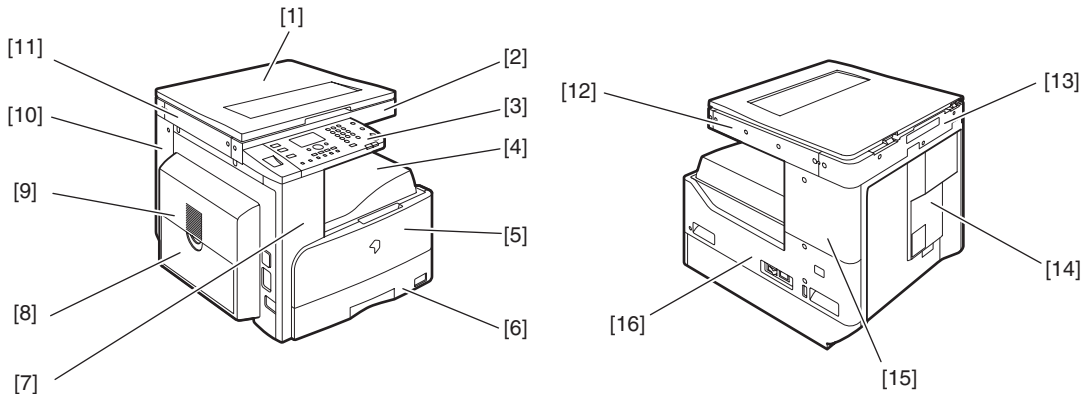
F-2-5

[1]	Drum unit	---	[3]	Cassette size label	---
[2]	Power cable	---	[4]	Caution sheet	---

Check the documentation and CD against the following table:

Driver/Utility CD-ROM
User Manual CD-ROM
Operators manual: Users Guide
Operators manual: Easy Operation Guide

1-3 Names of Parts



F-2-6

[1]	Copyboard cover	[9]	Left door
[2]	Reader front cover	[10]	Left cover (rear)
[3]	Control panel	[11]	Reader left cover
[4]	Delivery tray	[12]	Reader right cover
[5]	Front cover	[13]	Reader error cover
[6]	Cassette 1	[14]	Rear cover
[7]	Left cover (front)	[15]	Right cover (upper)

[8] Manual feed tray

[16] Right cover (lower)

2.1.4 Before Starting the Work (230VEUR)

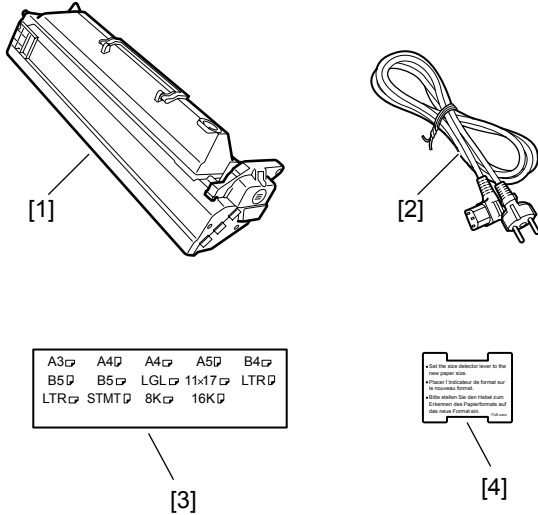
1-1 Points to Make Before Installation

Be sure to go through the following before starting the work:

- 1) If you are installing the machine after moving it from a cold to warm location, be sure to leave the machine unpacked for at least 2 hours so that the machine is fully used to the site temperature, thus avoiding image faults caused by condensation. (The term "condensation" refers to the formation of droplets of water on the surface of a metal object brought in from a cold to warm place, i.e., as the result of the rapid cooling of the moisture (vapor) around the object.)
- 2) The machine weighs a maximum of about 37.9 kg. Be sure to work in a group of 2 persons when lifting it.
- 3) The machine is manufactured considering that it would be connected to IT Power Distribution System in Norway.

1-2 Checking the Contents

Check to be sure that none of the following contents is missing:



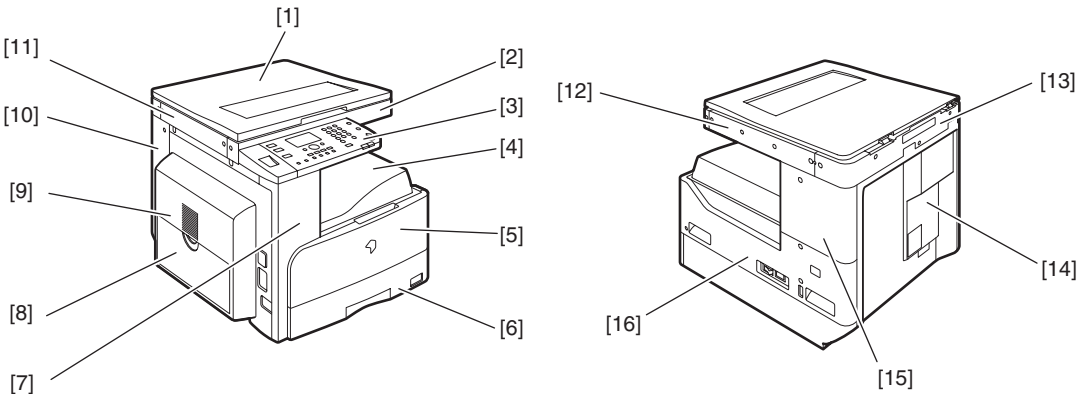
F-2-7

[1]	Drum unit	---	[3]	Cassette size label	---
[2]	Power cable	---	[4]	Caution sheet	---

Check the documentation and CD against the following table:

Driver/Utility CD-ROM
User Manual CD-ROM
Operators manual: Users Guide
Operators manual: Easy Operation Guide

1-3 Names of Parts



F-2-8

[1]	Copyboard cover	[9]	Left door
[2]	Reader front cover	[10]	Left cover (rear)
[3]	Control panel	[11]	Reader left cover
[4]	Delivery tray	[12]	Reader right cover
[5]	Front cover	[13]	Reader error cover
[6]	Cassette 1	[14]	Rear cover
[7]	Left cover (front)	[15]	Right cover (upper)

[8] Manual feed tray

[16] Right cover (lower)

2.1.5 Before Starting the Work (230VCSPL)

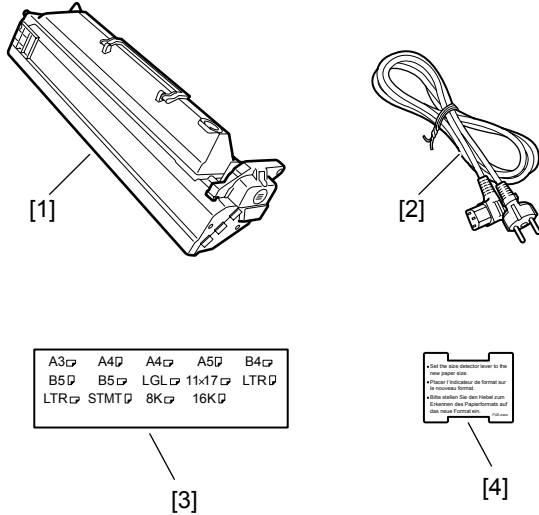
1-1 Points to Make Before Installation

Be sure to go through the following before starting the work:

- 1) If you are installing the machine after moving it from a cold to warm location, be sure to leave the machine unpacked for at least 2 hours so that the machine is fully used to the site temperature, thus avoiding image faults caused by condensation. (The term "condensation" refers to the formation of droplets of water on the surface of a metal object brought in from a cold to warm place, i.e., as the result of the rapid cooling of the moisture (vapor) around the object.)
- 2) The machine weighs a maximum of about 37.9 kg. Be sure to work in a group of 2 persons when lifting it.
- 3) The machine is manufactured considering that it would be connected to IT Power Distribution System in Norway.

1-2 Checking the Contents

Check to be sure that none of the following contents is missing:



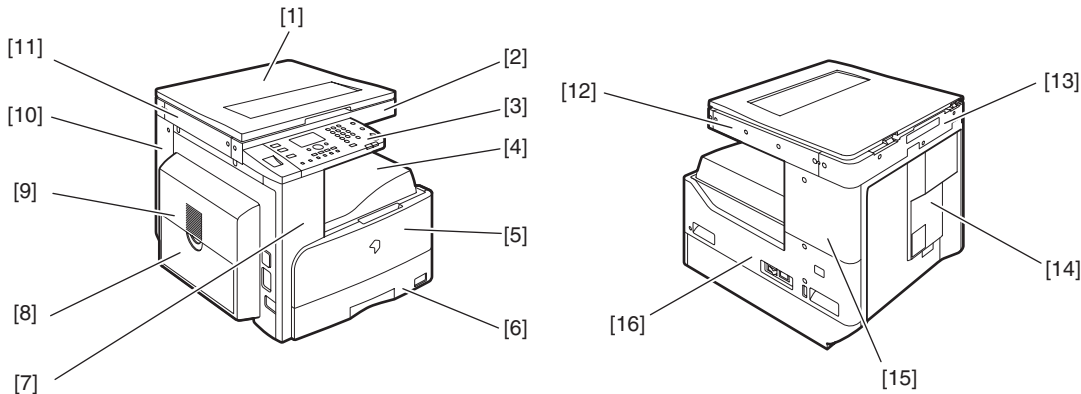
F-2-9

[1]	Drum unit	---	[3]	Cassette size label	---
[2]	Power cable	---	[4]	Caution sheet	---

Check the documentation and CD against the following table:

Driver/Utility CD-ROM
User Manual CD-ROM
Operators manual: Users Guide
Operators manual: Easy Operation Guide

1-3 Names of Parts



F-2-10

[1]	Copyboard cover	[9]	Left door
[2]	Reader front cover	[10]	Left cover (rear)
[3]	Control panel	[11]	Reader left cover
[4]	Delivery tray	[12]	Reader right cover
[5]	Front cover	[13]	Reader error cover
[6]	Cassette 1	[14]	Rear cover
[7]	Left cover (front)	[15]	Right cover (upper)

[8] Manual feed tray

[16] Right cover (lower)

2.1.6 Before Starting the Work (230V CCN)

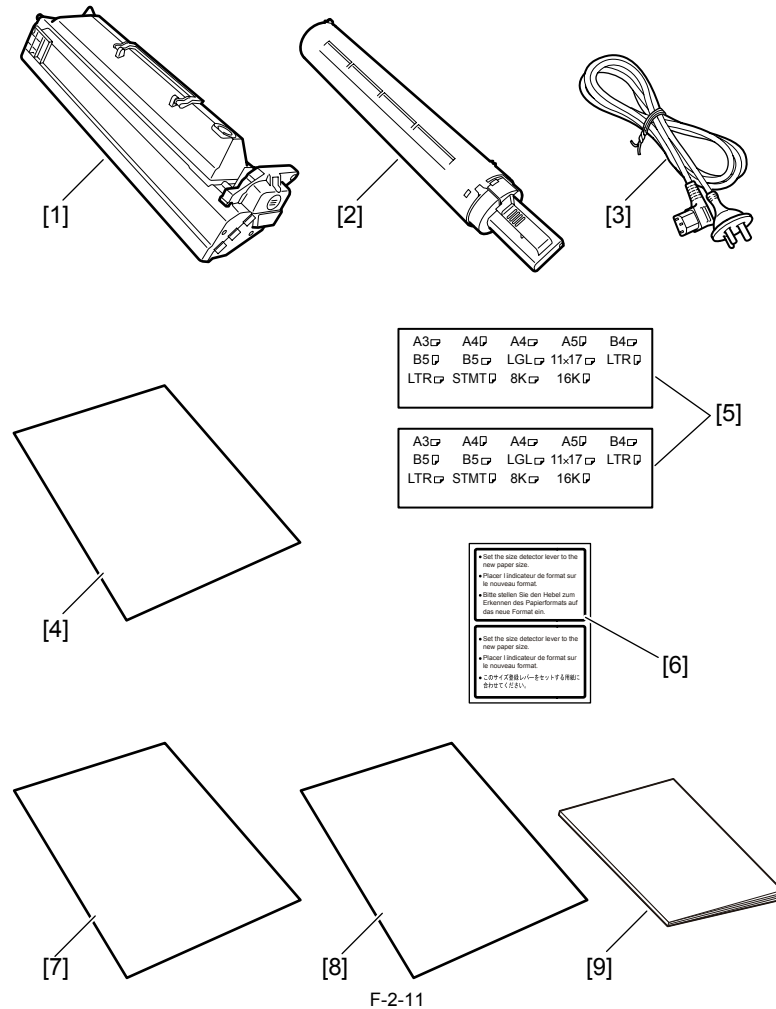
1-1 Points to Make Before Installation

Be sure to go through the following before starting the work:

- 1) If you are installing the machine after moving it from a cold to warm location, be sure to leave the machine unpacked for at least 2 hours so that the machine is fully used to the site temperature, thus avoiding image faults caused by condensation. (The term "condensation" refers to the formation of droplets of water on the surface of a metal object brought in from a cold to warm place, i.e., as the result of the rapid cooling of the moisture (vapor) around the object.)
- 2) The machine weighs a maximum of about 46.2 kg. Be sure to work in a group of 2 persons when lifting it.

1-2 Checking the Contents

Check to be sure that none of the following contents is missing:



[1]	Drum unit	---	[6]	Caution level	---2(1)	(*1)
[2]	Black toner	---	[7]	China written guarantee	---	
[3]	Power cable	---	[8]	Energy efficiency notice	---	
[4]	Certificate of China	---	[9]	Service record	---	
[5]	Cassette size label	---2(1)				

*1: 2-cassette model: 2 pcs., 1-cassette model: 1 pc.

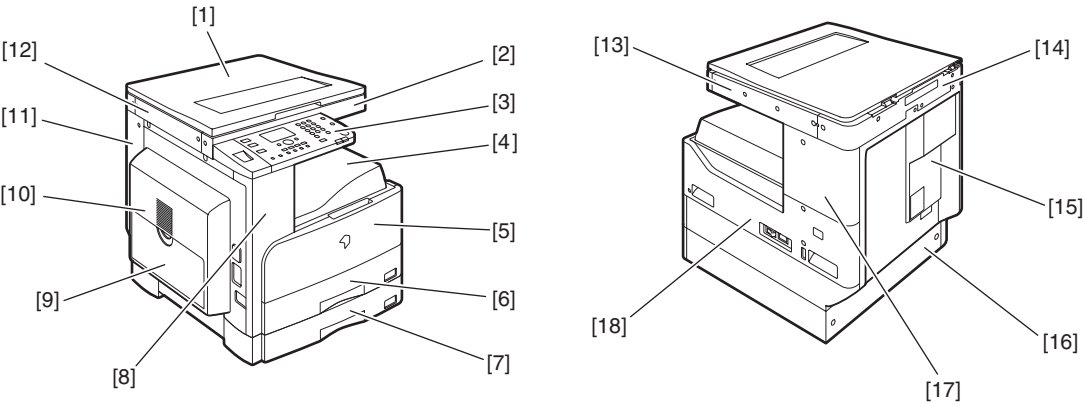
Check the documentation and CD against the following table:

<Except iR2320J>
Documentation/CD-ROM
Driver/Utility CD-ROM
User Manual CD-ROM
Easy Operation Guide
Users Guide

<iR2320J>
Documentation/CD-ROM
Easy Operation Guide

<iR2320J>
Documentation/CD-ROM
Copying Guide
Reference Guide

1-3 Names of Parts



F-2-12

[1]	Copyboard cover	[10]	Left door
[2]	Reader front cover	[11]	Left cover (rear)
[3]	Control panel	[12]	Reader left cover
[4]	Delivery tray	[13]	Reader right cover
[5]	Front cover	[14]	Reader error cover
[6]	Cassette 1	[15]	Rear cover
[7]	Cassette 2 (*2)	[16]	Cassette rear cover (*2)
[8]	Left cover (front)	[17]	Right cover (upper)
[9]	Manual feed tray	[18]	Right cover (lower)

*2: 2-cassette model only

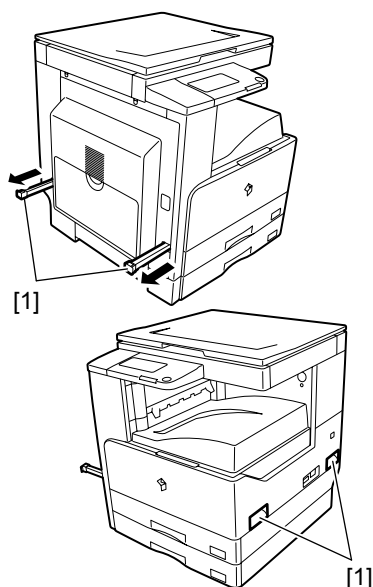
2.2 Unpacking and Installation

2.2.1 Unpacking and Removing the Packaging Materials

- 1) Unpack the machine and remove vinyl, cushioning materials, and tape.
- 2) Hold the handles [1] of the machine together with one or more persons and take it out.



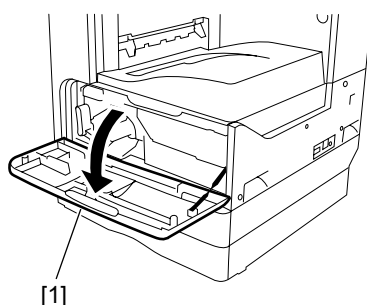
The maximum weight of this machine is approximately 46.2 kg. Two or more persons are required to lift the machine.



F-2-13

2.2.2 Installing the Drum Unit

- 1) Open the front cover [1] of the main body.

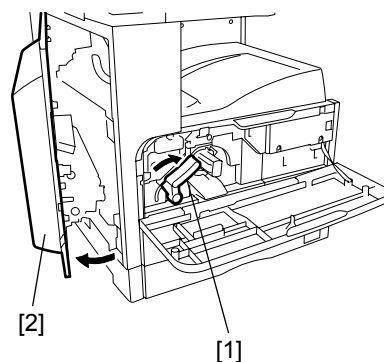


F-2-14

- 2) Turn the developer pressure release lever [1] clockwise, and then open the left door [2] until it stops.



The left door must be opened fully to prevent the drum from being damaged while it is inserted into the drum unit.

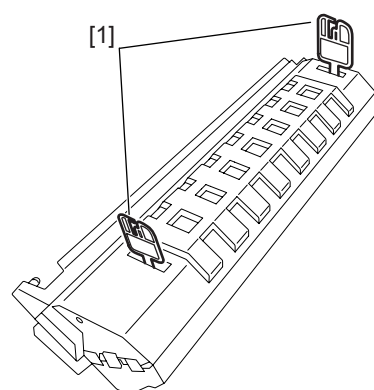


F-2-15

- 3) Open the packaging bag of the new drum unit, take the new drum out of it, and then remove packing tape.

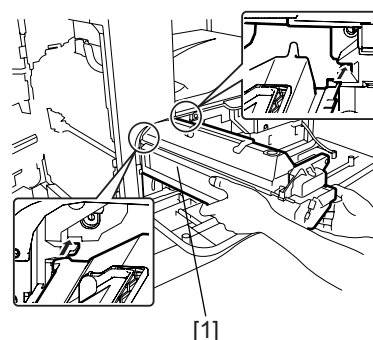


The drum unit except for Latin America (120V) model and EUR model is provided with pressure release hooks [1]. Remove them. Drum units for other regions are not provided with the pressure release hooks.



F-2-16

- 4) Holding the protective cover [1] of the new drum unit, place the drum unit against the iR body.

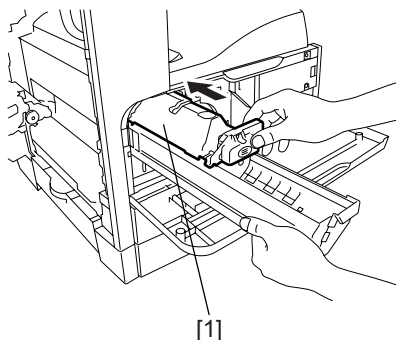


F-2-17

- 5) While holding the protective cover, insert the new drum unit [1] into the main body.

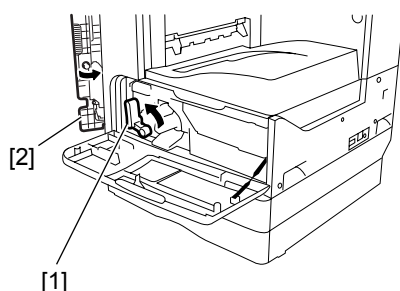
MEMO:

The protective cover will not be reused.



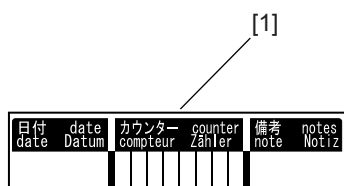
F-2-18

- 6) Turn the developer pressure release lever [1] counterclockwise, and then close the left door [2].



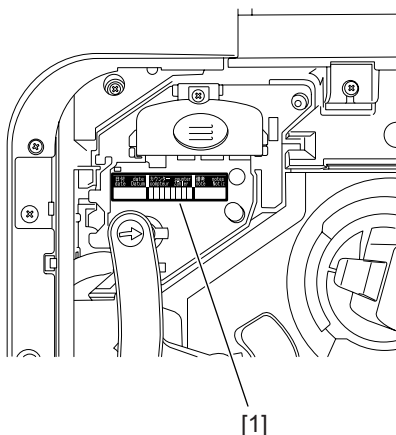
F-2-19

- 7) Enter the date in the drum counter label [1].



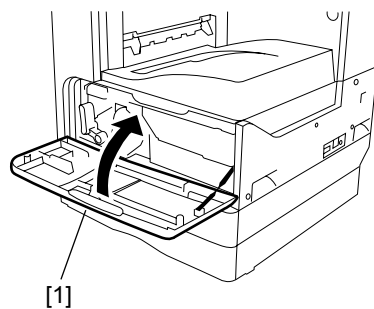
F-2-20

- 8) Affix the drum counter label [1] on the drum unit.



F-2-21

- 9) Close the front cover [1].



F-2-22

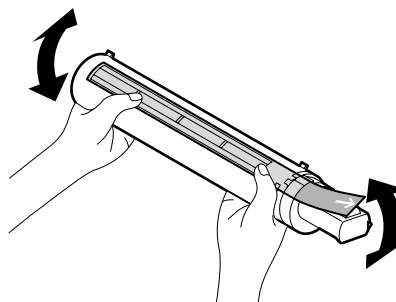
2.2.3 Installing the Toner Bottle



If the machine is installed in a low-temperature, low-humidity place, the image density may be slightly lower than usual on the first approx. 100 sheets printed after installation of the machine.

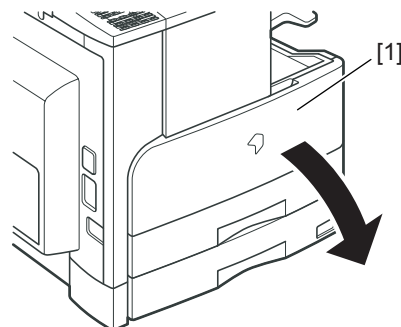
When installing the machine in a low-temperature, low-humidity environment, perform the steps mentioned in **<Going through the Developer Idling Mode>** (provided after step 6 in this section) before installing the toner bottle.

- 1) Shake the toner bottle 5-6 times.



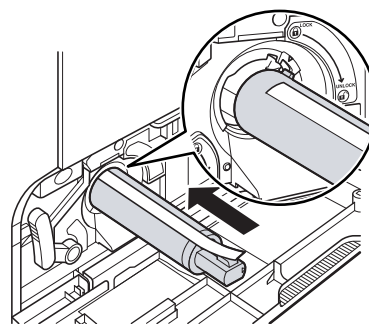
F-2-23

- 2) Open the front cover [1].



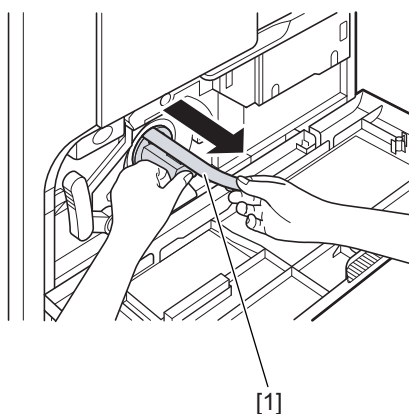
F-2-24

- 3) Insert the toner bottle.



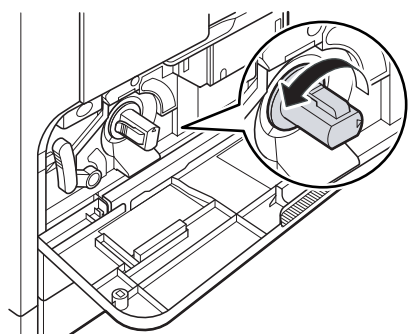
F-2-25

- 4) While holding the toner bottle, pull the seal [1] to remove it.



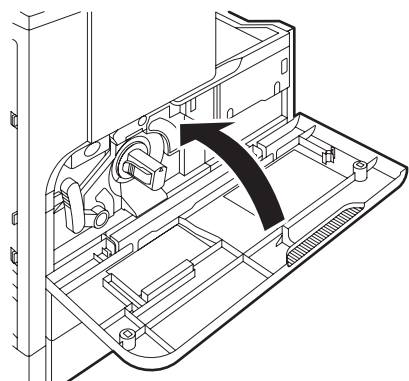
F-2-26

- 5) Turn the toner cartridge in the direction of the arrow until it stops.



F-2-27

- 6) Close the front cover.



F-2-28

<Going through the Developer Idling Mode>



When installing the machine in a low-temperature, low-humidity environment, go through the developer idling mode before installing the toner bottle in order to prevent the density from becoming low on the first approx. 100 sheets.

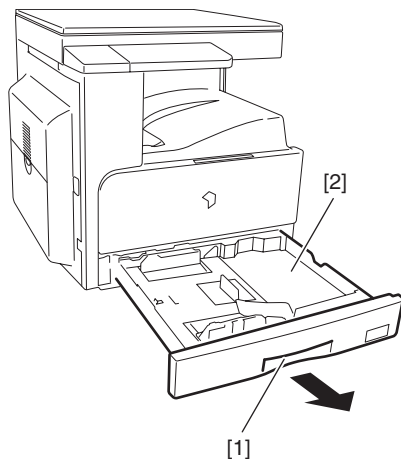
- 1) Plug the power cord into the outlet.
- 2) Open the front cover.
- 3) With the front cover open, turn on the main power switch.
- 4) When a message appears on the control panel display, press the following keys to enter the service mode:

Additional functions key > # key

- 5) Select "Service Choice", and then press the OK key.
- 6) Select "Printer Setting" using upper/lower arrow key, and then press the OK key.
- 7) Select "Bit Switch 14" using upper/lower arrow key, and then press the OK key.
- 8) Select "14-1" using upper/lower arrow key, and then press the OK key.
- 9) Select "ON" using upper/lower arrow key, and then press the OK key.
- 10) Close the front cover. The machine will run in the developer idling mode for about 1 minute. When the machine stops, the idling mode ends.
- 11) Press the Reset key to exit the service mode.
- 12) Install the toner cartridge following the above-mentioned procedure.

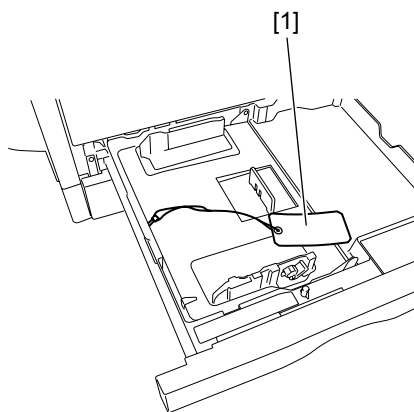
2.2.4 Setting the Cassettes

- 1) Holding the knob [1] at the center of the cassette, draw out the cassette [2] until it stops.



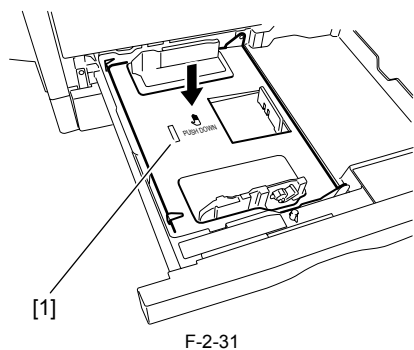
F-2-29

- 2) Remove the wire [1] securing the inner plate of the cassette.



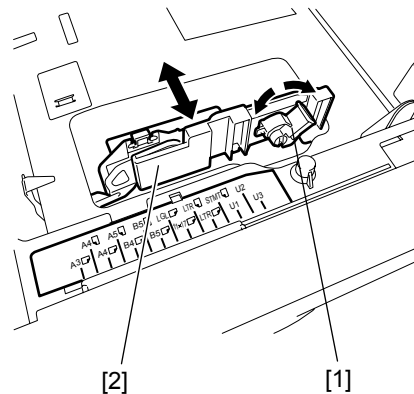
F-2-30

- 3) Press the "PUSH DOWN" mark [1] on the inner plate to lock it into the cassette.



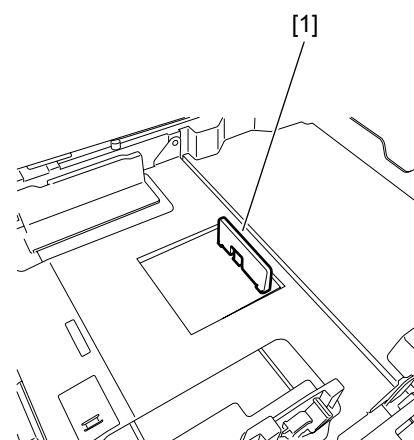
F-2-31

- 4) Turn the lever [1] of the paper front guide counterclockwise to release it. Slide the paper front guide [2] to fit to the size of the paper to be used, and then turn the lever clockwise to lock it.



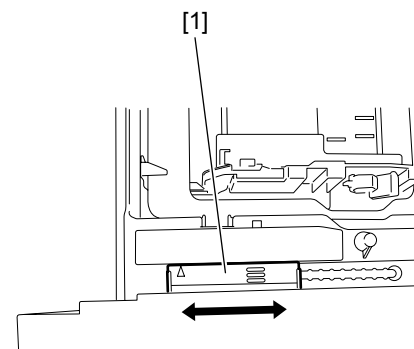
F-2-32

- 5) Turn the paper trailing edge registration plate [1] to the left to remove it. Re-attach it to fit to the size of the paper to be loaded.



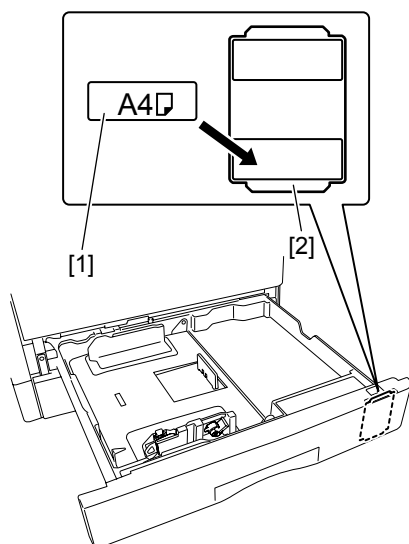
F-2-33

- 6) Slide the paper size detection lever [1] to fit to the paper size.



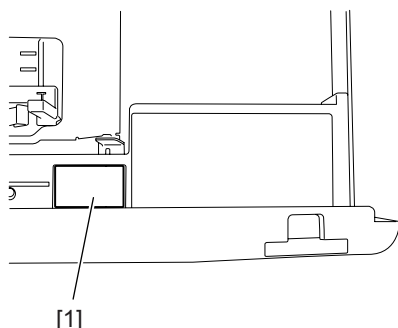
F-2-34

- 7) Affix the cassette size label [1] to the paper size indication plate [2].



F-2-35

- 8) Affix the caution sheet [1] printed in an appropriate language.

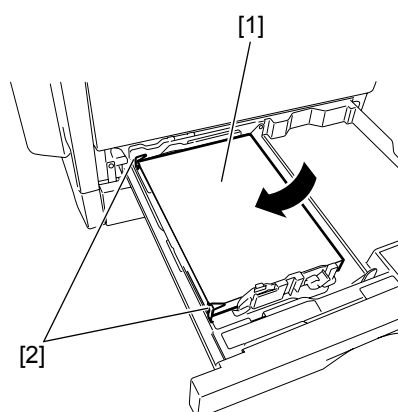


F-2-36

- 9) Align the left, right, and leading edges of sheets and load the stack of paper [1] in the cassette. Make sure that the paper is below the claws [2] of the cassette.

MEMO:

Inserting the cassette into the machine with the inner plate locked into the cassette will unlock the inner plate automatically. If the inner plate is not locked, press the "PUSH DOWN" mark on the inner plate to lock it into the cassette and then load paper.



F-2-37

- 10) Holding the knob at the center of the cassette, insert the cassette in the machine it stops.

2.2.5 Checking the Image Quality

- 1) Plug [1] of the power cord into the outlet, and then turn on the main power switch [2].



Notice on connecting the power supply.

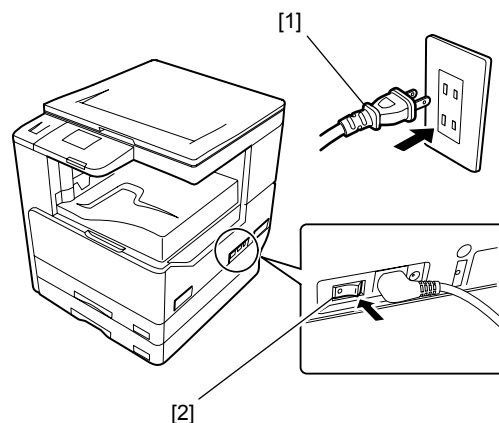
For Norway only:

The product is manufactured considering that it would be connected to IT system.

Supply of toner will start after the initial rotation. After a few minutes, supply of toner finishes and the machine stops automatically.



Use the specified power supply (rated voltage $\pm 10\%$ and rated current).



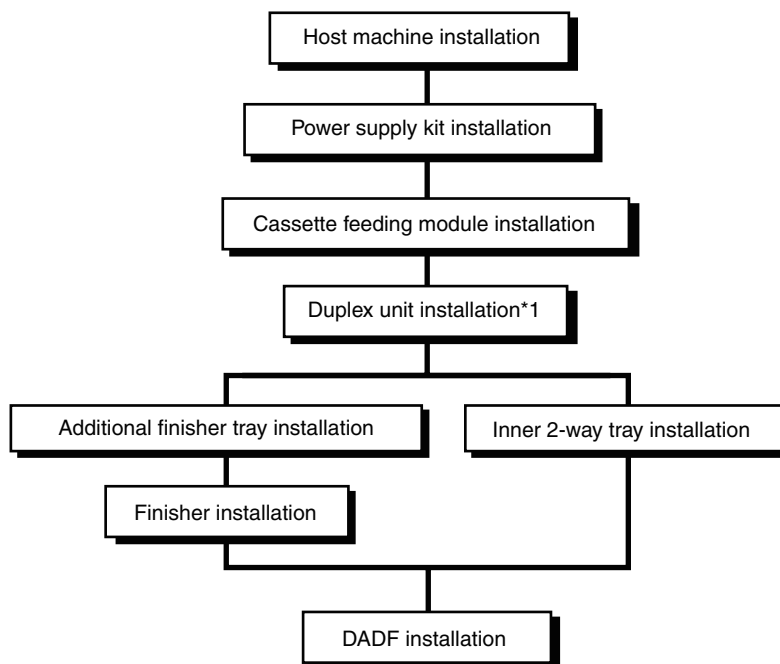
F-2-38

- 2) Place a document on the document glass, take a copy of it by supplying paper from the cassette or manual feed tray, and check the printed image. Also perform the following checks:
- Check whether abnormal sound is heard.
 - Check the printed images at all preset magnifications.
 - Check whether the document is copied normally on the specified number of sheets.

2.3 Flow of Accessory Installation

2.3.1 Flow of Accessory Installation

If you are going to install any accessory after installing the host machine, follow the following flow of work so that the work will become effective.



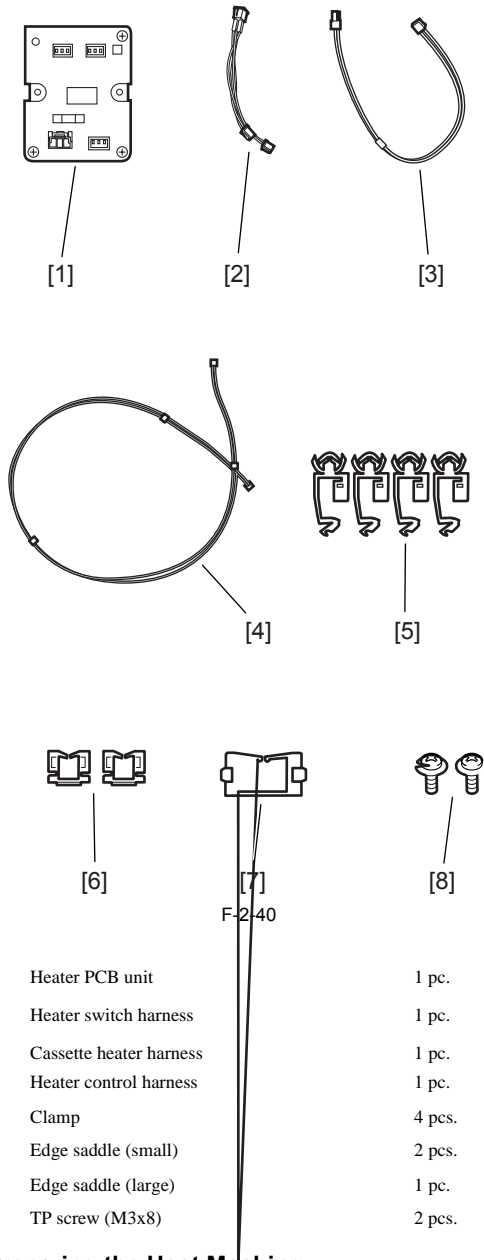
*1:Except for the duplex unit standard model

F-2-39

2.4 Installing the Heater PCB

2.4.1 Preparing the parts

1) Prepare the following parts.



Before installing, make sure the host machine is turned off. If it is turned on, go through the following:

1) Open the front cover [1].

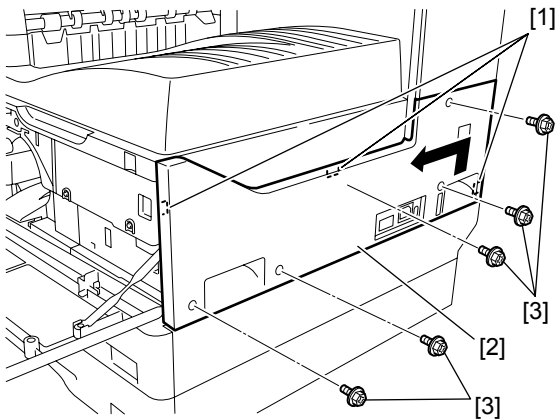
F-2-41

2) Remove the rear cover [1].
- RS tightening screws (M3 x 8)[2], 4 pcs.

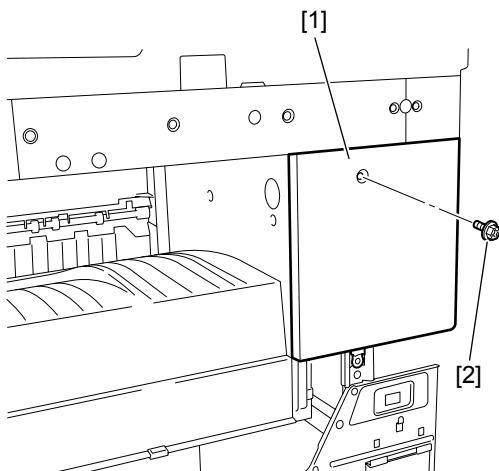
F-2-42

2.4.2 Preparing the Host Machine

- 3) Release the 3 hooks [1] and then remove the lower-right cover [2].
- RS tightening screws (M3 x 8)[3], 5 pcs.



- 4) Remove the upper-right cover [1].
- RS tightening screw (M3 x 8)[2], 1 pc.

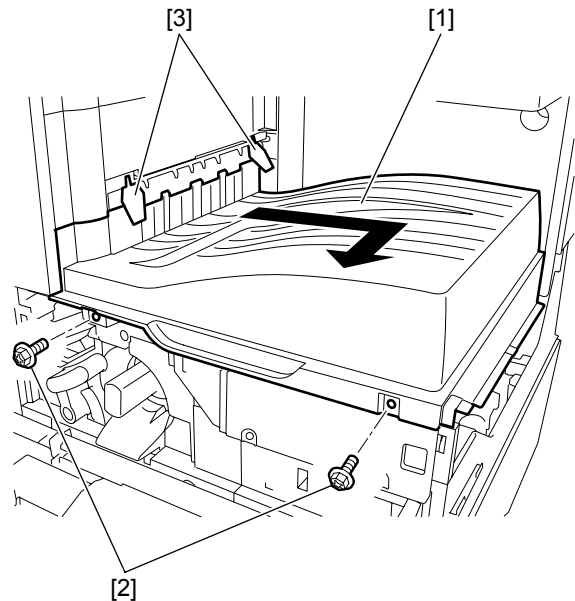


F-2-43

- 5) Remove the delivery tray [1].
- RS tightening screws (M3 x 8)[2], 2 pcs.



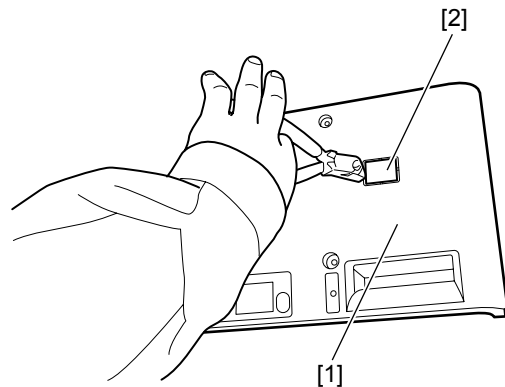
When detaching the delivery tray, be careful not to damage the paper holder [3].



MEMO:

When the Finisher-U2 is connected, detach the tray unit of finisher refer to the service manual of the Finisher-U2.

- 6) Using a nipper or the like, cut out the face plate [2] (used to install a heater switch) on the lower-right cover [1].



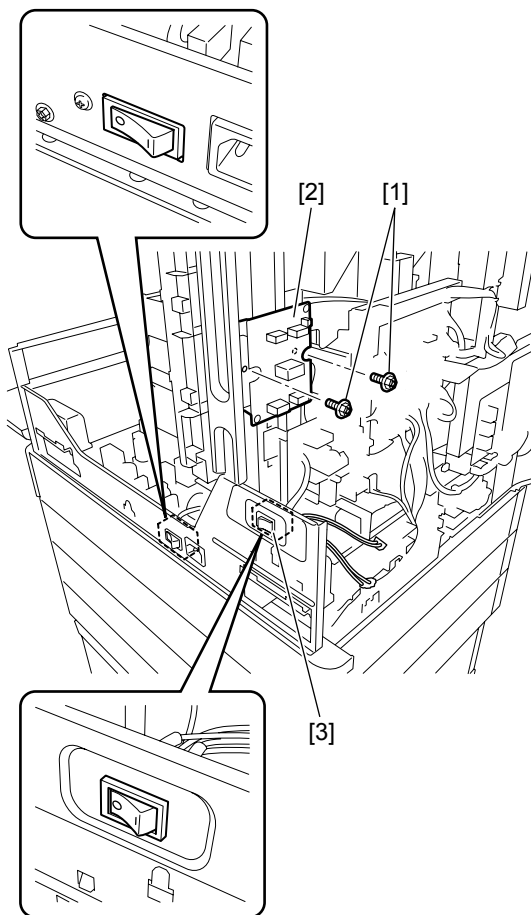
F-2-44

2.4.3 Installing the Heater PCB

- 1) Install the heater PCB unit [2].
- Supplied TP screws (M3x8) [1], 2pcs.
- 2) Install the heater switch [3] on the right side panel.

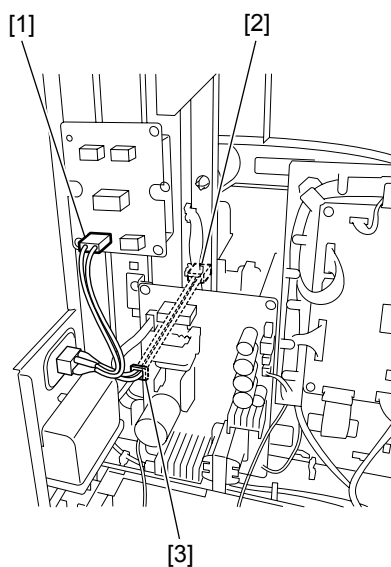


Install the heater switch with the OFF position on the left and the ON position on the right just like the main power switch.



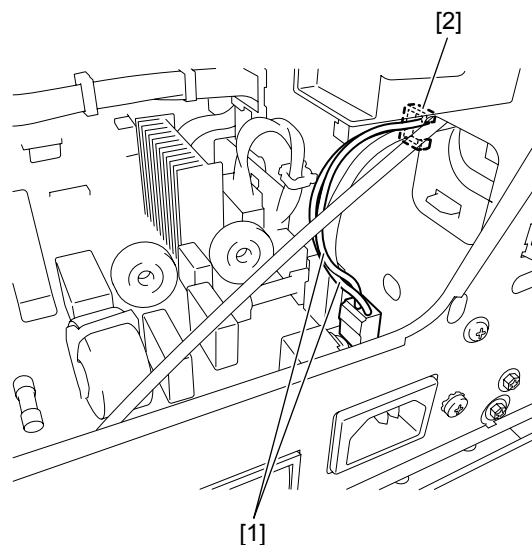
F-2-45

- 3) Install the edge saddle [3]. Connect one heater switch harness [1] to the connector (J1901) on the heater PCB. Route the other harness [2] to the front of the host machine through the edge saddle [3].



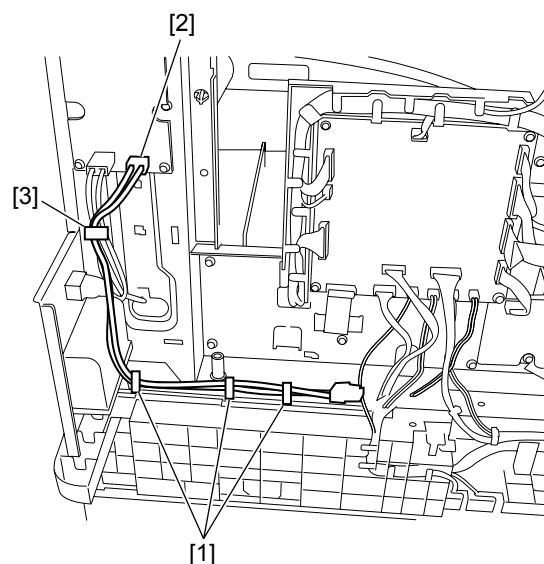
F-2-46

- 4) Attach the edge saddle [2], then connect the header switch harness [1] (routed to the front of the host machine) to the connector (J15) on the power supply PCB through the edge saddle [2].



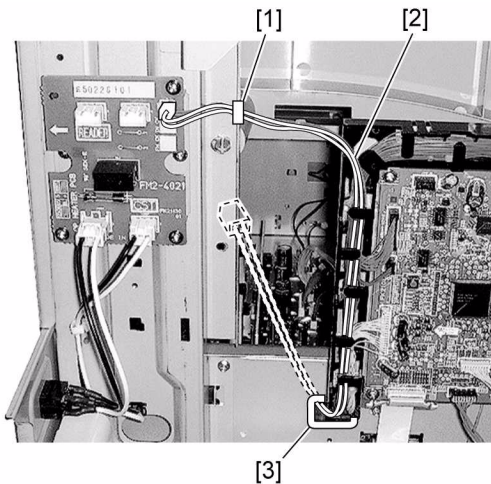
F-2-47

- 5) Install the three clamps [1] on the back of the host machine.
- 6) Connect the cassette heater harness [2] to the connector (J1905) on the heater PCB unit, install the reuse band [3], and then pass the harness through the clamps installed in step 5).



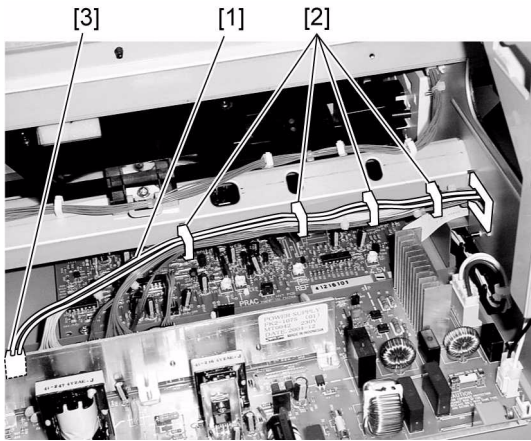
F-2-48

- 7) Install the edge saddle (small) [1].
- 8) Connect the heater harness [2] to the connector (J1902) on the heater PCB unit, pass the harness through the installed edge saddle, and then route the harness to the front of the host machine through the hole [3].




F-2-49

- 9) Pass the heater harness [1] through the wire saddle [2], and then connect it to the connector (J17) [3] on the power supply PCB.



F-2-50

- 10) Install the delivery tray.
 - RS tightening screws (M3 x 8) 2pcs.

 When attaching the delivery tray, be careful not to damage the full stack sensor and paper holders.

- 11) Install the upper-right cover.
 - RS tightening screw (M3 x 8) 1pc.
- 12) Install the lower right cover.
 - RS tightening screws (M3 x 8) 5pcs.
- 13) Install the rear cover.
 - RS tightening screws (M3 x 8) 4pcs.
- 14) Close the front cover of the host machine.

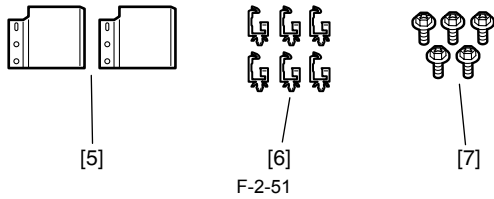
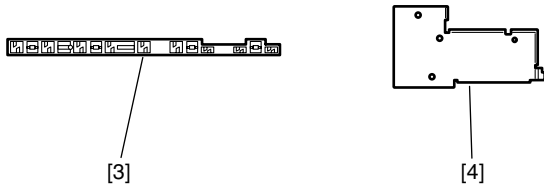
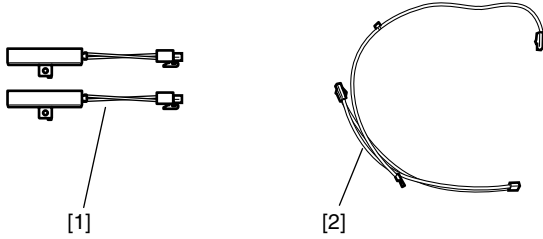
2.5 Installing the Reader Heater

2.5.1 Preparing the parts



Before installing, make sure the heater PCB has been installed.

1) Prepare the following parts.



F-2-51

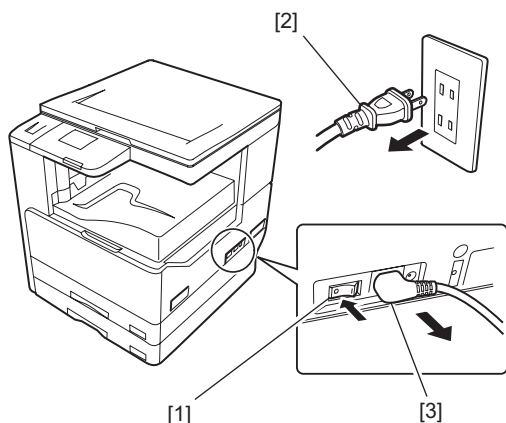
[1]	Reader heater	2 pcs.
[2]	Heater harness	1 pc.
[3]	Harness guide	1 pc.
[4]	Right heater base	1 pc.
[5]	Heater cover	2 pcs.
[6]	Clamp	6 pcs.
[7]	TP screw (M3x6)	5 pcs.

2.5.2 Installing the Reader Heater Harness



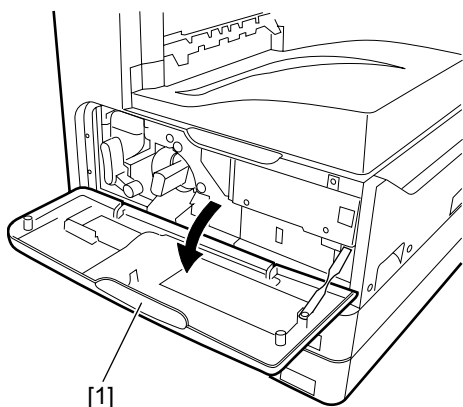
Before installing, make sure the host machine is turned off. If it is turned on, go through the following:

1. Turn off the main power switch.
2. Disconnect the power cable (from the power outlet).
3. Disconnect the power cable.



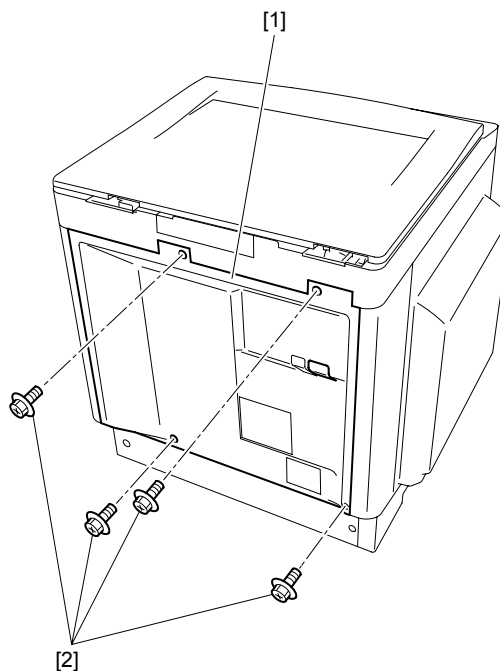
F-2-52

- 1) Open the front cover [1].

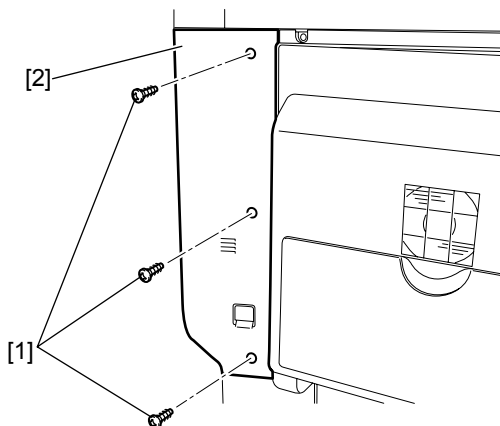


F-2-53

- 2) Remove the rear cover [1].
- RS tightening screws (M3 x 8)[2], 4 pcs.

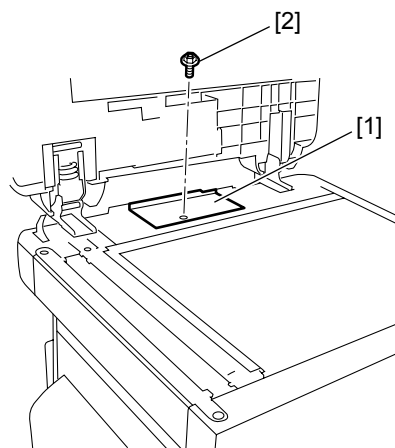


- 3) Remove the rear-left cover [2].
- RS tightening screws (M3 x 8)[1], 3 pcs.



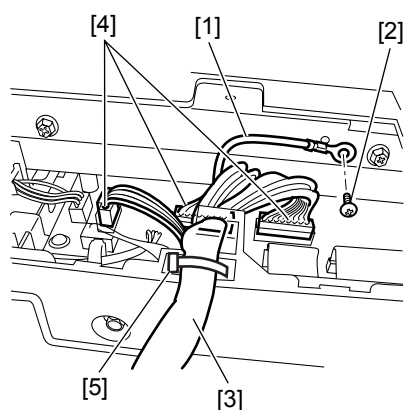
F-2-54

- 4) Detach the copyboard cover. (If ADF is equipped, open the ADF)
- 5) Detach the small cover [1].
- Screw [2], 1 pc.



F-2-55

- 6) Disconnect the ground cable [1] of the ADF harness. (only for ADF equipped.)
 - Screw [2], 1 pc.
- 7) Remove the ADF harness [3]. (only for ADF equipped.)
 - Connectors [4], 4 pcs.

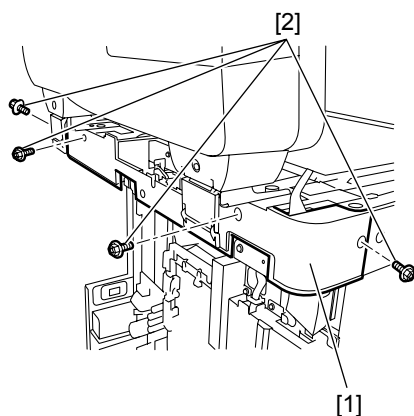


F-2-56



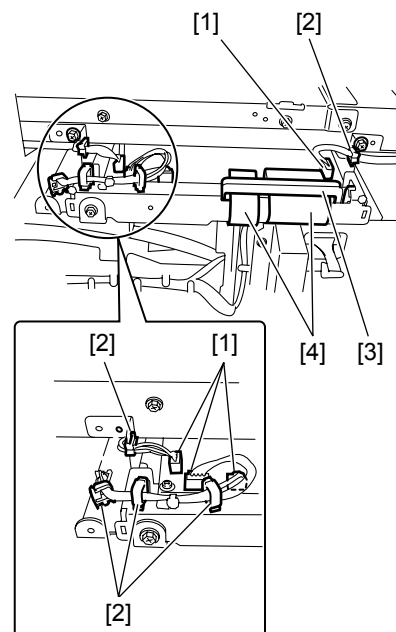
When installing the ADF harness [3], fit the harness band [5] in the groove in the reader rear cover.

- 8) Detach the reader rear cover [1].
 - Screws [2], 4 pcs.



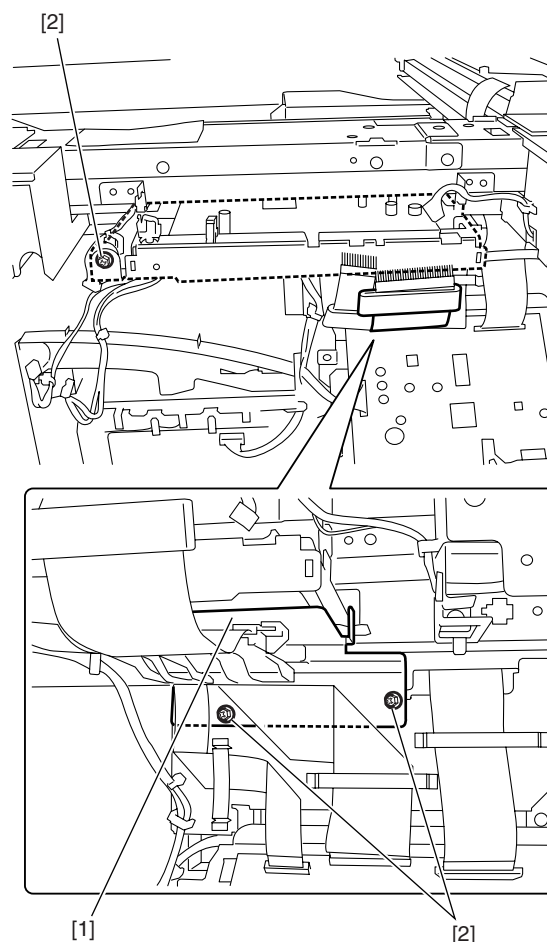
F-2-57

- 9) Disconnect the four connectors [1] from the reader controller PCB.
 10) Remove the harness from the edge saddle/clamp [2].
 11) Remove the flexible cable holder [3], and then disconnect the two flexible cables [4].



F-2-58

- 12) Detach the reader flexible cable cover [1].
 - Screws [2], 3 pcs.

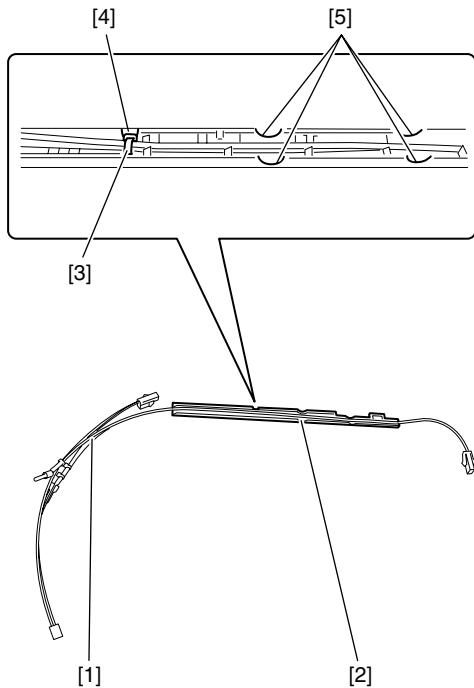


F-2-59

- 13) Pass the heater harness [1] through the harness guide [2] with the clamp [3] of the heater harness aligned with the notch [4] in the harness guide.



Don't mistake the notch [4] and the notch [5] for screw stop.



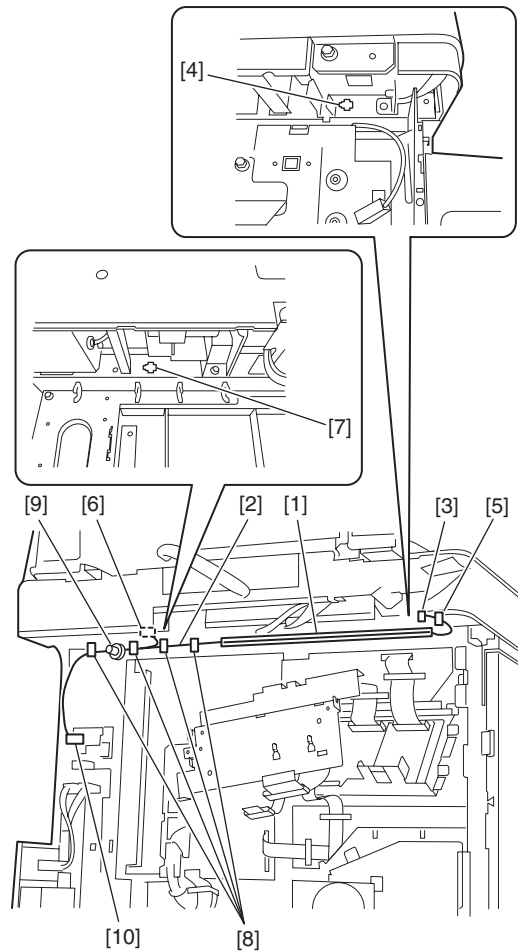
F-2-60

- 14) Secure the harness guide [1] to the rear bottom of the reader together with the heater harness [2].
 15) Connect the heater connector (right) [3] to the hole [4] of the frame of the reader unit.
 16) Install the wire saddle [5], and then pass the heater harness [2] through it.
 17) Connect the heater connector (left) [5] to the hole [7] of the frame of the reader unit.
 18) Install the four wire saddles [8], and then pass the heater cable through them.

MEMO:

Rout the heater cable so as its terminal [9] to be connected at the position shown in the Figure.

- 19) Connect the heater harness [2] to the connector (J1904) [10] on the heater PCB.



F-2-61

- 20) Install the reader flexible cable cover at the original position, and then perform steps 9 to 11 in reverse to connect the reader flexible cable to the image processor PCB.

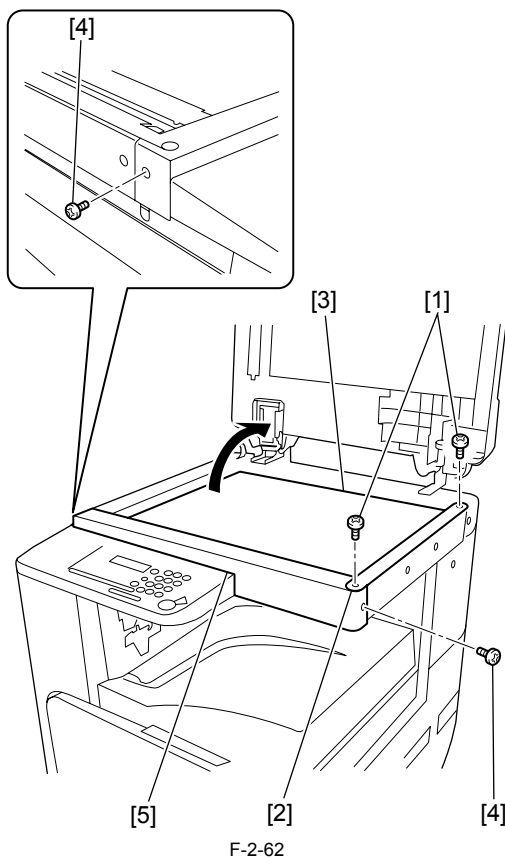
2.5.3 Removing Reader Components



Installation precautions are as follows:

- Do not touch the top surface of the contact sensor.
- Be careful not to allow foreign objects to enter the reader unit.
- Do not stain the stream reading glass.
- Be careful not to touch grease on the shaft, when moving the contact sensor, etc.

- 1) Open the ADF/copyboard cover.
- 2) Remove the right glass holder [2] of the reader.
 - Screws [1], 2 pcs.
- 3) Remove the copyboard glass [3].
- 4) Remove the front cover [5] of the reader.
 - Screws [4], 2 pcs.

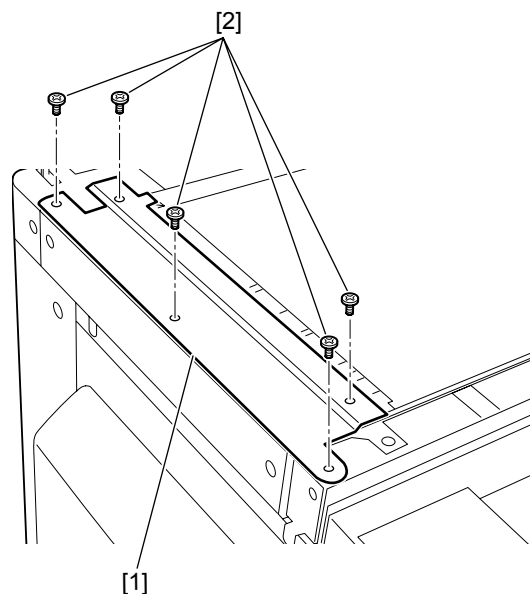


2.5.4 Removing Parts at the Left of the Reader

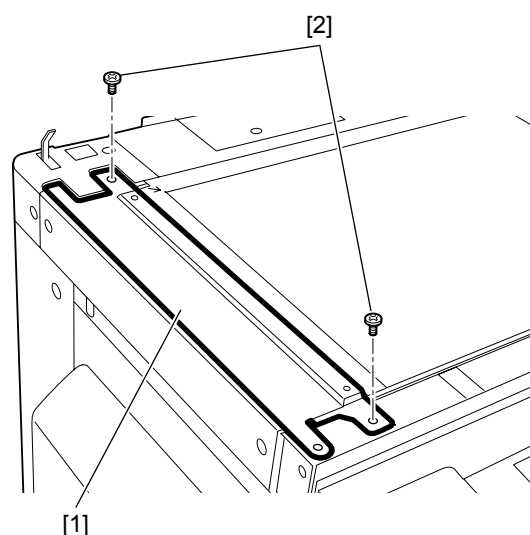
The work procedure for removing the parts at the left of the reader differs between the machine with a copyboard cover and the machine with a DADF. Follow the appropriate procedure.

a. Machine with a Copyboard Cover

- 1) Remove the upper-left cover [1] of the reader.
 - Screws [2], 5 pcs.

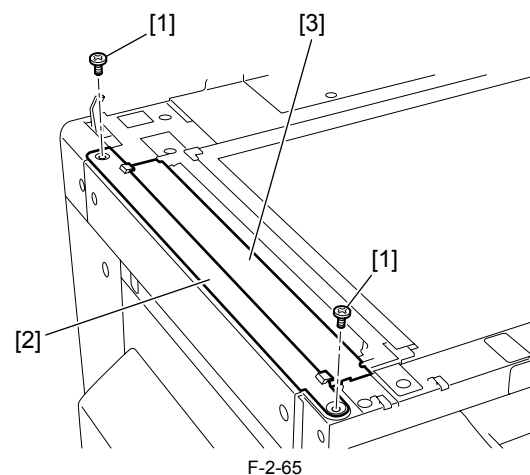


- 2) Remove the blind plate [1].
 - Screws [1], 2 pcs.



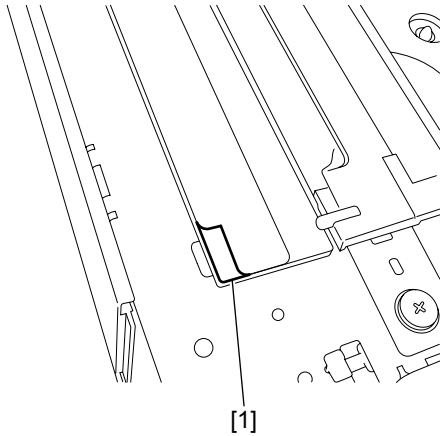
b. Machine with a DADF

- 1) Remove the stream reading glass holder [2].
 - Screws [1], 2 pcs.
- 2) Remove the stream reading glass [3].



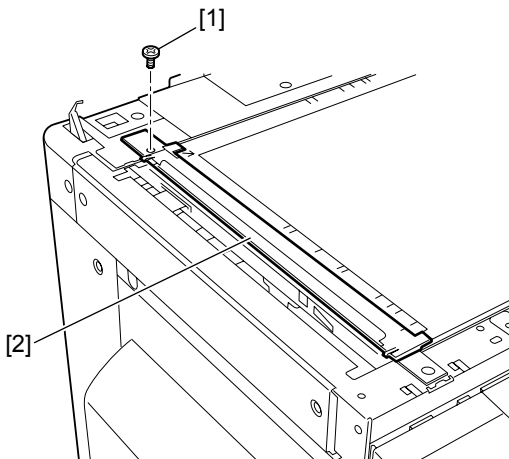


Mount the stream reading glass with the notch [1] of the sheet material affixed to the glass is at the front left.



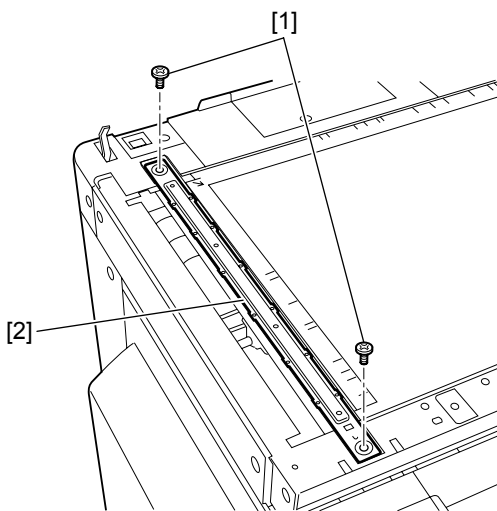
F-2-66

- 3) Remove the jump board [2].
- Screw [1], 1pc.



F-2-67

- 4) Remove the stay [2].
- Screws [1], 2pcs.



F-2-68

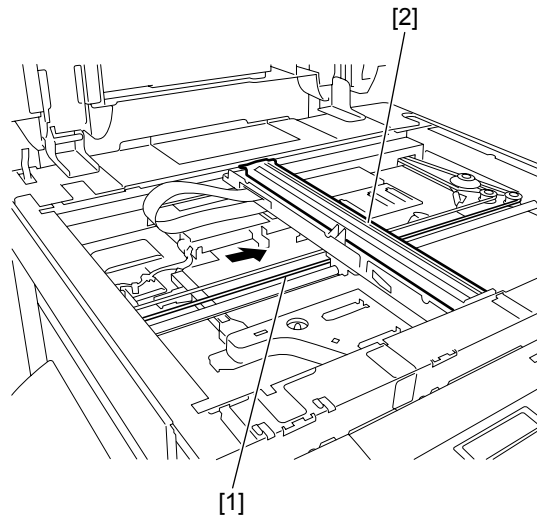
MEMO:

Though this process mentions the illustration of the model with the document size sensor, a process is the same even with the model without the document size sensor.

- 1) Pull the front side [1] of the drive belt in the direction of the arrow to move the contact sensor [2] to the vicinity of center.

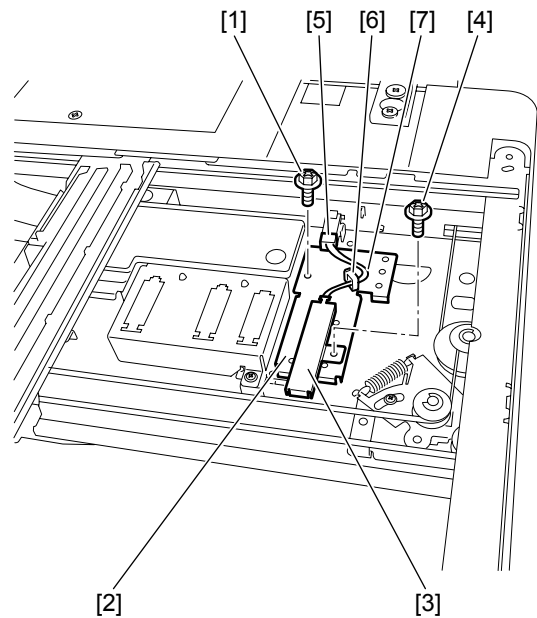


Do not touch the top surface of the contact sensor.



F-2-69

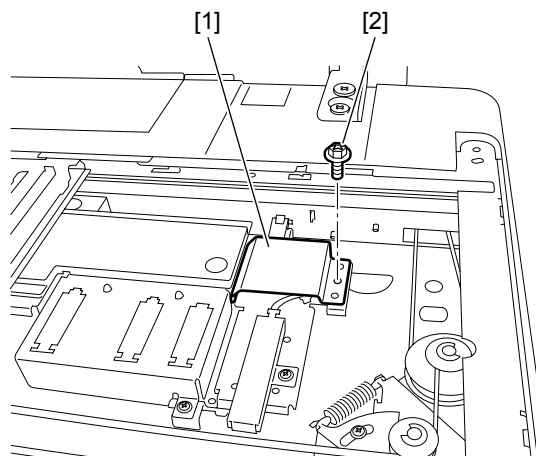
- 2) Install the heater base [2].
- Screw [1], 1 pc.
- 3) Install the reader heater [3] on the header base [2].
- Screw [4], 1 pc.
- 4) Install the wire saddle [6] and route the cable [7].
- 5) Connect the connector [5] of the heater.



F-2-70

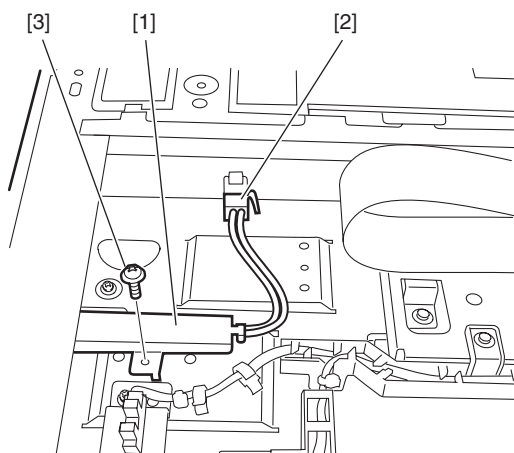
2.5.5 Installing the Reader Heater

- 6) Attach the heater cover [1].
- Screw [2], 1 pc.



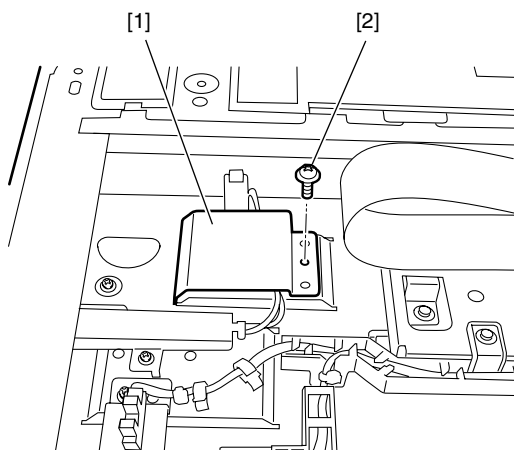
F-2-71

- 7) Install the reader heater [1].
- Screw [3], 1 pc.
8) Connect the connector [2] of the heater.



F-2-72

- 9) Attach the heater cover [1].
- Screw [2], 1 pc.



F-2-73

- 10) Reinstall the parts at the left of the reader.
- Stay (2 screws)
- Jump board (1 screw)
- Stream reading glass
- Glass holder (2 screws)



Tighten the screws pressing the glass holder towards the glass.

- 11) Attach the front cover of the reader.
- Screws, 2 pcs.
12) Install the copyboard glass.

- 13) Install the right glass holder of the reader.
- Screws, 2 pcs.



Tighten the screws pressing the glass holder towards the glass.

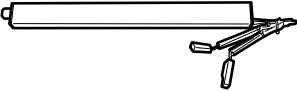

- 14) Attach the rear-left cover of the host machine.
- Screws, 3 pcs.
15) Attach the upper-right cover of the host machine.
- Screw, 1 pc.
16) Attach the lower-right cover of the host machine.
- Screws, 5 pcs.
17) Attach the rear cover of the host machine.
- Screws, 4 pcs.

2.6 Installing the Cassette Heater

2.6.1 Preparing the parts

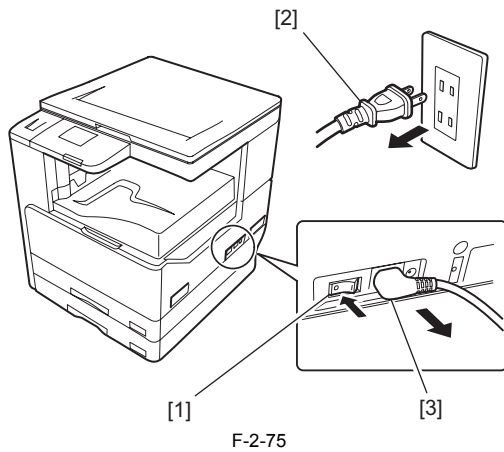
⚠
Before installing the cassette heater, make sure the heater PCB has been installed.

1) Prepare the following parts.

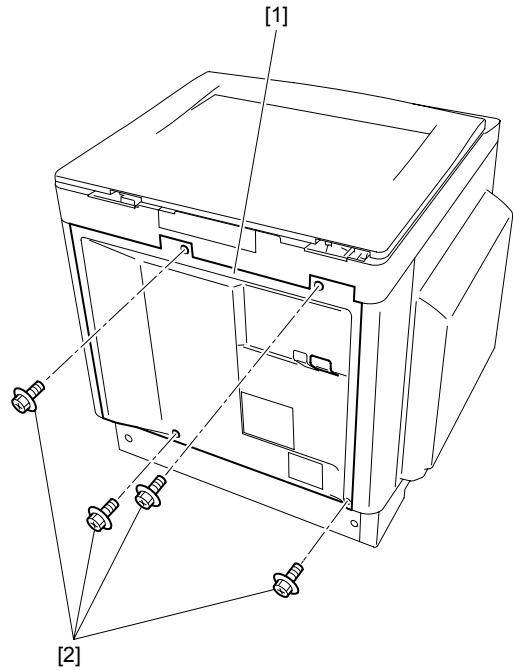
	[1]		[2]
			
	F-2-74		
No.	Part name	Part number	QTY
[1]	Cassette heater	FK2-1088-000 (230V)	1 pc.
[2]	P tightening screw (M4x8)	XB4-5400-809	1 pc.

2.6.2 Installing the Cassette Heater

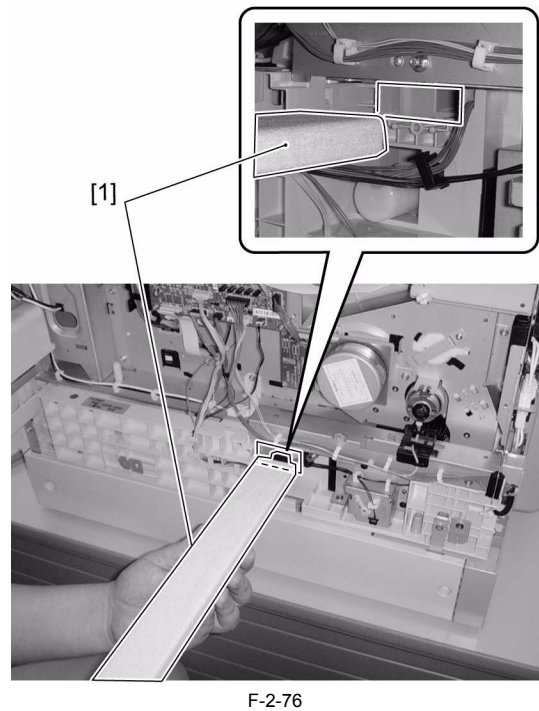
⚠
Before installing, make sure the host machine is turned off. If it is turned on, go through the following:
1. Turn off the main power switch.
2. Disconnect the power cable (from the power outlet).
3. Disconnect the power cable.



1) Remove the rear cover [1].
- Screws [2], 4 pcs.

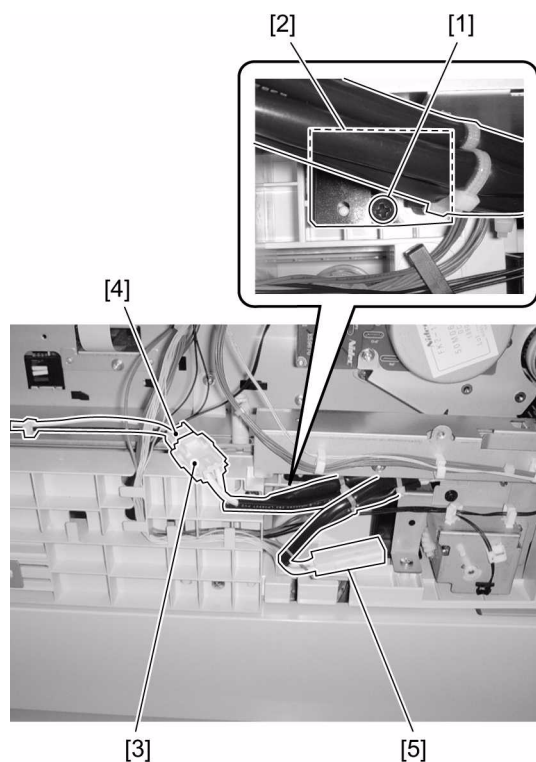


2) Insert the cassette heater [1] from behind the host machine.



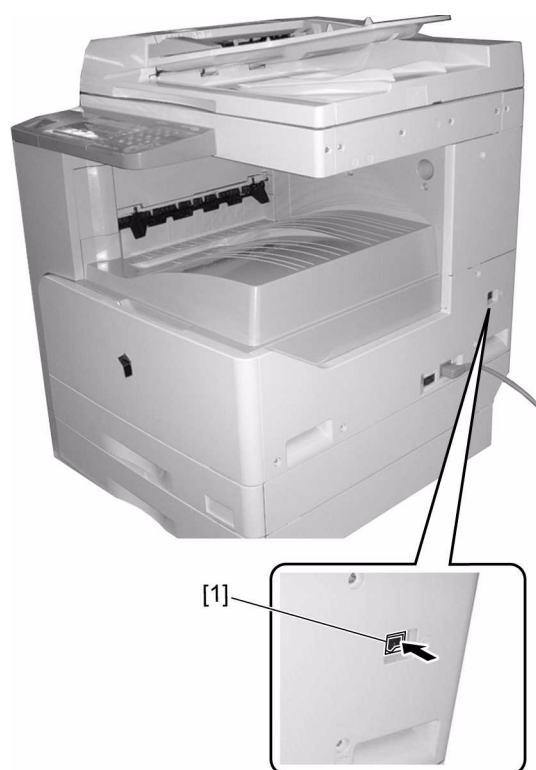
⚠
When installing the cassette heater unit, make sure that harness is not pinched.

- 3) Secure the cassette heater [2] using a screw [1].
- 4) Connect one harness [3] to the cassette heater harness [4].
- 5) Place the other harness [5] at the position shown below. Connect this connector to the heater of the cassette when connecting the cassette heater to the cassette at the second or lower stage.



F-2-77

- 6) Attach the rear cover. (4 screws)
- 7) Turn on the main power switch of the host machine.
- 8) Turn on the heater switch [1] and make sure that the cassette heater is powered.



F-2-78

When installing the heater for the cassette at the second or lower stage, detach the rear cover of the cassette and follow the procedure mentioned in this procedural manual.

Chapter 3 Main Controller

Contents

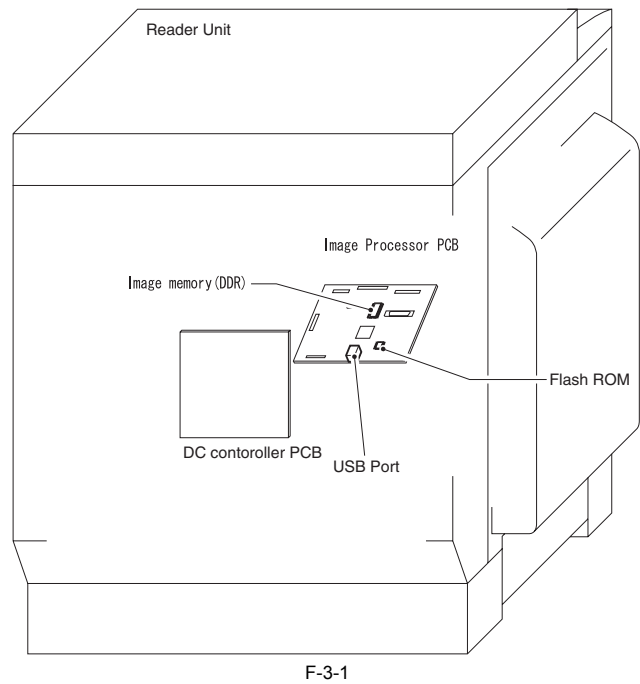
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3.5.1.3 Procedure after Replacing the Image Processor PCB	3-6

3.1 Construction

3.1.1 Constraction and Mechanisms

The main controller assembly of this equipment is composed of the following parts for function.

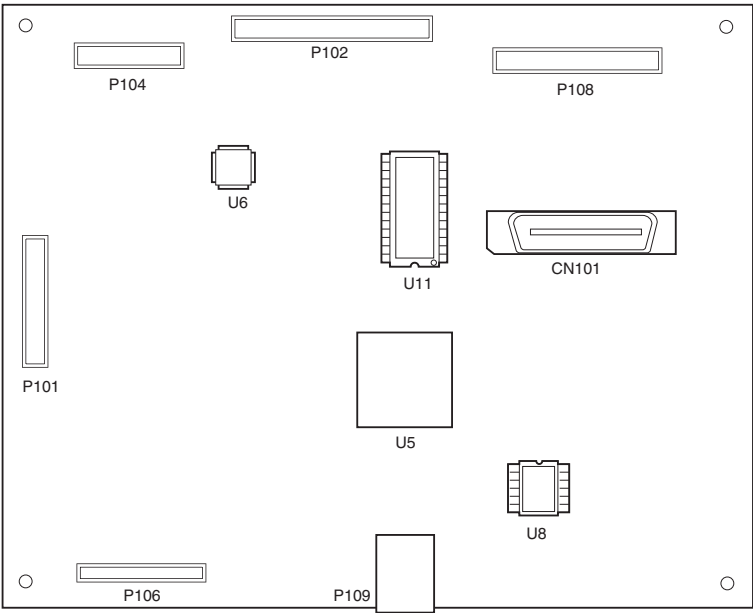
Item	Function
Image processor PCB	System control, Memory control, Control of printer output image processing, Reader image processing.
Image memory–DDR–	Temporary storage for image data Capacity:64MB
Flash ROM	To store the system software–– To keep the user data/service data information.
USB port	USB2.0 interfase



3.2 Construction of the Electrical Circuitry

3.2.1 Image processor PCB

The following is a diagram showing the major control mechanisms of the Image Processor PCB according to connectors.



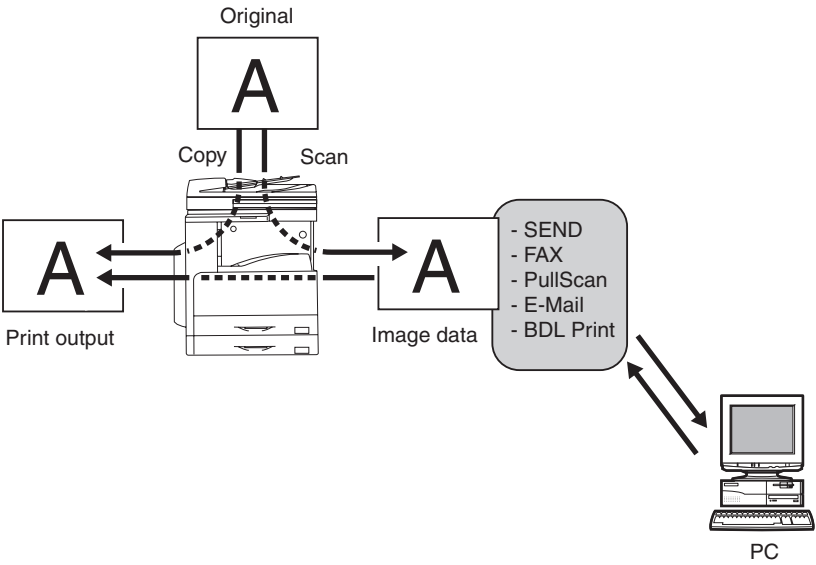
F-3-2

Connector	Description
P101	Power supply connection slot
P102	Reader Book connection slot
P104	Reader ADF connection slot
P106	DC controller PCB connection slot
P108	Control panel connection slot
P109	USB port
CN101	LAN PCB connection slot

3.3 Image Processing

3.3.1 Overview of Image flow

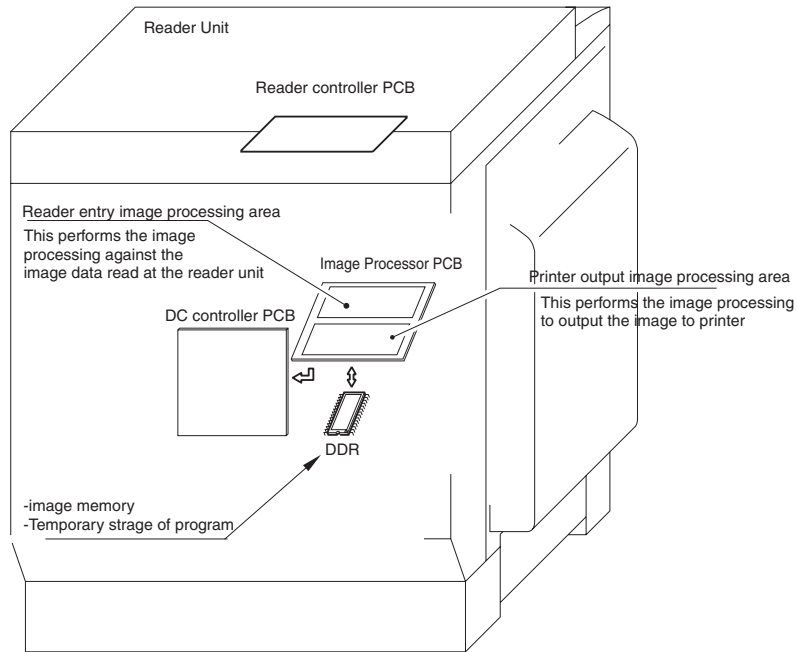
The following is the image flow using the function of this equipment.



F-3-3

3.3.2 Configuration of Image processing Module

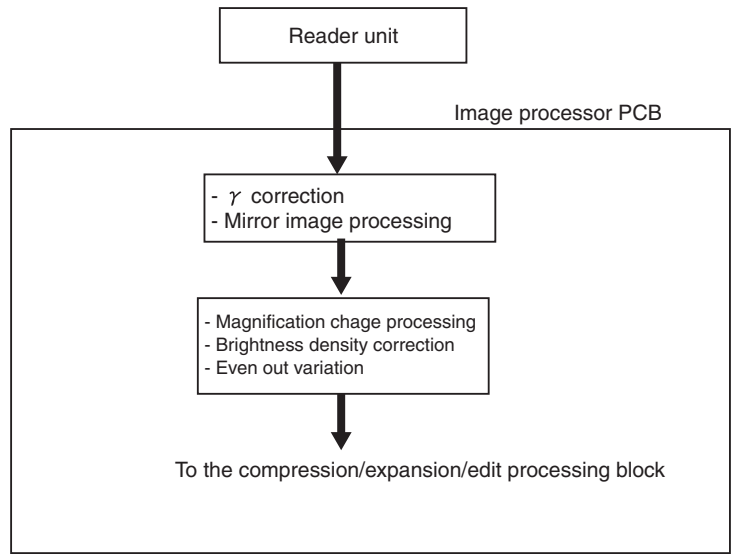
The main image processing of this equipment is executed by the Main controller PCB (main). Following is the related module configuration.



F-3-4

3.3.3 Reader entry Image processing

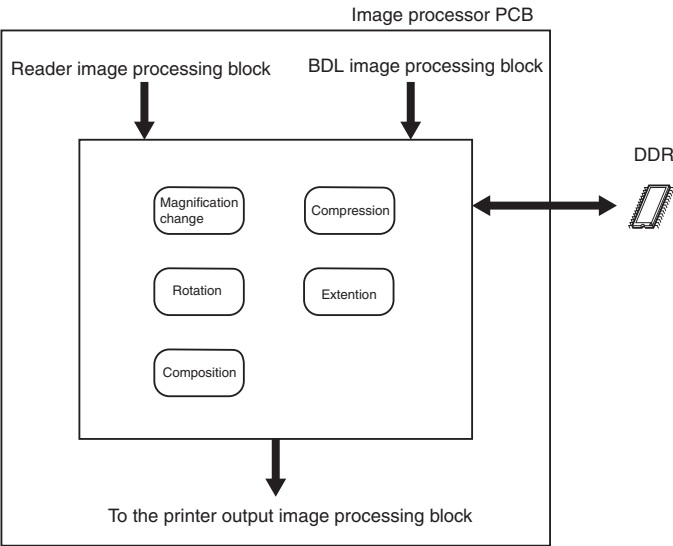
The image processor PCB performs the image processing to the image data read at the contact image sensor.



F-3-5

3.3.4 Compression/extension/edit processing block

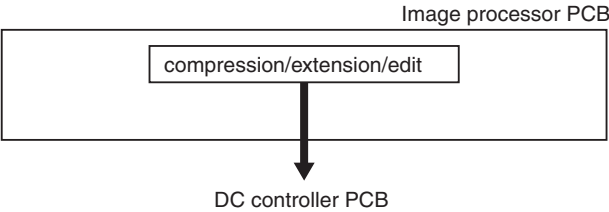
This performs the compression/extension/edit processing.



F-3-6

3.3.5 Printer output Image processing

Image processor PCB executes the image processing against the image data sent from the reader unit.

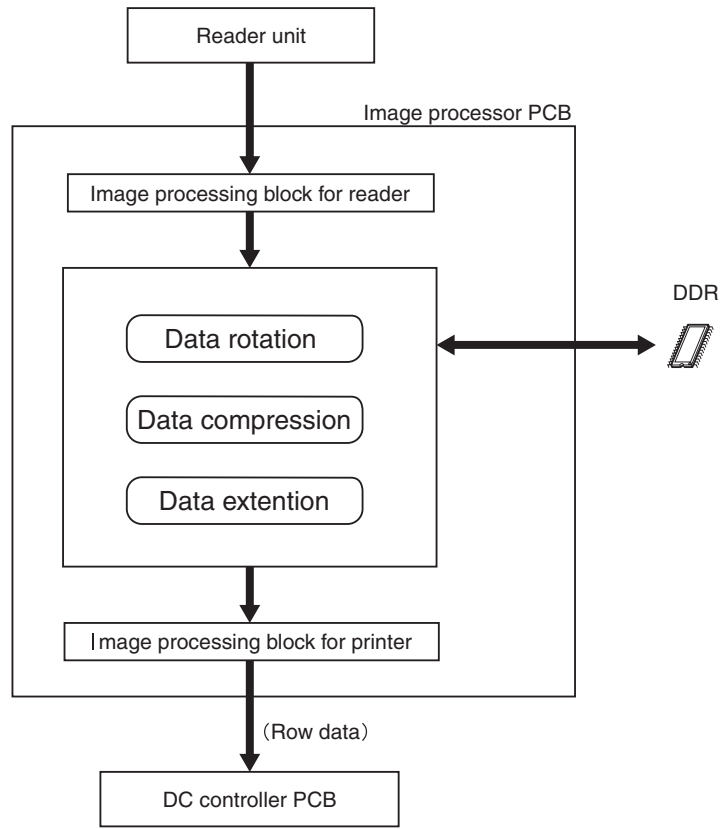


F-3-7

3.4 Flow of Image Data

3.4.1 Image data flow of copy function

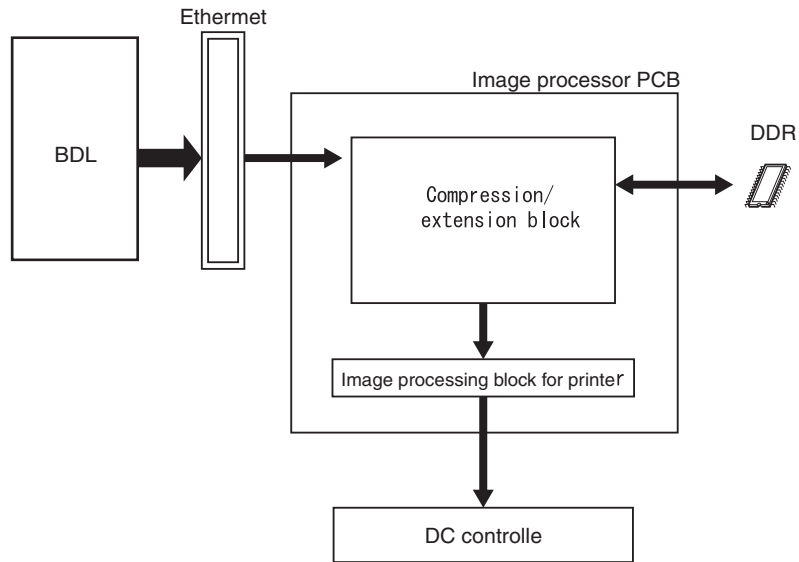
Flowing is the image data flow when the copy function is used.



F-3-8

3.4.2 Image data flow of BDL function

Following is the image data flow when the BDL function is used.



F-3-9

3.5 Parts Replacement Procedure

3.5.1 Main Controller PCB

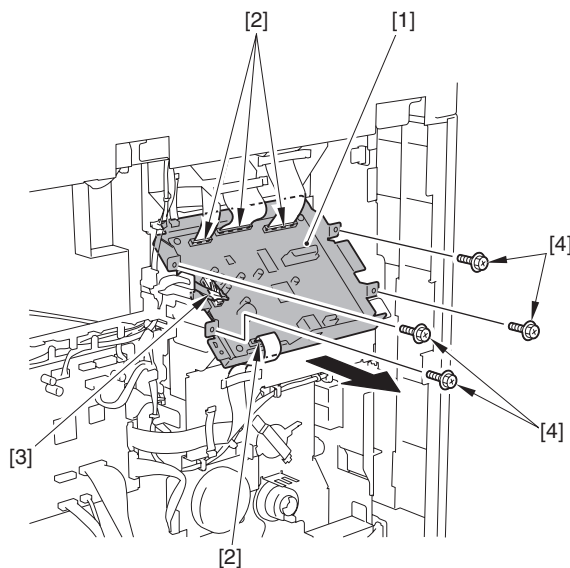
3.5.1.1 Preparation for Removing the image processor PCB

1) Remove the rear cover. (page 9-5) [Removing the Rear Cover]

3.5.1.2 Removing the Image Processor PCB

1) Remove the image processor PCB unit [1].

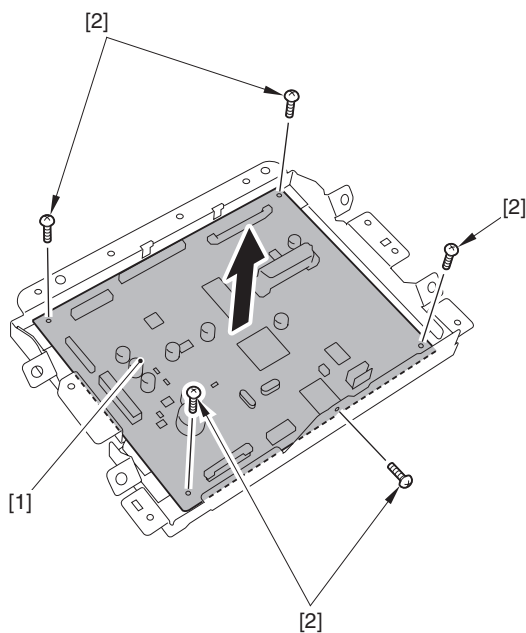
- 4 flat cables [2]
- 1 connector [3]
- 4 screws [4]



F-3-10

2) Remove the image processor PCB [1].

- 4 screws [2]



F-3-11

3.5.1.3 Procedure after Replacing the Image Processor PCB

If you have replaced the image processor PCB with a new one, perform the

following operations:

- Using the user support tool, download the latest firmware (System/Boot).
 - Input the all value printed on the service label affixed to the rear cover.
- Make the following adjustments:
- Correction of output between CIS channels
- 1) Enter the service mode.
 - Sequentially press the Additional Functions, # key on the operation panel.
 - 2) Using the upper/lower arrow keys on the operation panel, select "Test".
 - 3) Press the OK key.
 - 4) Using the upper/lower arrow keys on the operation panel, select "Scanner test".
 - 5) Press the OK key.
 - 6) Using the upper/lower arrow keys on the operation panel, select "CS Output Test".
 - 7) Press the OK key.
 - 8) Select "Yes" and then press the OK key.

After completion of the above steps, contact sensor output correction will be performed and parameters will be set automatically.

- Read position adjustment (Stream reading: Only when the ADF is installed)

- 1) Enter the service mode.
 - Sequentially press the Additional Functions, # key on the operation panel.
 - 2) Using the upper/lower arrow keys on the operation panel, select "Test".
 - 3) Press the OK key.
 - 4) Using the upper/lower arrow keys on the operation panel, select "Scanner test".
 - 5) Press the OK key.
 - 6) Using the upper/lower arrow keys on the operation panel, select "CS Position Test".
 - 7) Press the OK key.
 - 8) Select "Yes" and press the OK key.
- The optical system starts scanning. Several seconds later, automatic adjustment of the reading position finishes and "OK" appears.

⚠ If automatic adjustment fails, "NG" appears. Perform the following procedure:
Clean the white roller of the DADF and the document glass of the host machine, and then retry auto adjustment.

Chapter 4 Original Exposure System

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4.1 Construction

4.1.1 Specifications, Control Methods, and Functions (When the original size detection sensor is equipped for BOOK mode)

Major specifications, control methods, and functions of the original exposure system are summarized below.

Item	Function/Method
Exposure light source	LED
Original scan	In BOOK mode: Original scan is performed by moving the contact image sensor (CIS). When ADF is used: Original stream reading is performed with the contact image sensor (CIS) fixed.
Scan resolution	600 dpi (vertical scan) x 600 dpi (horizontal scan) (Color send: 300 dpi horizontal scan)
Gradation	256
Carriage position detection	Contact image sensor (CIS) HP sensor (SR401)
Magnification range	25% to 400% Vertical scan direction: Image processing is by image processor PCB Horizontal scan direction: BOOK mode: Carriage movement speed change and image processing by image processor PCB *1 ADF mode: Original feed speed change and image processing by image processor PCB *1
Lens	Rod lens array
CMOS sensor	Number of lines: 1 Number of pixels: Total 7488 (incl. 7176 effective pixels) Maximum original scan width: 304 mm
CIS drive control	Drive control by reader motor (M401)
Original size detection	[1] BOOK mode: Vertical scan direction: Detection by reflection type sensor (AB/INCH) Horizontal scan direction: Detection by reflection type sensor (AB/INCH) [2] When ADF is used Width: Detection by original width sensor PCB in ADF Length: Detection by photo sensor in ADF

*1 The control method depends on the magnification. For more details, refer to "Magnification Change".

4.1.2 Specifications, Control Methods, and Functions (When the original size detection sensor is not equipped for BOOK mode)

Major specifications, control methods, and functions of the original exposure system are summarized below.

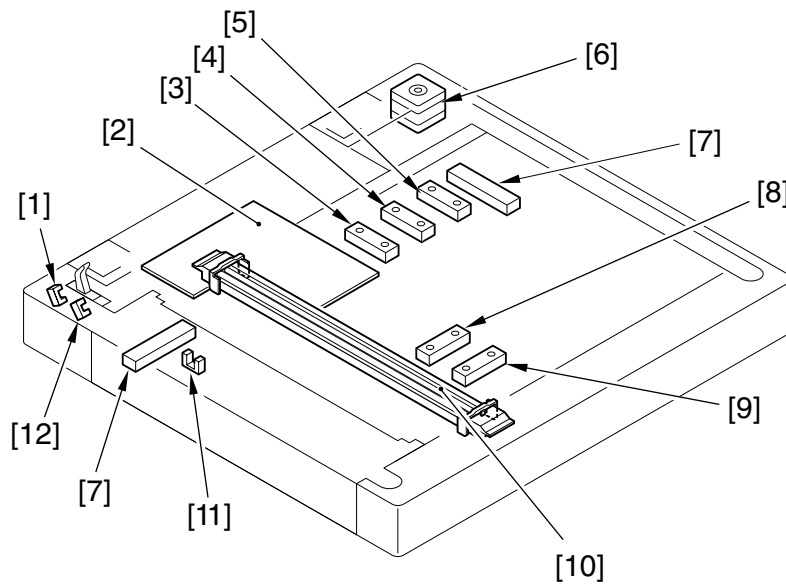
Item	Function/Method
Exposure light source	LED
Original scan	In BOOK mode: Original scan is performed by moving the contact image sensor (CIS). When ADF is used: Original stream reading is performed with the contact image sensor (CIS) fixed.
Scan resolution	600 dpi (vertical scan) x 600 dpi (horizontal scan) (Color send: 300 dpi horizontal scan)
Gradation	256
Carriage position detection	Contact image sensor (CIS) HP sensor (SR401)

Item	Function/Method
Magnification range	25% to 400%
	Vertical scan direction: Image processing is by image processor PCB
	Horizontal scan direction:
	BOOK mode: Carriage movement speed change and image processing by image processor PCB *1
	ADF mode: Original feed speed change and image processing by image processor PCB *1
Lens	Rod lens array
CMOS sensor	Number of lines: 1
	Number of pixels: Total 7488 (incl. 7176 effective pixels)
	Maximum original scan width: 304 mm
CIS drive control	Drive control by reader motor (M401)
Original size detection	[1] BOOK mode: Unavailable
	[2] When ADF is used
	Width: Detection by original width sensor PCB in ADF
	Length: Detection by photo sensor in ADF

*1 The control method depends on the magnification. For more details, refer to "Magnification Change".

4.1.3 Major Components (When the original size detection sensor is equipped for BOOK mode)

Major components of the original exposure system are as follows:



F-4-1

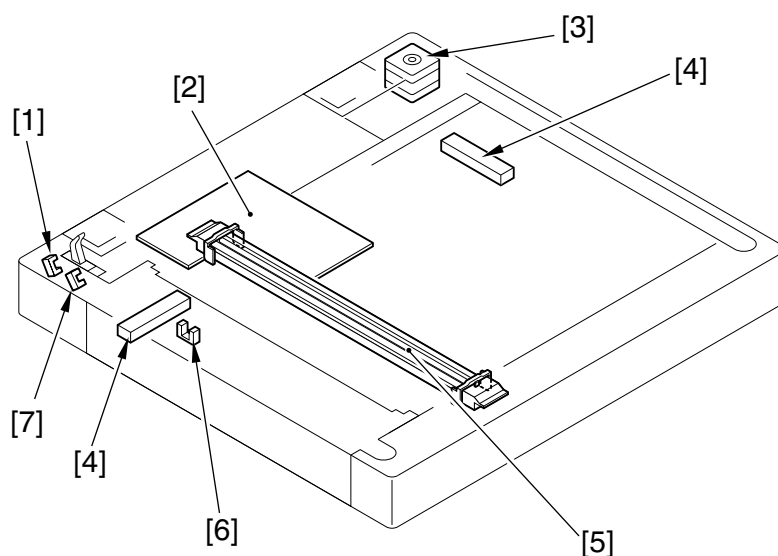
Component	No.	Function/Specification
[1] Copyboard cover open/close sensor (Rear: SR402)	SR402	Photo interrupter: Detects the copyboard cover open/close status. Starts detecting the original size when the copyboard cover angle is 30 deg.
[2] Reader controller PCB	-	Controls drive of the reader unit and image processing.
[3] Original sensor 3	SR406	Detects the original size (for all destinations).
[4] Original sensor 4	SR407	Detects the original size (AB, INCH/AB).
[5] Original sensor 5	SR408	Detects the original size (INCH/A)
[6] Reader motor	M401	Pulse motor: Controls drive of the carriage.
[7] Reader heater*1	-	Prevents condensation inside the original glass.

	Component	No.	Function/Specification
[8]	Original sensor 1	SR404	Detects the original size (AB, INCH/A, INCH/AB).
[9]	Original sensor 2	SR405	Detects the original size (AB, A, INCH/AB)
[10]	Contact image sensor (CIS)	-	Uses LEDs for indirect exposure (LED + Photoconductor)
[11]	CISHP sensor	SR401	Photo interrupter: Detects the CIS position.
[12]	Copyboard cover open/close sensor	SR403	Finishes detecting the original size when the copyboard cover angle is 5 deg.

*1 Option setting

4.1.4 Major Components (When the original size detection sensor is not equipped for BOOK mode)

Major components of the original exposure system are as follows:



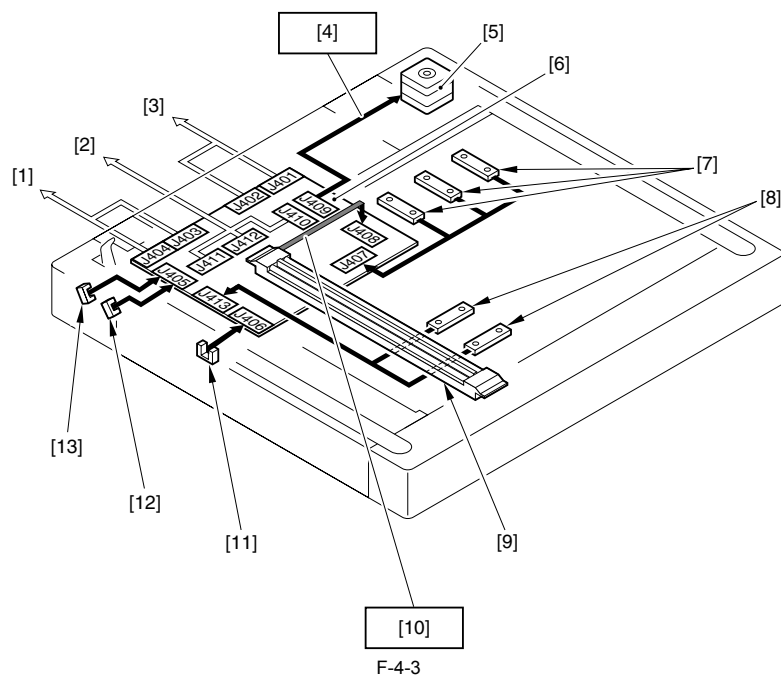
F-4-2

	Component	No.	Function/Specification
[1]	Copyboard cover open/close sensor (Rear: SR402)	SR402	Photo interrupter: Detects the copyboard cover open/close status. Starts detecting the original size when the copyboard cover angle is 30 deg.
[2]	Reader controller PCB	-	Controls drive of the reader unit and image processing.
[3]	Reader motor	M401	Pulse motor: Controls drive of the carriage.
[4]	Reader heater*1	-	Prevents condensation inside the original glass.
[5]	Contact image sensor (CIS)	-	Uses LEDs for indirect exposure (LED + Photoconductor)
[6]	CISHP sensor	SR401	Photo interrupter: Detects the CIS position.
[7]	Copyboard cover open/close sensor	SR403	Finishes detecting the original size when the copyboard cover angle is 5 deg.

*1 Option setting

4.1.5 Control System Configuration (When the original size detection sensor is equipped for BOOK mode)

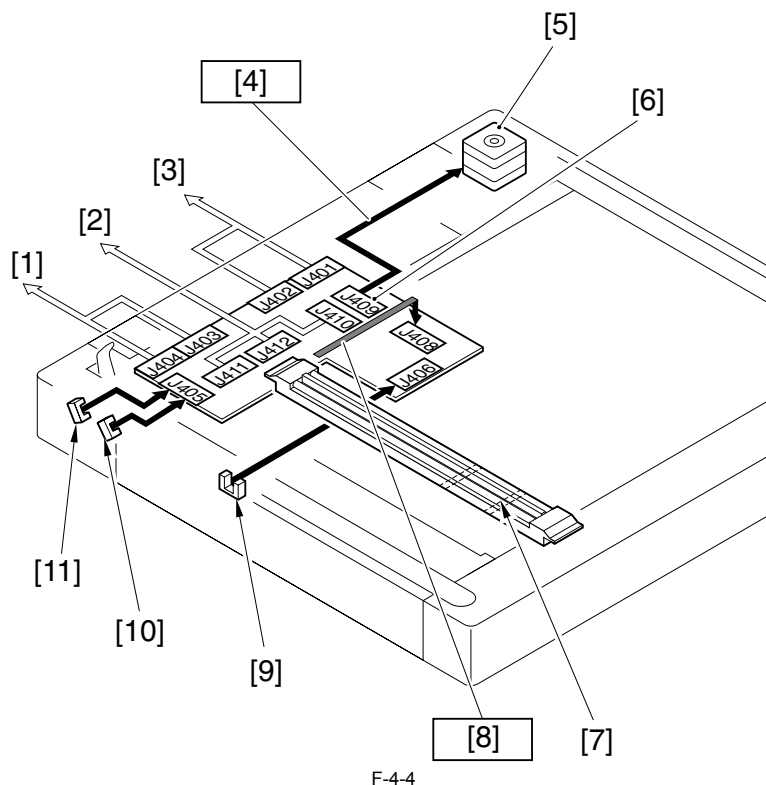
The control system configuration of the original exposure system is shown below.



- [1] Printer main body (Connected to the image processor PCB)
- [2] Connected to ADF
- [3] Connected to the power supply PCB
- [4] Reader motor drive control
- [5] Reader motor (M401)
- [6] Reader controller PCB
- [7] Original sensor (horizontal scan direction)
- [8] Original sensor (vertical scan direction)
- [9] Contact image sensor
- [10] Image signal
- [11] CISHP sensor (PS503)
- [12] Copyboard cover open/close sensor (Front: SR403)
- [13] Copyboard cover open/close sensor (Front: SR402)

4.1.6 Control System Configuration (When the original size detection sensor is not equipped for BOOK mode)

The control system configuration of the original exposure system is shown below.

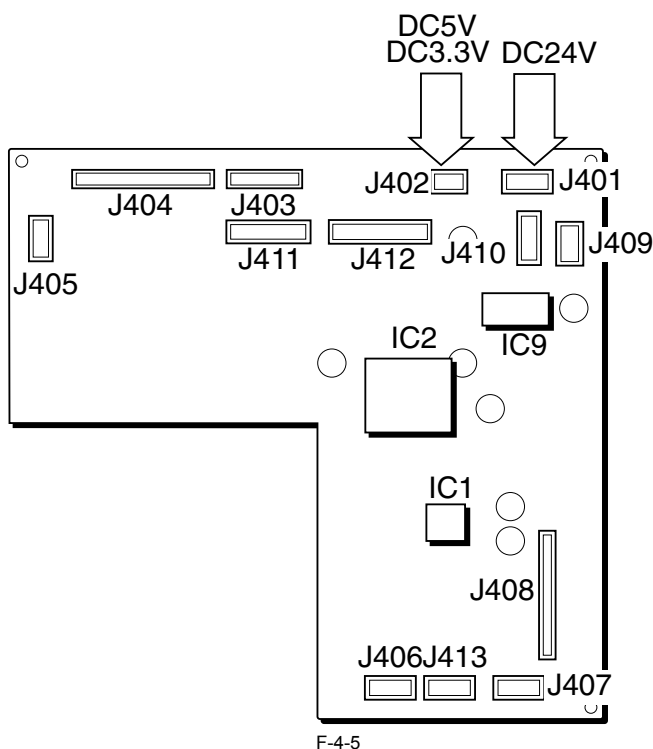


- [1] Printer main body (Connected to the image processor PCB)
- [2] Connected to ADF
- [3] Connected to the power supply PCB

- [4] Reader motor drive control
- [5] Reader motor (M401)
- [6] Reader controller PCB
- [7] Contact image sensor
- [8] Image signal
- [9] CISHP sensor (SR401)
- [10] Copyboard cover open/close sensor (Front: SR403)
- [11] Copyboard cover open/close sensor (Front: SR402)

4.1.7 Reader Controller PCB (When the original size detection sensor is equipped for BOOK mode)

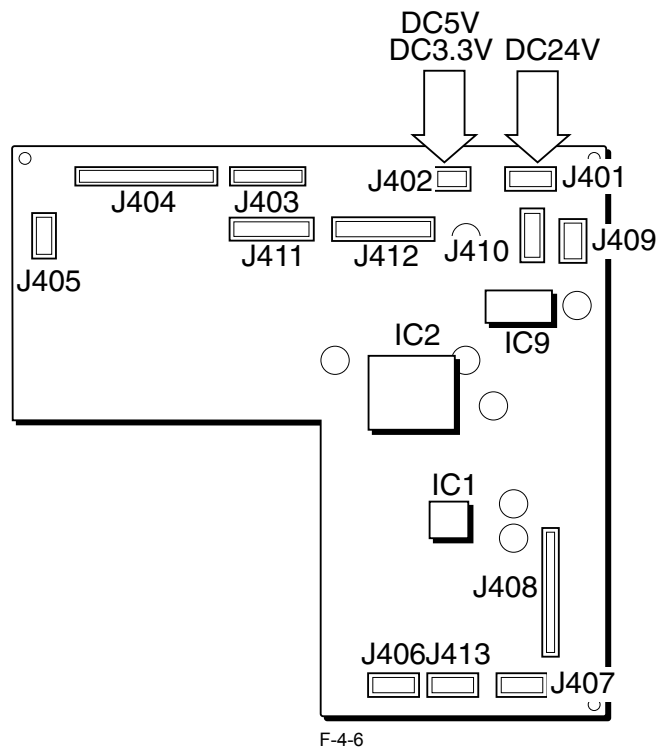
The functional configuration of the reader controller PCB is shown below.



Jack No.	Function
J401	Supplies power (24 VDC) from the main body (printer).
J402	Supplies power (5 VC, 3.3 VDC) from the main body (printer).
J403	Communicates with the main body (printer) (to control the ADF).
J404	Communicates with the main body (printer).
J405	Connected to the copyboard open/close sensor.
J406	Connected to the contact image sensor (CIS) HP sensor.
J407	Connected to the original sensor 1 and original sensor 2.
J408	Connected to the contact image sensor (CIS).
J409	Connected to the reader motor.
J410	Supplies power to the ADF.
J411	Communicates with the ADF (to drive the sensor).
J412	Communicates with the ADF (to drive the motor).
J413	Connected to the original sensor 3, original sensor 4, and original sensor 5.

4.1.8 Reader Controller PCB (When the original size detection sensor is not equipped for BOOK mode)

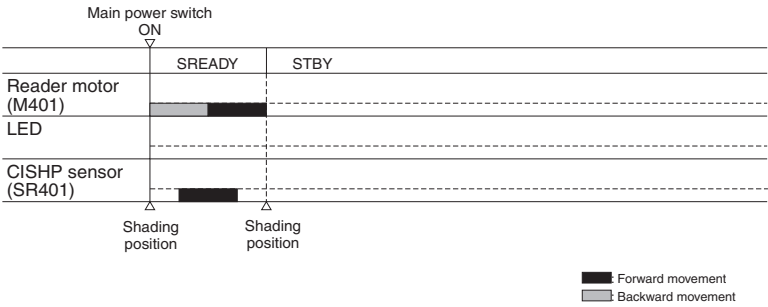
The functional configuration of the reader controller PCB is shown below.



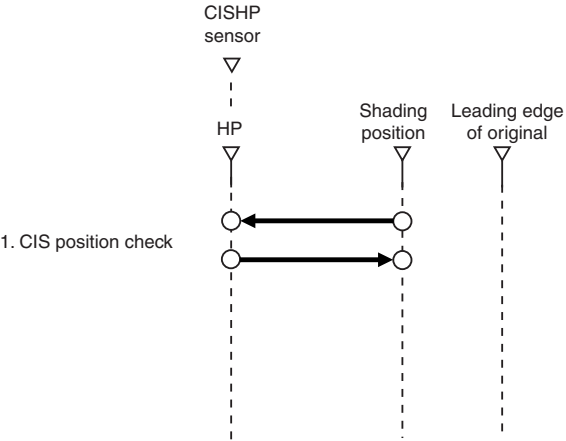
Jack No.	Function
J401	Supplies power (24 VDC) from the main body (printer).
J402	Supplies power (5 VC, 3.3 VDC) from the main body (printer).
J403	Communicates with the main body (printer) (to control the ADF).
J404	Communicates with the main body (printer).
J405	Connected to the copyboard open/close sensor.
J406	Connected to the contact image sensor (CIS) HP sensor.
J407	Unused.
J408	Connected to the contact image sensor (CIS).
J409	Connected to the reader motor.
J410	Supplies power to the ADF.
J411	Communicates with the ADF (to drive the sensor).
J412	Communicates with the ADF (to drive the motor).
J413	Unused.

4.2 Basic Sequence

4.2.1 Basic Sequence at Power-on

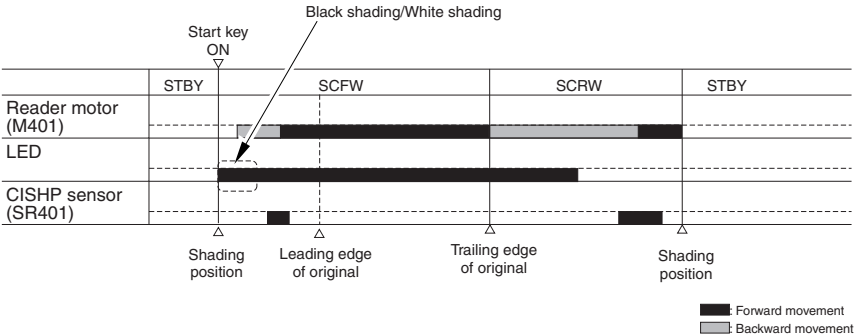


F-4-7

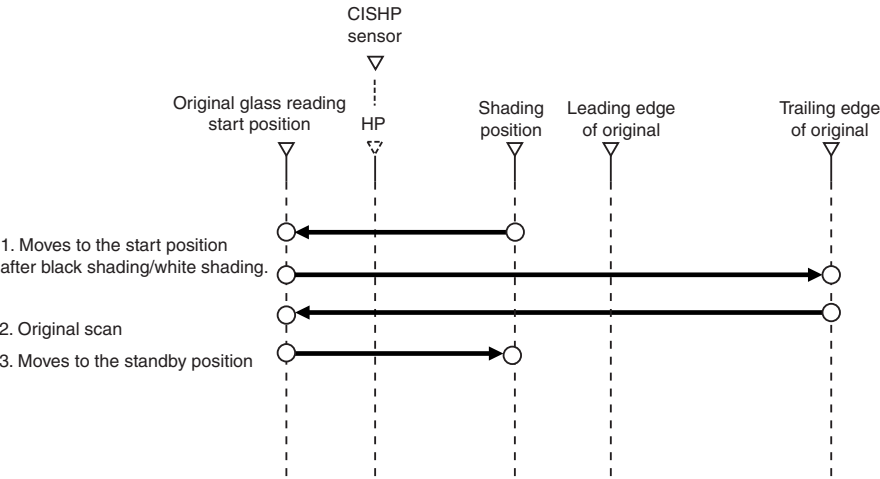


F-4-8

4.2.2 Basic Sequence after Depression of Start Key (Book mode, One Sheet of original)



F-4-9



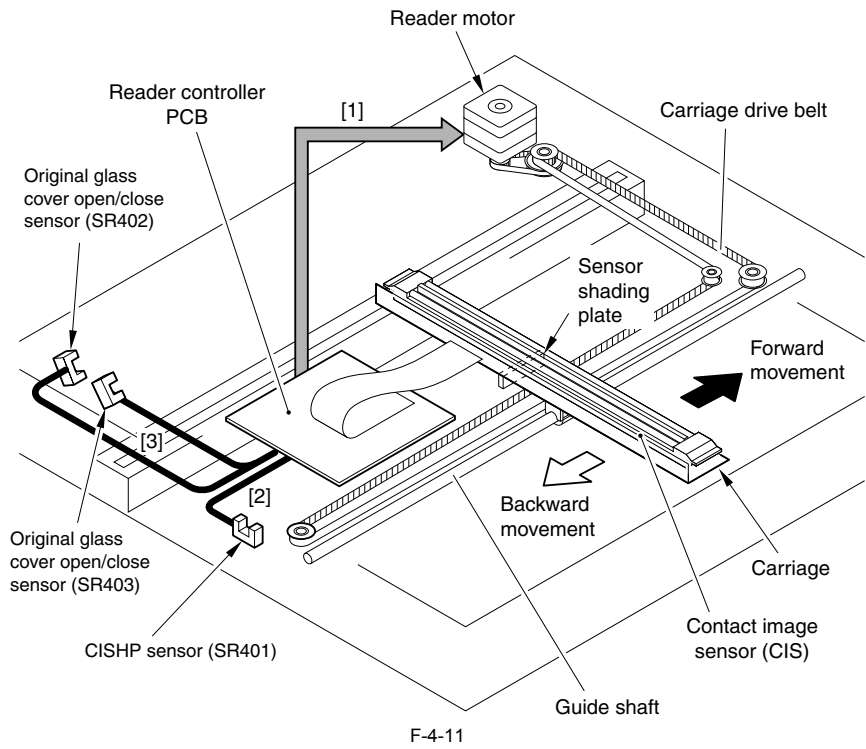
F-4-10

4.3 Various Control

4.3.1 Controlling the Scanner Drive System

4.3.1.1 Outline

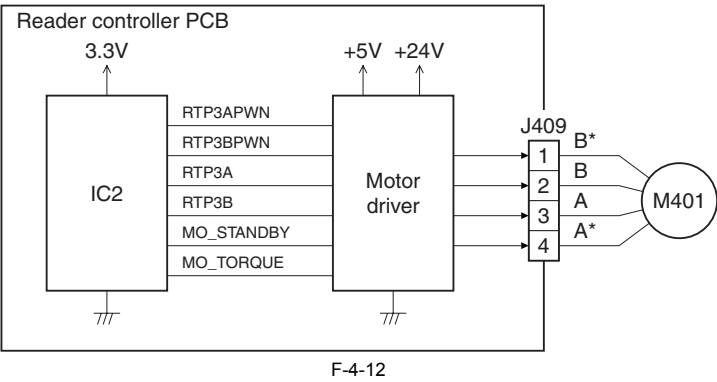
The machine's scanner system consists of the following components:



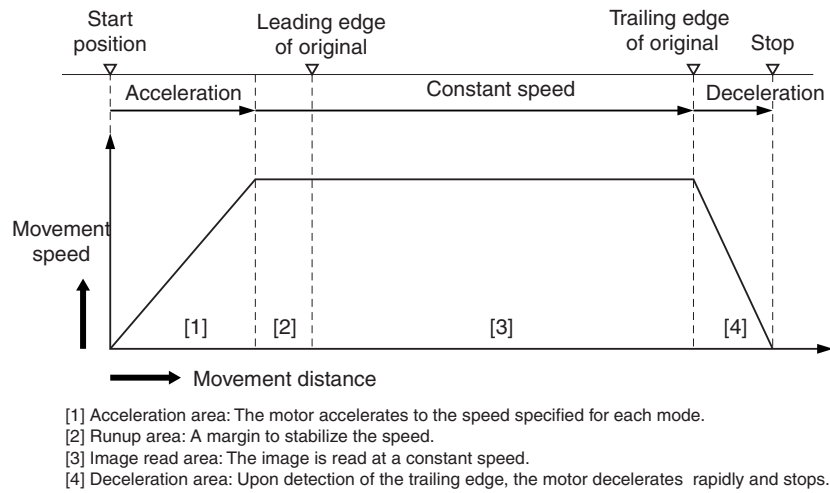
- [1] Reader motor (M401) drive signal
Controls rotation/stop and rotational direction/speed of the reader motor.
- [2] Contact image sensor (CIS) HP sensor (SR401) signal
Detects that the contact image sensor (CIS) is at the home position.
- [3] Copyboard cover sensor (SR403 (front)/SR402 (rear)) signal
Detects the open/close status of the copyboard cover.

4.3.1.2 Reader Motor Control

The reader motor driver controls rotation/stop and rotational direction/speed of the reader motor based on the signals from IC2.



a. Forward Movement during Image Scan
During image scan, operation of the contact image sensor (CIS) is controlled by controlling the motor as shown below.



F-4-13

b. Backward Movement after Image Scan

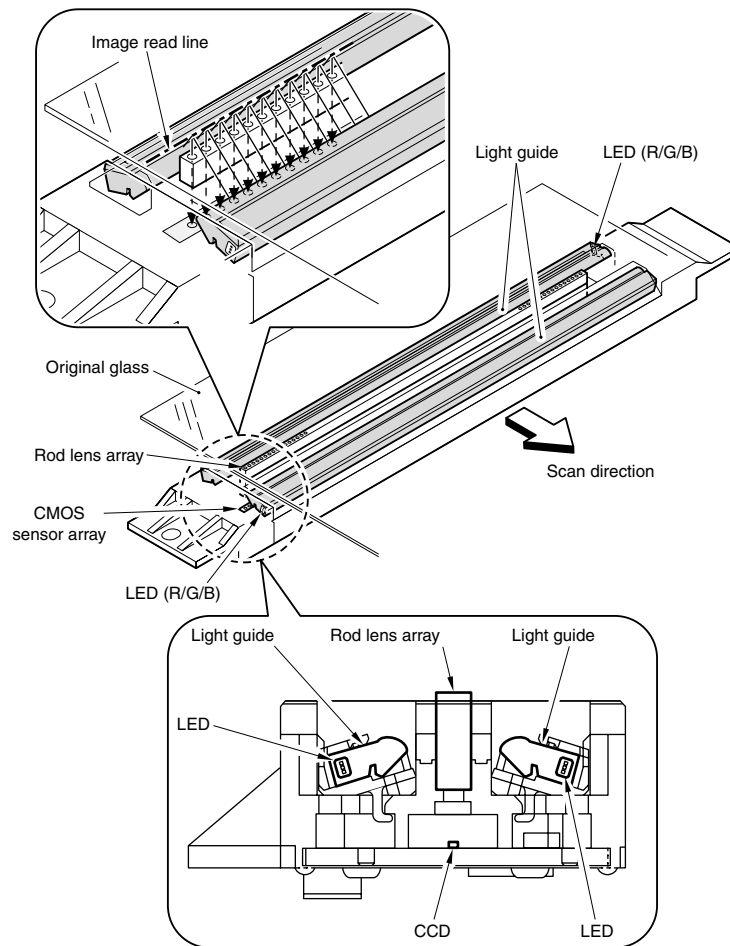
After image scan, the carriage moves back to the contact image sensor (CIS) shading position at the constant speed (118 mm/sec).

4.3.2 Contact Image Sensor (CIS)

4.3.2.1 Outline

The original is exposed to light and read using the contact image sensor (CIS) to read the image on a line-by-line basis.

Component	Function
LED	Illuminates the original.
Light guide	Illuminates the entire image line with the LED light.
Rod lens array	Collects the light reflected by the original.
CMOS sensor array	Receives the light that passed through the rod lens array.



F-4-14

4.3.2.2 Analog Control Performed by the CIS

The flow of analog image processing performed by the contact image sensor (CIS) is as follows:

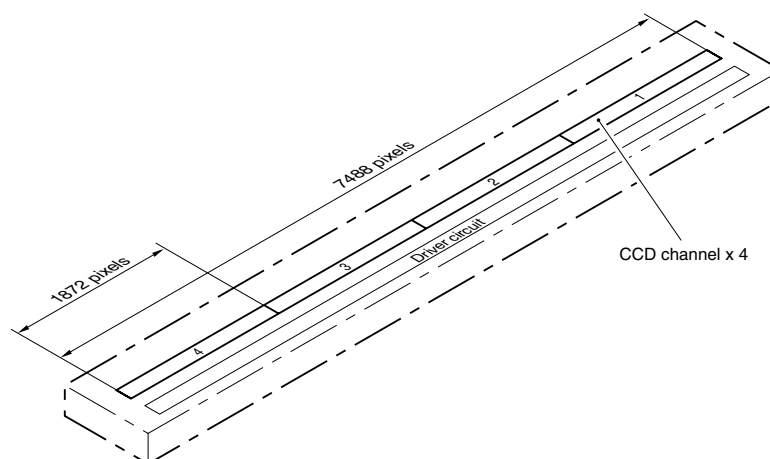
The light reflected by the original is collected by the rod lens array.

- The light is received by the CMOS sensor array.

- The CMOS sensor array converts the received light to an electric signal and outputs it.

The CMOS sensor array consists of four channels (units).

Each channel is provided with an output correction table to output an image signal after performing gain correction for the input brightness signal.



F-4-15

- After replacing the contact image sensor (CIS), go through the following steps to perform inter-channel output correction:

1) Enter the service mode.

Sequentially press the Additional Functions, # key on the operation panel.

2) Using the upper/lower arrow keys on the operation panel, select "Test".

3) Press the OK key.

4) Using the upper/lower arrow keys on the operation panel, select "Scanner test".

5) Press the OK key.

6) Using the upper/lower arrow keys on the operation panel, select "CS Output Test".

7) Press the OK key.

8) Select "Yes" and then press the OK key.

After completion of the above steps, contact sensor output correction will be performed and parameters will be set automatically.

4.3.3 Enlargement/Reduction

4.3.3.1 Magnification Change in Vertical Scan Direction

In the Book mode or when the ADF is used

In the vertical scan direction, the image is read at 100%. Magnification is changed by processing data on the image processor PCB.

4.3.3.2 Magnification Change in Horizontal Scan Direction

Magnification in the sub scanning direction is varied according to the rate of magnification as follows:

1) When magnification is varied to 25% through 49% for reduction

a. In the Book mode

Data is processed using the reader controller PCB and image processor PCB with the document scanning speed held at 118mm/sec.

b. When the ADF is used

The document feed speed (when the ADF is used) is varied between 118 mm/sec and 59 mm/sec according to the rate of magnification, and data is processed using the reader controller PCB and image processor PCB.

2) When magnification is varied to 50% through 99% for reduction

a. In the Book mode

Data is processed using the reader controller PCB and image processor PCB with the document scanning speed held at 118mm/sec.

b. When the ADF is used

The document feed speed (when the ADF is used) is varied between 118 mm/sec and 236 mm/sec according to the rate of magnification. The reader controller PCB and image processor PCB are not used for data processing.

3) When magnification is varied to 100% through 200% for enlargement

The document scanning speed (in the BOOK mode) and the document feed speed (when the ADF is used) are varied between 118 mm/sec and 59 mm/sec according to the rate or magnification. The image processor PCB is not used for data processing.

4) When magnification is varied to 201% through 400% for enlargement

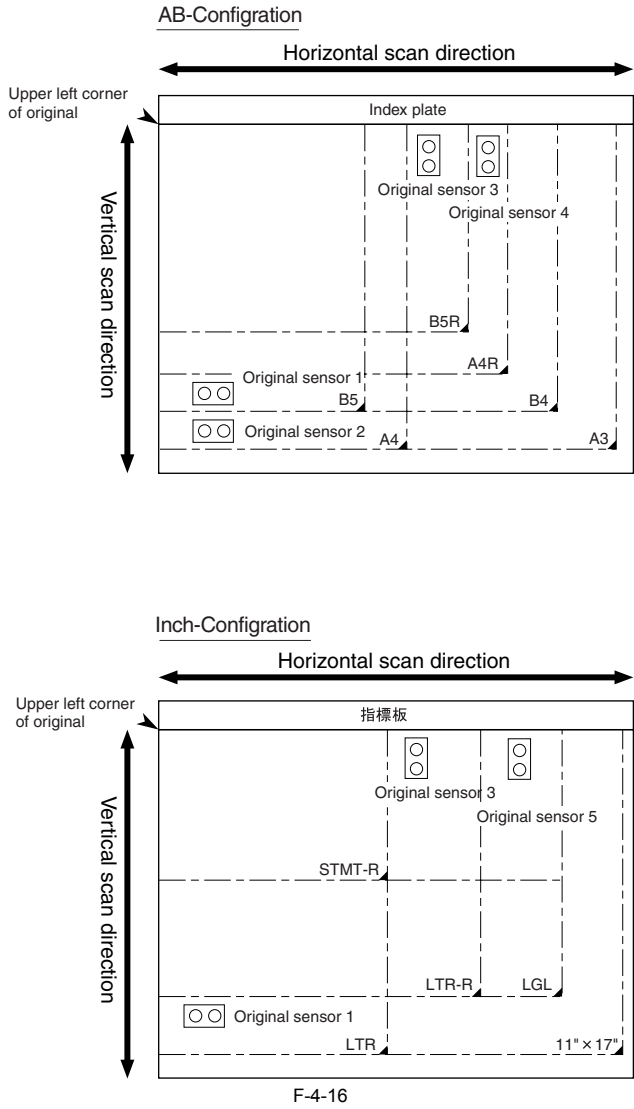
Data is processed using the reader controller PCB and image processor PCB with the document scanning speed held at 59mm/sec.

4.3.4 Detecting the Size of Originals

4.3.4.1 Outline

The original size is identified by the combination of presence and absence of output levels of the reflection type sensors as summarized in the tables below.

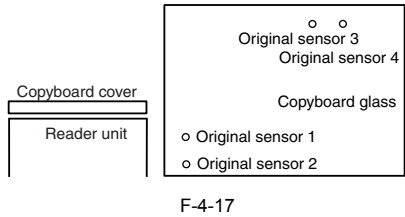
- Absence of paper: The light reflected from the reflection type sensor changes when the copyboard cover is open/close.
 - Presence of paper: The light reflected from the reflection type sensor does not change when the copyboard cover is open/close.
- This machine is provided with the following sensors. Locations of the sensors are shown below.
- Vertical scan direction: Reflection type photo sensors (2 locations for AB; 1 location for Inch)
 - Horizontal scan direction: Reflection type photo sensors (2 locations for AB; 2 locations for Inch)



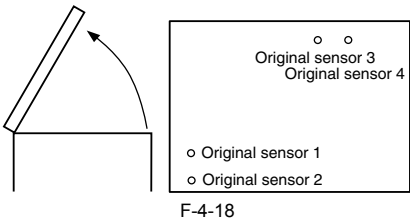
4.3.4.2 Outline of Original Size Detection

- In the BOOK mode
One sheet of original (A4R) is set and the copyboard cover (or ADF) is closed.

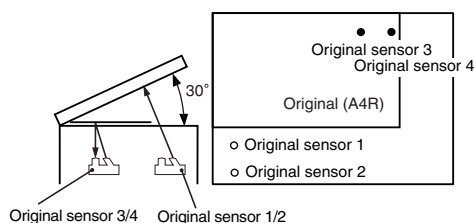
- 1) Standby state
Original sensor: Turns off.



- 2) The copyboard cover opens (at an angle of more than 30o).
Original sensor: Turns off.

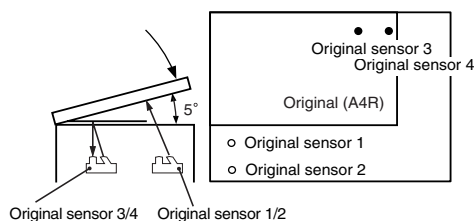


- 3) The copyboard cover is closed (at an angle of 30 deg).
Original sensor: Turns on and original size identification process 1 is performed.



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- 4) The copyboard cover is closed (at an angle of more than 5 deg but less than 30 deg)
Original sensor: Turns on and original size identification process 2 is performed.



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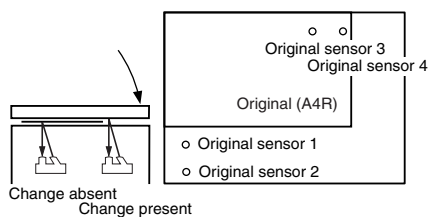
- 5) The original cover is closed (at an angle of 5 deg or less)
The original size is identified.

Original sensor: Turns off.

In identifying the original size, the data obtained in the original size identification process 1 is compared with the data obtained in the original size identification process 2 to check whether these two pieces of data are identical.

Note that a wrong original size may be identified because the sensor output level does not change in the following cases:

- When the original is A3-sized black
- When the original is a book (its thickness does not allow the copyboard cover to close fully, making it difficult to detect the sensor level change).
- When the copyboard cover is not closed fully (the sensor level change is not detected after lapse of the above time-out time)



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Before original size identification processes 1 and 2 are performed, the original size is detected with original sensors as follows:

AB-Configuration

Original size	Original sensor 1	Original sensor 2	Original sensor 3	Original sensor 4
A3	○	○	○	○
A4	○	○	●	●
B4(8K)*1	○	●	○	○
B5(16K)*1	●	○	○	○
A4R	●	●	○	○
B5R(16K)*1	●	●	○	●
No original	●	●	●	●

Inch-Configuration

Original size	Original sensor 1	Original sensor 3	Original sensor 5
11"X17"	○	○	○
LTR	○	●	●
LGL	●	○	○
LTR-R	●	○	●
No original	●	●	●

○ :No original
● :Change absent

F-4-22

* For Chinese paper, the following sizes are detected:
8K:Equivalent to B4 size
16K:Equivalent to B5 size

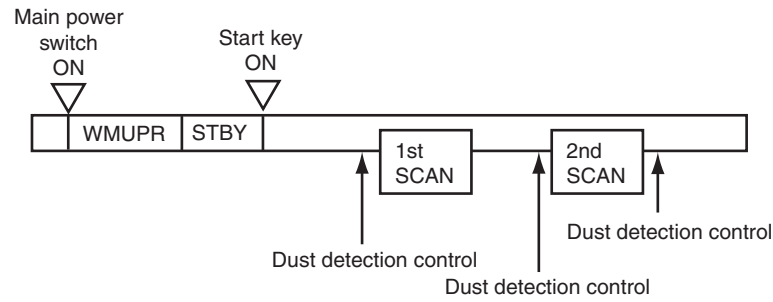
4.3.5 Dirt Sensor Control

4.3.5.1 Outline

The machine changes the original read position or corrects the read image depending on the presence/absence of dust on the stream reading glass or ADF platen roller, thus preventing dust from showing up in the image. This control is performed only when the ADF is used and it is closed.

[Control Timing]

- At job end
- Immediately before scanning (one sheet at a time)



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[Description of Control]

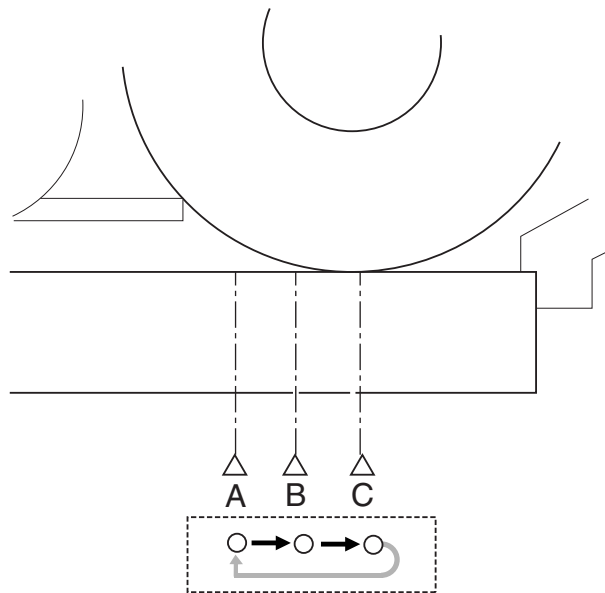
- At job end (Dust detection)

The contact image sensor (CIS) checks the light reflected by the ADF platen roller surface at the read position for presence/absence of dust. After completion of a job, dust detection is performed maximum six times in 3 point of A, B and C. First, dust detection is performed once at position A. If no dust is detected at position A, dust detection is performed twice there. If no dust is detected, the original is scanned at position A. If dust is detected at position A, move to position B and dust detection is performed twice at position B. If no dust is detected at position B, the original is scanned at position B. If dust is also detected at position B, move to position C and dust detection is performed once at position C. If dust is also detected at position C, a relevant message is displayed on the operation panel. In this case, move back to position A and the original is scanned at position A.



- At job start (Dust bypass)

Presence/absence of dust is detected at all points A, B, and C in this order at job end. The original is read at the point where least dust is detected.



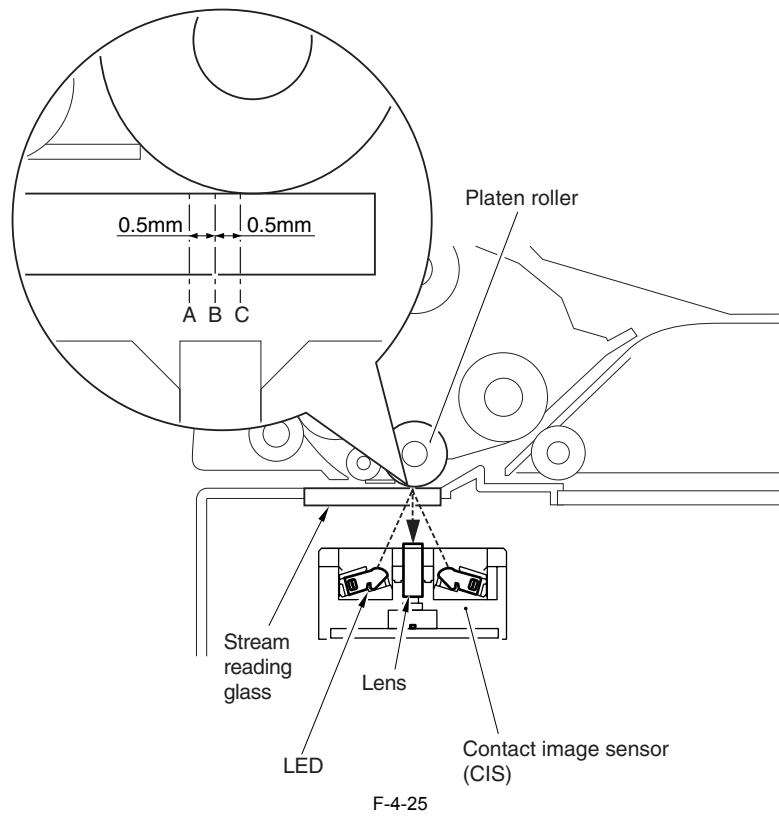
F-4-24

- Immediately before scanning (one sheet at a time)

The contact image sensor (CIS) does not move to detect dust.

The original is read at the position determined at job end or start. If presence of dust is detected there, the read image is corrected.

Point	Description
A	Read reference position
B	out 0.5 mm from the reference position to the inside of the roller
C	About 1.0 mm from the reference position to the inside of the roller

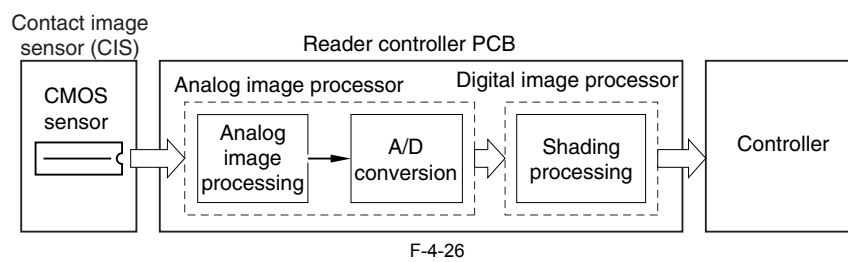


4.3.6 Image Processing

4.3.6.1 Outline

Major specifications and functions of the image processing system are as follows:

- CMOS sensor	Number of lines: 1 Number of pixels: Total 7488 (incl. 7176 effective pixels) Pixel size: 32 x 46.9 μ m
- Shading correction	Shading correction: Made for each job. Shading adjustment: Made in the Service mode.

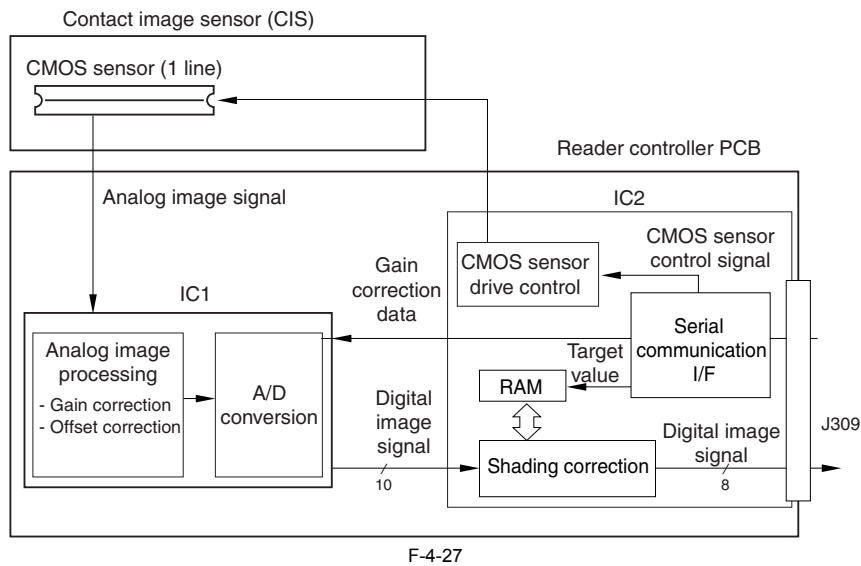


Functions of the image processing system are summarized below.

- Reader controller PCB	CMOS sensor drive, analog image processing, A/D conversion, and shading correction
-------------------------	------------------------------------------------------------------------------------

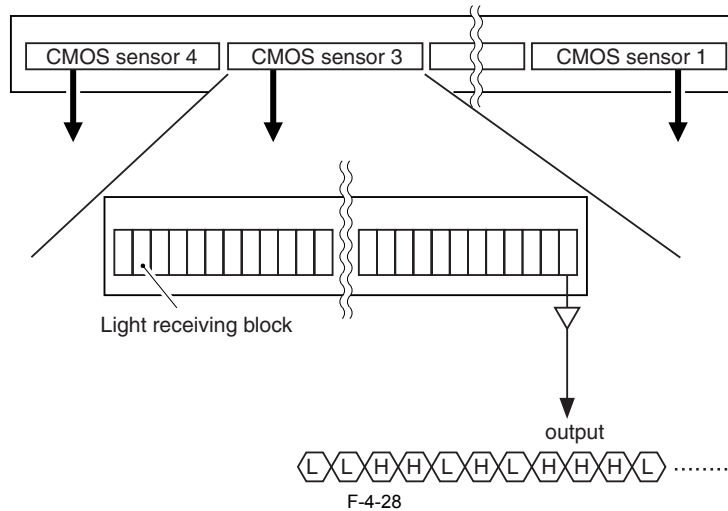
The reader controller PCB is used to process images on a line-by-line basis. Its major functions are as follows:

- 1) Analog image processing
 - CMOS sensor drive
 - CMOS sensor output gain correction and offset correction
 - CMOS sensor output A/D conversion
- 2) Digital image processing
 - Shading correction



4.3.6.2 CMOS Sensor Drive

The CMOS sensor used in this machine is a 1-line linear image sensor consisting of 7488 photocells. After completion of photoelectric conversion in the light-receiving block, the signals are output to the AP circuit in the reader controller PCB in parallel for each channel (total four channels) of the CMOS sensor array.



4.3.6.3 CMOS Sensor Output Gain Correction and Offset Correction

The analog video signals output from the CMOS sensor are corrected so that they will have a specific gain level (gain correction), and the output voltages generated in the absence of incident light are also corrected so that they will have a specific offset level (offset correction).

4.3.6.4 CMOS Sensor Output A/D Conversion

After completion of the above corrections, the analog video signals are converted to digital signals corresponding to individual pixel voltage levels by the A/D converter.

4.3.6.5 Shading Correction (Outline)

The CMOS sensor outputs are necessary even for the following reasons even when the density of the original is uniform:

- (1) Variation in sensitivity among CMOS sensor pixels
- (2) Variation in light intensity of rod lens array

The machine performs shading correction to even out the CMOS sensor output.

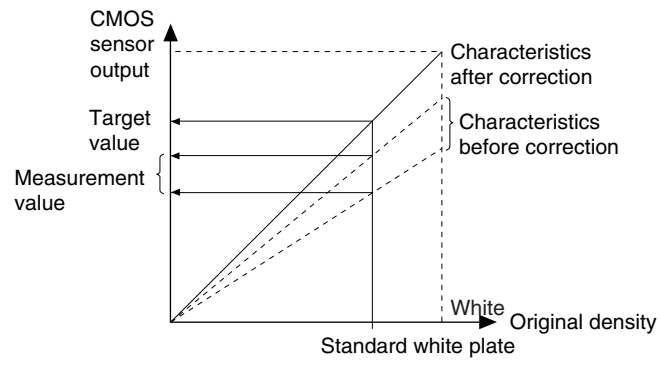
There are two types of shading correction: shading adjustment performed in the Service mode and shading correction performed for each job.

4.3.6.6 Shading Adjustment

The machine measures the density of the standard white plate, and stores the measured density data. It then processes the stored data to use it as the target value for shading correction.

4.3.6.7 Shading Correction

The machine performs shading correction for each scan. It measures the density of the standard white plate, and compares the measured value with the target value stored in the shading correction circuit to use the difference between the two as the shading correction value. The machine uses this shading correction value to correct the variation among CMOS sensor pixels when scanning the original, thus evening out the image density level.



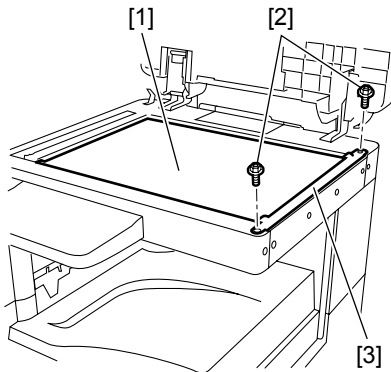
F-4-29

4.4 Parts Replacement Procedure

4.4.1 Copyboard glass

4.4.1.1 Removing the Copyboard glass

- 1) Open the copyboard cover (or ADF).
- 2) Remove the copyboard glass [1].
 - Screws [2] 2 pcs.
 - Glass retainer [3] 1 pc.



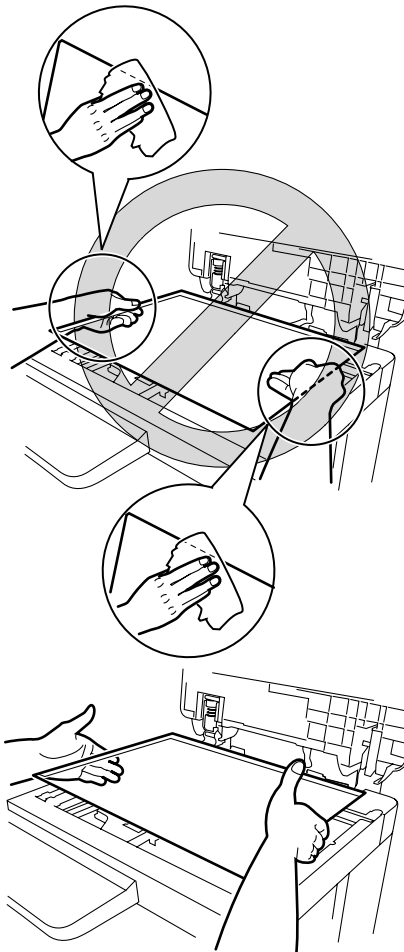
F-4-30



When removing the copyboard glass, take care not to touch the following:

- Glass surface
- Standard white plate

Dirt on these parts can show up as white/black lines in the image. If dirt is found, remove it with lint-free paper moistened with alcohol.

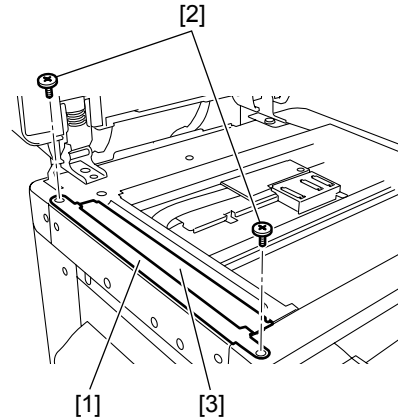


MEMO:

This machine does not require any action after replacing the document glass.

4.4.1.2 Removing the ADF Reading Glass (only for ADF equipment)

- 1) Open the ADF.
- 2) Remove the glass retainer [1].
 - Screws [2] 2 pcs.
- 3) Remove the ADF reading glass [3].

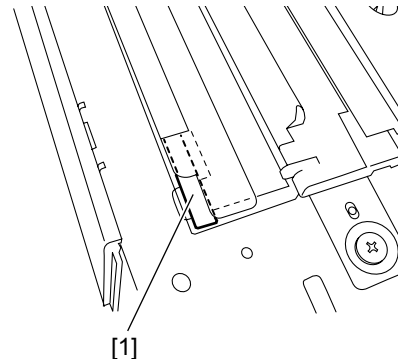


F-4-31



- When removing the ADF reading glass, take care not to touch the glass surface. Dirt on these parts can show up as white/black lines in the image. If dirt is found, remove it with lint-free paper moistened with alcohol.

- When installing the ADF reading glass, position the cut portion [1] of the ADF reading glass sheet at the front-left corner.



F-4-32

4.4.2 Reader Controller PCB

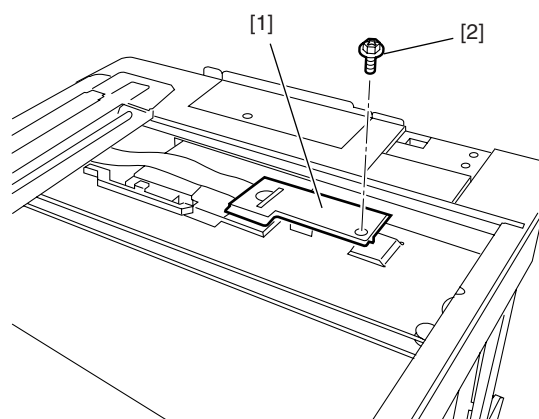
4.4.2.1 Removing the Reader Controller PCB (When the original size detection sensor is not equipped for BOOK mode)

- 1) Remove the rear cover.
- 2) Remove the left cover (rear).
- 3) Remove the copyboard cover (When the ADF is equipped, open the ADF).
- 4) Remove the small cover.
- 5) Disconnect the ground cable of the ADF harness (Only for the ADF equipped).
- 6) Remove the ADF harness (Only for the ADF equipped).
- 7) Remove the reader rear cover.
- 8) Remove the glass retainer.
- 9) Remove the copyboard glass.

MEMO:

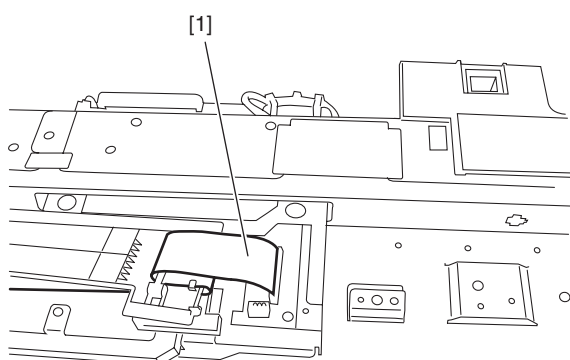
This machine stores adjustment values in the image processor PCB, not the reader controller PCB. Accordingly, you need not input adjustment values after replacing the reader controller PCB.

- 10) Remove the cover [1].
- Screw [2] 1 pc.



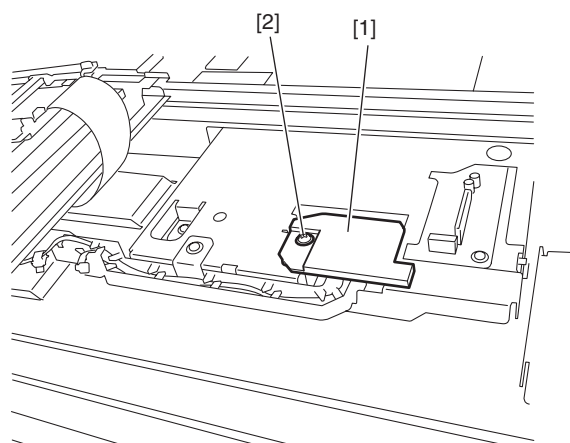
F-4-33

- 11) Remove the flexible cable [1] on the reader controller PCB.



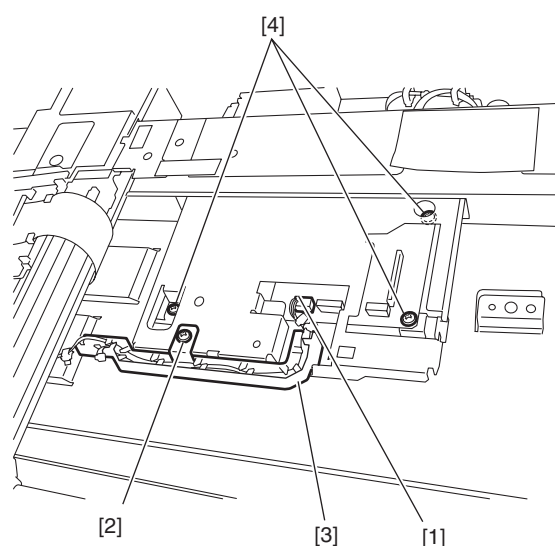
F-4-34

- 12) Remove the cover [1].
- Screw [2] 1 pc.



F-4-35

- 13) Remove the connector [1] and one screw [2] to remove the harness guide [3]. Remove three screws [4].



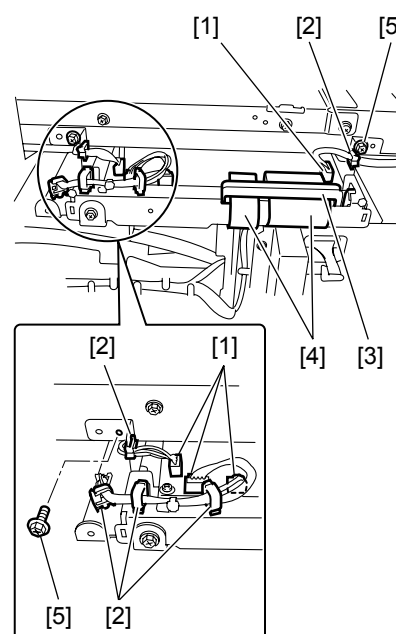
F-4-36

- 14) Go to the back of the machine, and then disconnect the four connectors [1] from the reader controller PCB.

- 15) Remove the harness from the edge saddle/clamp [2].

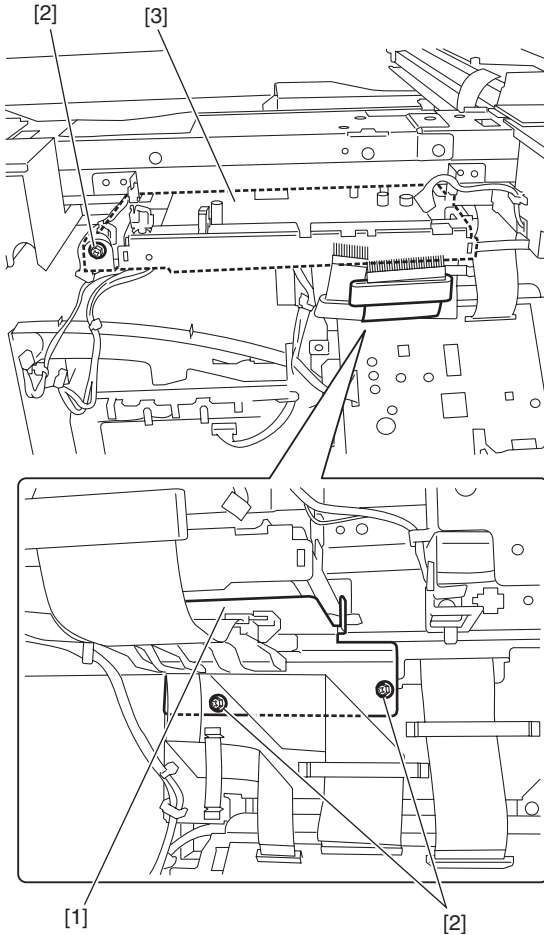
- 16) Remove the flexible cable holder [3], and then disconnect the two flexible cables [4].

- 17) Remove the two screws [5].



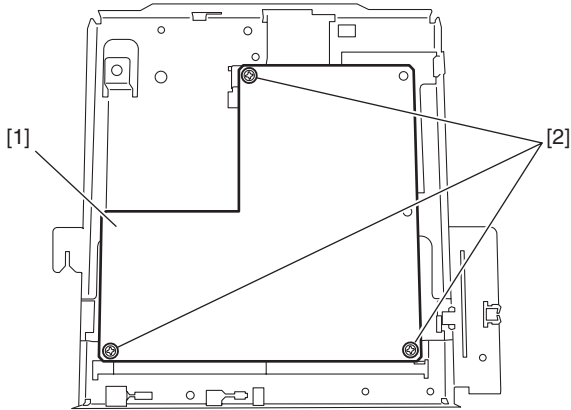
F-4-37

- 18) Remove the flexible cable guide [1].
 - Screws [2] 3 pcs.
 19) Remove the reader controller PCB [3] together with the mount.



F-4-38

- 20) Remove the reader controller PCB [1] from the mount.
 - Screws [2] 3 pcs.



F-4-39

4.4.2.2 Removing the Reader Controller PCB (When the original size detection sensor is equipped for BOOK mode)

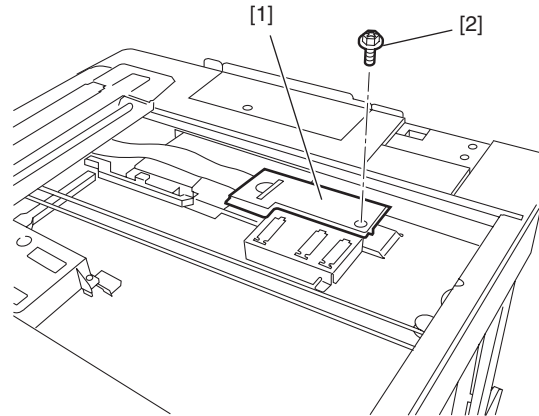
- 1) Remove the rear cover.
- 2) Remove the left cover (rear).
- 3) Remove the copyboard cover (When the ADF is equipped, open the ADF).
- 4) Remove the small cover.
- 5) Disconnect the ground cable of the ADF harness (Only for the ADF equipped).
- 6) Remove the ADF harness (Only for the ADF equipped).
- 7) Remove the reader rear cover.
- 8) Remove the glass retainer.

- 9) Remove the copyboard glass.

MEMO:

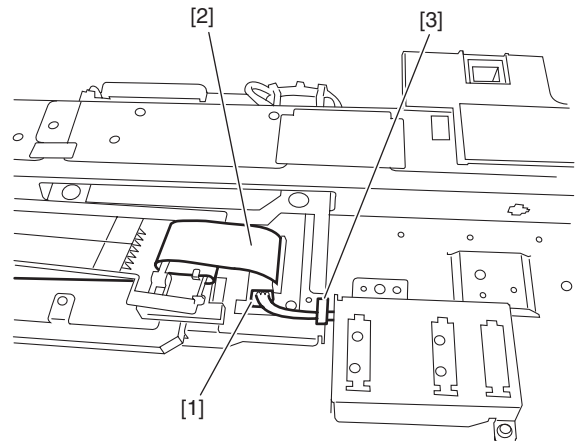
This machine stores adjustment values in the image processor PCB, not the reader controller PCB. Accordingly, you need not input adjustment values after replacing the reader controller PCB.

- 10) Remove the cover [1].
 - Screw [2] 1 pc.



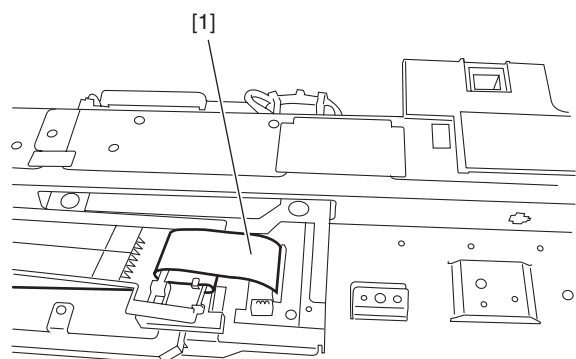
F-4-40

- 11) Disconnect the connectors [1], and then remove the flexible cable [2].
 Remove the harness from the edge saddle [3].



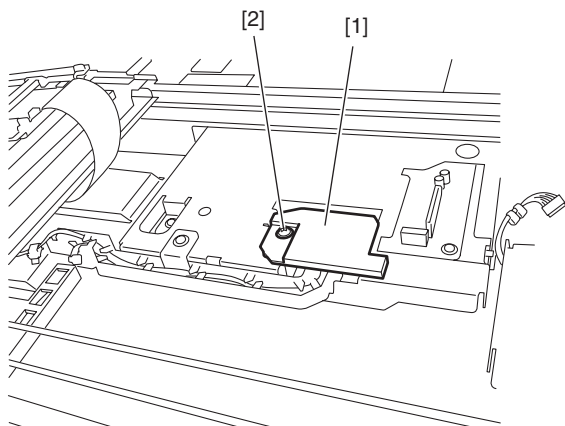
F-4-41

- 11) Remove the flexible cable [1] on the reader controller PCB.



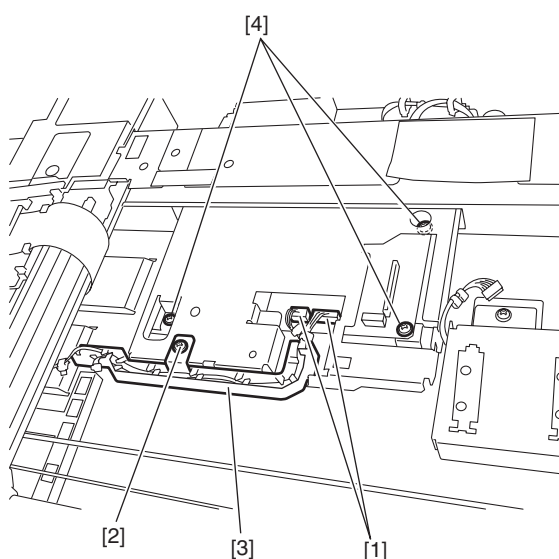
F-4-42

- 12) Remove the cover [1].
- Screw [2] 1 pc.



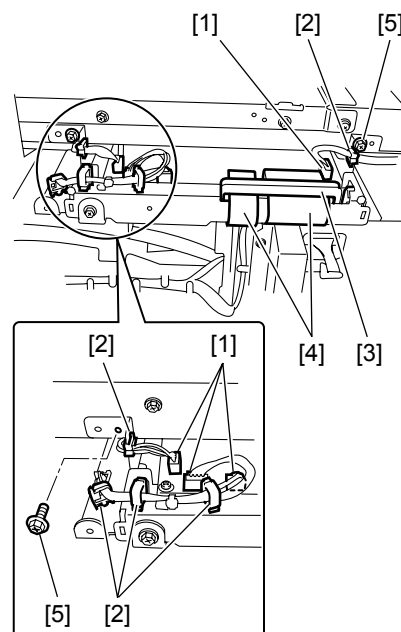
F-4-43

- 13) Remove the two connector [1] and one screw [2] to remove the harness guide [3]. Remove three screws [4].



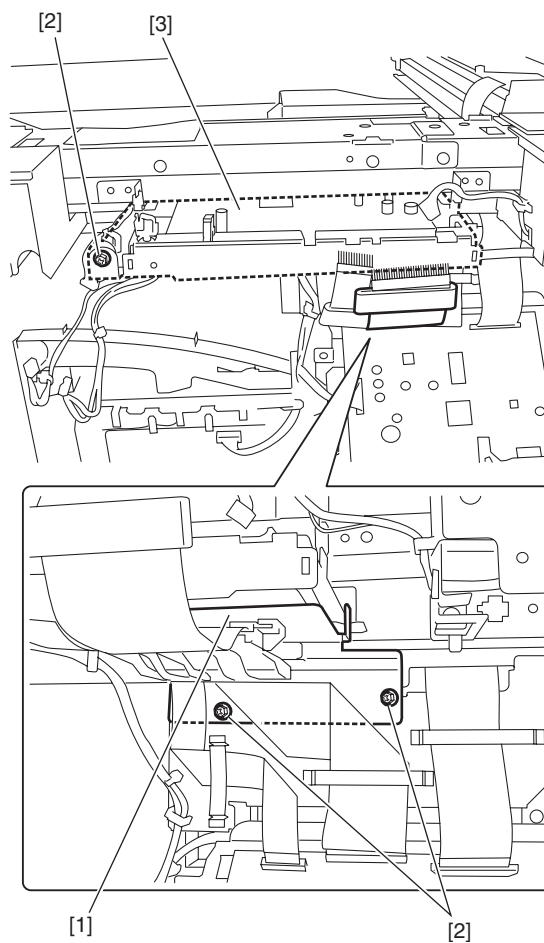
F-4-44

- 14) Go to the back of the machine, and then disconnect the four connectors [1] from the reader controller PCB.
15) Remove the harness from the edge saddle/clamp [2].
16) Remove the flexible cable holder [3], and then disconnect the two flexible cables [4].
17) Remove the two screws [5].



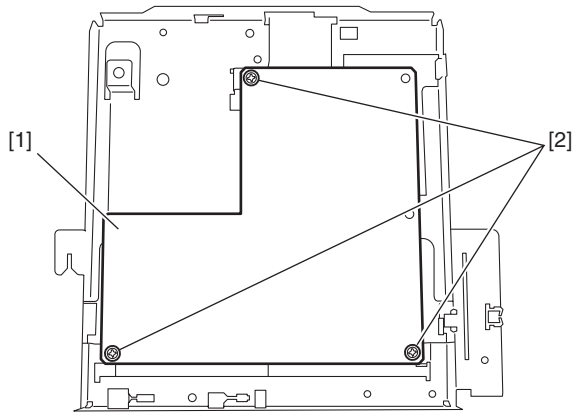
F-4-45

- 18) Remove the flexible cable guide [1].
- Screws [2] 3 pcs.
19) Remove the reader controller PCB [3] together with the mount.



F-4-46

- 20) Remove the reader controller PCB [1] from the mount.
- Screws [2] 3 pcs.

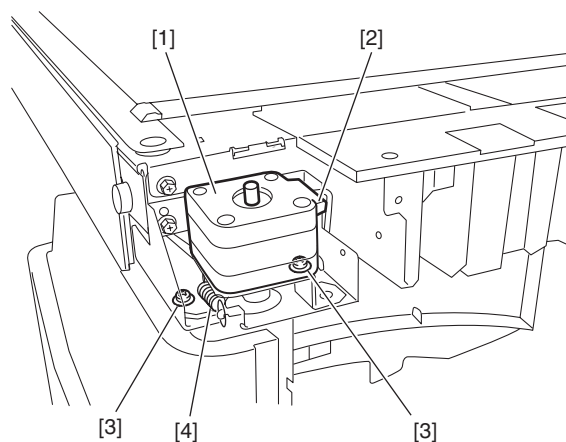


F-4-47

4.4.3 Scanner Motor

4.4.3.1 Removing the Scanner Motor

- 1) Remove the rear cover.
- 2) Remove the left cover (rear).
- 3) Remove the copyboard cover (When the ADF is equipped, open the ADF).
- 4) Remove the small cover.
- 5) Disconnect the ground cable of the ADF harness (Only for the ADF equipped).
- 6) Remove the ADF harness (Only for the ADF equipped).
- 7) Remove the reader rear cover.
- 8) Remove the scanner motor.
 - Connector [2] 1 pc.
 - Screw [3] 2 pcs.
 - Spring [4] 1 pc.



F-4-48

4.4.4 Contact sensor

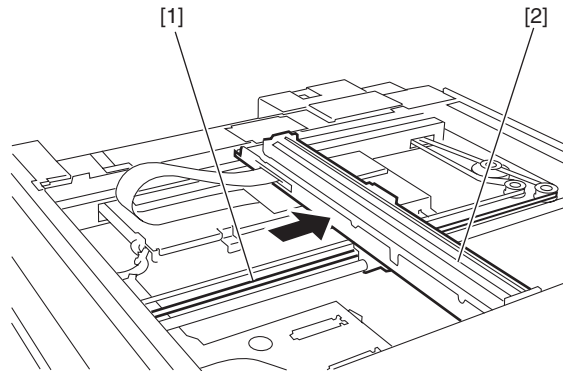
4.4.4.1 Removing the Contact Image Sensor (CIS)

MEMO:

Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

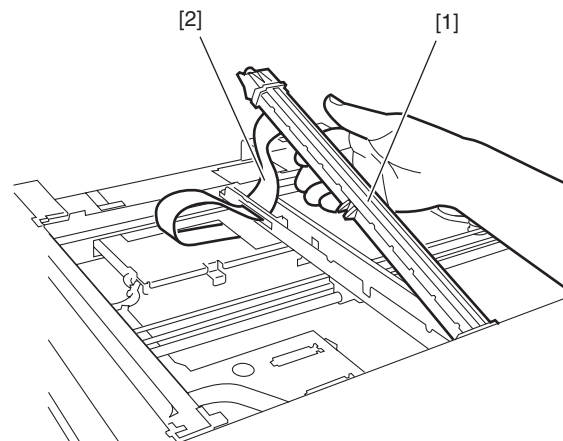
- 1) Remove the rear cover.
- 2) Remove the left cover (rear).
- 3) Remove the copyboard cover (When the ADF is equipped, open the ADF).
- 4) Remove the small cover.
- 5) Disconnect the ground cable of the ADF harness (Only for the ADF equipped).
- 6) Remove the ADF harness (Only for the ADF equipped).
- 7) Remove the reader rear cover.
- 8) Remove the copyboard glass.

- 9) Pull the drive belt (front) [1] in the direction of the arrow to move the contact sensor [2] to the position shown below.



F-4-49

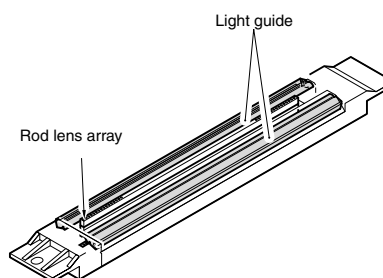
- 10) Remove the rear side of the contact sensor [1] from the carriage.
11) Disconnect the flexible cable [2], and then remove the contact sensor [1].



F-4-50



When removing or installing the contact sensor unit, take care not to touch the light guide and rod lens array.



F-4-51

4.4.4.2 Procedure after Replacing the CIS

After replacing the contact image sensor (CIS), go through the following steps to perform inter-channel output correction:

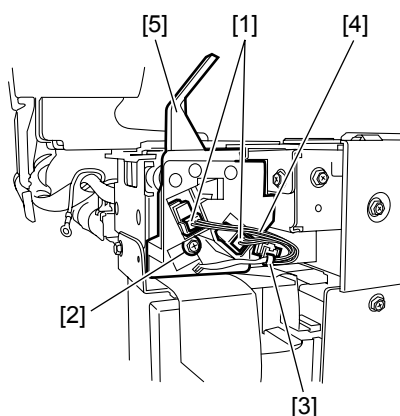
- 1) Enter the service mode.
- Sequentially press the Additional Functions, # key on the operation panel.
- 2) Using the upper/lower arrow keys on the operation panel, select "Test".
- 3) Press the OK key.
- 4) Using the upper/lower arrow keys on the operation panel, select "Scanner test".
- 5) Press the OK key.
- 6) Using the upper/lower arrow keys on the operation panel, select "CS Output Test".
- 7) Press the OK key.
- 8) Select "Yes" and then press the OK key.

After completion of the above steps, contact sensor output correction will be performed and parameters will be set automatically.

4.4.5 Copyboard Cover Open/Close Sensor

4.4.5.1 Removing the Copyboard Cover Open/Close Sensor (Front/Rear)

- 1) Remove the rear cover.
- 2) Remove the left cover (rear).
- 3) Remove the copyboard cover (When the ADF is equipped, open the ADF).
- 4) Remove the small cover.
- 5) Disconnect the ground cable of the ADF harness (Only for the ADF equipped).
- 6) Remove the ADF harness (Only for the ADF equipped).
- 7) Remove the reader rear cover.
- 8) Disconnect the two connectors [1], and then remove the screw [2].
- 9) Remove the reusable band [3], and then remove the harness [4] from the sensor mount.
- 10) Remove the sensor mount [5].
- 11) Remove the sensor from the sensor mount.



F-4-52

4.4.6 Contact Sensor HP Sensor

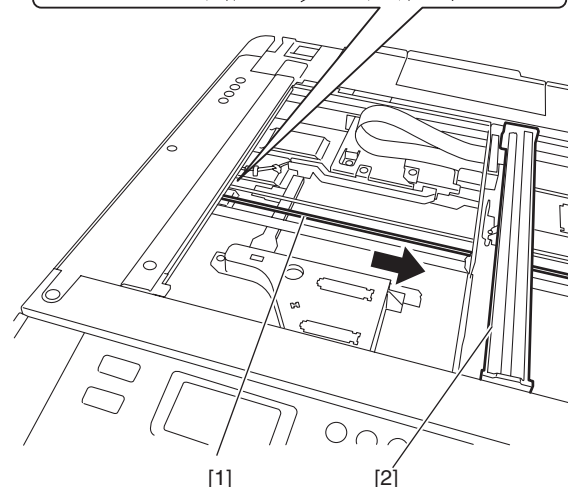
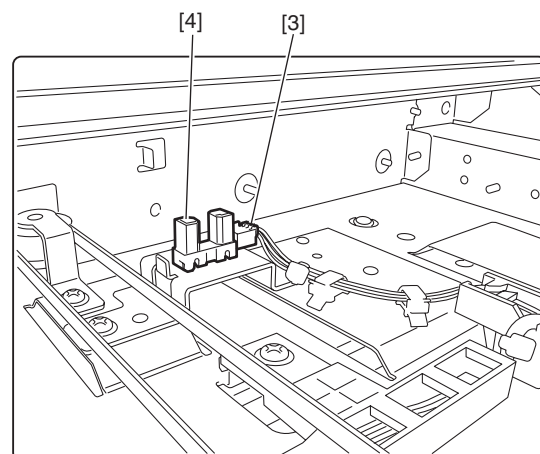
4.4.6.1 Removing the Contact Sensor HP Sensor (When the ADF is not installed)

MEMO:

Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

- 1) Remove the copyboard glass cover.
- 2) Remove the copyboard glass.

- 3) Pull the drive belt (front) [1] in the direction of the arrow to move the contact sensor [2] to the center.
- 4) Remove the connector [3], and then remove the contact sensor HP sensor [4].



F-4-53

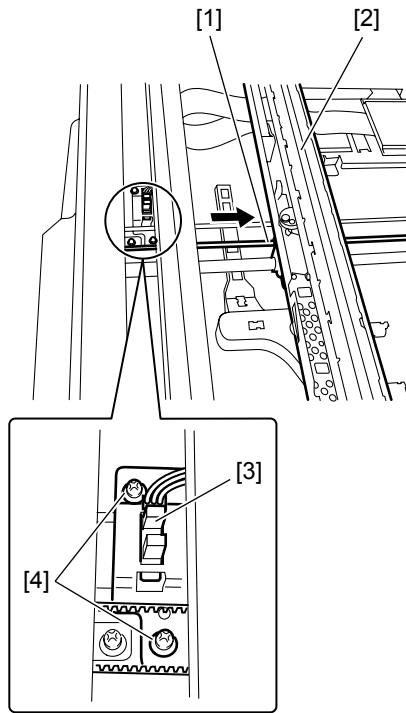
4.4.6.2 Removing the Contact Sensor HP Sensor (When the ADF is installed)

MEMO:

Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

- 1) Open the ADF.
- 2) Remove the copyboard glass.
- 3) Remove the ADF reading glass.

- 4) Pull the drive belt (front) [1] in the direction of the arrow to move the contact sensor [2] to the center.
- 5) Remove the contact sensor HP sensor [3] together with the mount.
 - Screws [4] 2pcs.
- 6) Remove the contact sensor HP sensor.

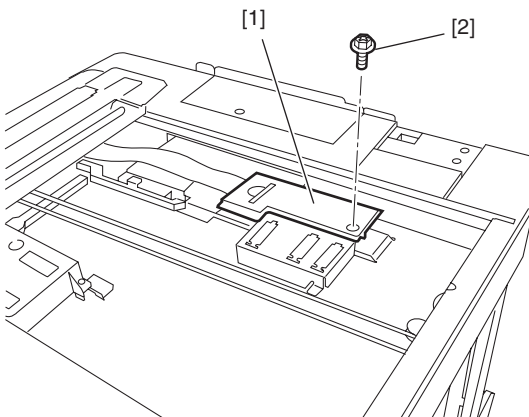


F-4-54

4.4.7 Original Size Sensor

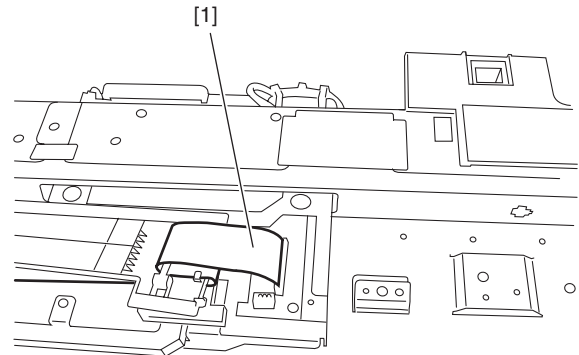
4.4.7.1 Removing the Original Sensor (Vertical Scan Direction) (When the original size detection sensor is equipped for BOOK mode)

- 1) Open the copyboard glass cover or ADF.
- 2) Remove the copyboard glass.
- 3) Remove the cover [1].
 - Screw [2] 1 pc.



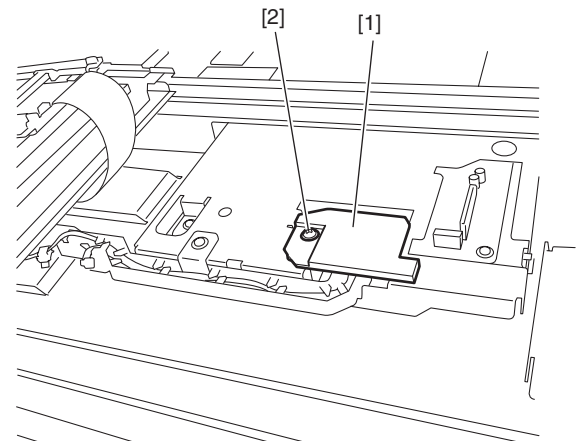
F-4-55

- 4) Remove the flexible cable [1] from the reader controller PCB.



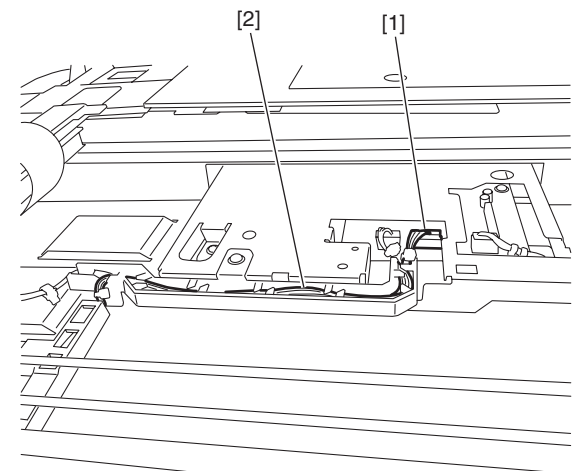
F-4-56

- 5) Remove the cover [1].
 - Screw [2] 1 pc.



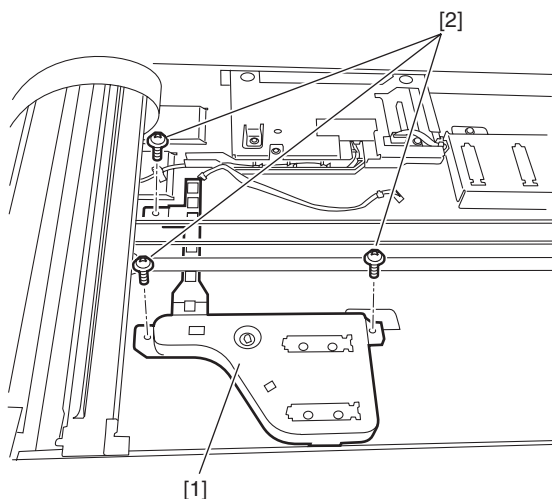
F-4-57

- 6) Pull the drive belt (front) left direction to move the contact sensor to the left.
- 7) Remove the connector [1], and then remove the harness [2] from the harness guide.



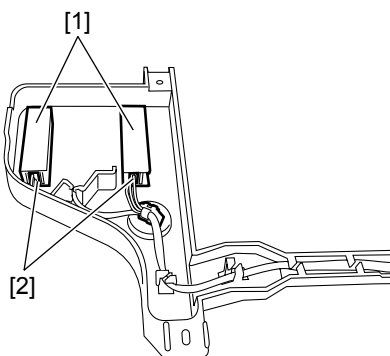
F-4-58

- 8) Remove the original size sensor (Vertical scan direction) [1] together with them mount.
- Screws [2] 3 pcs.



F-4-59

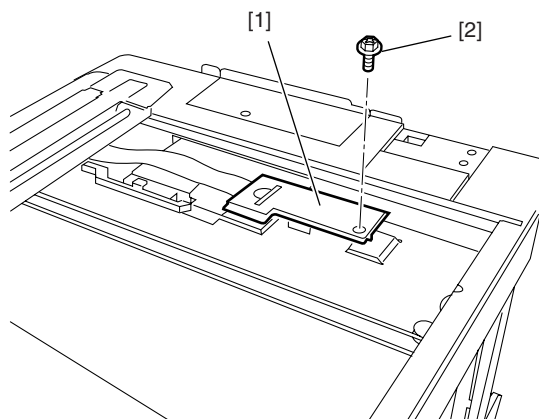
- 9) Remove the original size sensor (Vertical scan direction) [1].
- Connectors [2] 2 pcs.



F-4-60

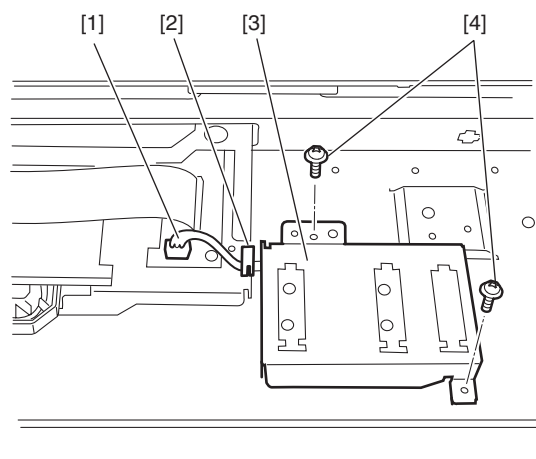
4.4.7.2 Removing the Original Sensor (Horizontal Scan Direction) (When the original size detection sensor is equipped for BOOK mode)

- 1) Open the copyboard glass cover or ADF.
- 2) Remove the copyboard glass.
- 3) Remove the cover [1].
- Screw [2] 1 pc.



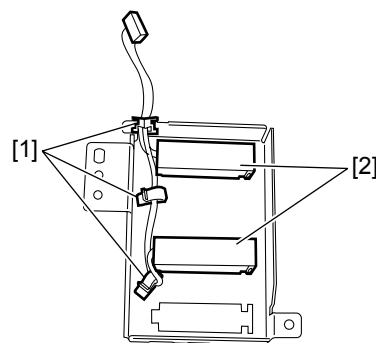
F-4-61

- 4) Remove the connector [1] from the reader controller PCB, and then remove the harness from the edge saddle [2].
- 5) Remove the original size sensor (horizontal scan direction) [3] together with them mount.
- Screws [4] 2 pcs.



F-4-62

- 6) Remove the harness from the edge saddle/clamp [1], and then disconnect the connector.
- 7) Remove the original size sensor [2].



F-4-63

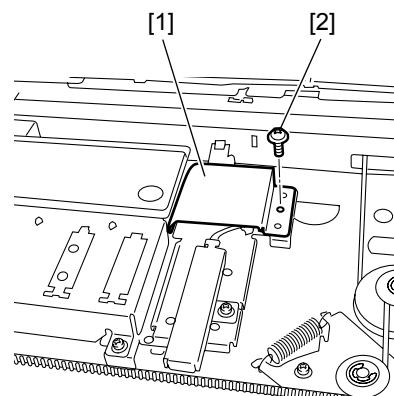
4.4.8 Reader Heater (option)

4.4.8.1 Removing the Reader Heater (Right)

MEMO:

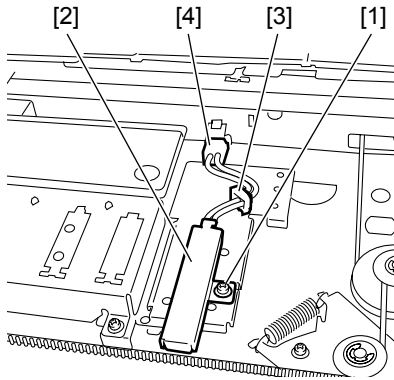
Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

- 1) Open the copyboard cover (or ADF).
- 2) Remove the copyboard glass.
- 3) Remove the heater cover [1].
- Screw [2] 1 pc.



F-4-64

- 4) Remove the screw [1].
 - 5) Remove the reader heater (right) [2].
- Wire saddle [3] 1 pc.
 - Connector [4] 1 pc.



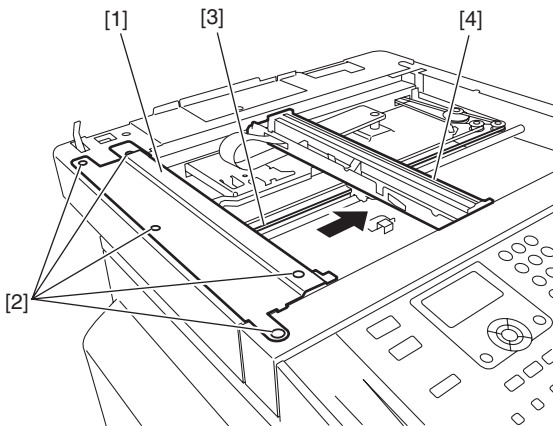
F-4-65

4.4.8.2 Removing the Reader Heater (Left) (When the ADF is not installed)

MEMO:

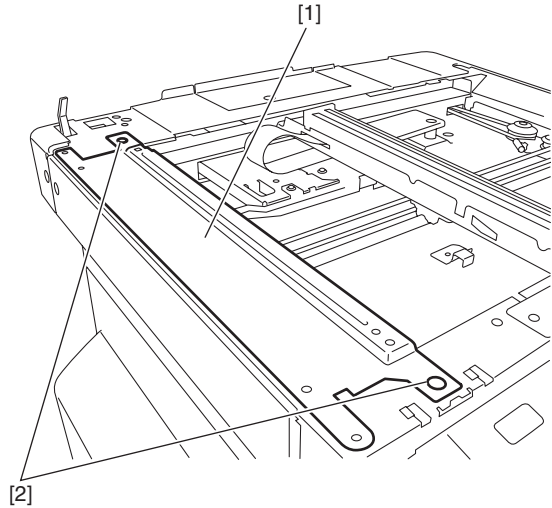
Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

- 1) Open the copyboard cover.
 - 2) Remove the reader front cover.
 - 3) Remove the cover [1].
- Screws [2] 5 pcs.
- 4) Pull the drive belt (front) [3] in the direction of the arrow to move the contact sensor [4] to the center.



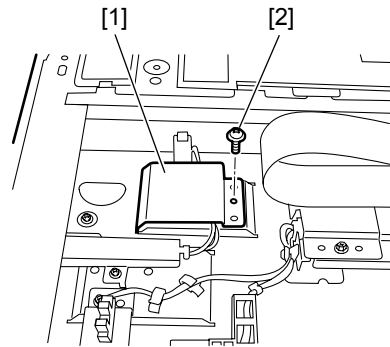
F-4-66

- 5) Remove the metal plate [1].
- Screws [2] 2 pcs.



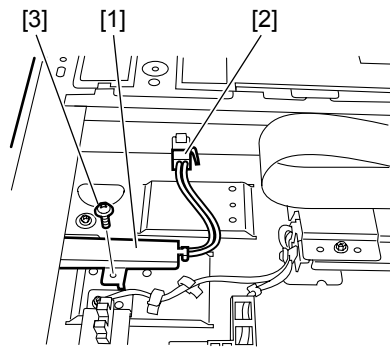
F-4-67

- 6) Remove the heater cover [1].
- Screw [2] 1 pc.



F-4-68

- 7) Remove the reader heater (left) [1].
- Connector [2] 1 pc.
 - Screw [3] 1 pc.



F-4-69

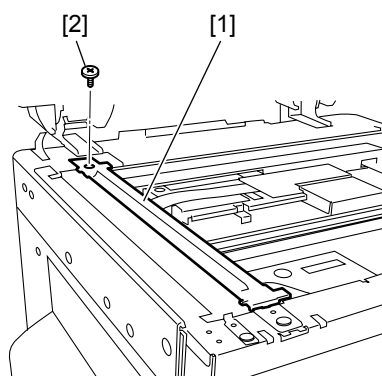
4.4.8.3 Removing the Reader Heater (Left) (When the ADF is installed)

MEMO:

Illustrations of this procedure are figured the document size sensor equipped model, but procedure is same as document size sensors are not equipped model.

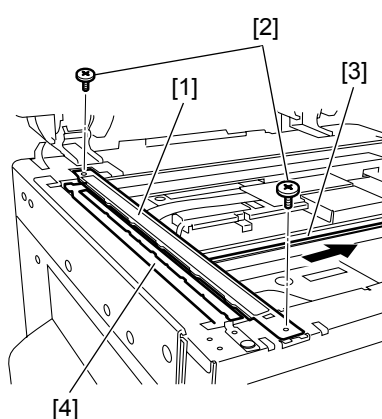
- 1) Open the ADF.
- 2) Remove the reader front cover.
- 3) Remove the glass retainer.
- 4) Remove the ADF reading glass.

- 5) Remove the jump board [1].
 - Screw [2] 1 pc.



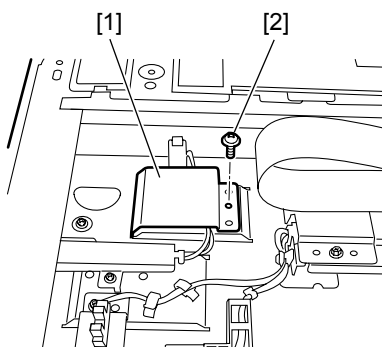
F-4-70

- 6) Remove the stream reading glass stay [1].
 - Screws [2] 2 pcs.
- 7) Pull the drive belt (front) [3] in the direction of the arrow to move the contact sensor [4] to the center.



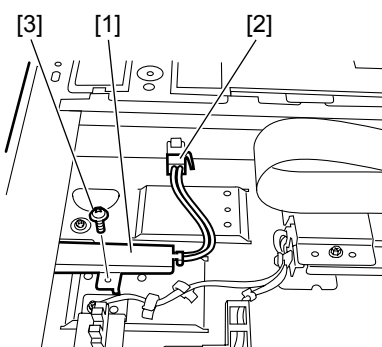
F-4-71

- 8) Remove the heater cover [1].
 - Screw [2] 1 pc.



F-4-72

- 9) Remove the reader heater (left) [1].
 - Connector [2] 1 pc.
 - Screw [3] 1 pc.



F-4-73

Chapter 5 Laser Exposure

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5.1 Construction

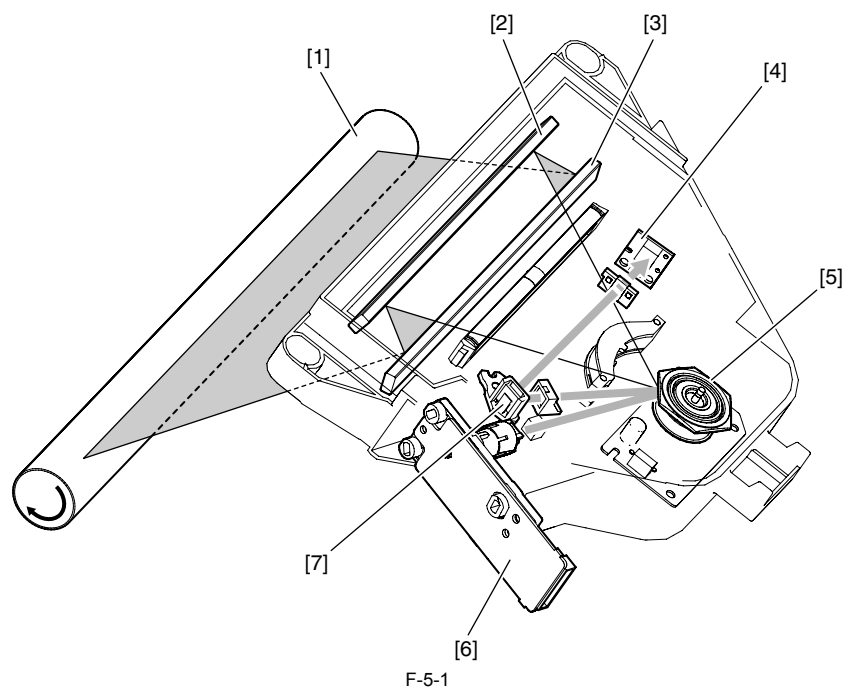
5.1.1 Overview

The laser scanner unit consists of a laser driver, scanner motor, and others. It is controlled by the signals from the DC controller PCB. The laser driver operates the laser diode to emit light in response to the laser control signals and video signals from the DC controller PCB. Laser beams are emitted, through a collimator lens and cylindrical lens, to the hexahedral mirror rotating at a constant speed. Laser beam reflected by the hexahedral mirror focus on the photoconductor drum via the imaging lens and loop-back mirrors installed before the hexahedral mirror. When the hexahedral mirror rotates at a constant speed, the photoconductor drum is scanned with laser beams at a constant speed. When the photoconductor drum rotates at a constant speed and the photoconductor is scanned with laser beams at a constant speed, a latent image is formed on the photoconductor drum.

5.1.2 Specifications and Control Mechanism

Laser beam	
Number of laser beams	1 beams
Scanner Motor	
Type of motor	DC brushless motor
Rotation control	Constant speed rotaion control
Polygon Mirror	
Number of facets	6 facets (40-mm dia.)
Control Mechanism	
Synchronous control	Horizontal (main scan) synchronization control
Light intensity control	Automatic photocurrent control (APC)
Others	Laser emission ON/OFF control
	Laser scanner motor control
	Laser shutter control

5.1.3 Main Components



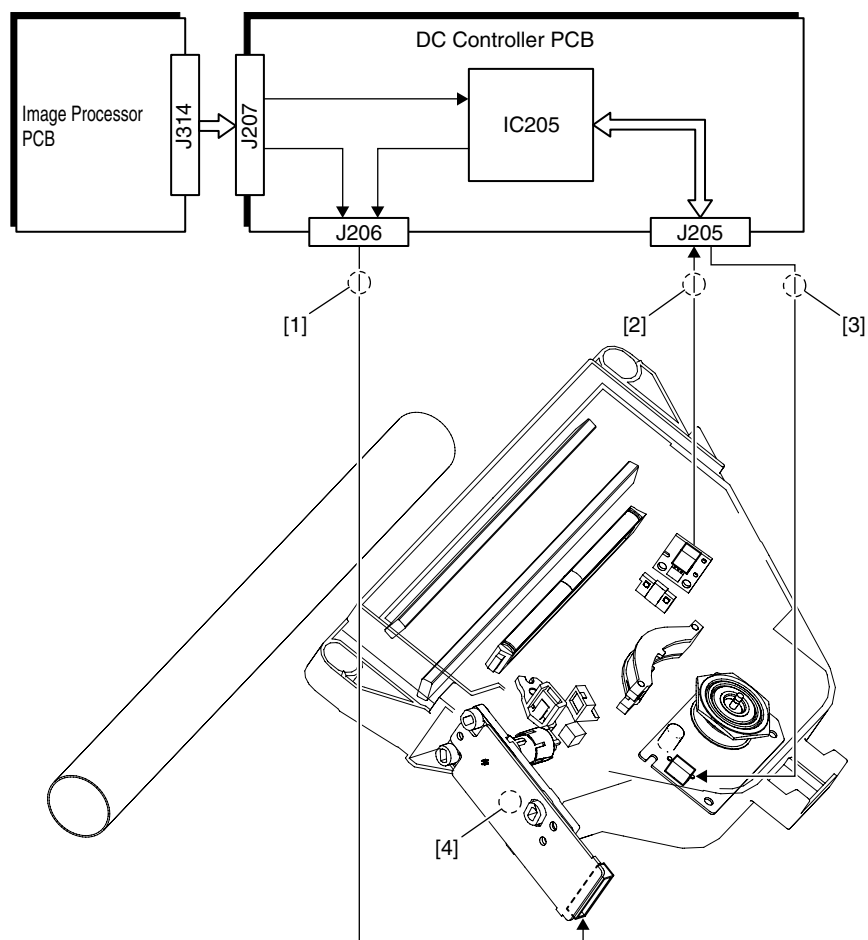
Name	Function
[1] Photoconductive drum	Receives laser beams to form a latent image.
[2] Laser mirror 1 (loop-back mirror)	Reflects a laser beam toward laser mirror 2.
[3] Laser mirror 2 (loop-back mirror)	Reflects a laser beam toward the photoconductor drum.
[4] BD PCB	Generates a BD signal.
[5] Polygonal mirror	Scans the photoconductive drum with a laser beam in the main scan direction.
[6] Laser unit	Emits laser beams.
[7] BD mirror	Reflects a laser beam toward the BD PCB.

5.1.4 Control System Configuration

The laser exposure system is controlled mainly by the IC5 on the DC controller PCB.

Main control types are as follows:

- [1] Laser emission ON/OFF control/video signal input
- [2] Horizontal synchronization control
- [3] Laser scanner motor control
- [4] Automatic photocurrent control (APC)



5.2 Various Controls

5.2.1 Controlling the Laser Activation Timing

5.2.1.1 Laser Emission ON/OFF Control

The purpose of this control is to turn ON/OFF the laser diode (LD) in response to video signals.

The DC controller PCB sends laser control signals (CNTRL0, CNTRL1, and CNTRL2), which are used to switch between laser driver operation modes, to the laser driver IC along with video signals (VDO1, /VDO1). The laser driver IC controls laser emission (ON/OFF) according to the combination of CNTRL0, CNTRL1, and CNTRL2 signals.

The following table shows combinations of laser control signals (CNTRL0, CNTRL1, and CNTRL2).

Laser control signal			Laser status	Description
CTL2	CTL1	CTL0	Laser A	
0	0	0	OFF	Laser control OFF
0	0	1	ON	Laser beams can be emitted in response to video signals.
0	1	0	ON	APC over laser
0	1	1	OFF	Forced stop of laser emission

5.2.1.2 Horizontal Synchronization Control

The purpose of this control is to adjust the position where scanning starts in the horizontal direction (main scan direction) of the image with reference to the horizontal synchronization signal (/BD) sent from the BD sensor in the laser scanner. The horizontal synchronization signal is also used as a vertical synchronization signal to recognize the leading edge of paper. Upon detection of arrival of the fed paper at the prescribed position, the DC controller PCB starts sending the /BD signal to the image processor PCB. The image processor PCB recognizes the leading edge of paper at the start of the continuous /BD signal; it recognizes the trailing edge of paper at the end of the continuous /BD signal.

5.2.2 Controlling the Intensity of Laser Light

5.2.2.1 Automatic Photocurrent Control (APC)

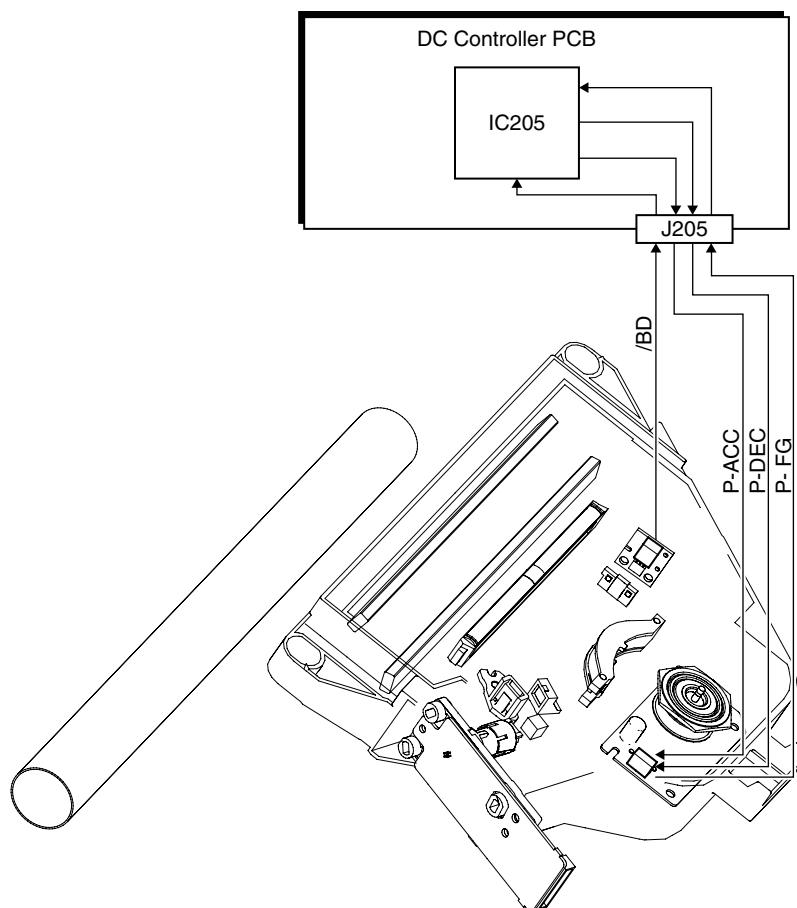
The purpose of this control is to monitor the laser beam emitted to the photodiode on the laser driver circuit board in order to adjust the light quantity.

5.2.3 Controlling the Laser Scanner Motor

5.2.3.1 Laser Scanner Motor Control

From the moment the laser scanner motor starts to the moment it reaches the target revolution speed, the revolution speed is controlled with reference to the laser scanner motor revolution speed signal (FG signal). After the target revolution speed is reached, the revolution speed is controlled so that the BD cycle and the laser scanner motor revolution cycle are in the same phase.

The revolution speed of the laser scanner motor is controlled using an acceleration signal (ACC signal) and deceleration signal (DEC signal).

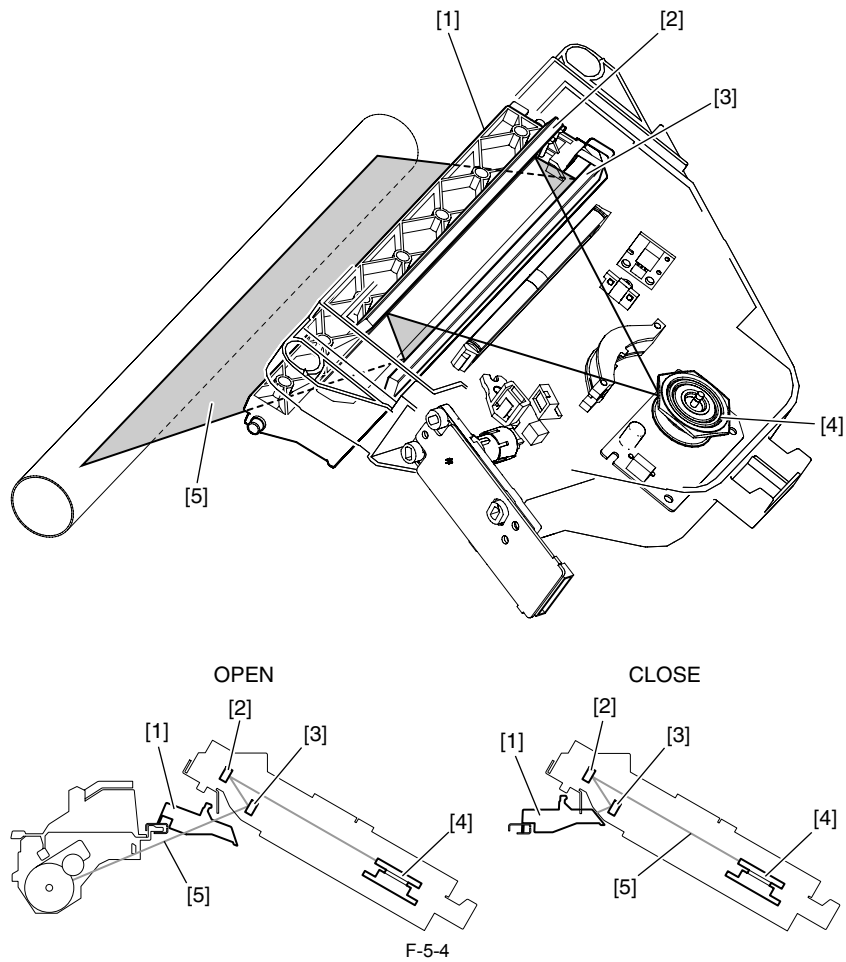


F-5-3

5.2.4 Controlling the Laser Shutter

5.2.4.1 Laser Shutter Control

When the drum unit is drawn out, the interlocked laser shutter moves down, shutting off the laser beam path. When opening of the front cover or left door is detected, the laser scanner motor and laser outputs turn off.



Laser shutter control

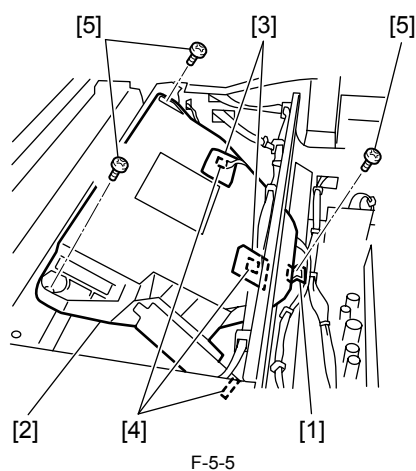
- [1] Laser shutter
- [2] Laser mirror 1
- [3] Laser mirror 2
- [4] Polygonal mirror
- [5] Laser beam

5.3 Parts Replacement Procedure

5.3.1 Laser Scanner Unit

5.3.1.1 Removing the Laser Scanner Unit

- 1) Remove the rear cover.
- 2) Open the front cover.
- 3) Remove the right cover (lower).
- 4) Remove the delivery tray.
- 5) Remove the metal plate [1] and laser scanner unit [2].
 - Sponges [3] 2 pcs.
 - Connectors [4] 3 pcs.
 - Screws [5] 3 pcs.



Chapter 6 Image Formation

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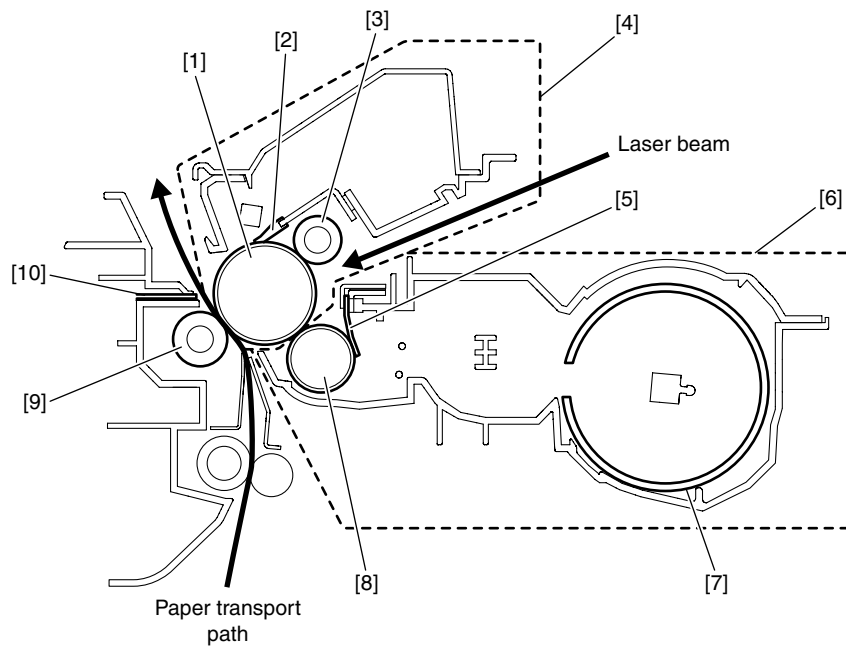
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6.1 Construction

6.1.1 Specifications of Image Formation System

Photosensitive drum	
Drum type	OPC drum
Drum diameter	30mm
Cleaning mechanism	Cleaning blade
Processing speed	106.81mm/sec
Primary charging	
Charging method	Roller charging (AC + DC)
Charging roller diameter	14mm
Transfer charging	
Charging method	Roller charging (DC)
Charging roller diameter	16mm
Developing assembly	
Developing cylinder diameter	20mm
Developing method	Dry, 1-component jumping (AC + DC)
Toner	1-component, negative toner
Remaining toner level detection	Remaining toner level sensor (in developing assembly)
Others	
Separation method	Static Eliminator + Curvature separation
Waste toner	Collected in the drum cartridge.

6.1.2 Major Components of Image Formation System



F-6-1

- [1] Photosensitive drum
- [2] Cleaner blade
- [3] Primary charging roller
- [4] Drum unit
- [5] Blade
- [6] Developing assembly
- [7] Toner bottle
- [8] Developing cylinder
- [9] Transfer charging roller
- [10] Static eliminator

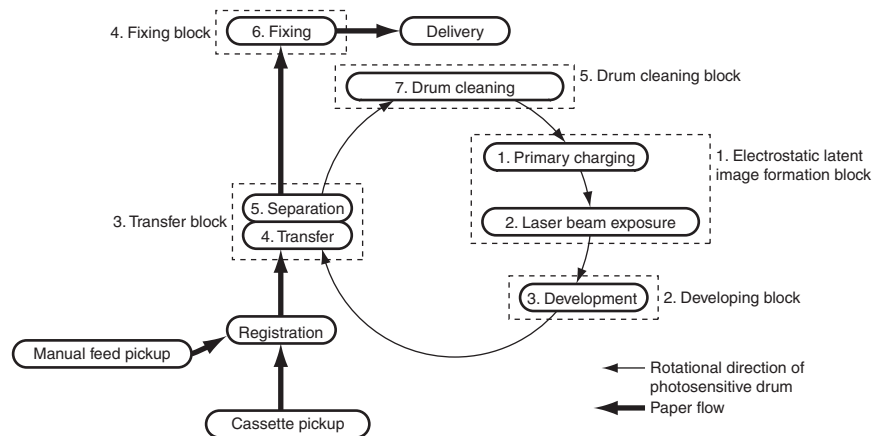
6.2 Image Formation Process

6.2.1 Image Formation Process

The image formation system of this machine consist of a primary charging roller, a drum unit integrated with a drum cleaner, a toner bottle, a developing assembly, a transfer charging roller, and so on.

The image formation process of this machine is composed of the following five blocks (7 steps):

- [1] Electrostatic latent image formation block
 - Step 1: Primary charging (AC & Minus DC)
 - Step 2: Laser exposure
- [2] Developing block
 - Step 3: Developing (AC & Minus DC bias)
- [3] Transfer block
 - Step 4: Transfer (Plus DC)
 - Step 5: Separation (Minus DC)
- [4] Fixing block
 - Step 6: Fixing (Minus DC bias)
- [5] Drum cleaning block
 - Step 7: Drum cleaning



F-6-2

6.3 Basic Sequence

6.3.1 Basic Sequence of Operation

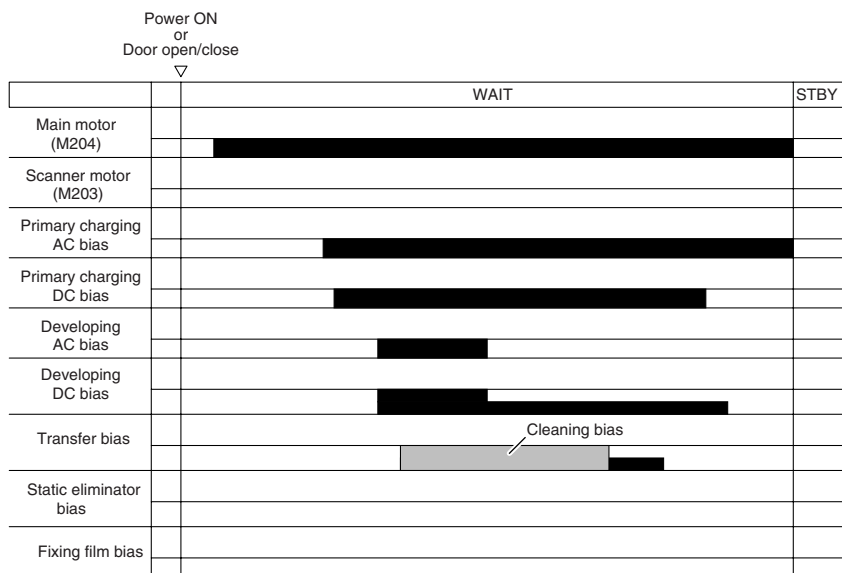
The basic sequence of operation of this machine is explained below.

For more details, refer to the explanation of various types of bias control.

- At power-on (when the door is opened/closed)

The main motor starts rotating after completion of the error check.

To prevent fogging of the drum, the developing DC bias voltage is held higher than usual during application of the developing AC bias voltage.

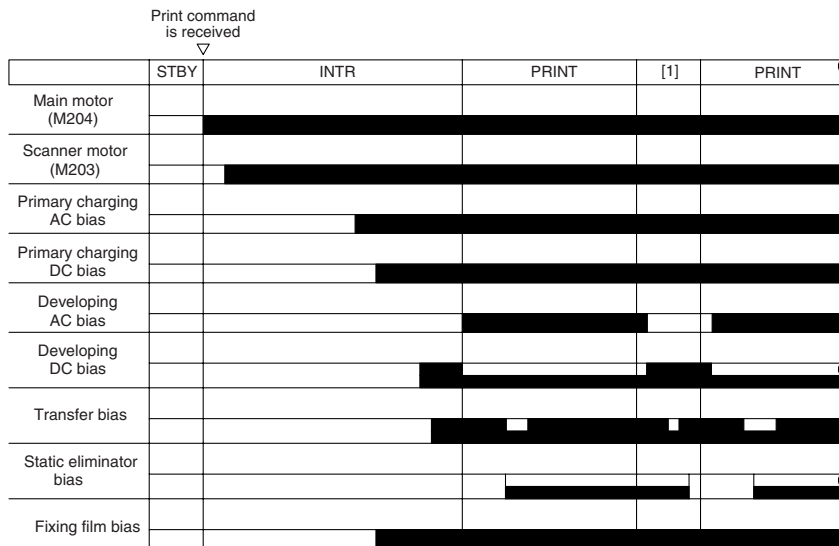


F-6-3

- During printing

To prevent fogging of the drum, the developing DC bias is held higher than usual except during image formation.

To prevent the toner remaining on the photosensitive drum from sticking to the transfer charging roller, the transfer roller bias which is lower than that applied during printing is applied at the prescribed timing.



F-6-4

[1] Between sheets

- At the end of printing
To prevent fogging of the drum, the developing DC bias is held higher than usual except during image formation.
To prevent the toner remaining on the photosensitive drum from sticking to the transfer charging roller, the transfer roller bias which is lower than that applied during printing the is applied at the prescribed timing.



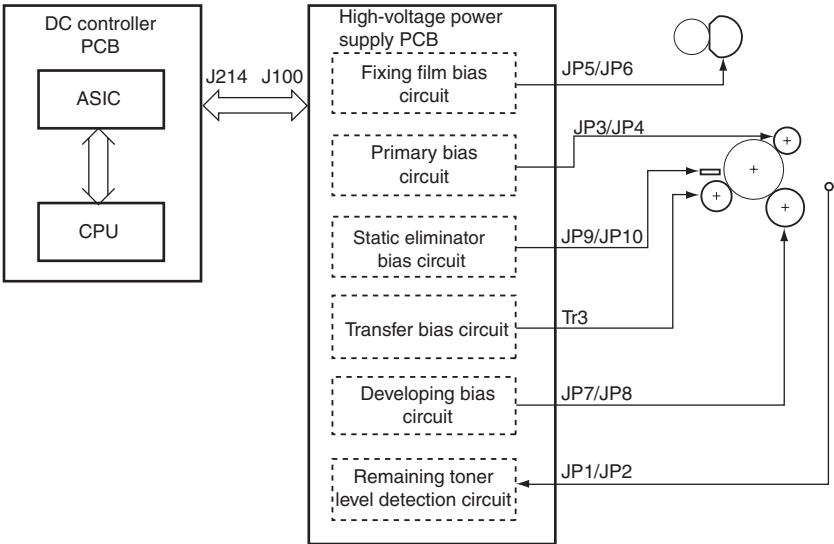
F-6-5

[1] Time until post-rotation

6.4 Driving and Controlling the High-Voltage System

6.4.1 Outline

The voltage generated by superimposing the DC voltage over the AC voltage is applied to the primary charging roller and developing cylinder, and a positive or negative DC voltage is applied to the transfer charging roller according to the instruction of the CPU on the DC controller PCB.
The primary DC bias and developing DC bias are changed according to the image density information sent from the image processor PCB, thus adjusting the image density.
A negative DC voltage is applied to the electrostatic discharge needle and fixing film.



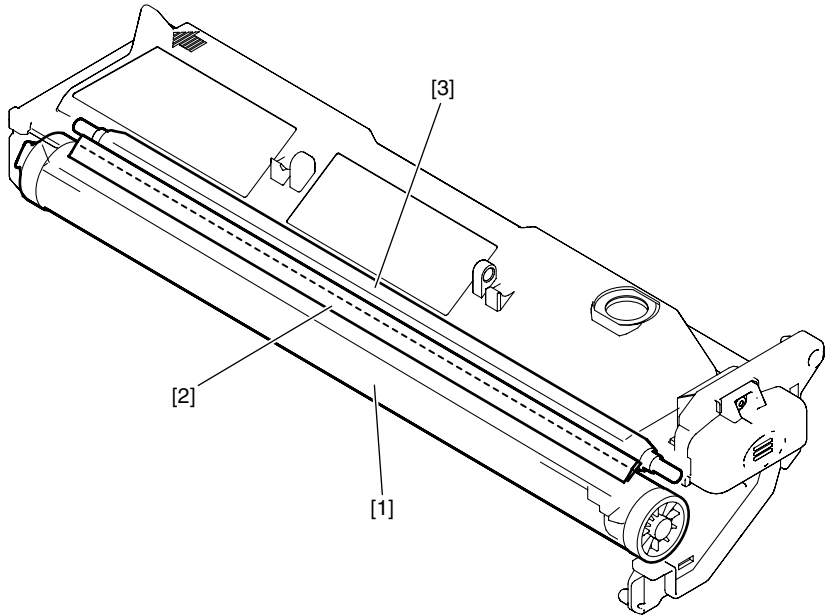
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6.5 Drum Unit

6.5.1 Outline of the Drum Unit

6.5.1.1 Outline

Major components of the drum unit are as follows:



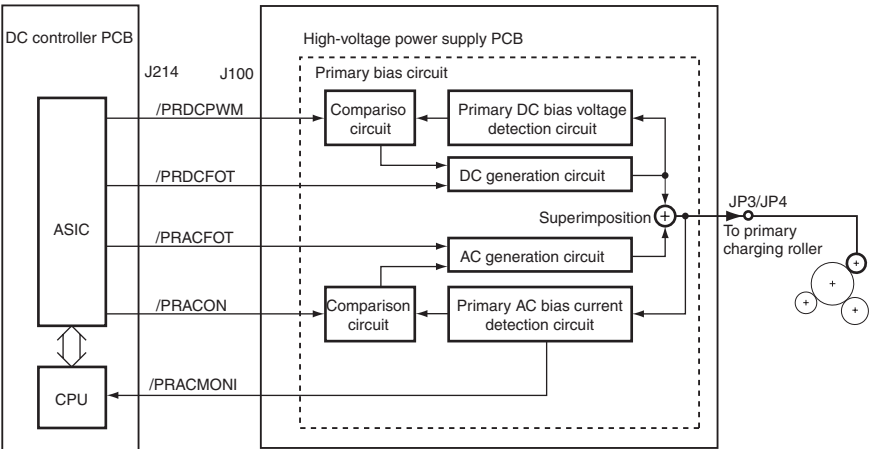
F-6-7

- [1] Photosensitive drum
- [2] Cleaning blade
- [3] Primary charging roller

6.5.2 Charging Mechanism

6.5.2.1 Primary Charging Bias Control

With the primary charging bias method, the drum is charged directly by the charging roller. In addition to a DC bias, an AC bias is applied to the primary charging roller to stabilize charging. When the drum is charged, both AC and DC biases are applied. When the drum is discharged, only the AC bias is applied. The ASIC on the DC controller PCB outputs the primary bias drive signal (/PRACFOT), primary AC bias ON/OFF signal (/PRACON), primary DC bias drive signal (/PRDCFOT), and primary DC bias output level signal (/PRDCPWM) to apply the voltage generated by superimposing the primary AC bias over the primary DC bias to the primary charging roller. The primary AC bias is detected by the primary AC bias current detection circuit, and is fed back to the AC generator circuit via the comparison circuit. The primary DC bias is detected by the primary DC bias current detection circuit, and is fed back to the DC generator circuit via the comparison circuit. Thus, this machine controls the primary DC bias voltage. The primary DC bias voltage changes with the developing DC bias voltage according to the image density information sent from the image processor PCB.

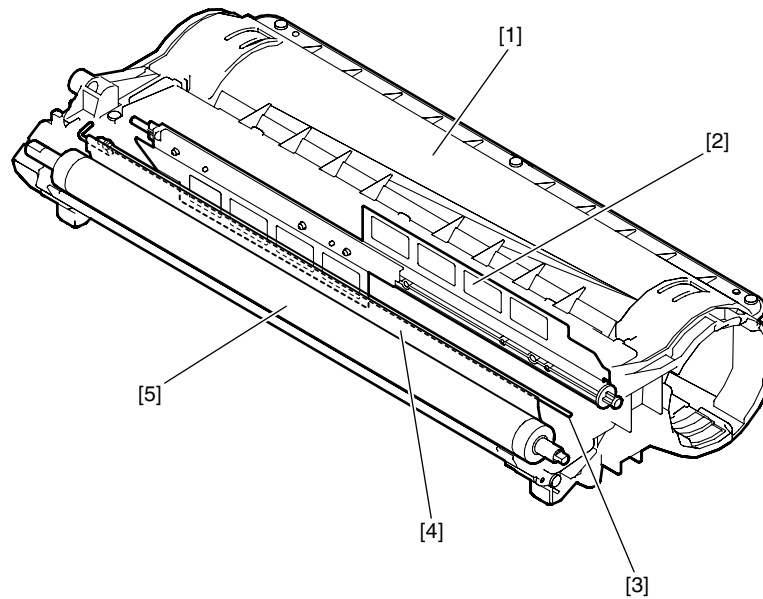


F-6-8

6.6 Developing Unit

6.6.1 Outline

Major components of the developing assembly are as follows:



F-6-9

- [1] Developing Assembly
- [2] Stirring plate
- [3] Antenna rod
- [4] Developing blade
- [5] Developing cylinder

6.6.2 Developing Bias Control

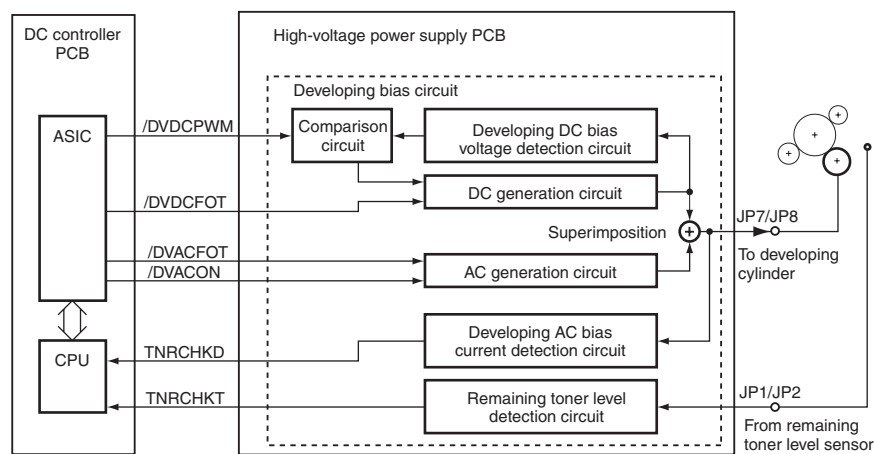
A DC bias and an AC bias are applied to the developing cylinder.

The ASIC on the DC controller PCB outputs the developing AC bias drive signal (/DVACFOT), developing AC bias ON/OFF signal (/DVACON), developing DC bias drive signal (/DVDCFOT), and developing DC bias output level signal (/DVDCPWM) to apply the voltage generated by superimposing the developing AC bias over the developing DC bias to the developing cylinder.

To prevent fogging of the drum, a DC bias higher than usual is applied except during image formation and when the developing AC bias is applied for warm-up rotation.

The developing DC bias is detected by the developing DC bias detection circuit, and is fed back to the DC generation circuit via the comparison circuit, thus controlling the DC bias voltage. The developing DC bias voltage changes with the primary DC bias voltage according to the image density information sent from the image processor PCB.

The remaining toner level is detected during warm-up rotation and when the developing AC bias is applied for printing. The remaining toner level detection signal (TNRCHKT) sampled from the antenna (for remaining toner level check) in the developing assembly is compared with the reference signal (TNRCHKD) received from the developing bias detection circuit.



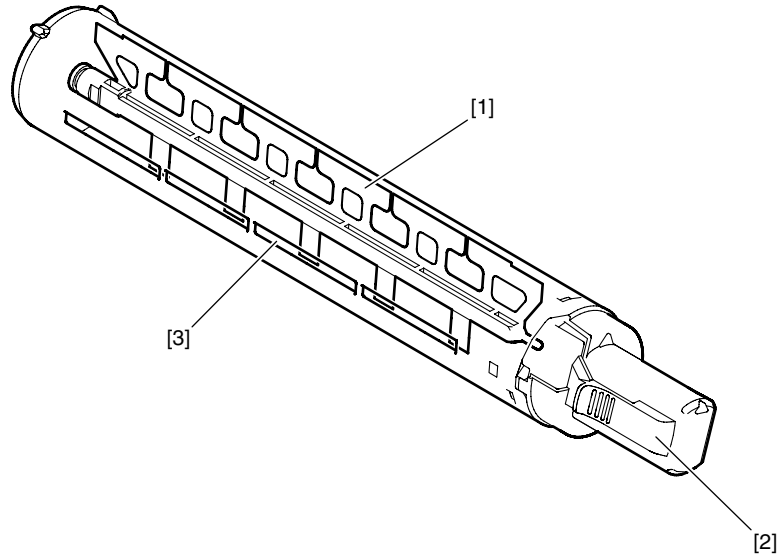
F-6-10

6.7 Toner Container

6.7.1 Outline

The structure of the toner bottle is shown below.

The toner bottle is charged with 1-component, insulating, magnetic toner. The stirring rod in the toner bottle is rotated by the mina motor to supply toner into the developing assembly through the toner supply port.



F-6-11

- [1] Stirring rod
- [2] Toner bottle lever
- [3] Toner supply port

6.8 Transfer Unit

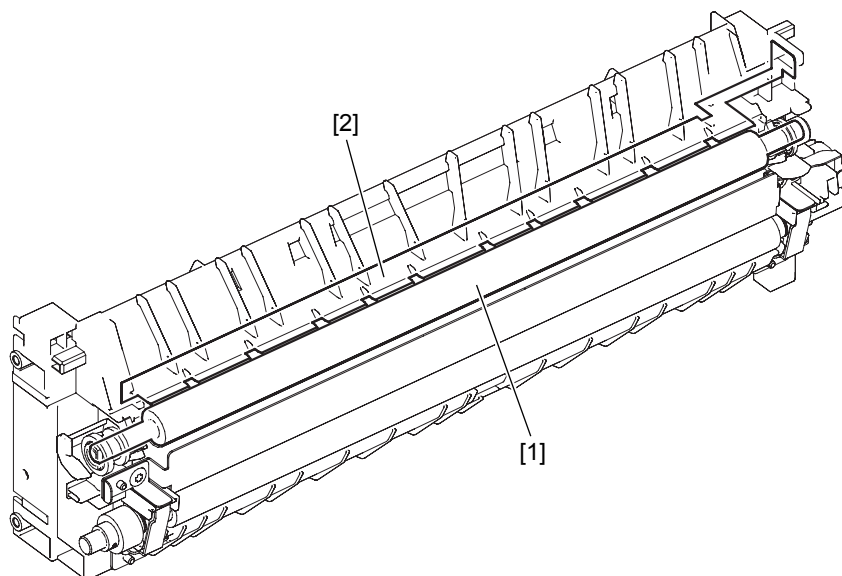
6.8.1 Outline of the Transfer Unit

6.8.1.1 Outline

The transfer unit consists of a transfer roller [1] and an static eliminator [2].

The transfer roller is driven by the photosensitive drum.

The static eliminator is biased to separate paper from the drum.

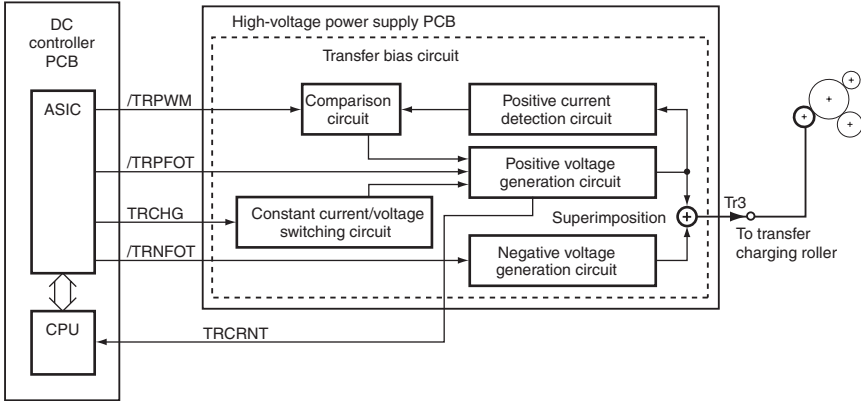


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6.8.2 Controlling the Transfer Bias

6.8.2.1 Transfer Roller Bias Control

A negative bias, sheet-to-sheet bias, or positive bias is applied to the transfer charging roller according to the type of sequence. The negative bias is applied at the prescribed timing to moves the toner from the transfer charging roller to the photosensitive drum for cleaning. The sheet-to-sheet bias is lower than that applied during printing and it is applied at the prescribed timing to prevent the toner remaining on the photosensitive drum from adhering to the transfer charging roller. The positive bias is applied to transfer toner images from the photosensitive drum to paper.

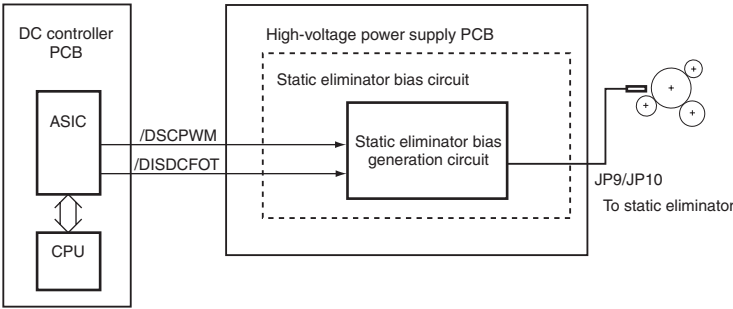


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6.8.3 Separation Mechanism

6.8.3.1 Static Eliminator Bias Control

Two types of biases, a high-output bias and a low-output bias, are applied to the static eliminator using the static eliminator bias drive signal (/DISDCFOT) and static eliminator bias output level signal (/DSCPWM) issued from the DC controller PCB according to the type of the print sequence, thus allowing the printing paper to separate easily from the photosensitive drum.



F-6-14

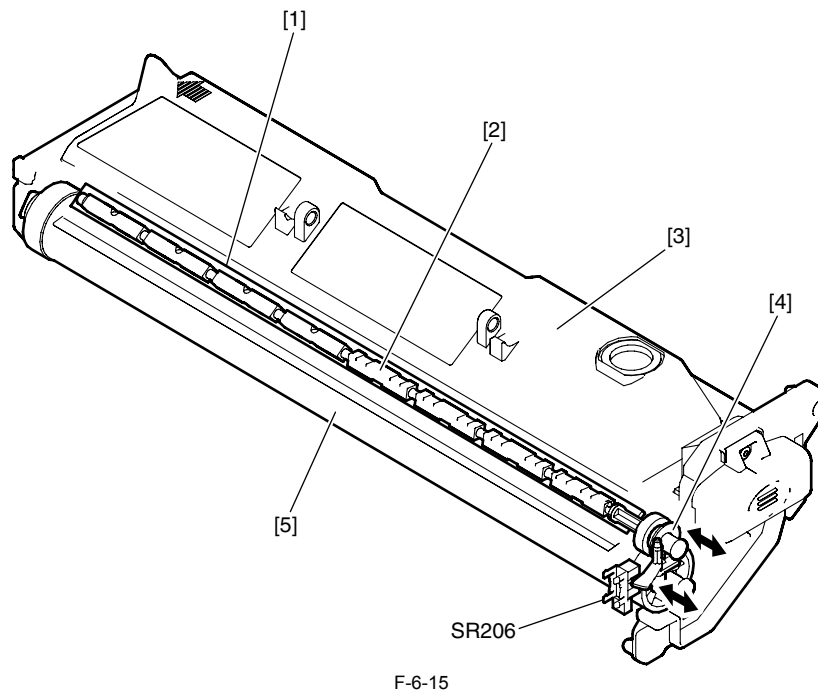
6.9 Photosensitive Drum Cleaning

6.9.1 Outline

Toner remaining on the photosensitive drum after image transfer is scraped by the photosensitive drum cleaner blade and is fed in the waste toner box.

6.9.2 Waste Toner Full Detection

The waste toner collected by the cleaner blade is fed to the waste toner box using the waste toner feed screw in the drum unit. A torque limiter is provided at the end of the waste toner feed screw. When the waste toner box is filled with waste toner, the torque limiter goes on to stop the waste toner feed screw. As a result, the sensor flag of the waste toner full sensor (SR206) is pushed intermittently, reporting the waste toner full condition to the DC controller PCB.



- [1] Cleaner blade
- [2] Waste toner stirring rod
- [3] Waste toner box
- [4] Torque limiter
- [5] Drum

MEMO:

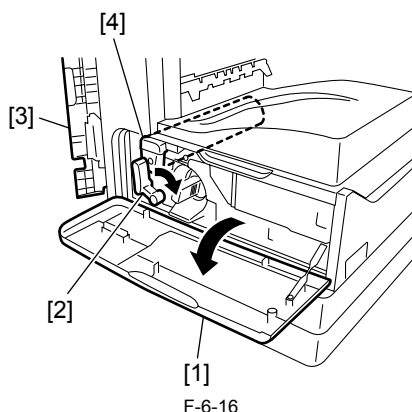
The waste toner box is capable of storing about 630 g of toner.

6.10 Parts Replacement Procedure

6.10.1 Drum Unit

6.10.1.1 Removing the Drum Unit

- 1) Open the front cover [1].
- 2) Turn the developing assembly locking lever [2] clockwise to open the left door [3].
- 3) Draw out the drum unit [4].

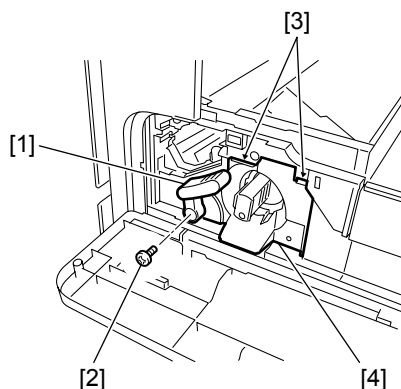


- When attaching or detaching the drum unit, open the left door fully to prevent the damage to the drum unit.
- To prevent exposure of the drum, cover the drum unit with a few sheets of paper and place it in a safe place.

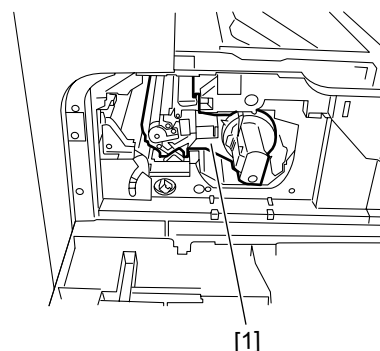
6.10.2 Developing Assembly

6.10.2.1 Removing the Developing Assembly

- 1) Open the front cover.
- 2) Turn the developing assembly locking lever clockwise to open the left door.
- 3) Draw out the drum unit.
- 4) Remove the rear cover.
- 5) Remove the right cover (lower).
- 6) Remove the delivery tray.
- 7) Remove the developing assembly locking lever [1].
- Screw [2] 1 pc.
- 8) Release the two hooks [3] (marked with snap-fit mark), and then remove the toner bottle cover [4].



- 9) Draw out the developing assembly [1].



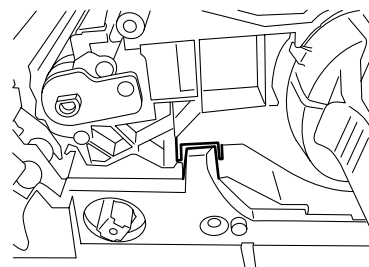
6.10.2.2 Precautions about Installation of Developing Assembly



When installing the developing assembly, follow the precaution given below.

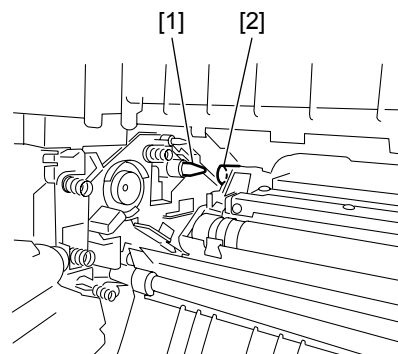
Front side

Fit the convex portion of the main body in the concave portion on the bottom of the developing assembly.



Rear side

Fit the pin [1] seen in the back of the main body in the support hole [2] provided at the back of the developing assembly.



6.10.2.3 Procedure after Replacing the Developing Assembly

<Going through the Developer Idling Mode>



After replacing the developing assembly, go through the following steps in the developing assembly idle rotation mode before installing the toner cartridge.

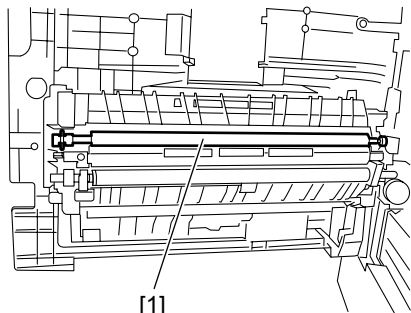
- 1) Plug the power cord into the outlet.
- 2) Open the front cover.
- 3) With the front cover open, turn on the main power switch.
- 4) When a message appears on the operation panel display, press the following keys to enter the service mode:
Additional Functions key > # key
- 5) Select "Service's Choice" using the arrow key, and then press the OK key.
- 6) Select "Printer Setting" using the arrow key, and then press the OK key.

- 7) Select "BitSwitch14" using the arrow key, and then press the OK key.
- 8) Select "SW-14-1" using the arrow key, and then press the OK key.
- 9) Select "On" using the arrow key, and then press the OK key.
- 10) Press the Reset key to exit the service mode.
- 11) Close the front cover. The machine will run in the developer idling mode for about 1 minute.
- 12) When the machine stops, the idling mode ends.
Install the toner cartridge following the above-mentioned procedure.

6.10.3 Transfer Charging Roller

6.10.3.1 Removing the Transfer Charging Roller

- 1) Open the left door.
- 2) Remove the transfer charging roller [1]



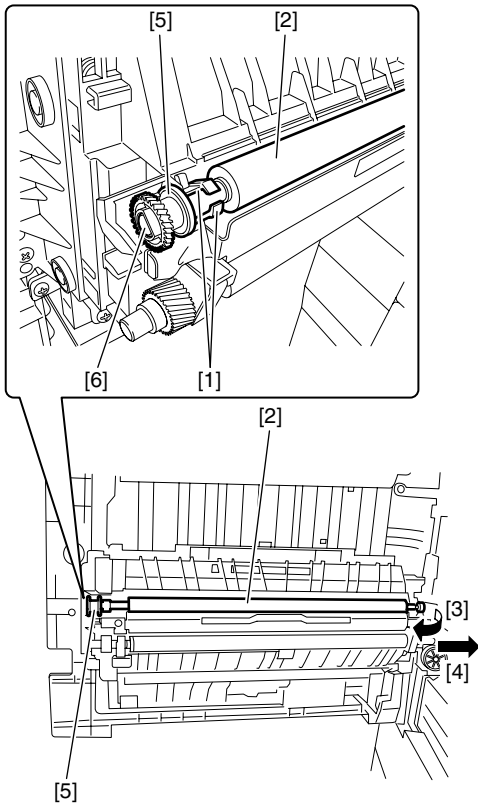
F-6-21



Do not touch the transfer charging roller surface.

MEMO:

The transfer charging roller bearing [1] could be the same shape as the figure below. If so, detach the transfer charging roller towards the arrow [3] and [4]. Gear [5] will come off when detaching the transfer charging roller. Be careful not to lose the gear [5]. When attaching the transfer charging roller, apply transfer charging roller D cut[6] to gear [5] D cut.



Chapter 7 Pickup/Feeding System

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7.1 Construction

7.1.1 Specifications/Configuration/Operation Methods

Functions and operation methods of the pickup/feeding system are as follows:

	Item	Function/Operation method
Pickup method	Cassette	Clow retard
	Multi manual feed tray	Duplo separation
Paper stack	Cassette	Plain Paper 300Sheets(64g/m2) 260Sheets(75g/m2) 250Sheets(80g/m2) 120Sheets(90g/m2)
	Multi manual feed tray	Plain paper Large 50Sheets(64g/m2)*1 Small 100Sheets(64g/m2) Large 50Sheets(75g/m2) Small 100Sheets(75g/m2) Large 50Sheets(80g/m2) Small 80Sheets(80g/m2) Large 50Sheets(90g/m2) Small 50Sheets(90g/m2) Thick Paper 50Sheets(105g/m2) 35Sheets(128g/m2) Label sheet 1Sheets OHP 50Sheets Envelope 10Sheets
Paper size Setting	Cassette	Set by user
	Multi manual feed tray	Set by user
Delivery option	Finisher-U2 Inner 2Way Tray-E2	
Pickup option	Cassette Feeding Module-J1*2/S1/S2*3 Cassette Feeding Module-K1*2/T1/T2*3	

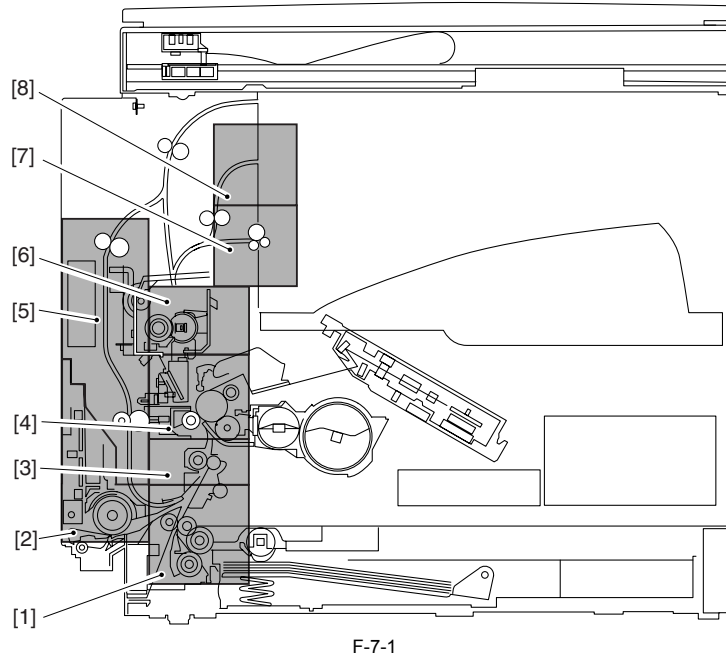
*1 Large:more than B4/LGL,Small:less than B4/LGL

*2 Option only for EUR

*3 Option only for CN

7.1.2 Locations of Main Units (When the duplex unit is not equipped)

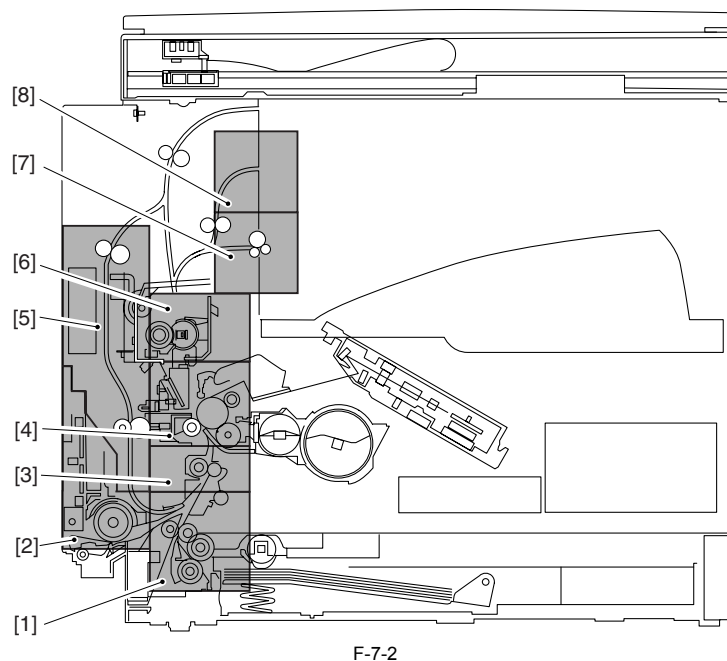
Locations of main units of the pickup/feeding system are shown below.



- [1] Pickup assembly
- [2] Manual feed pickup assembly
- [3] Registration roller
- [4] Transfer assembly
- [5] Duplex print paper feed assembly(option)*1
- [6] Fixing assembly
- [7] First delivery assembly
- [8] Second delivery assembly(option)

7.1.3 Locations of Main Units (When the duplex unit is equipped)

Locations of main units of the pickup/feeding system are shown below.

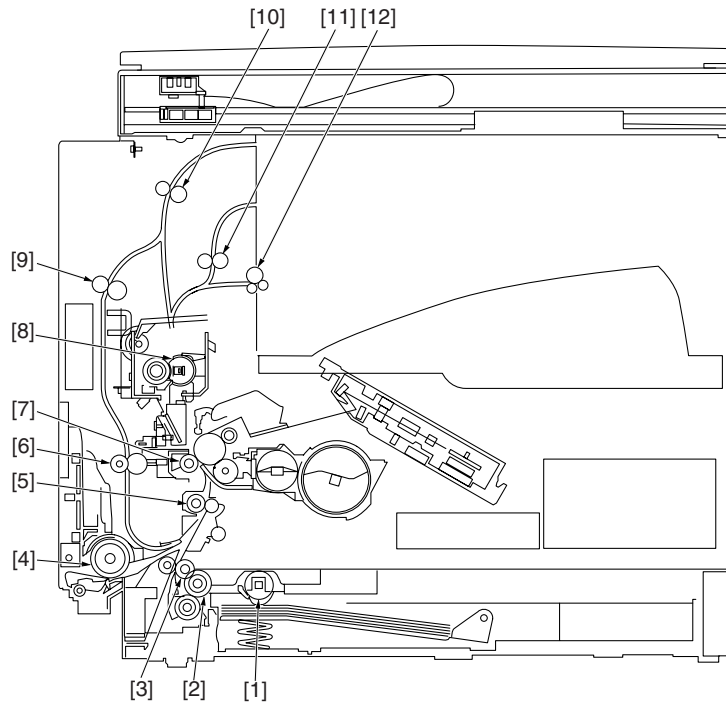


F-7-2

- [1] Pickup assembly
- [2] Manual feed pickup assembly
- [3] Registration roller
- [4] Transfer assembly
- [5] Duplex print paper feed assembly
- [6] Fixing assembly
- [7] First delivery assembly
- [8] Second delivery assembly(option)

7.1.4 Roller Layout Drawing

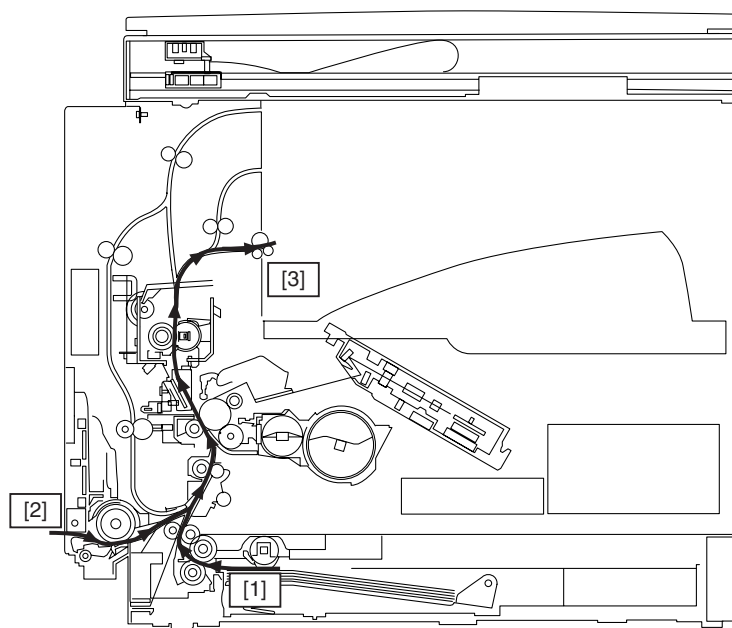
The layout of the rollers used in the pickup/feeding system is shown below.



F-7-3

- [1] Pickup roller
- [2] Cassette pickup roller
- [3] Feed roller 1
- [4] Multi pickup roller
- [5] Registration roller
- [6] Duplex print paper feed roller 3
- [7] Transfer roller
- [8] Fixing roller
- [9] Duplex print paper feed roller 2
- [10] Duplex print paper feed roller 1
- [11] Second delivery roller
- [12] First delivery roller

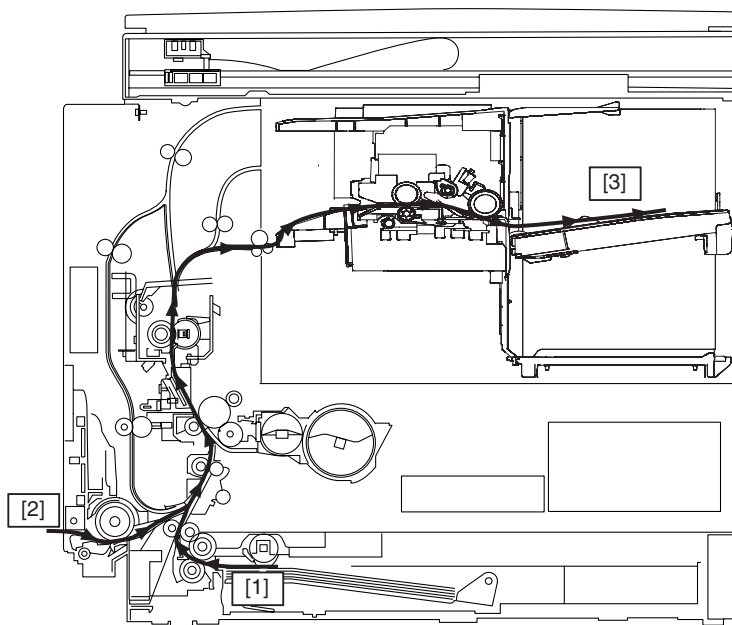
7.1.5 Paper Path Drawing(Printer on its own)



F-7-4

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Delivery from copy tray 1

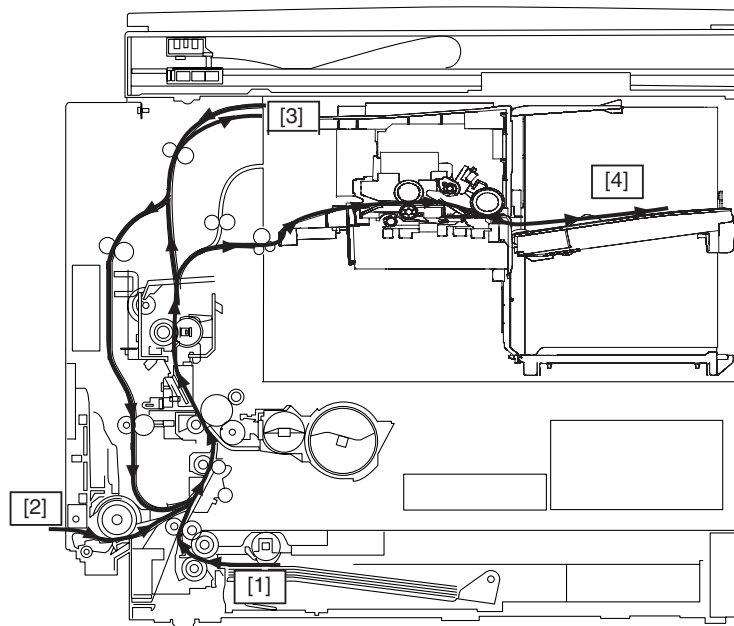
7.1.6 Paper Path Drawing(Finisher-U2)



F-7-5

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Finisher-U2(option)

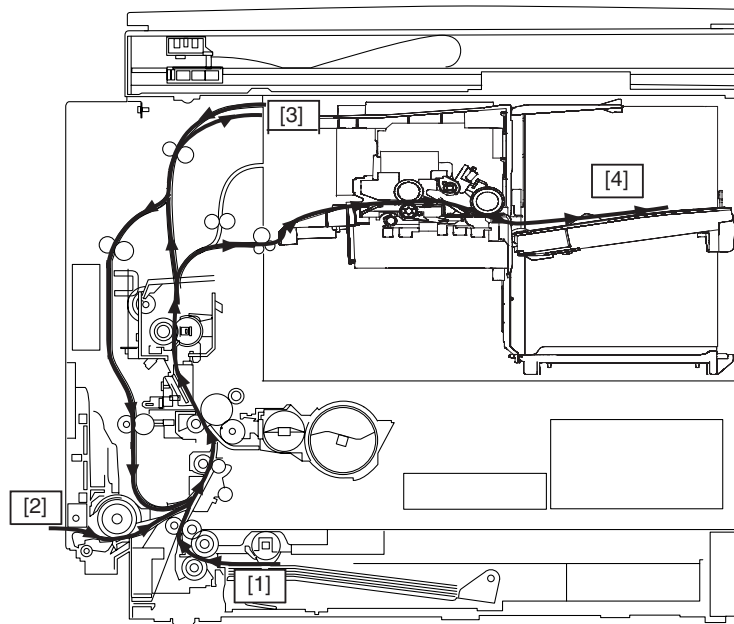
7.1.7 Paper Path Drawing(Duplex Unit-A1(option)/Finisher-U2)



F-7-6

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Both sides re-paper feed(option)
- [4] Finisher-U2(option)

7.1.8 Paper Path Drawing(Duplex Unit-A1(standard)/Finisher-U2)

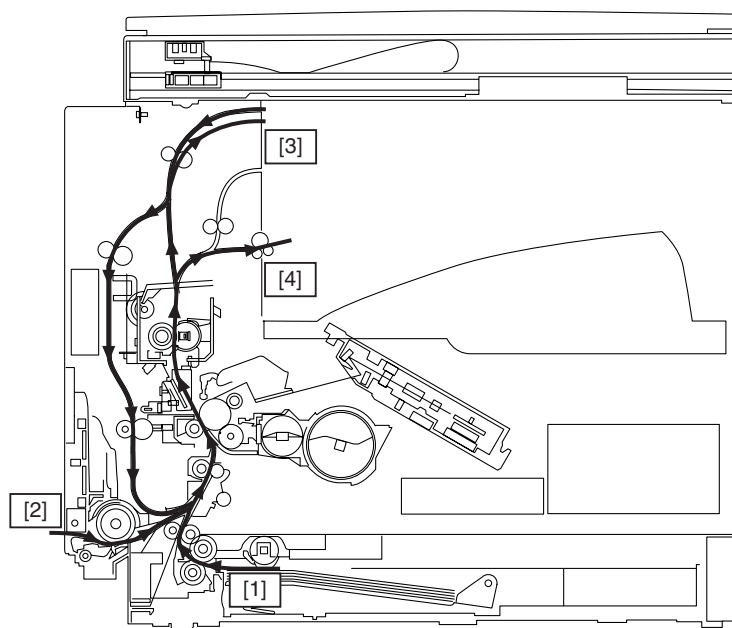


F-7-7

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Both sides re-paper feed*1
- [4] Finisher-U2(option)

*1 This comes standard.

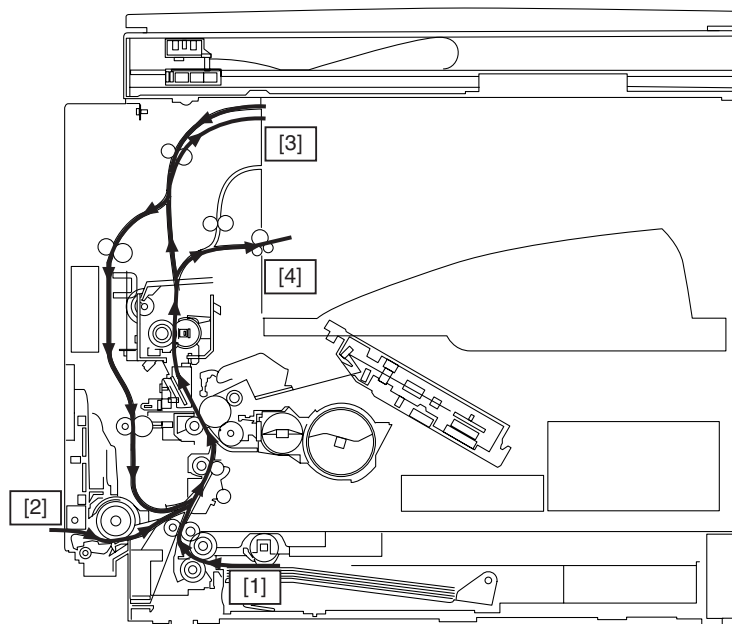
7.1.9 Paper Path Drawing(Duplex-A1(option))



F-7-8

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Both sides re-paper feed(option)
- [4] Delivery from copy tray 1

7.1.10 Paper Path Drawing(Duplex-A1(standard))

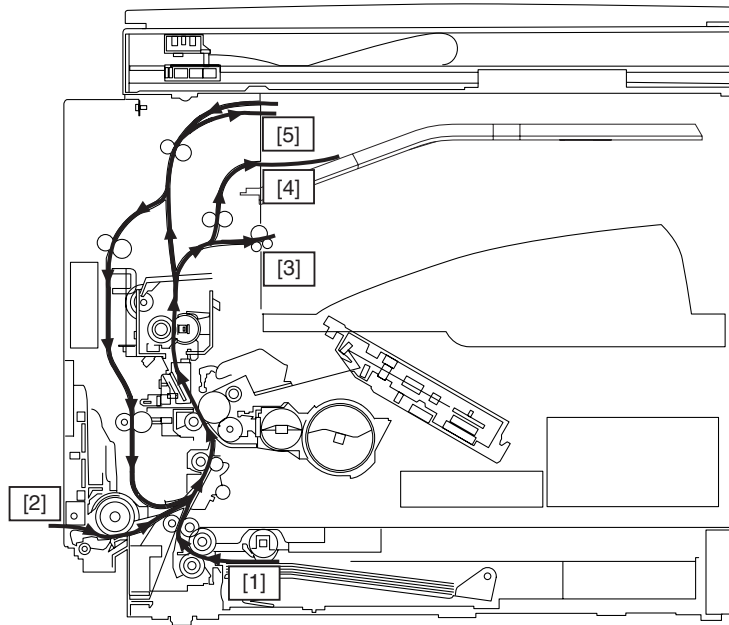


F-7-9

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Both sides re-paper feed*1
- [4] Delivery from copy tray 1

*1 This comes standard.

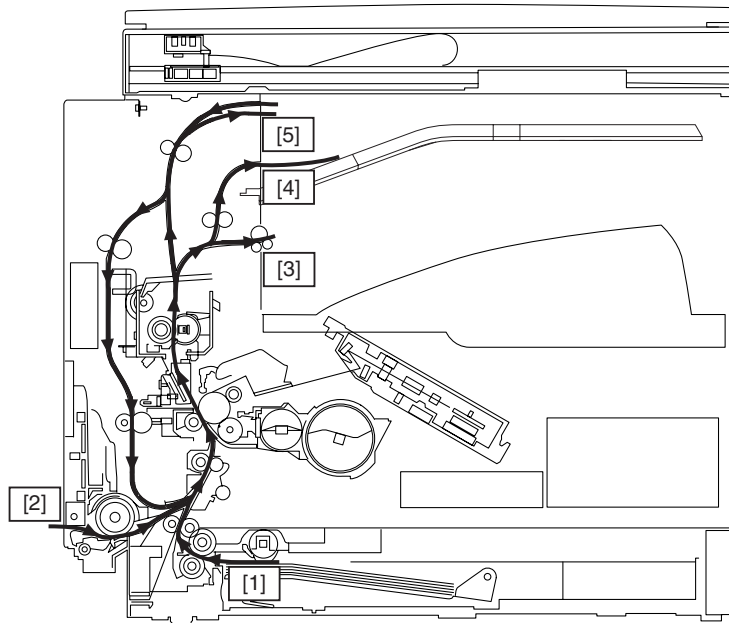
7.1.11 Paper Path Drawing(Duplex-A1(option)/Inner 2Way Tray-E2)



F-7-10

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Delivery from copy tray 1
- [4] Delivery from copy tray 2(option)
- [5] Both sides re-paper feed(option)

7.1.12 Paper Path Drawing(Duplex-A1(standard)/Inner 2Way Tray-E2)

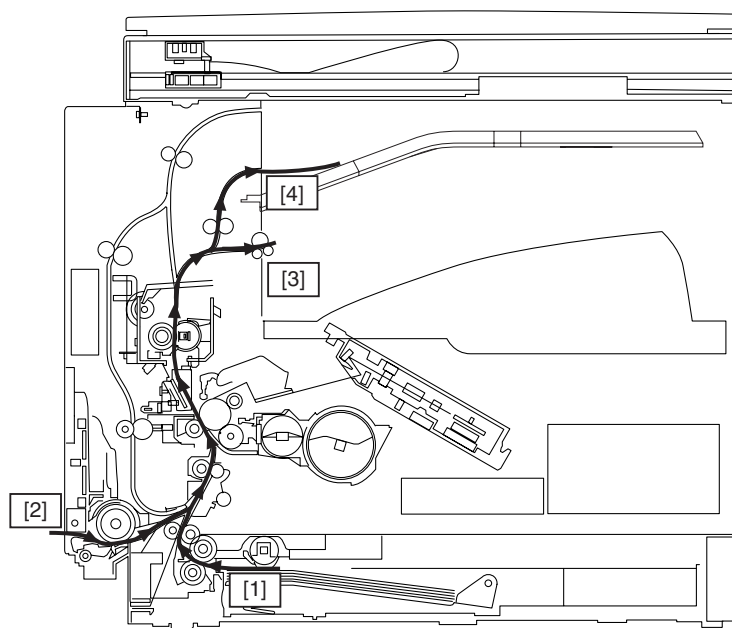


F-7-11

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Delivery from copy tray 1
- [4] Delivery from copy tray 2(option)
- [5] Both sides re-paper feed*1

*1 This comes standard.

7.1.13 Paper Path Drawing(Inner 2Way Tray-E2)

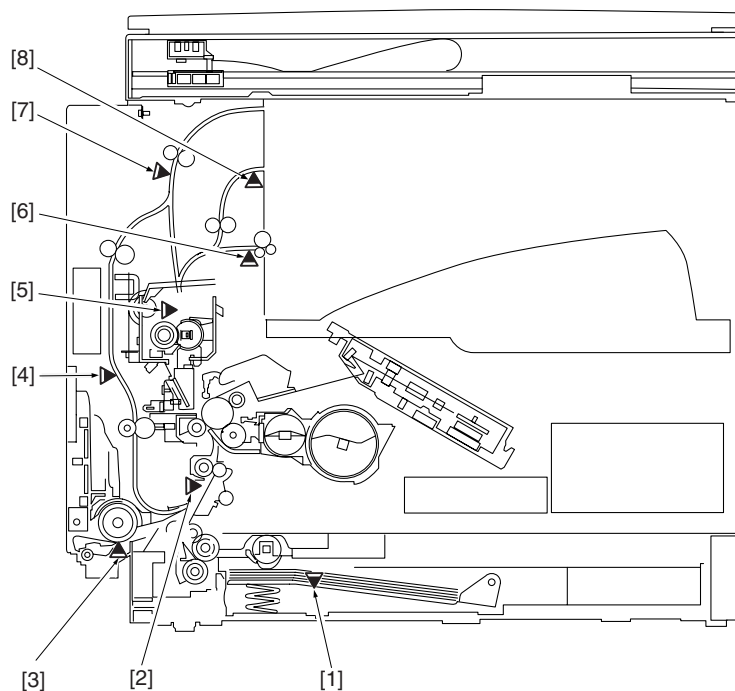


F-7-12

- [1] Cassette pickup
- [2] Manual feed pickup
- [3] Delivery from copy tray 1
- [4] Delivery from copy tray 2(option)

7.1.14 Sensor Layout Drawing (When the duplex unit is not equipped)

The layout of the sensors used in the pickup/feeding system is shown below.

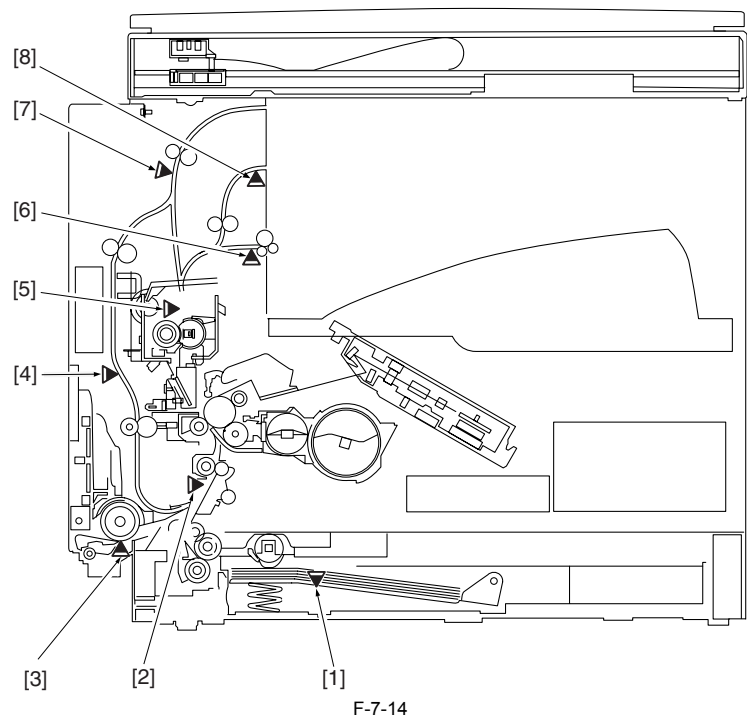


F-7-13

- [1] Cassette 1 paper presence/absence sensor (SR204)
- [2] Registration sensor (SR209)
- [3] Manual feed paper presence/absence sensor (SR208)
- [4] Duplex print paper sensor 2 (SR1003)(Option)
- [5] Fixed paper delivery sensor (SR202)
- [6] First delivery sensor (SR203)
- [7] Duplex print paper sensor 1 (SR1002)(option)
- [8] Second delivery sensor (SR1102)(option)

7.1.15 Sensor Layout Drawing (When the duplex unit is equipped)

The layout of the sensors used in the pickup/feeding system is shown below.



- [1] Cassette 1 paper presence/absence sensor (SR204)
- [2] Registration sensor (SR209)
- [3] Manual feed paper presence/absence sensor (SR208)
- [4] Duplex print paper sensor 2 (SR1003)*1
- [5] Fixed paper delivery sensor (SR202)
- [6] First delivery sensor (SR203)
- [7] Duplex print paper sensor 1 (SR1002)*1
- [8] Second delivery sensor (SR1102)(option)

*1 This comes standard.

7.2 Detecting Jams

7.2.1 Delay Jams

7.2.1.1 Delay Jam in Pickup Assembly

Delay Jam in Pickup Assembly

The registration sensor cannot detect the leading edge of paper within the jam detection time interval after paper pickup started.

Sensor/Solenoid
Registration sensor (SR209)
Pickup solenoid (SL202)

7.2.1.2 Delay Jam in Delivery Assembly (Paper Leading Edge Jam at Delivery Sensor/Wound Paper Jam at Fixing Assembly)

Paper Leading Edge Jam at First Delivery Sensor

The first delivery sensor cannot detect presence of paper within the prescribed time after the registration clutch has been turned on.

Sensor/Clutch
First delivery sensor (SR203)
Registration clutch (CL203)

Wound Paper Jam at Fuser

The delivery sensor has detected absence of paper within the prescribed time after it detected presence of paper (within the prescribed time after the registration clutch had been turned on).

Sensor/Clutch
First delivery sensor (SR203)
Registration clutch (CL203)

7.2.1.3 Duplex Paper Sensor 1 Delay Jam

Duplex paper sensor 1 delay jam

This jam occurs if the duplex paper sensor 1 does not turn on within the predetermined time after the delivery sensor in the host machine turns on.

Sensors
Delivery sensor (SR202)
Duplex paper sensor 1(SR1002)

7.2.1.4 Duplex Paper Sensor 2 Delay Jam

Duplex paper sensor 2 delay jam

This jam occurs if the duplex paper sensor 2 does not turn on within the predetermined time after the duplex reversal motor starts rotating.

Sensor
Duplex paper sensor 2 (SR1003)

7.2.2 Stationary Jams

7.2.2.1 Stationary Jam in Pickup Assembly

Stationary Jam in Pickup Assembly

The registration sensor does not detect absence of paper within the prescribed time before the next leading edge of fed paper reaches the registration sensor.

Sensor
Registration sensor(SR209)

7.2.2.2 Stationary Jam in Delivery Assembly (Paper Trailing Edge Stationary Jam at First Delivery Sensor/Stationary Jam at First Delivery Sensor)

Paper Trailing Edge Stationary Jam at First Delivery Sensor

The first delivery sensor cannot detect absence of paper within the prescribed time after the registration sensor has been turned off.

Sensor
Registration sensor (SR209)
First delivery sensor (SR203)

Stationary Jam at First Delivery Sensor

The first delivery sensor cannot detect absence of paper within the prescribed time after it has detected the leading edge of paper.

Sensor
First delivery sensor (SR203)

7.2.2.3 Duplex Paper Sensor 1 Stationary Jam

Duplex paper sensor 1 stationary jam

This jam occurs when the duplex print paper sensor 1 does not turn off when the paper with a longitudinal length of less than 280 mm reaches the standby point (about 90 mm downstream from the duplex paper sensor 2).

Sensor
Duplex paper sensor 1 (SR1002)

7.2.2.4 Duplex Paper Sensor 2 Stationary Jam

Duplex paper sensor 2 stationary jam

This jam occurs when the duplex paper sensor 2 does not turn off when the predetermined time lapses after the feed motor starts rotating.

Sensors
Duplex paper sensor 1 (SR1002)
Duplex paper sensor 2 (SR1003)

7.2.3 Other Jams

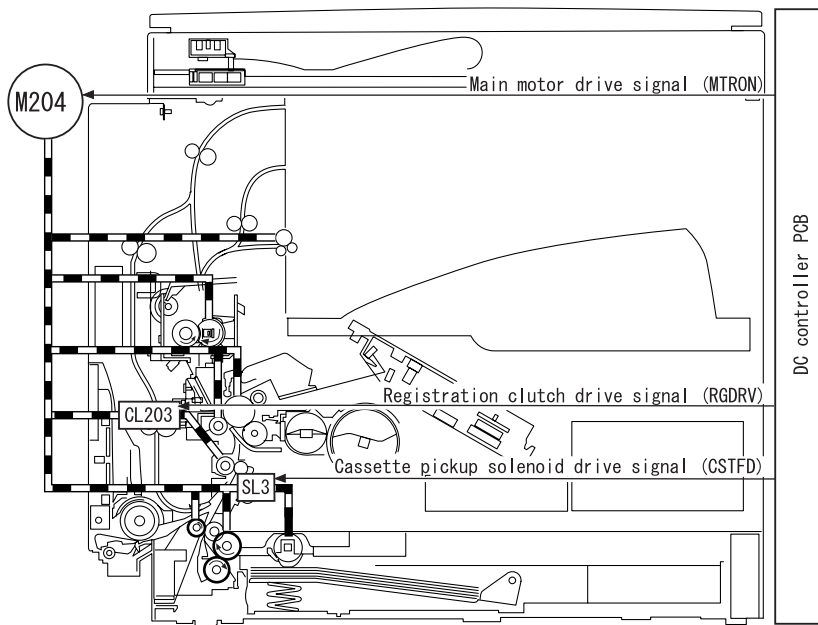
7.2.3.1 Door Open Jam

Door Open Jam

The door is opened when paper to be printed is in the paper feed path.

7.3 Cassette Pick-Up Unit**7.3.1 Overview**

The paper picked up from the cassette is fed to the registration roller using the vertical path roller driven by the main motor (M204). The registration roller is not rotating when paper reaches there, so an arch is formed at the leading of the paper to prevent skewing. The DC controller PCB turns on the registration clutch (CL203) at the prescribed timing to transfer the main motor rotation to the registration roller, thus feeding the paper to the delivery tray through the transfer, separation, fixing, and delivery assemblies.

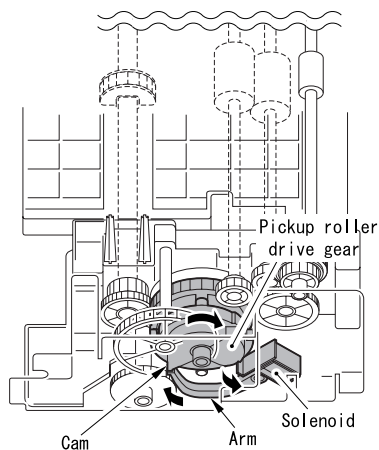


F-7-15

7.3.2 Cassette Pickup Operation

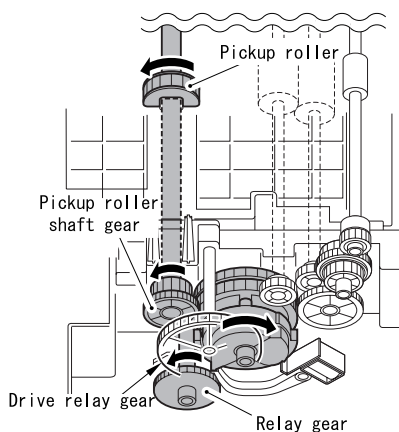
Rotation of the pickup roller is controlled by the pickup roller drive gear, which transfers the drive power of the main motor (M204) to the pickup roller drive shaft, and the cassette pickup solenoid (SL202). When the main motor starts rotating, the interlocked relay gear also starts rotating. At this time, the pickup roller drive gear is not driven because its toothless portion is positioned at the relay gear and therefore these gears are not engaged with each other.

1) The DC controller PCB issues a cassette pickup solenoid drive signal (CSTFD). When the solenoid is turned on, the control arm pushes the cam to rotate the pickup roller drive gear slightly.



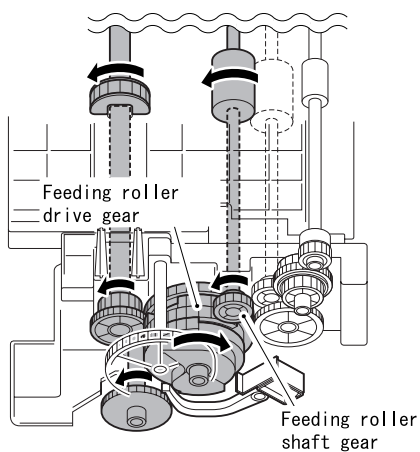
F-7-16

- 2) When the pickup roller drive gear is engaged with the pickup roller shaft gear, drive power is transferred to the pickup roller shaft gear and consequently the pickup roller starts rotating.



F-7-17

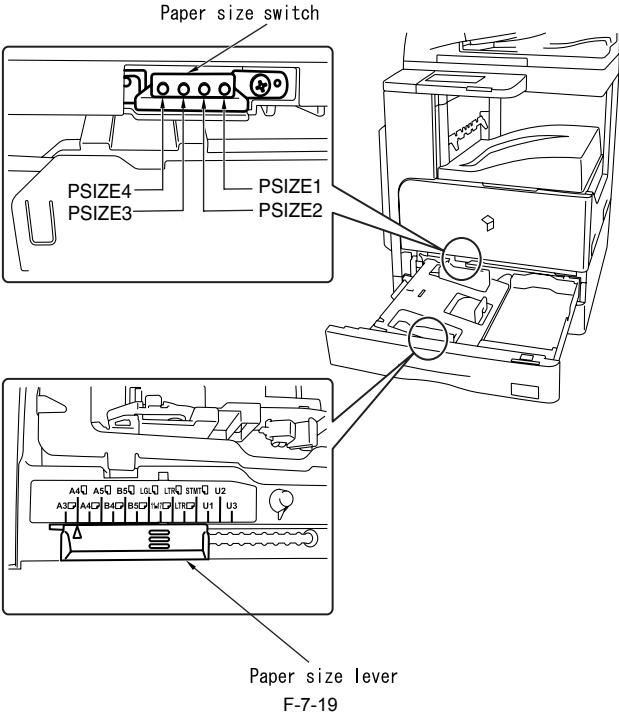
- 3) When the feed roller drive gear is engaged with the feed roller shaft gear, drive power is transferred to the feed roller shaft gear and consequently the feed roller starts rotating.
 4) When the pickup roller rotates once, the toothless portion of the pickup roller drive gear comes to the position of the relay gear and consequently drive power of the main motor is not transferred, stopping the rotation of pickup and feed rollers.
 5) The picked up paper is fed to the registration roller through the vertical path roller.



F-7-18

7.3.3 Cassette Paper Size Detection

The size of the paper in the cassette is detected by the DC controller PCB when the user changes the position of the cassette paper size lever. When the cassette is inserted in the iR host machine, the paper size lever pushes the paper size switches provided in the iR host machine to allow the DC controller PCB to detect presence of the cassette and the size of paper. Paper size switches are arranged as shown below. Paper sizes are determined by the combinations of the switches pushed by the paper size lever.



	A3	A4	A4R	A5	B4	B5	B5R	LGL	11x17	LTR	LTRR	STM T	U1*	U2*	U3*
PSIZE1	ON	OFF	ON	OFF	OFF	ON	ON	OFF	ON	ON	ON	ON	OFF	OFF	OFF
PSIZE2	OFF	ON	OFF	ON	OFF	OFF	ON	ON	OFF	ON	ON	ON	ON	OFF	OFF
PSIZE3	OFF	OFF	ON	OFF	ON	OFF	OFF	ON	ON	OFF	ON	ON	ON	ON	OFF
PSIZE4	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	ON	ON	OFF	ON	ON	ON	ON

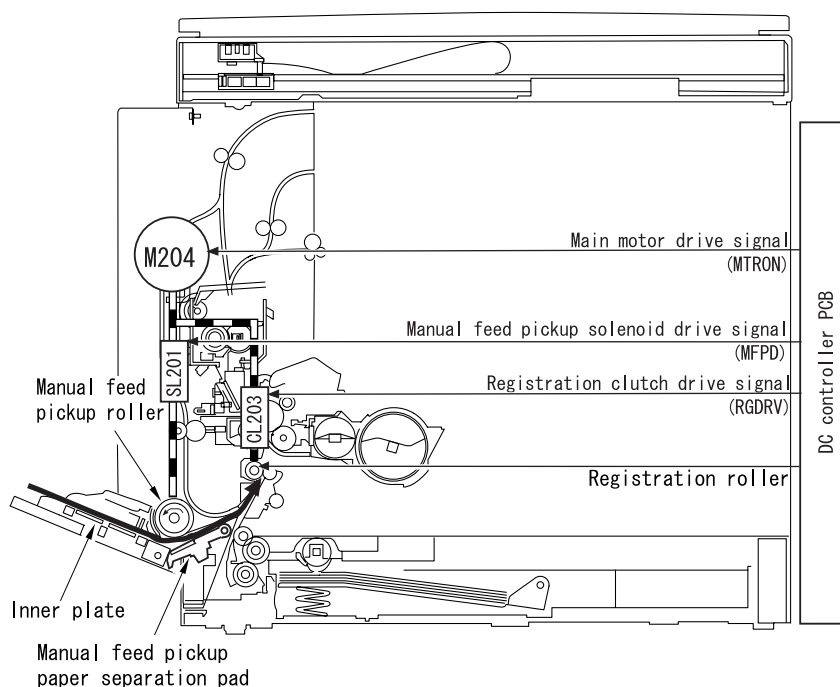
ON:The push switch is pushed.
OFF:The push switch is not pushed.
*:Not used.

7.4 Manual Feed Pickup Unit

7.4.1 Overview

a. Multi Manual feed Pickup Control

The manual feed pickup mechanism picks up sheets of paper in succession from the multi manual feed tray. The sheets of paper stacked in the tray are raised against the manual feed pickup roller by the inner plate. The manual feed pickup roller is driven by the main motor (M204) via the manual feed pickup solenoid (SL202) and gears. Only one sheet of paper is picked up by the combination of the manual feed pickup roller and manual feed pickup paper separation pad, and then fed to the registration roller. These operations are performed for each sheet to be picked. The user must set the size of the paper in the multi manual feed tray using the operation panel, or the user must register a fixed size in the user mode.



F-7-20

b. Inner Plate Lift Operation

During standby, the inner plate is at the down position with it held by the cams provided at the front and back of the manual feed pickup roller shaft. Rotation of the pickup roller rotates the interlocked cams to lift the inner plate, raising the sheets of paper (loaded in the manual feed tray) against the manual feed pickup roller. On the opposite side of the pickup roller is mounted a separation pad that separates only one sheet of paper from others and feeds it to the next section.

c. Manual feed Tray Pickup Drive Mechanism

pickup solenoid drive signal (MFPD) sent from the DC controller PCB. Rotation of the main motor drives the pickup drive power transfer gear. The DC controller PCB issues a manual feed pickup solenoid drive signal (MFPD). When the solenoid turns on, the stopper operates to rotate the pickup roller once. Next, the stopper operates again to stop rotation of the pickup roller.

7.4.2 Post-pickup Control after Multi Manual Feed Pickup

Paper pickup operation ends when paper is pressed against the registration roller. After this, the registration roller starts rotating and the multi manual feed pickup clutch turns on. This clutch turns off after feeding the paper by the distance equivalent to the paper size - 126.7 mm (*1) -5 mm (*2).

*1 Distance that paper is fed from the multi pickup roller to the point where the registration sensor turns on.

*2 Paper is post-fed to the point which is 5 mm to the training edge.

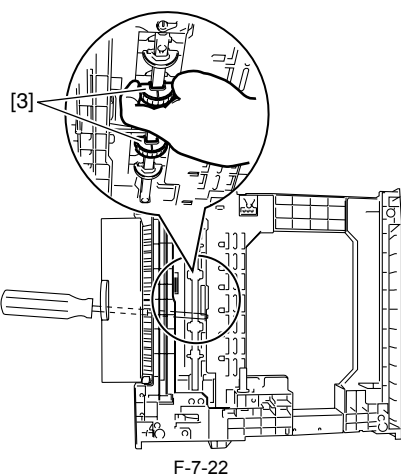
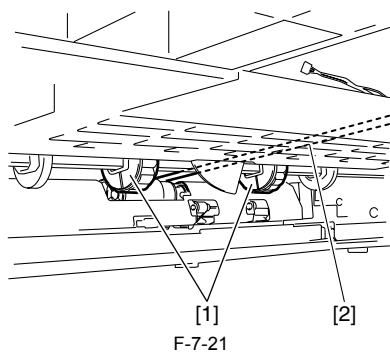
When the paper size is not specified, paper is post-fed by the distance equivalent to the multi paper feed enabled size (148 mm in longitudinal direction).
Minimum post-feed distance: $148 \text{ mm} - 126.7 \text{ mm} - 5 \text{ mm} = 16.3 \text{ mm}$

7.5 Parts Replacement Procedure

7.5.1 Pickup Roller

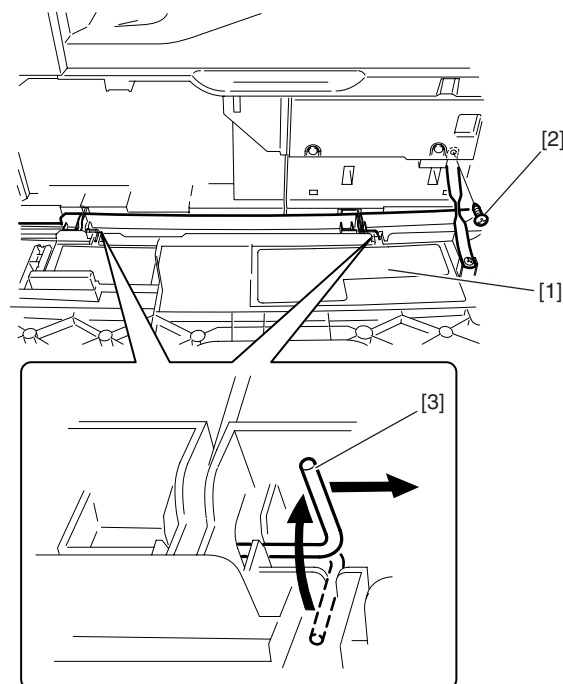
7.5.1.1 Removing the Cassette Paper Pickup Roller

- 1) Remove the cassette.
- 2) Open the lower-left cover.
- 3) With the pickup roller [1] down, insert a screwdriver [2] or the like from the left side of the host machine as shown below.
- 4) Remove the pickup roller [3] with your fingers as shown below.

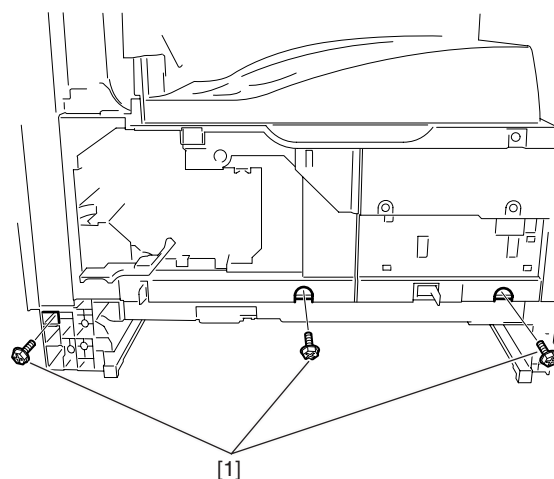


- 7) Detach the front cover [1].

- Screw [2], 1 pc.
- Fixed pins [3], 2 pcs.



- 8) Unscrew the three screws [3] on the front side of the machine, which fastens the machine and the cassette.

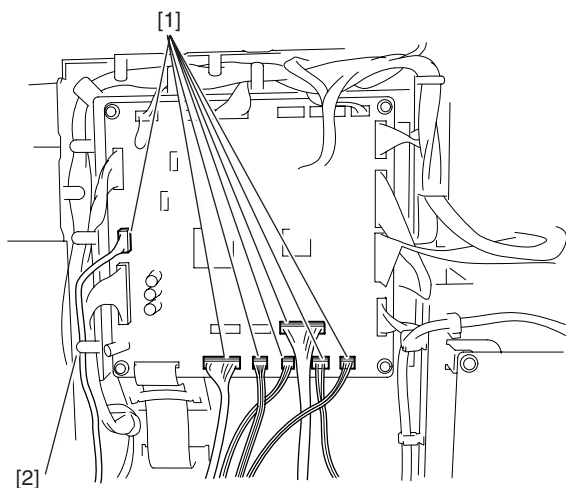


7.5.2 Cassette

7.5.2.1 Removing the First Cassette Unit

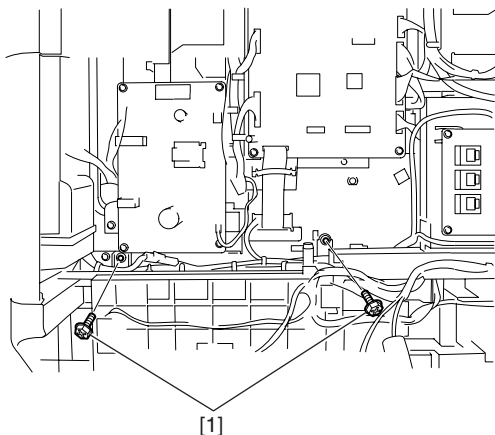
- 1) Pull out the first cassette of the machine.
- 2) Pull out the drum unit.
- 3) Detach the left front cover.
 - Screw, 2 pcs.
- 4) Detach the rear cover.
 - Screw, 4 pcs.
- 5) Detach the left rear cover.
 - Screw, 3 pcs.
- 6) Detach the left door.

- 9) Pull out the connector [1] on the DC controller PCB, which is at the rear side of the machine. (Connector to be pulled out: J209, J210, J211, J212, J213, J219 and J222)
The harness of connector J222 should be detached from harness guide [2].



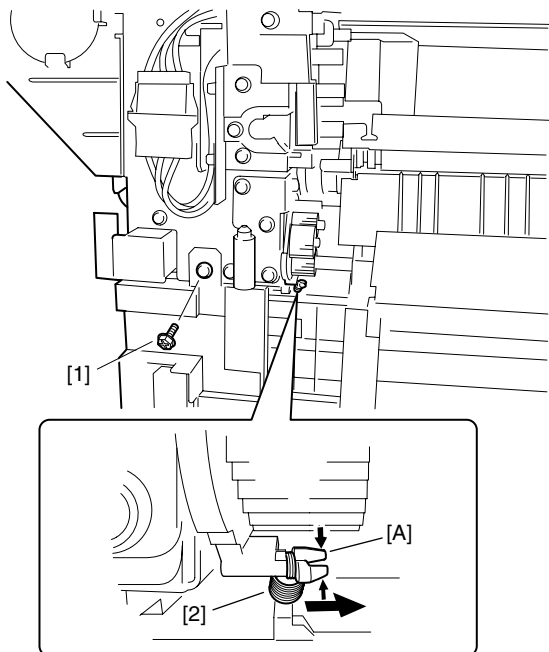
F-7-25

- 10) Unscrew the two screws [1], which fastens the machine and the cassette.



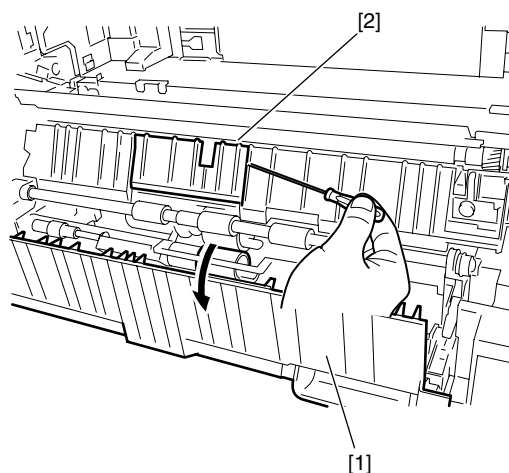
F-7-26

- 11) Unscrew the screw [1] on the left side of the machine, which fastens the machine and the cassette. And then shorten the tip of part [A] and detach the spring [2] on the drive unit.



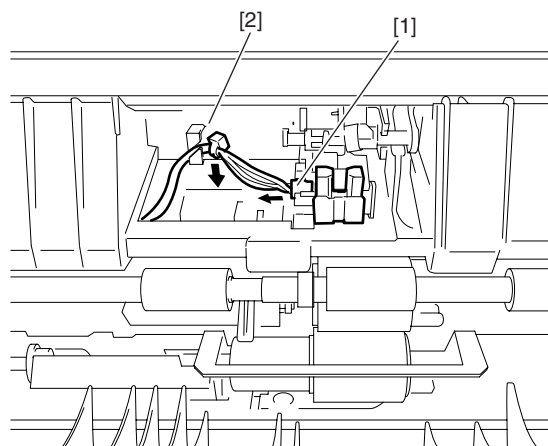
F-7-27

- 12) Open the left guide [1] and detach the small cover [2] by using a minus screwdriver.



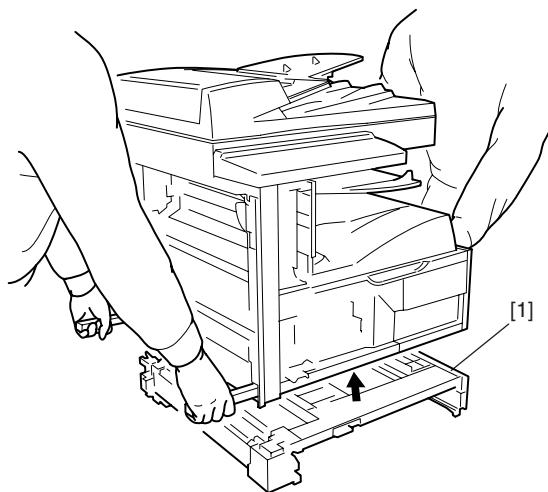
F-7-28

- 13) Pull out the connector [1] on the registration sensor and detach the harness from harness guide [2].



F-7-29

- 14) Lift the machine by holding the handle on the machine and detach the cassette-feeding unit [1].

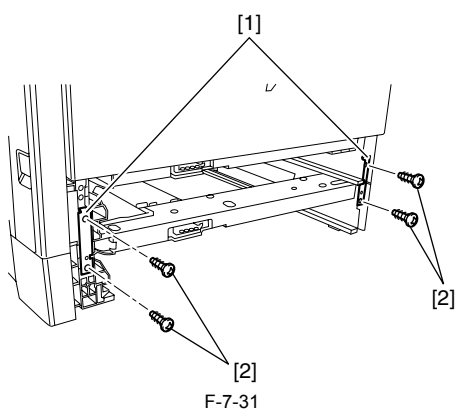


F-7-30

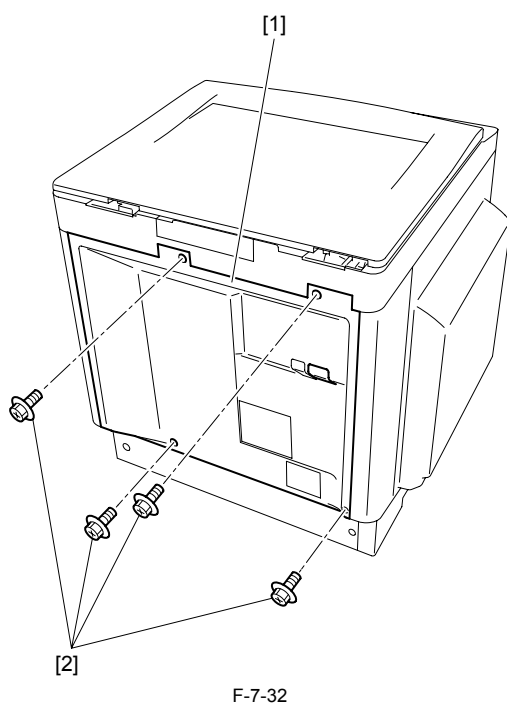
7.5.2.2 Removing the Second Cassette Unit

- 1) Remove the upper and lower cassette from the machine.

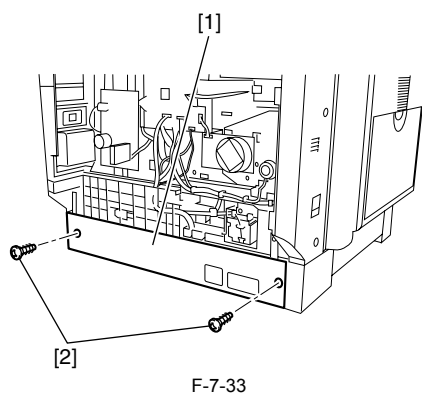
- 2) Remove the two connecting plates [1].
- Screw [2] 4 pcs.



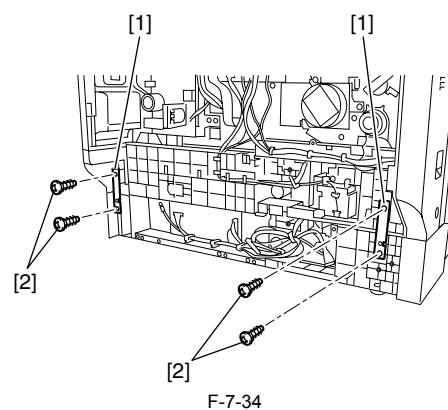
- 3) Remove the rear cover [1].
- Screw [2] 4 pcs.



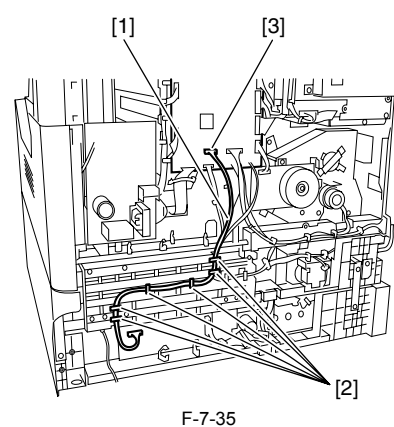
- 4) Remove the cassette rear cover [1].
- Screws [2] 2 pcs.



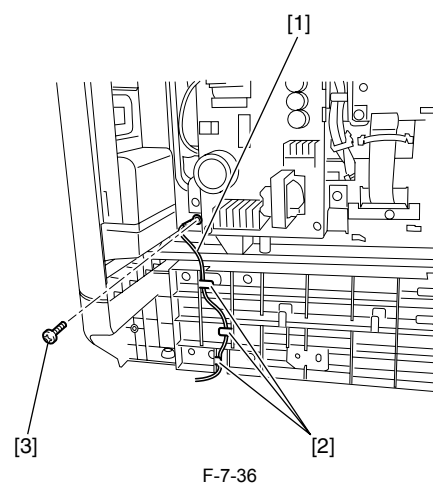
- 5) Remove the two connecting plates [1].
- Screws [2] 4 pcs.



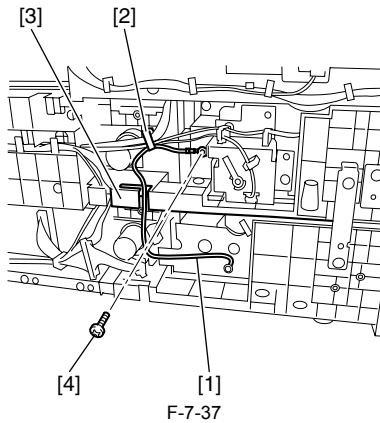
- 6) Remove the harness [1] from harness guide [2].
- Connector [3] 1 pc.



- 7) Remove ground wire [1] from harness guide [2].
- Screw [3] 1 pc.



- 8) Remove ground wire [1] from wire saddle [2] and harness guide [3].
- Screw [4] 1 pc.

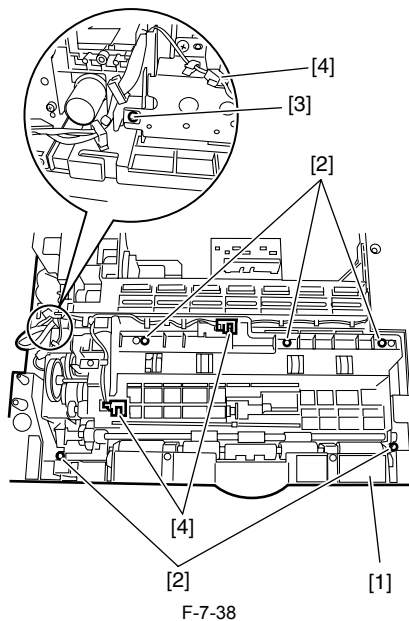


- 9) Remove the cassette unit by lifting the machine.

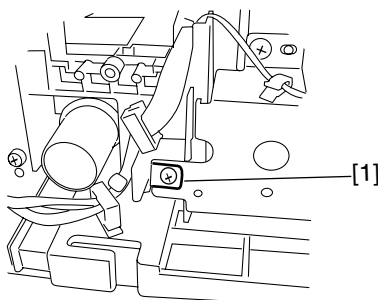
7.5.3 Cassette Pickup Assembly

7.5.3.1 Removing the Cassette Pickup Assembly

- 1) Remove the lower-left cover.
- 2) Remove the cassette rear cover.
- 3) Remove the cassette pickup assembly [1].
 - Screw [2] 5 pcs.
 - Screw with toothed washer [3] 1 pc.
 - Connector [4] 3 pcs.



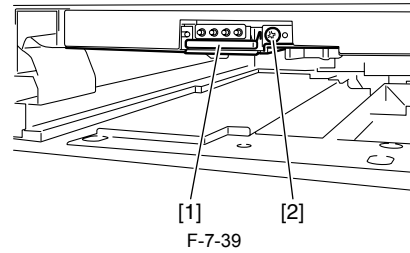
Install the cassette pickup assembly with the ground plate [1] outside the side plate.



7.5.4 Cassette Size Sensor

7.5.4.1 Removing the Paper Size Detection Switches

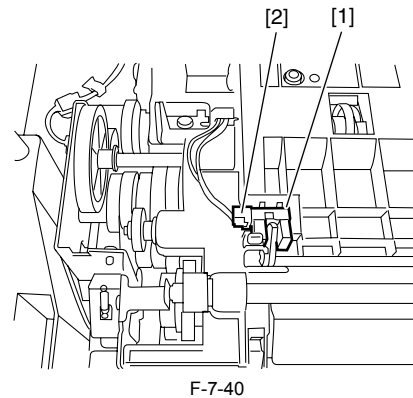
- 1) Remove the paper size switches [1].
 - Screw [2] 1 pc.



7.5.5 Cassette Retry Paper Sensor

7.5.5.1 Removing the Retry Sensor

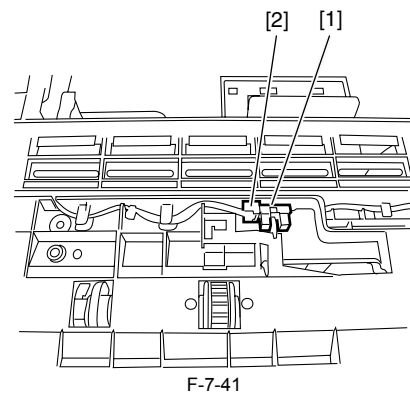
- 1) Remove the lower-left cover.
- 2) Remove the cassette rear cover.
- 3) Remove the cassette pickup assembly.
- 4) Remove the retry sensor [1].
 - Connector [2] 1 pc.



7.5.6 Cassette Paper Sensor

7.5.6.1 Removing the Cassette Paper Presence/Absence Sensor

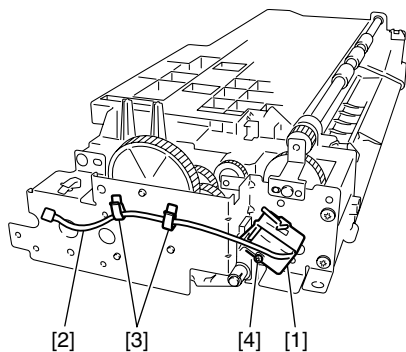
- 1) Remove the lower-left cover.
- 2) Remove the cassette rear cover.
- 3) Remove the cassette pickup assembly.
- 4) Remove the cassette paper presence/absence sensor [1].
 - Connector [2] 1 pc.



7.5.7 Cassette Pickup Solenoid

7.5.7.1 Removing the Cassette Pickup Solenoid

- 1) Remove the lower-left cover.
- 2) Remove the cassette rear cover.
- 3) Remove the cassette pickup assembly.
- 4) Remove the cassette pickup solenoid [1].
 - Harness [2] 1 pc.
 - Wire saddles [3] 2 pcs.
 - Screw [4] 1 pc.

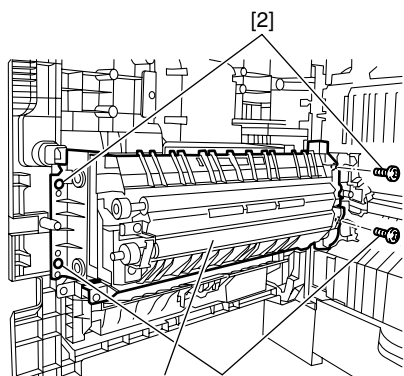


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7.5.8 Manual Pickup Roller

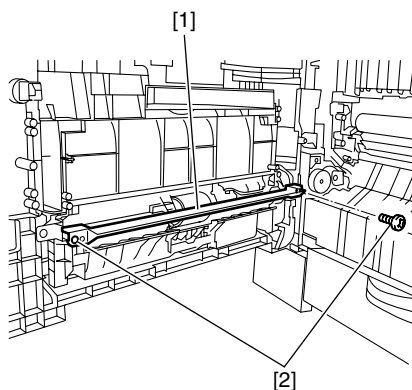
7.5.8.1 Removing the Multifeder Pickup Roller

- 1) Open the front cover.
- 2) Turn the developer pressure release lever clockwise, and then open the left door.
- 3) Draw out the drum unit.
- 4) Remove the transfer registration unit [1].
 - Screw [2] 4 pcs.



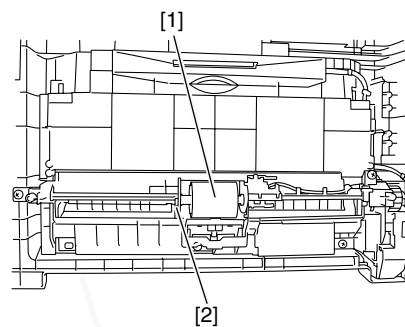
F-7-43

- 5) Remove the feed guide [1].
 - Screw [2] 2 pcs.



F-7-44

- 6) Remove the multi-paper roller [1].
 - Bearing [1] 1 pc.

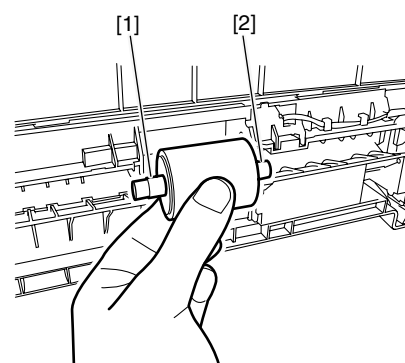


F-7-45



When installing the multifeder pickup roller, pay attention to the orientation.

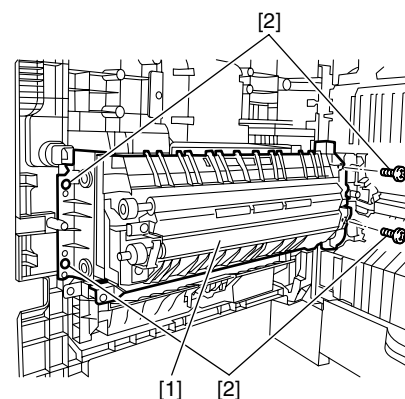
Left-side axis: [1] Long Right-side axis: Short [2]



7.5.9 Manual Feed Tray paper sensor

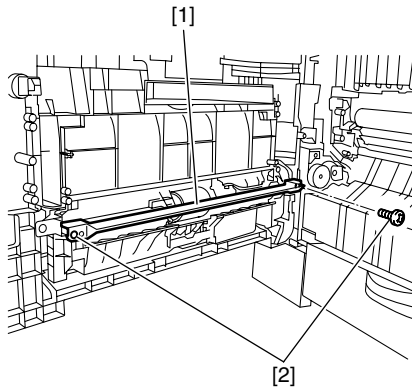
7.5.9.1 Removing the Multifeder Paper Presence/Absence Sensor

- 1) Open the front cover.
- 2) Turn the developer pressure release lever clockwise, and then open the left door.
- 3) Draw out the drum unit.
- 4) Remove the transfer registration unit [1].
 - Screw [2] 4 pcs.



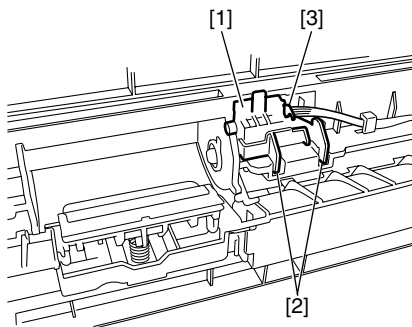
F-7-46

- 5) Remove the feed guide [1].
- Screw [2] 2 pcs.



F-7-47

- 6) Remove the multifeder paper presence/absence sensor [1].
- Claws [2] 2 pcs.
- Connector [3] 1 pc.

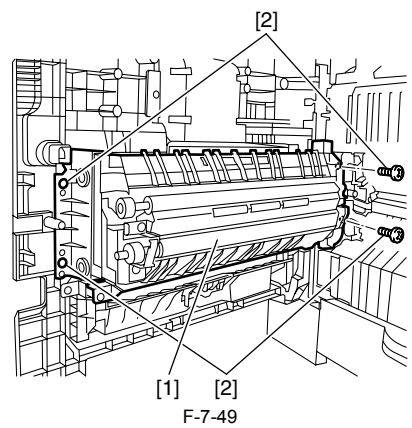


F-7-48

7.5.10 Manual Feed Pickup Solenoid

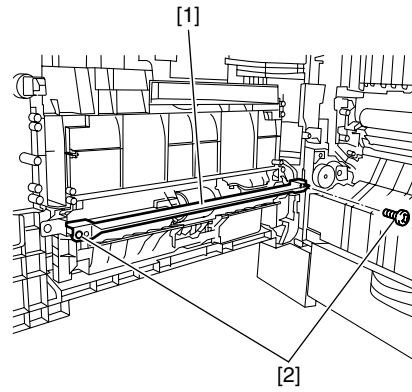
7.5.10.1 Removing the Multifeder Pickup Solenoid

- 1) Open the front cover.
- 2) Turn the developer pressure release lever clockwise, and then open the left door.
- 3) Draw out the drum unit.
- 4) Remove the transfer registration unit [1].
- Screw [2] 4 pcs.



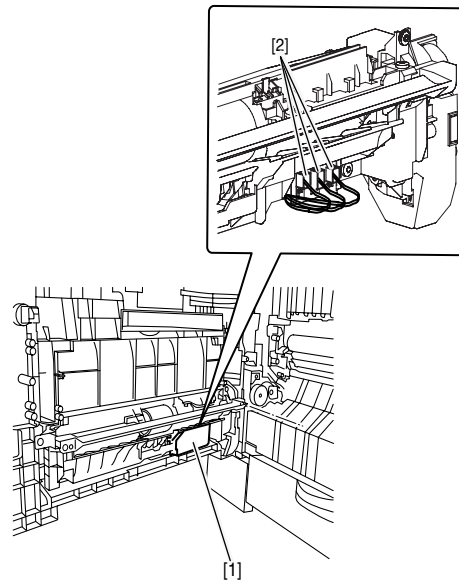
F-7-49

- 5) Remove the feed guide [1].
- Screw [2] 2 pcs.



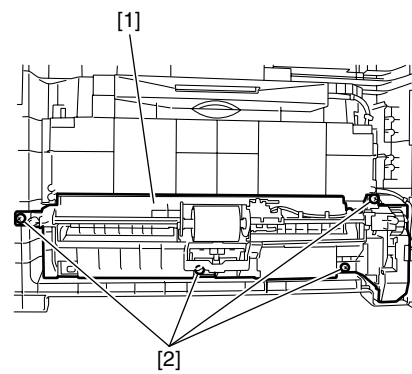
F-7-50

- 6) Remove the multifeder connector cover [1].
- Connectors [2] 3 pcs.



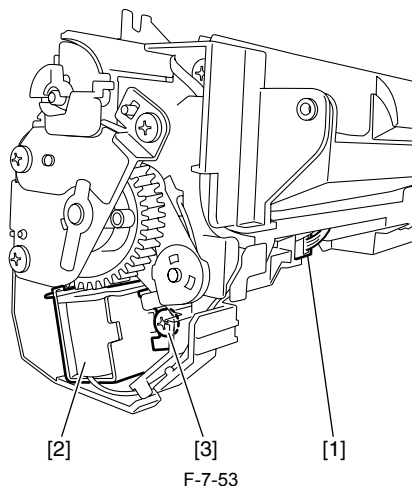
F-7-51

- 7) Remove the multifeder unit [1].
- Screws [2] 4 pcs.



F-7-52

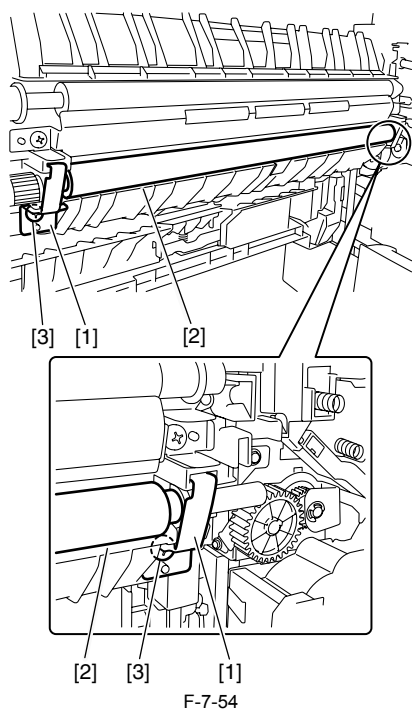
- 8) Remove the harness from the guide.
 - connector [1] 1 pc.
- 9) Remove the multifeed pickup solenoid [2].
 - Screw [3] 1 pc.



7.5.11 Registration Roller

7.5.11.1 Removing the Registration Roller

- 1) Open the front cover.
- 2) Turn the developer pressure release lever clockwise, and then open the left door.
- 3) Draw out the drum unit.
- 4) Remove the two metal plates [1], and remove the registration roller [2].
 - Screws [3] 2 pcs.

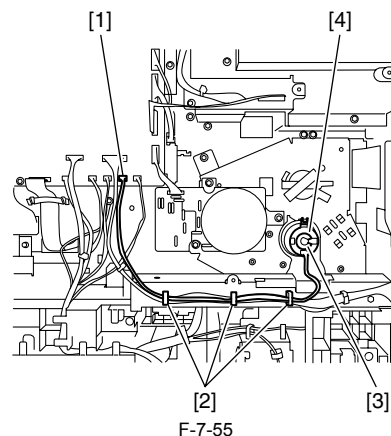


7.5.12 Registration Clutch

7.5.12.1 Removing the Registration Clutch

- 1) Remove the rear cover.

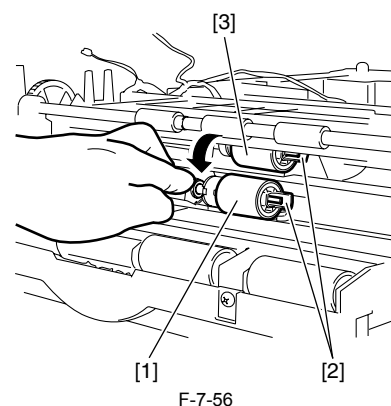
- 2) Disconnect the connector [1], and then remove the harness from the three wire saddles [2].
- 3) Remove the resin ring [3], and then remove the registration clutch [4].



7.5.13 Separation Roller

7.5.13.1 Removing the Feed and Separation Rollers

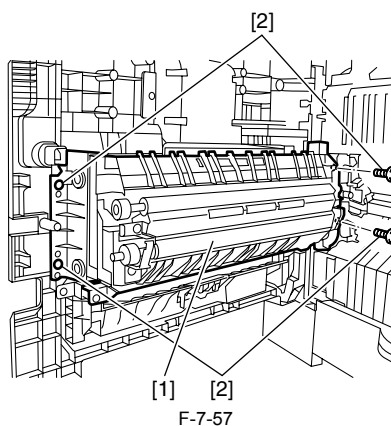
- 1) Remove the cassette.
- 2) Open the lower-left cover.
- 3) Lower the separation roller [1] as shown below, and then remove the separation roller [1] and feed roller [3] by holding the claws [2] of the roller collars.



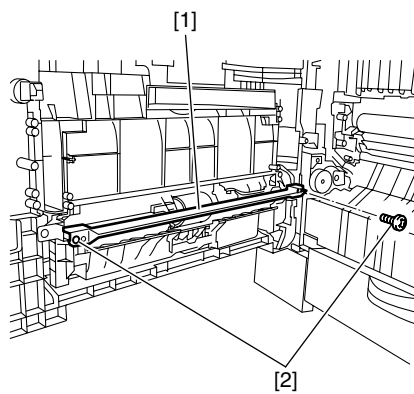
7.5.14 Separation Pad

7.5.14.1 Removing the Separation Pad

- 1) Open the front cover.
- 2) Turn the developer pressure release lever clockwise, and then open the left door.
- 3) Draw out the drum unit.
- 4) Remove the transfer registration unit [1].
 - Screw [2] 4 pcs.

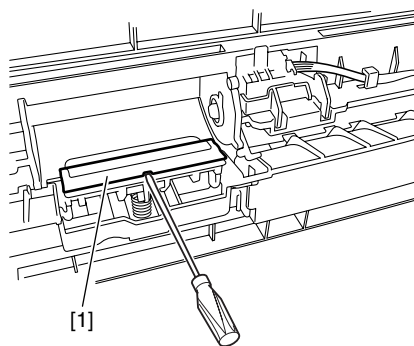


- 5) Remove the feed guide [1].
- Screw [2] 2 pcs.



F-7-58

- 6) Remove the multi-paper roller.
7) Use a minus screwdriver and remove separation pad [1].



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Chapter 8 Fixing System

Contents

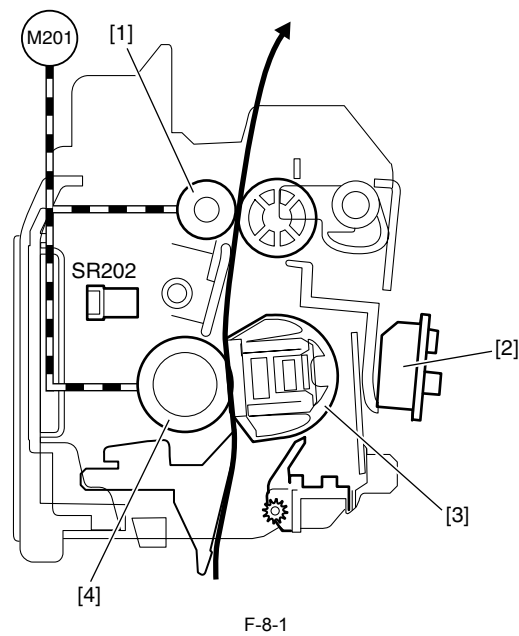
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8.1 Construction

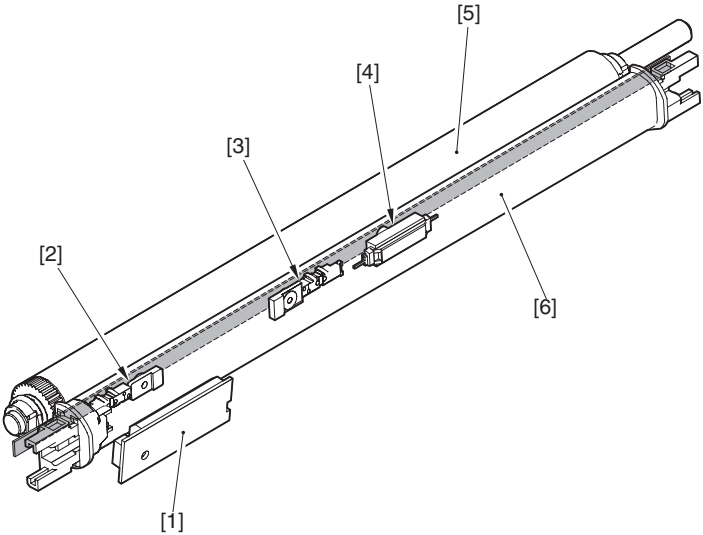
8.1.1 Specifications, Control Mechanisms, and Functions

Item	Function/Method
Fixing method	by fixing film + pressure roller
Fixing heater	Unitary flat heater incorporating both main heater and sub heater
Fixing temperature detection	[1] Main thermistor (TH1): Temperature control and fault detection [2] Sub thermistor (TH2): Fault detection [3] Thermo-switch (TP1): Fault detection
Fixing temperature control	[1] Warm-up temperature control [2] Normal temperature control [3] Sheet-to-sheet temperature control
Protection functions	[1] Detection of error in temperature control by thermistor [2] Detection of temperature rise by thermo-switch
Fixing drive control	Speed control by detecting fixing film rotation

8.1.2 Major Components



[1]	Inner delivery roller	[4]	Pressure roller
[2]	Fixing film speed sensor	SR202	Fixing delivery sensor
[3]	Fixing film unit	M201	Fixing drive motor



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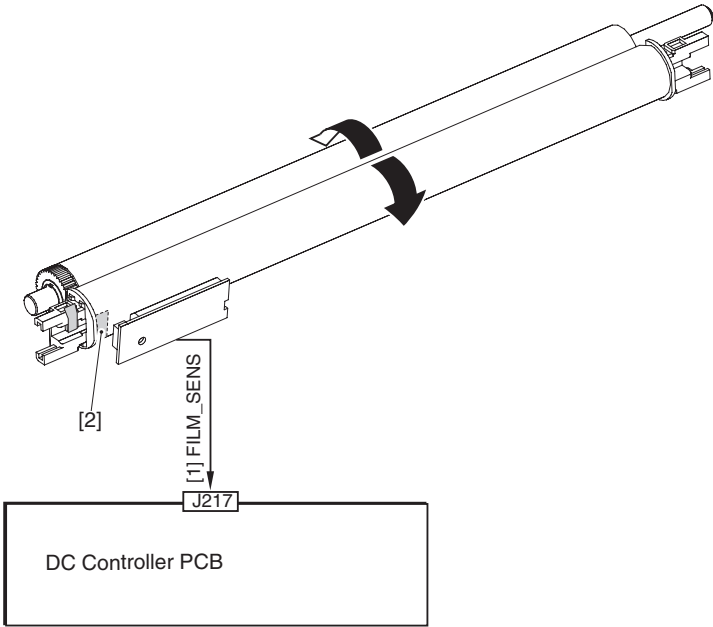
[1]	Fixing film speed sensor	[4]	Thermo-switch (TP1)
[2]	Sub thermistor (TH2)	[5]	Pressure roller
[3]	Main thermistor (TH1)	[6]	Fixing film unit

8.2 Various Control Mechanisms

8.2.1 Controlling the Speed of the Fixing Film

8.2.1.1 Controlling the Fixing Film Speed

The rotation cycle is measured with reference to the mark provided at the end of the fixing film to rotate the fixing drive motor at the optimum speed, thus keeping the paper feed speed constant. Measurement of the cycle of each rotation (excluding the initial rotation and post-rotation) of the fixing drive motor starts when 1 second lapses after the motor starts rotating and ends when the trailing edge of the last sheet has passed through the fixing nipper.



F-8-3

- [1] Film rotation detection signal (FILM_SENS): Set to 1 and 0 alternately when the fixing film is rotating.
- [2] Rotation cycle measurement mark

8.2.2 Controlling the Fixing Film Temperature

8.2.2.1 Outline

The surface temperature of the fixing heater is detected to control the fixing heater drive signal so that the fixing heater temperature becomes the target temperature. The temperature of the fixing heater is detected by the thermistor (TH1/TH2) provided on the fixing heater. If the surface temperature rises, the resistance of the thermistor lowers and the voltage of the fixing heater temperature detection signal (M_TH/S_TH) also lowers.

The CPU on the DC controller monitors the voltage of the M_TH/S_TH signal to control the fixing heater 1 drive signal (H1DRV) and fixing heater 2 drive signal (H2DRV). These two voltages are generated based on the zero crossing detection signal which is output from the heater control circuit. The CPU controls these two signals to adjust the fixing heater temperature to the prescribed value.

8.2.2.2 Controlling the Fixing Film Temperature

This machine performs fixing temperature control according to the fixing heater temperature as mentioned below.

- 1) Warm-up temperature control
Upon receipt of a print command from the DC controller, the fixing heater heats to the temperature below the target paper-present section temperature.
- 2) Paper-present section temperature control
The fixing heater temperature is adjusted to the target paper-present section temperature according to the combination of the paper size, number of sheets fed, fixing mode, and temperature detected by the fixing main thermistor.
- 3) Sheet-to-sheet temperature control
The fixing heater temperature is held relatively below the target paper-present section temperature to prevent the paper-absent section temperature from rising between sheets.
- 4) Down sequence
The temperature may detect an abnormally high temperature during continuous printing. If the sub-thermistor detects a temperature equal to or higher than 275 deg C, the sheet-to-sheet distance is increased to prevent the paper-absent section temperature from rising. If the sub-thermistor detects a temperature equal to or lower than 220 deg C in the down sequence, normal control resumes.
- 5) Cooling mode
If printing is performed using wider sheets (*1) after printing is performed using narrower sheets in the continuous print mode, fixing offset may occur due to the difference in temperature between the edge and center. If the sub-thermistor detects a temperature equal to or higher than 130 deg C, paper feed and printing stop to prevent the temperature from rising at the edge. If the sub-thermistor detects a temperature equal to or lower than 130 deg C or two or more minutes lapse, normal control resumes.

*1: The large size is a paper of which the width is 10 mm larger than the previous job.

8.2.2.3 Target Temperatures by Mode

This machine controls the fixing temperature according to the "media type" selected in the user mode and the "target temperature" set in the "special mode." The correspondence between each mode and target temperature is as follows:

Fixing mode	Paper type	Target initial fixing temperature (*1)	Initial number of sheets (*2)	Condition
Normal	Plain paper (colored paper/recycled paper/label sheet (64-80 g/m ²))	190 deg C	1-9 (A4/LTR)	Special Mode P: OFF
		185 deg C	1-9 (A4/LTR)	Special Mode P: ON
Rough Paper Lo	Heavy paper 1 (81-90 g/m ²)	195 deg C	1-9 (A4/LTR)	
	Heavy paper 2 (91-105g/m ²)			
Rough Paper	Heavy paper 3 (106-128g/m ²)	220 deg C	1-9 (A4/LTR)	
Super rough paper	Bond paper	220 deg C	1-100 (A4/LTR)	Bond SP. Processing: Off
Super rough paper Hi	Bond paper	220 deg C	1-100 (A4/LTR)	Bond SP. Processing: On
Envelope	Envelope	220 deg C	1-2	
OHP	OHP	190 deg C	1-9 (A4/LTR)	

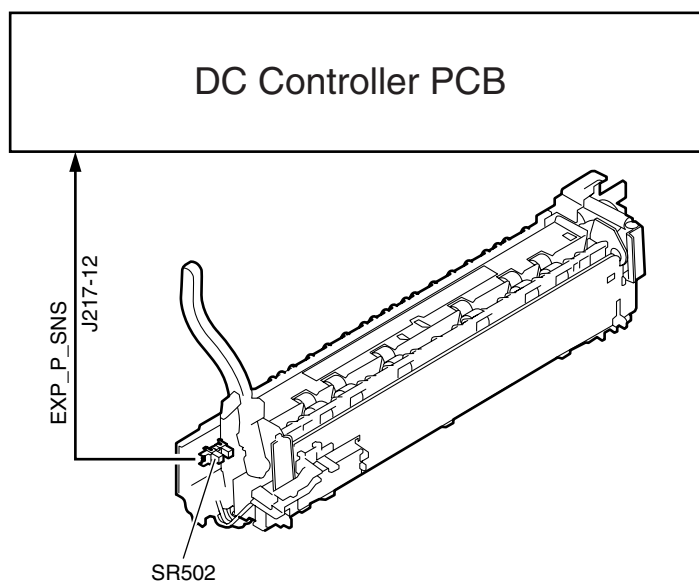
*1: Target fixing temperature at startup. When the initial temperature of the fixing unit is high, the target temperature is lowered. In the continuous copy mode, the target temperature is lowered in 5 deg C steps.

*2: Number of sheets controlled at the initial target temperature. If it is exceeded, the target temperature is lowered. The prescribed number of sheets varies with the paper size.

8.2.3 Detecting the Passage of Paper

8.2.3.1 Detecting the Passage of Paper

The paper passage detection mechanism of the fixing unit is shown below.



F-8-4

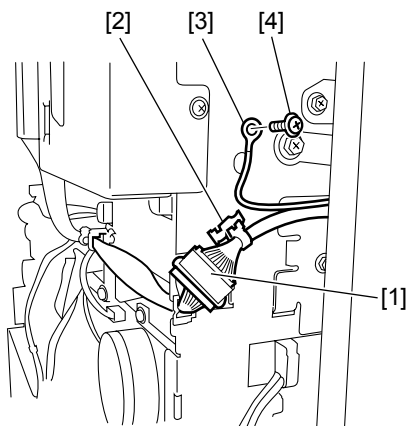
If a delay jam is detected by the fixing delivery sensor (SR202), the fixing motor is stopped immediately to prevent paper from winding around the fixing roller.

8.3 Parts Replacement Procedure

8.3.1 Fixing Unit

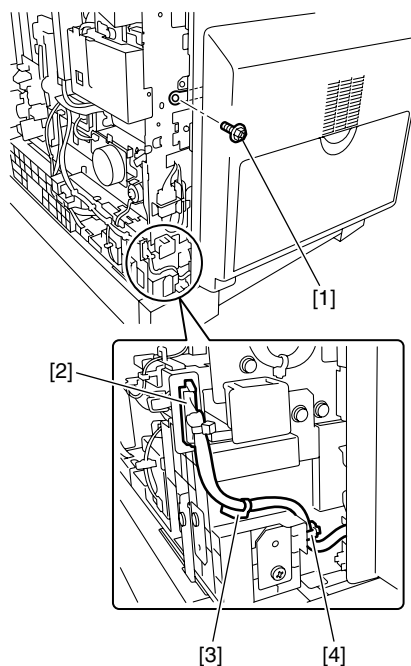
8.3.1.1 Removing the Fixing Unit

- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).
- 4) Disconnect the connector [1] of the junction harness and remove the reusable band [2], then remove the earth wire [3].
- Screw [4] 1 pc.



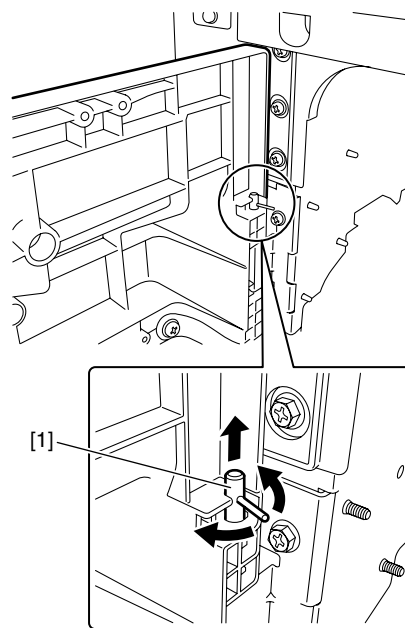
F-8-5

- 5) Remove the screw [1] securing the door support band. Remove the connector [2] and reusable band [3], and release the duplex unit harness from the wire saddle [4].



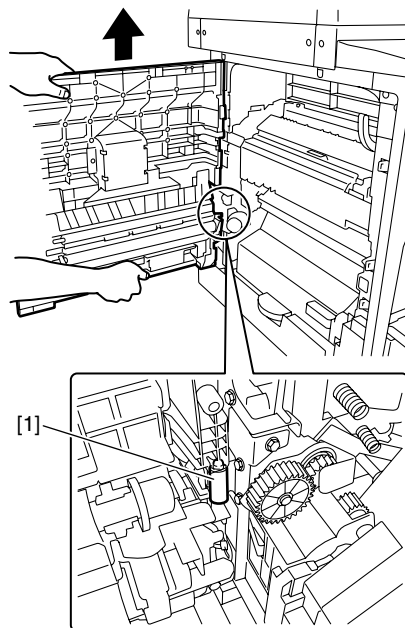
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- 6) Open the left door until it sops and pull out the hinge shaft [1].



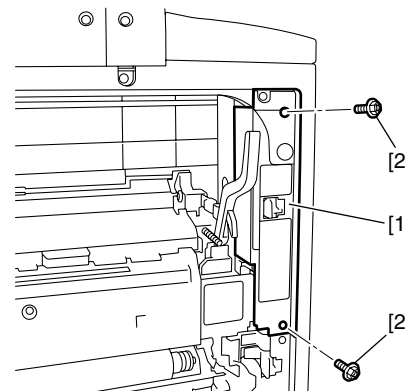
F-8-7

- 7) Lift the left door with both hands to release it from the door rotation shaft [1], and then remove the left door.



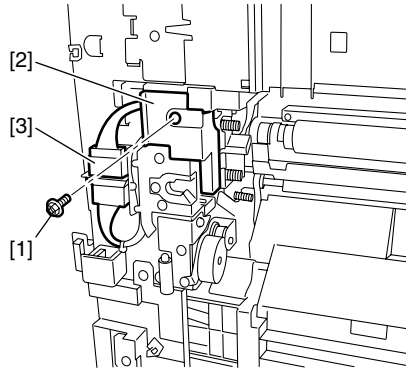
F-8-8

- 8) Detach the inner cover [1] at the upper front.
- Screws [2] 2 pcs.



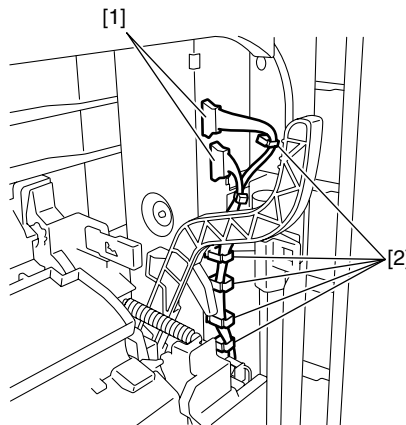
F-8-9

- 9) Remove the heater harness cover [2]. Disconnect the connector [3].
- Screw [1] 1 pc.



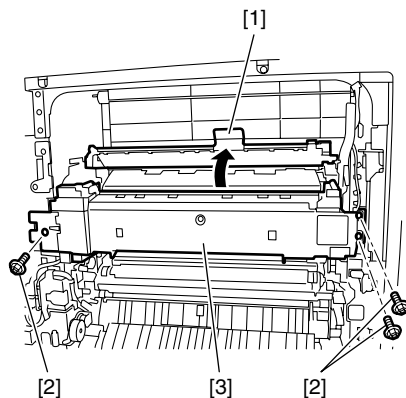
F-8-10

- 10) Disconnect the two connectors [1], and then release the fixing unit harness from the wire saddles [2].



F-8-11

- 11) Raise the delivery upper guide [1]. Remove the fixing unit [3].
- Screw [2] 3 pcs.



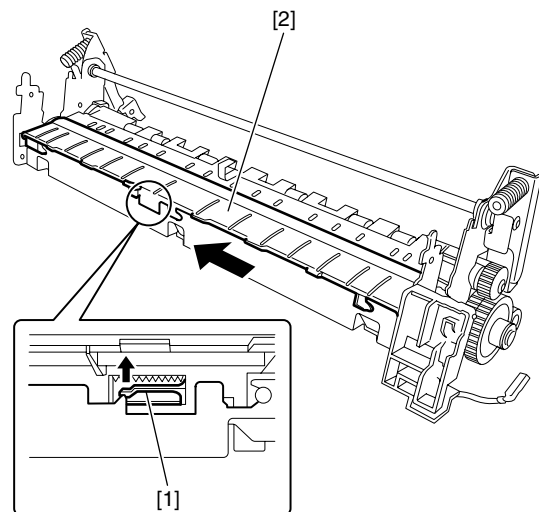
F-8-12

8.3.2 Pressure Roller

8.3.2.1 Removing the Pressure Roller

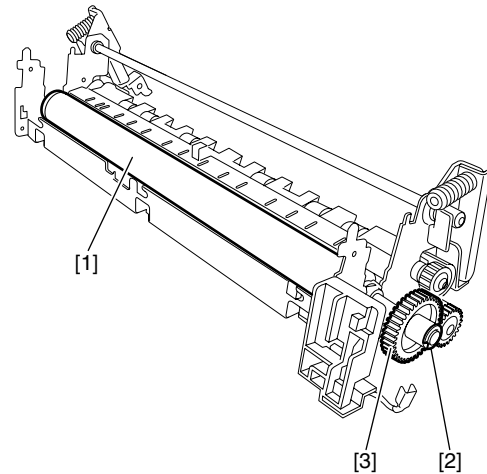
- 1) Remove the fixing unit.
2) Remove the fixing film unit.

- 3) Raise the claw [1] of the fixing unit inlet guide, and remove the slide the fixing unit inlet guide [2] by sliding it in the direction of the arrow.

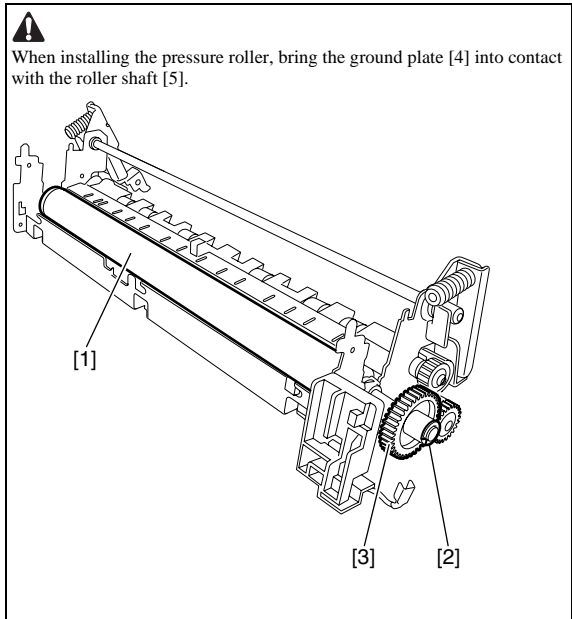


F-8-13

- 4) Remove the pressure roller [3].
- E-ring [1] 1 pc.
- Gear [2] 1 pc.



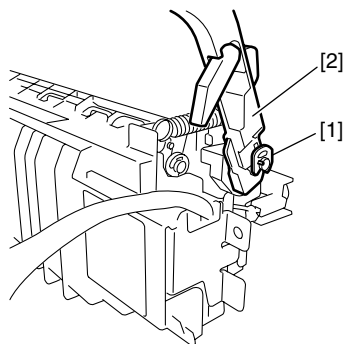
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8.3.3 Fixing Film

8.3.3.1 Removing the Fixing Film Unit

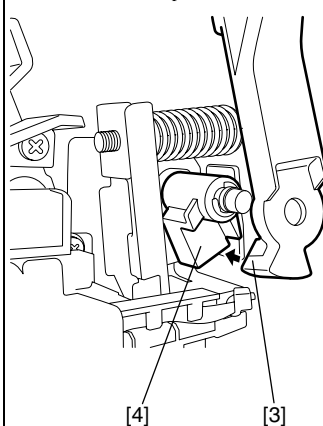
- 1) Remove the fixing unit.
- 2) Remove the fixing pressure release lever [2].
- Resin ring [1]



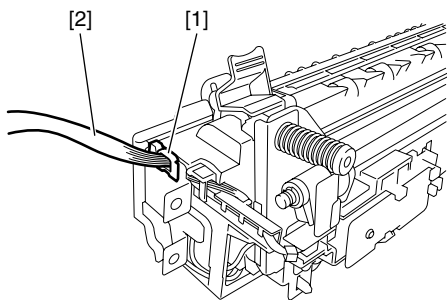
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When installing the fixing pressure release lever, check that the rib [3] of the lever is inside the pressure block [4].

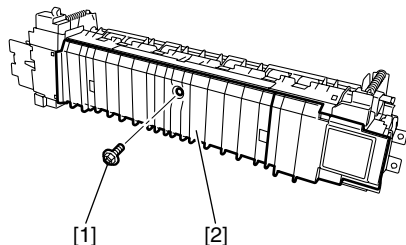


- 3) Release the fixing unit harness [2] from the wire saddle [1].



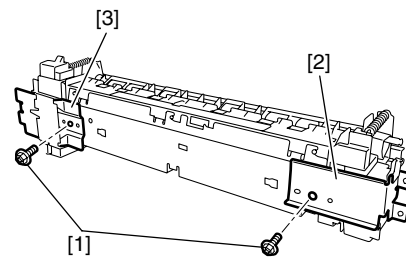
F-8-16

- 4) Remove the fixing paper guide [2].3
- Screw [1] 1 pc.



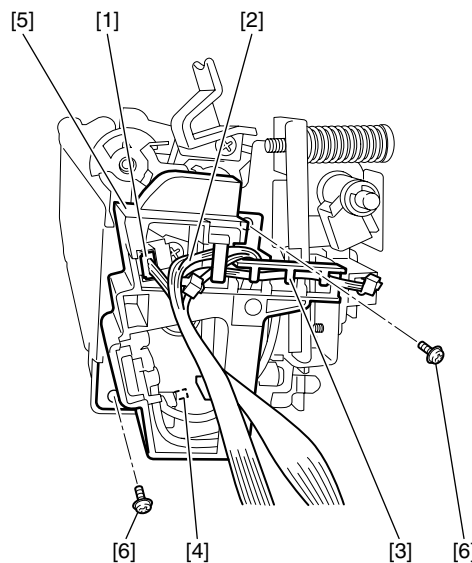
F-8-17

- 5) Remove the right side stay [2] and left side stay [3].
- Screw [1] 2 pcs.



F-8-18

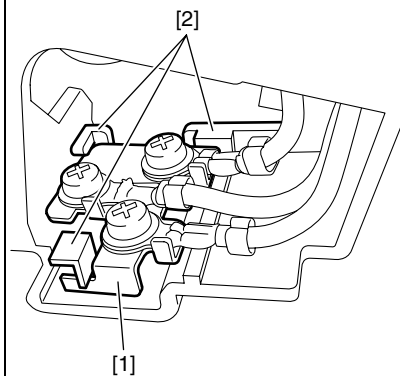
- 6) Disconnect the connector [1] and release the fixing DC harness [2] from the harness guide [3]. Unhook the claw [4] and remove the sensor holder [5].
- Screw [6] 2 pcs.



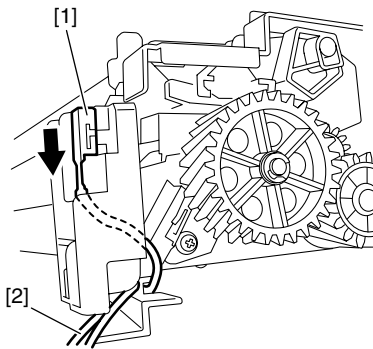
F-8-19



When installing the electrode plate [1], place it under the three claws [2] as shown below.

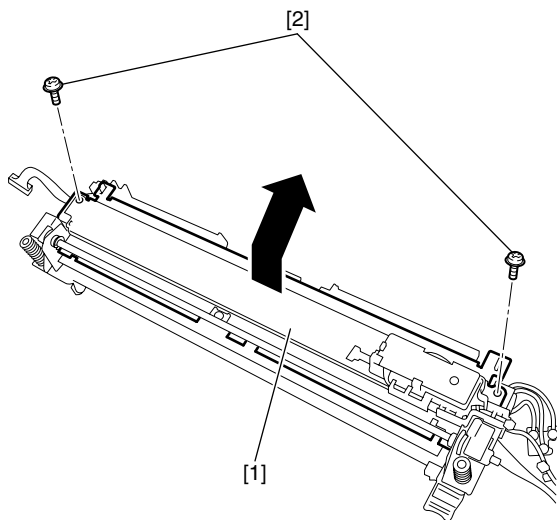


- 7) Remove the ground cable [1] from the holder, and then free the fixing unit AC harness.



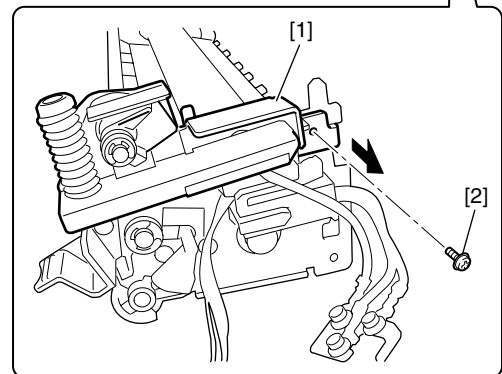
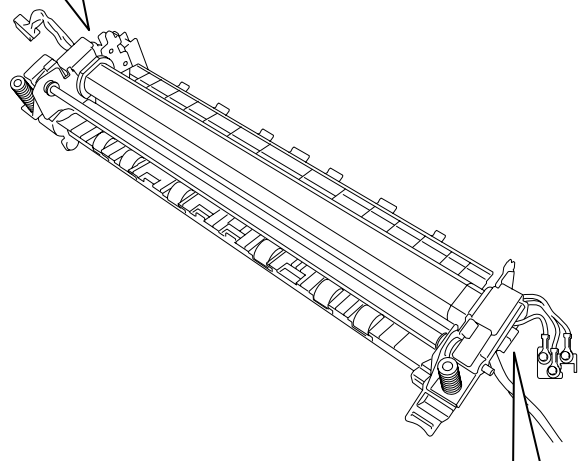
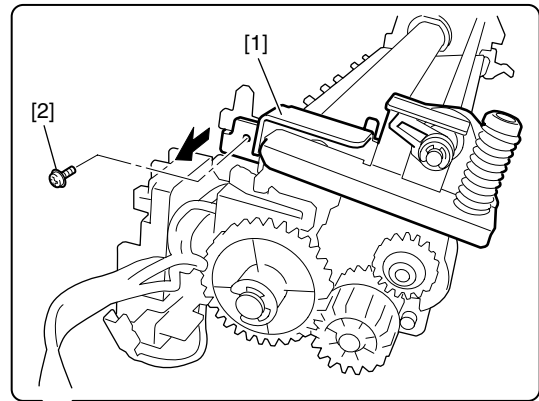
F-8-20

- 8) Remove the roller guide unit [1].
- Screw [2] 2 pcs.



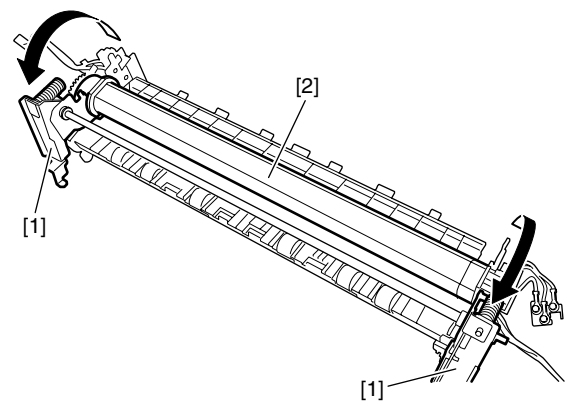
F-8-21

- 9) Release the pressure plates [1].
- Screw [2], 2 pcs.



F-8-22

- 10) After rotating the pressure plates [1] to release them from the fixing film unit, remove the fixing film unit [2].

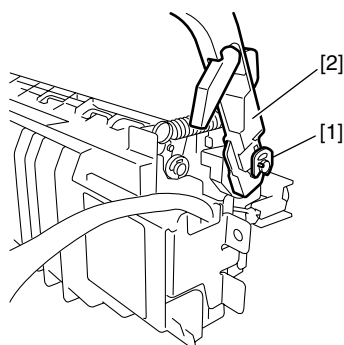


F-8-23

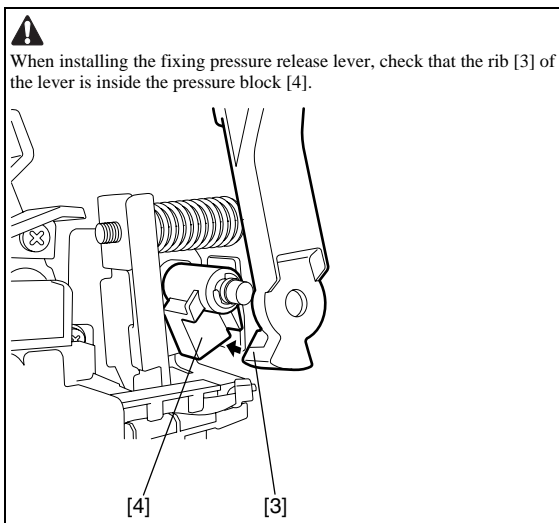
8.3.4 Fixing Delivery Sensor

8.3.4.1 Removing the Fixing Delivery Sensor

- 1) Remove the fixing unit.
- 2) Remove the fixing pressure release lever [2].
- Resin ring [1] 1 pc.

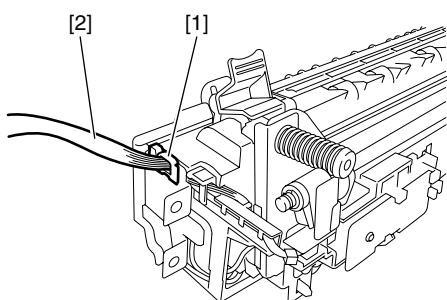


F-8-24



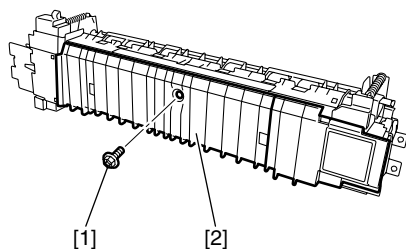
F-8-25

- 3) Remove the fixing unit harness [2] from the wire saddle [1].



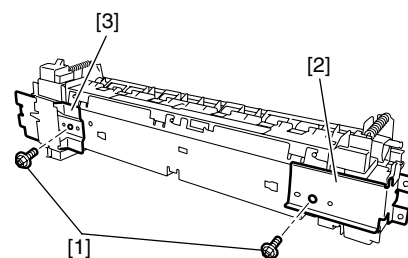
F-8-26

- 4) Remove the fixing paper guide [2].
- Screw [1] 1 pc.



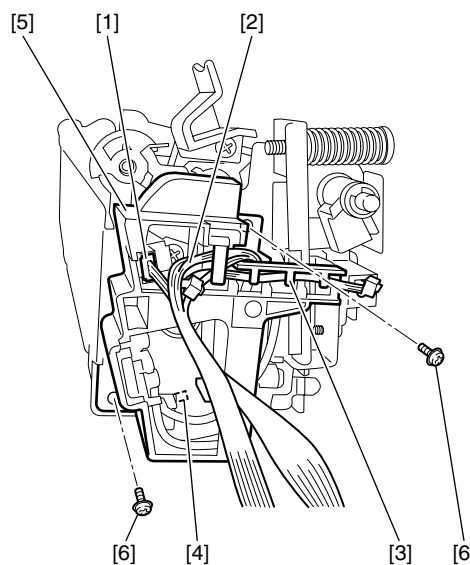
F-8-27

- 5) Remove the right side stay [2] and left side stay [3].
- Screws [1] 2 pcs.



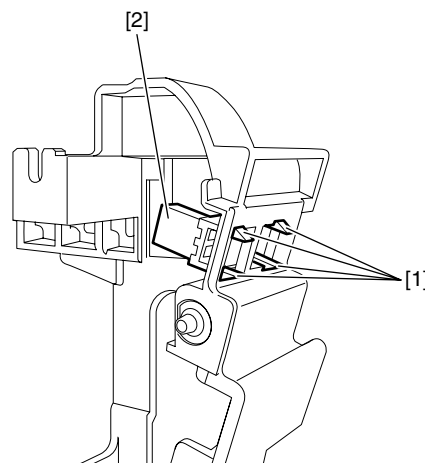
F-8-28

- 6) Disconnect the connector [1] and release the fixing DC harness [2] from the harness guide [3]. Unhook the claw [4] and remove the sensor holder [5].
- Screws [6] 2 pcs.

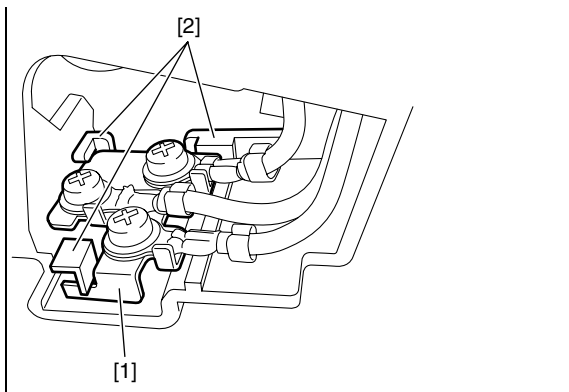


F-8-29

- 7) Release the four sensor claws [1], and then remove the fixing delivery sensor [2].



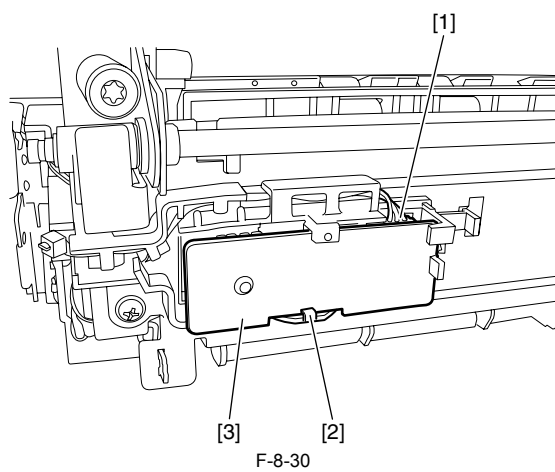
! When installing the electrode plate [1], place it under the three claws [2] as shown below.



8.3.5 Fixing Film Sensor

8.3.5.1 Removing the Fixing Film Sensor

- 1) Remove the fixing unit.
- 2) Disconnect the connector [1], release the two hooks [2], and then remove the film sensor [3].



Chapter 9 External and Controls

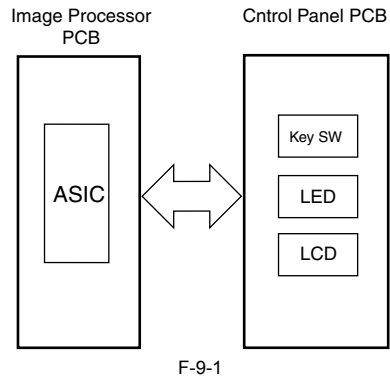
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9.1 Control Panel

9.1.1 Overview

The machine's control panel consists of the following PCBs, and is controlled by the ASIC of the image processor PCB. The indication on the LCD is in 5 lines (132 x 65 dots).

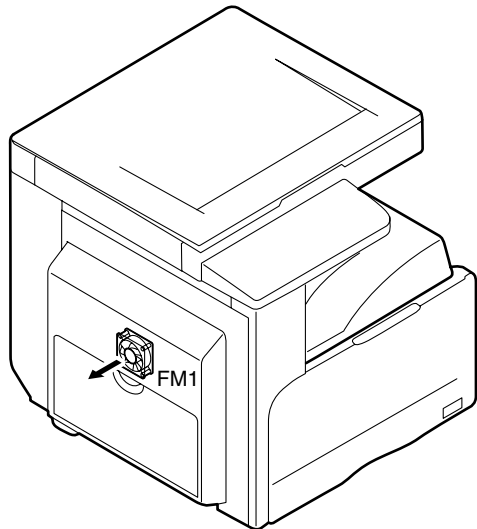


F-9-1

9.2 Fans

9.2.1 Overview

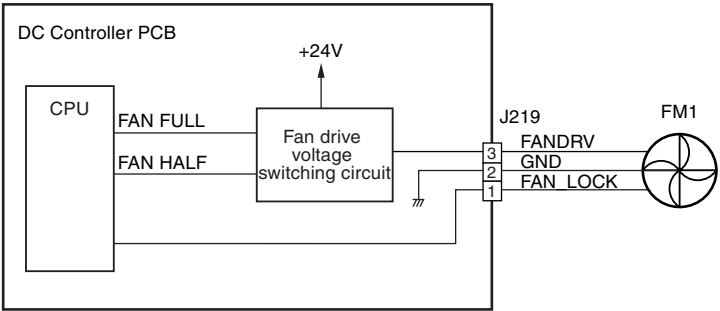
This machine is provided with a fan to cool the fixing unit.



F-9-2

9.2.2 Fan Control

The fan motor control circuit is shown below.



F-9-3

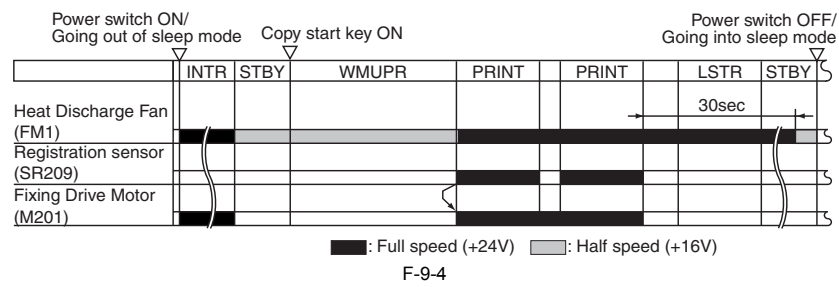
Switching between full-speed rotation and half-speed rotation is controlled as described below.
 1) Full-speed control
 When the CPU on the DC controller outputs a fan full speed signal (FAN_FULL), the fan drive voltage switching circuit supplies a +24 V fan drive voltage to turn

the heat exhaust fan at the full speed.

2) Half-speed control

When the CPU on the engine controller outputs a fan half speed signal (FAN_HALF), the fan drive voltage switching circuit supplies a +16 V fan drive voltage to turn the heat exhaust fan at the half speed.

Fan Control Sequence



E805-0000 (Main body fan error)

When the cooling fan of the main body starts, the fan lock detection signal (FAN_LOCK) has been held at the "H" level for longer than the prescribed time.

9.3 Power Supply System

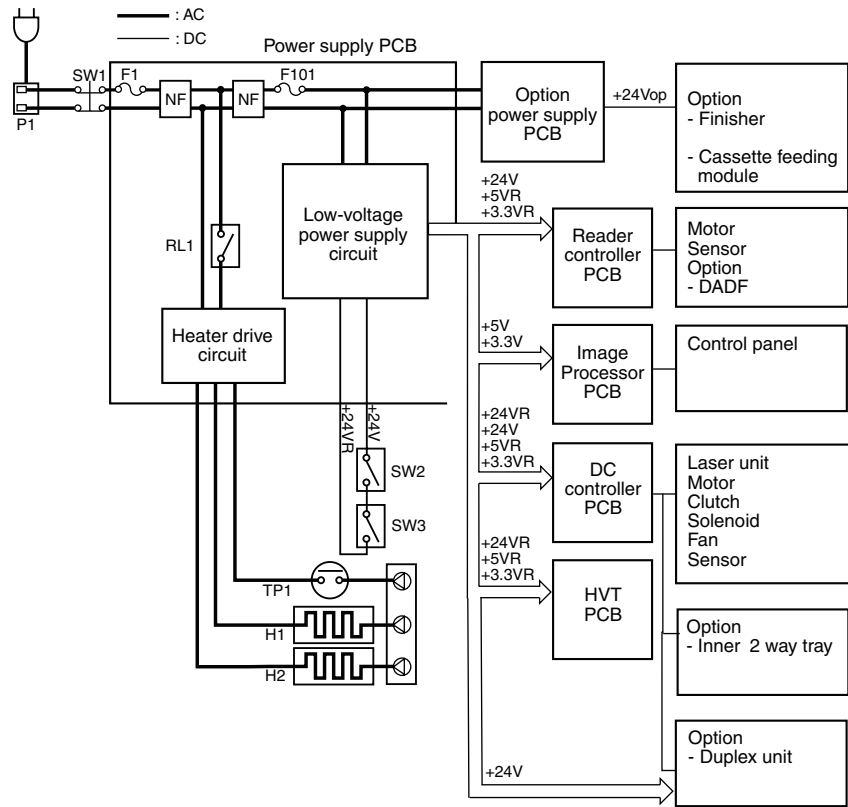
9.3.1 Power Supply

9.3.1.1 Outline (When the duplex unit is not equipped)

When the main power switch (SW1) is turned on, AC power is supplied to the low-voltage power supply circuit in the power supply PCB. The low-voltage power supply circuit supplies +3.3 V, +5 V, and +24 V to operate the machine. +24 V is supplied to the motors, fan, electromagnetic clutch, solenoid, etc. +5 V and +3.3 V are supplied to the sensor, etc. There are two types of +24 V voltages: +24 V which is normally supplied from the low voltage power supply and +24 VR which is cut off when the front cover or the left door is opened. The +24 VR also plays the role of a door open detection signal (DOPEN). This signal allows the CPU to detect that the front cover or the left door has opened.

T-9-1

Part Name	Function
Power supply PCB	Generates DC power from AC power.
Option power supply PCB (option)	Generates DC power from AC power for the options.
Main power switch (SW1)	Supplies AC power to the power supply PCB.
Front cover switch (SW2)	Detects opening/closing of the front cover and cuts off +24 VR.
Left door switch (SW3)	Detects opening/closing of the left door and cuts off +24 VR.



F-9-5

9.3.1.2 Outline (When the duplex unit is equipped)

When the main power switch (SW1) is turned on, AC power is supplied to the low-voltage power supply circuit in the power supply PCB.

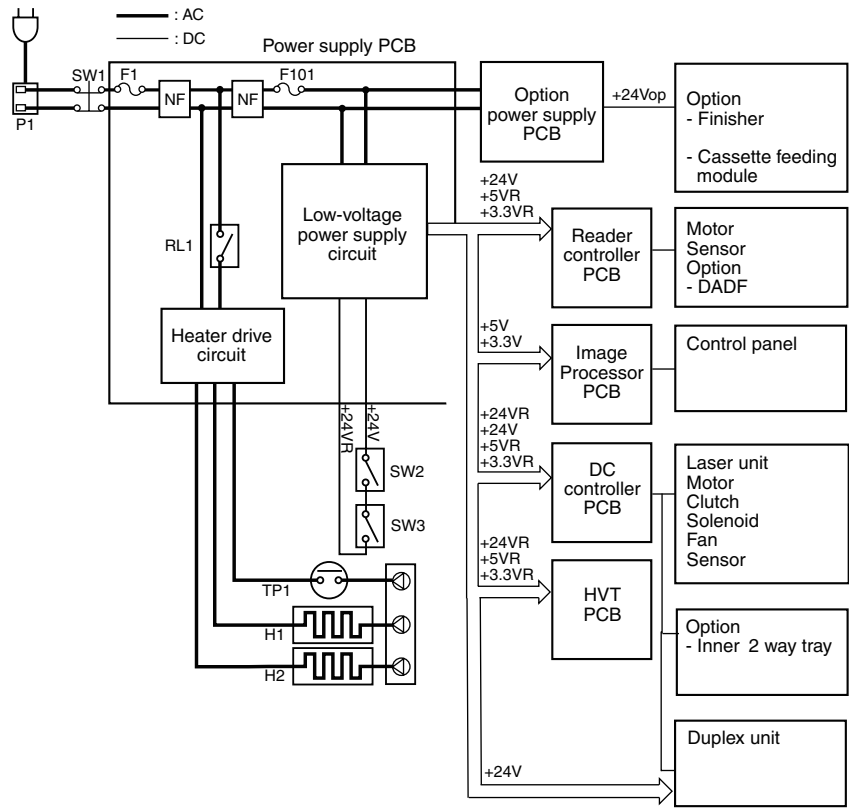
The low-voltage power supply circuit supplies +3.3 V, +5 V, and +24 V to operate the machine.

+24 V is supplied to the motors, fan, electromagnetic clutch, solenoid, etc. +5 V and +3.3 V are supplied to the sensor, etc.

There are two types of +24 V voltages: +24 V which is normally supplied from the low voltage power supply and +24 VR which is cut off when the front cover or the left door is opened. The +24 VR also plays the role of a door open detection signal (DOPEN). This signal allows the CPU to detect that the front cover or the left door has opened.

T-9-2

Part Name	Function
Power supply PCB	Generates DC power from AC power.
Option power supply PCB (option)	Generates DC power from AC power for the options.
Main power switch (SW1)	Supplies AC power to the power supply PCB.
Front cover switch (SW2)	Detects opening/closing of the front cover and cuts off +24 VR.
Left door switch (SW3)	Detects opening/closing of the left door and cuts off +24 VR.



F-9-6

9.3.1.3 Rated Output of the Power Supply PCB

Output	24V	5VR	3.3V	3.3VR
Rated output voltage	24V	5.1V	3.4V	3.4V
Output voltage tolerance	+10%, -5%	+3%, -4%	+3%, -3%	+3%, -3%
Rated output current	3.0A	0.8A	0.75A	0.85A
Overcurrent protection trigger current	9.0A	6.0A	8.0A	8.0A
Overvoltage protection trigger voltage	32.5V	8.0V	5.5V	5.5V

9.3.2 Protection Function

9.3.2.1 Protective Mechanisms

The power supply PCB is provided with an overcurrent/overvoltage protection function to automatically cut off the output voltage when a trouble such as a short circuit occurs on in the load.
When the overcurrent/overvoltage protection function is activated, turn off the main power switch, solve the trouble with the load, and then turn on the main power switch.
Further, the power supply circuit has two fuses which blow to stop power supply when an excessive current flows in the AC line.

9.4 Parts Replacement Procedure

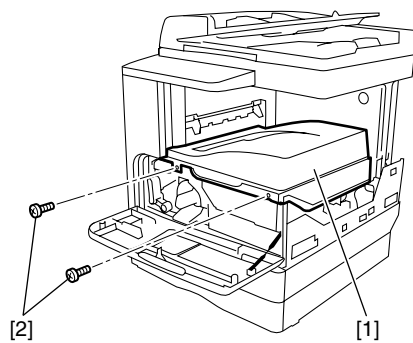
9.4.1 External Covers

9.4.1.1 Delivery Tray

9.4.1.1.1 Removing the Delivery Tray

- 1) Detach the rear cover.
- 2) Open the front cover.
- 3) Detach the right cover (lower).
- 4) Detach the delivery tray [1].

- Screw [2] 2 pcs.



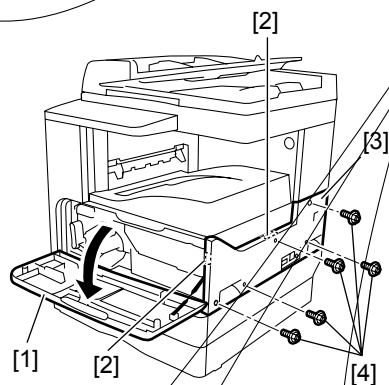
F-9-7

9.4.1.2 Right Cover (Lower)

9.4.1.2.1 Removing the Right Cover (Lower)

- 1) Remove the rear cover.
- 2) Open the front cover [1].
- 3) Remove the two hooks [2], and then detach the right cover (lower) [3].

- Screws [4] 5 pcs.



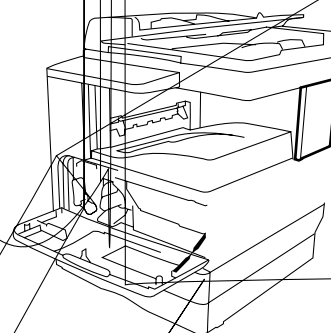
F-9-8

9.4.1.3 Right Cover (Upper)

9.4.1.3.1 Removing the Right Cover (Upper)

- 1) Remove the rear cover.
- 2) Open the front cover.
- 3) Remove the right cover (lower).
- 4) Remove the right cover (upper) [1].

- Screw [2] 1 pc.



F-9-9

9.4.1.4 Rear Cover

9.4.1.4.1 Removing the Rear Cover

- 1) Remove the rear cover [1].

- Screws [2] 4 pcs.

9.4.1.5 Left Cover (Lower)

9.4.1.5.1 Removing the Lower-left Cover

- 1) Detach the lower-left cover [2] by opening the rear support [1] with a slightly strong force applied in the direction of the arrow.

F-9-10

F-9-11

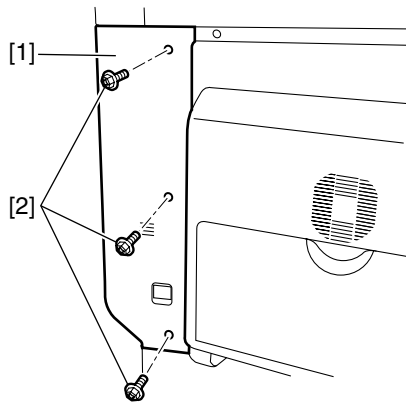
9.4.1.6 Left Cover (Rear)

- Screw [2] 1 pc.

9.4.1.6.1 Removing the Left Cover (Rear)

- 1) Detach the rear left cover [1].

- Screws [2] 3 pcs.



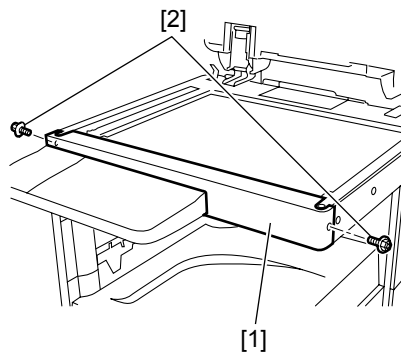
F-9-12

9.4.1.7 Reader Front Cover

9.4.1.7.1 Removing the Reader Front Cover

- 1) Open the copyboard cover (or ADF).
- 2) Detach the reader front cover [1].

- Screws [2] 2 pcs.

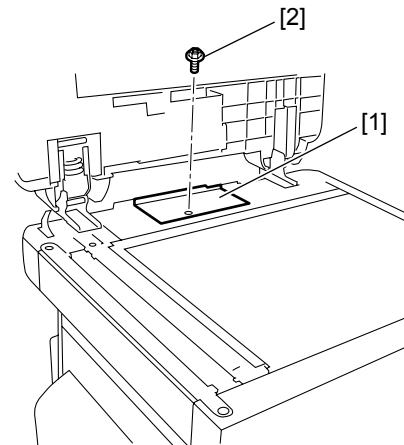


F-9-13

9.4.1.8 Reader Rear Cover

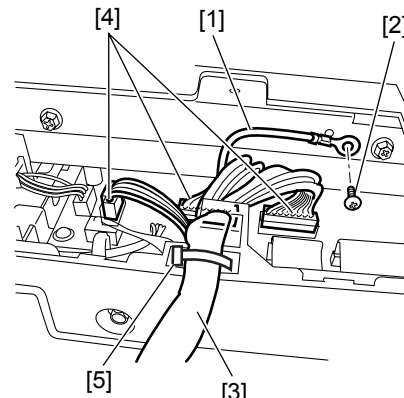
9.4.1.8.1 Removing the Reader Rear Cover

- 1) Remove the rear cover.
- 2) Open the front cover.
- 3) Remove the right cover (lower).
- 4) Remove the right cover (upper).
- 5) Remove the left cover (rear).
- 6) Open the copyboard cover (or ADF).
- 7) Remove the small cover [1].



F-9-14

- 8) Disconnect the ground cable [1] of the ADF harness (Only for ADF equipped).
- Screw [2] 1 pc.
- 9) Remove the ADF harness [3] (Only for ADF equipped).
- Connectors [4] 4 pcs.

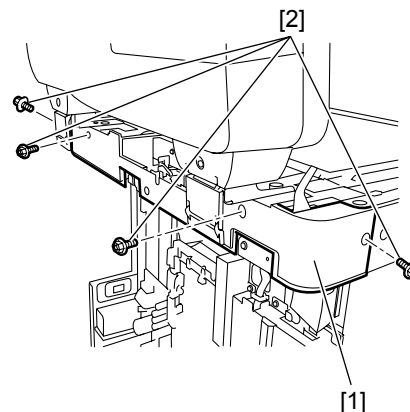


F-9-15

⚠ When installing the ADF harness [3], fit the harness band [5] in the groove in the reader rear cover.

- 10) Remove the reader rear cover [1].

- Screws [2] 4 pcs.



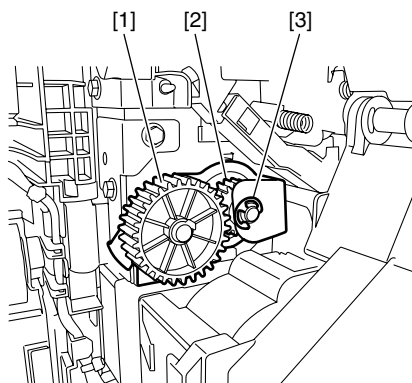
F-9-16

9.4.2 Main Drive Assembly

9.4.2.1 Removing the Main Drive Unit

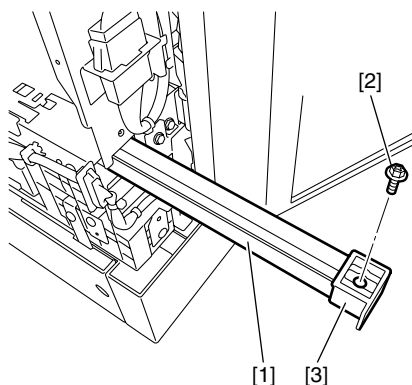
- 1) Open the front cover.
- 2) Turn the developing assembly locking lever clockwise to open the left door.

- 3) Draw out the drum unit.
- 4) Remove the rear cover.
- 5) Remove the left cover (rear).
- 6) Remove the main motor.
- 7) Remove the registration clutch.
- 8) Open the left door fully.
- 9) Remove the gear unit [1] and gear [2].
 - E-ring [3] 1 pc.



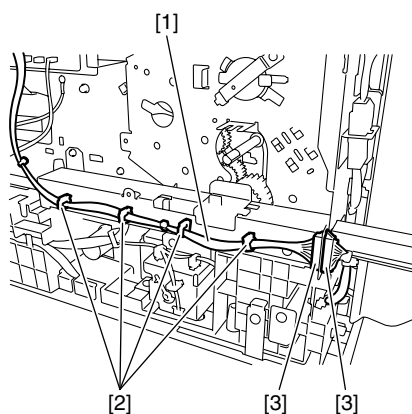
F-9-17

- 10) Pull out the handle [1] at the back of the machine, remove the screw [2], and then remove the stopper [3].



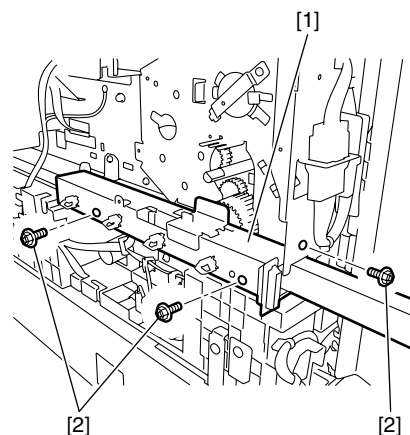
F-9-18

- 11) Remove the harness [1] from the wire saddle [2].
 - Connectors [3] 2 pcs.



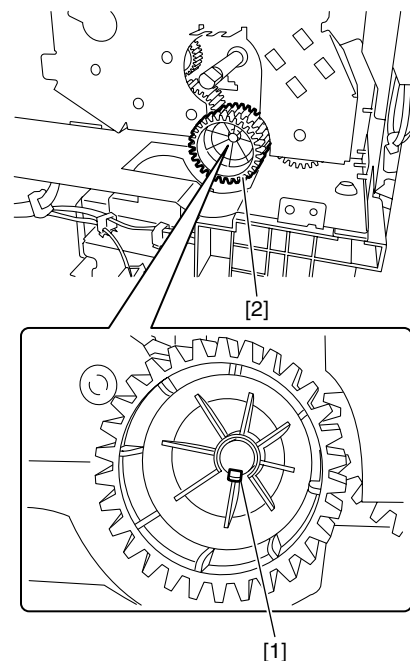
F-9-19

- 12) Remove the handle unit [1].
 - Screws [2] 3 pcs.



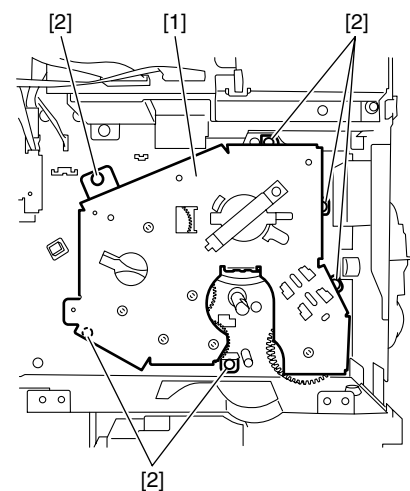
F-9-20

- 13) Release the gear stopper [1] from the shaft, and then remove the gear [2].



F-9-21

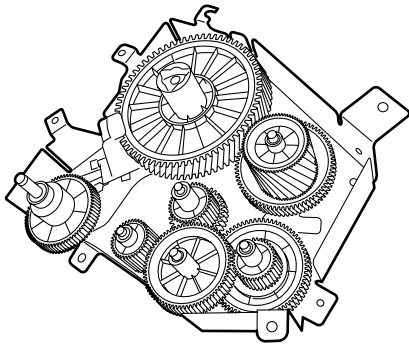
- 14) Remove the main drive unit [1].
 - Screws [2] 6 pcs.



F-9-22



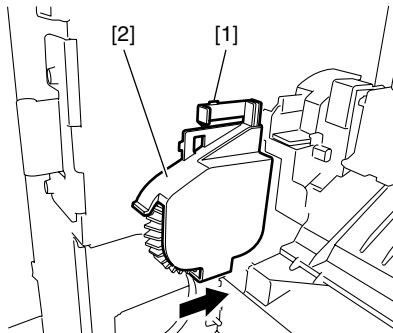
Since the gears in the main drive unit are not secured, gears will fall if the main drive unit is inclined. If gears should fall, install them at the positions shown below.



9.4.3 Fixing Drive Assembly

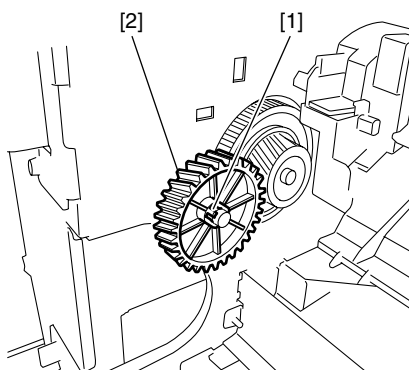
9.4.3.1 Removing the Fixing Drive Unit

- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).
- 4) Remove the left door.
- 5) Remove the fixing unit.
- 6) Remove the image processor PCB with the PCB mount.
- 7) Release the claw [1] on the gear cover, and then remove the gear cover [2] by sliding it in the direction of the arrow.



F-9-23

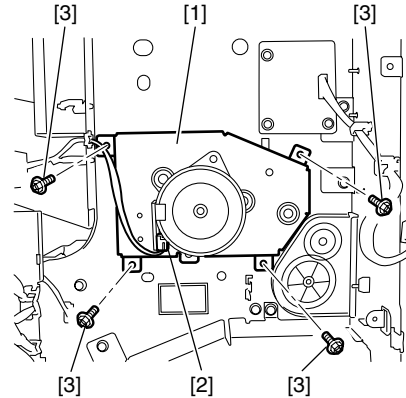
- 8) Release the gear stopper [1], and then remove the gear [2].



F-9-24

- 9) Remove the fixing drive unit [1].

- Connector [2] 1 pc.
- Screws [3] 4 pcs.



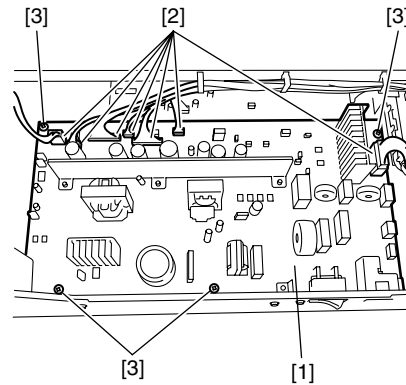
F-9-25

9.4.4 Power Supply Unit

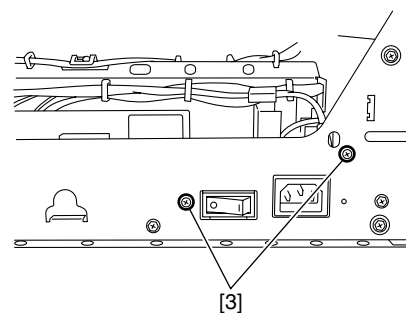
9.4.4.1 Removing the Main Power Supply PCB

- 1) Remove the rear cover.
- 2) Remove the right cover (lower).
- 3) Remove the delivery tray.
- 4) Remove the power supply PCB [1].

- Connectors [2] 7 pcs.
- Screws [3] 6 pcs.



F-9-26



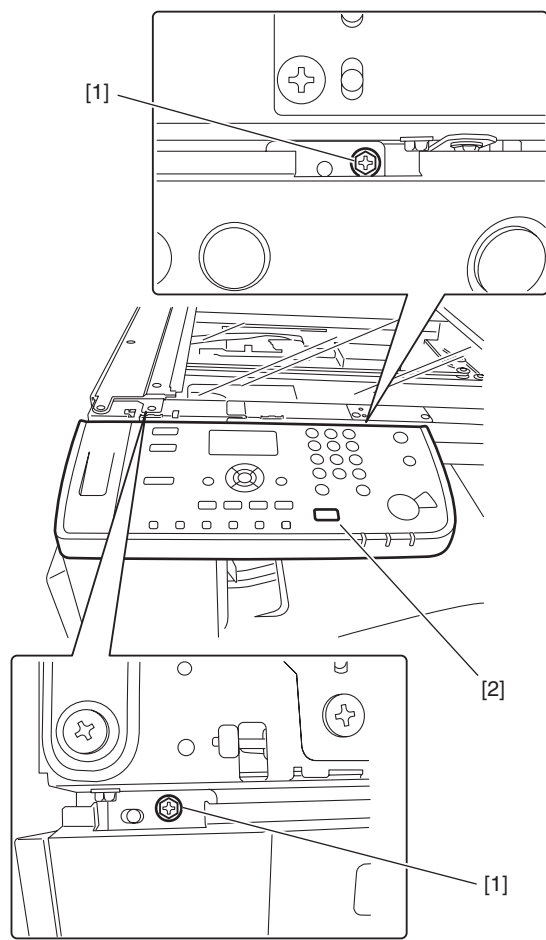
F-9-27

9.4.5 Control Panel

9.4.5.1 Removing the Operation Panel Unit

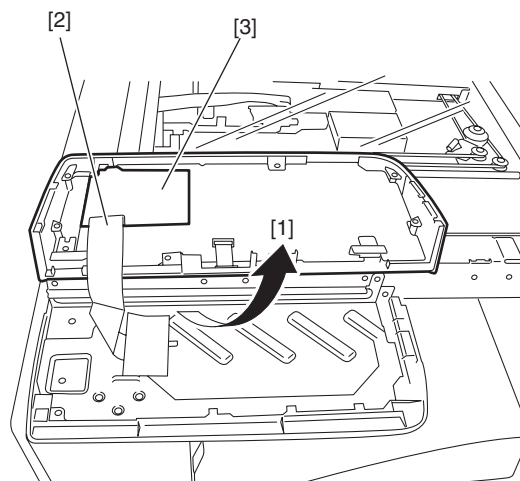
- 1) Open the copyboard cover (or ADF).
- 2) Remove the reader front cover.

- 3) Remove the left cover [1] of the operation panel unit.
- Screws [2] 2 pcs.



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- 4) Turn over the control panel [1] to remove it.
- Harness guide [2] 1 pc.
- Connector [3] 1 pc.

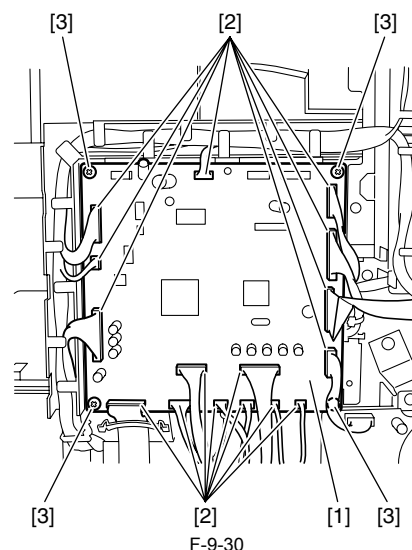


F-9-29

9.4.6 DC Controller PCB

9.4.6.1 Removing the DC Controller PCB

- 1) Remove the rear cover.
2) Remove the DC controller PCB [1].
- Connectors [2] 16 pcs.
- Screws [3] 4 pcs.

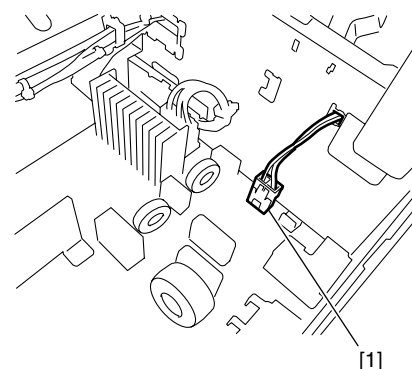


F-9-30

9.4.7 Option Power Supply PCB

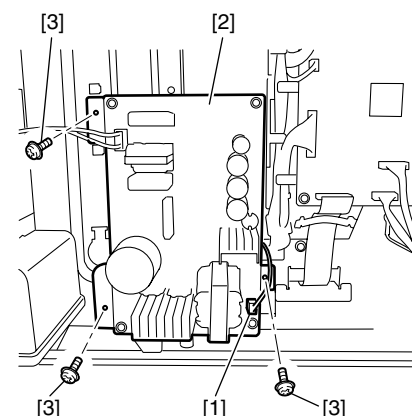
9.4.7.1 Removing the Option Power Supply PCB

- 1) Remove the rear cover.
2) Remove the right cover (lower).
3) Remove the delivery tray.
4) Disconnect the connector (J16) [1] on the power supply PCB.



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- 5) Disconnect the connector (J53) [1] on the power supply PCB.
6) Remove the option power supply PCB [2].
- Screws [3] 3 pcs.



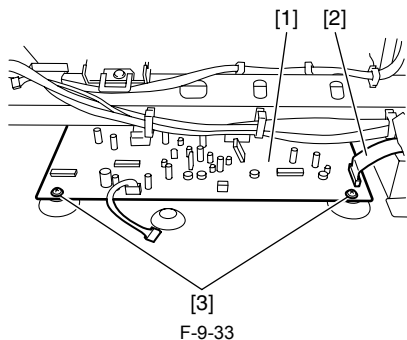
F-9-32

9.4.8 HVT PCB

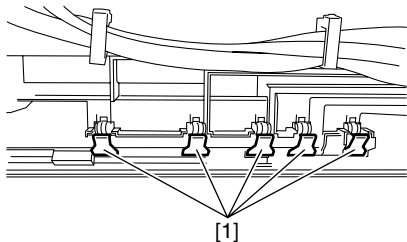
9.4.8.1 Removing the HVT PCB

- 1) Remove the rear cover.
2) Remove the right cover (lower).
3) Remove the delivery tray.

- 4) Remove the power supply PCB.
- 5) Remove the HVT PCB.
 - Connector [2] 1 pc.
 - Screws [3] 2 pcs.



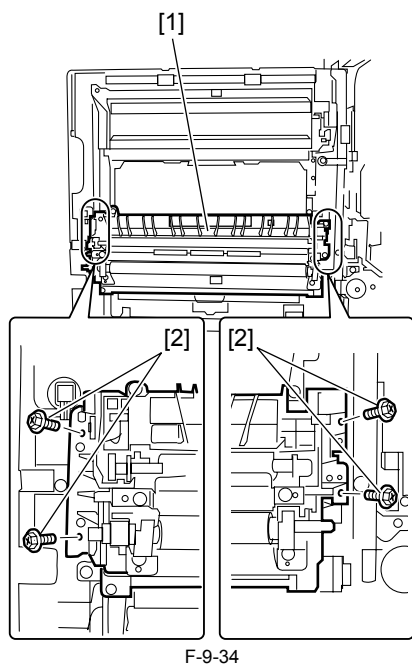
When installing the HVT PCB, check that the contacts on the high voltage electrode plate [1] touch the contacts on the PCB.



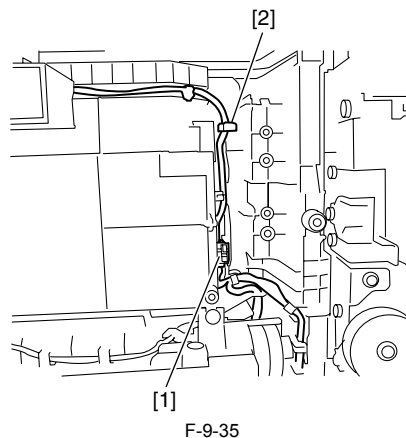
9.4.9 Fixing Heat Discharge Fan

9.4.9.1 Removing the Fan Filter (Non Duplex Unit)

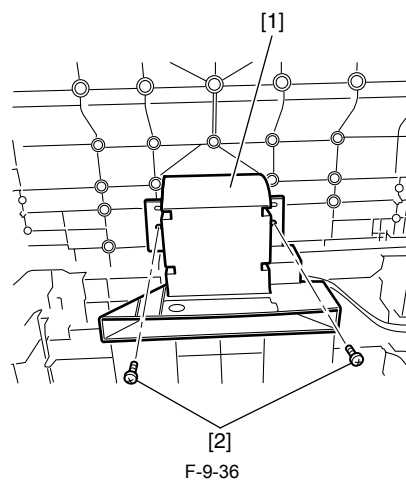
- 1) Open the left door until it stops.
- 2) Remove the transfer/registration unit [1].
 - Screws [2] 4 pcs.



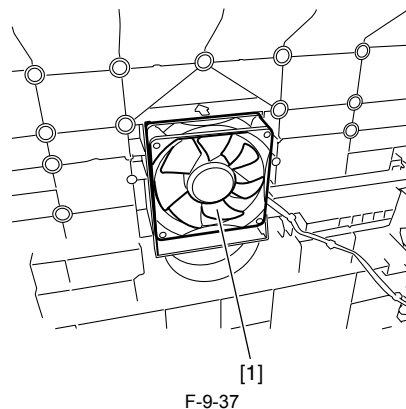
- 3) Disconnect the connector [1], and then release the harness from the wire saddle [2].



- 4) Remove the duct [1].
 - Screws [2] 2 pcs.

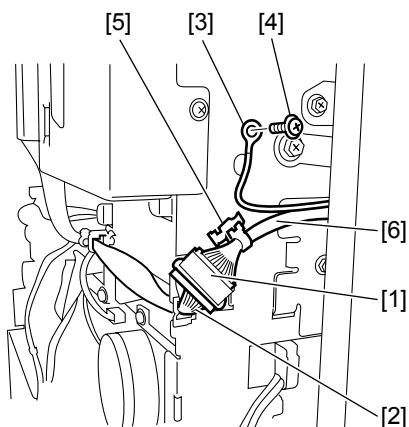


- 5) Remove the fan filter [1] from the duct.



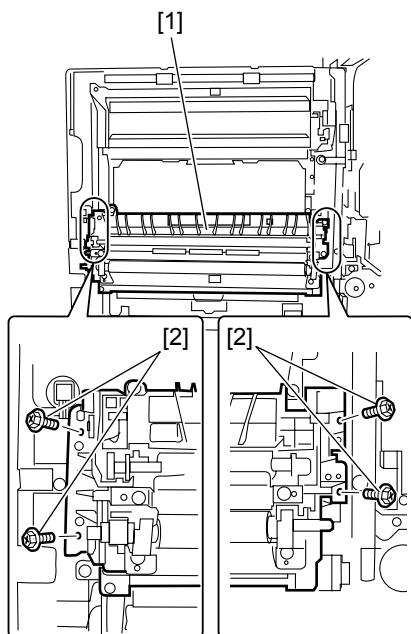
9.4.9.2 Removing the Fan Filter (With Duplex Unit Type)

- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).
- 4) Disconnect the relay harness [2] from the connector [1].
- 5) Disconnect the ground cable [3].
 - Screw [4] 1 pc.
- 6) Remove the reusable band [5] from the duplex unit harness at the rear-left of the main body, and then return the duplex unit harness [6] to the left door side.



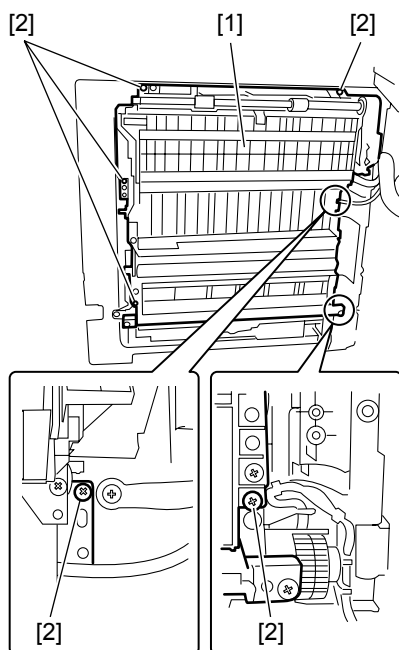
F-9-38

- 7) Remove the transfer/registration unit [1].
- Screws [2] 4 pcs.



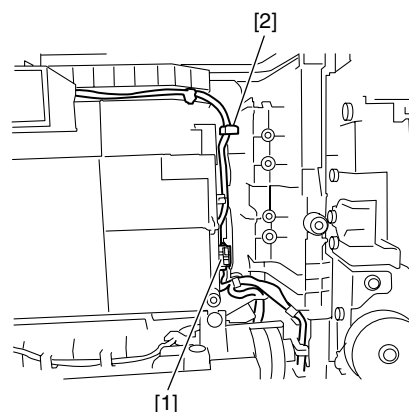
F-9-39

- 8) Remove the duplex unit [1] from the left door.
- Screws [2] 6 pcs.



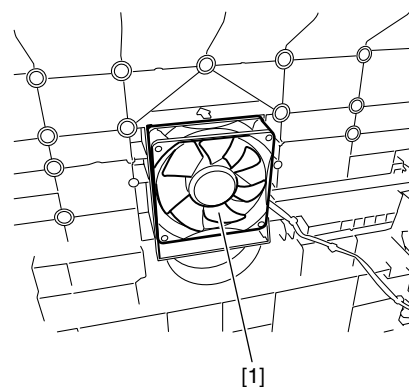
F-9-40

- 9) Disconnect the connector [1], and then release the harness from the wire saddle [2].



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- 10) Remove the fixing heart discharge fan [1].

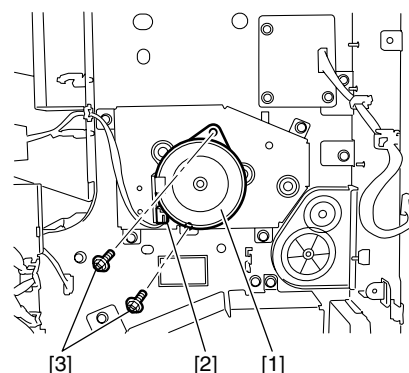


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9.4.10 Fixing Driver Motor

9.4.10.1 Removing the Fixing Unit Drive Motor

- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).
- 4) Remove the left door.
- 5) Remove the fixing unit.
- 6) Remove the image processor PCB with the PCB mount.
- 7) Remove the fixing motor [1].
- Connector [2] 1 pc.
- Screws [3] 2 pcs.



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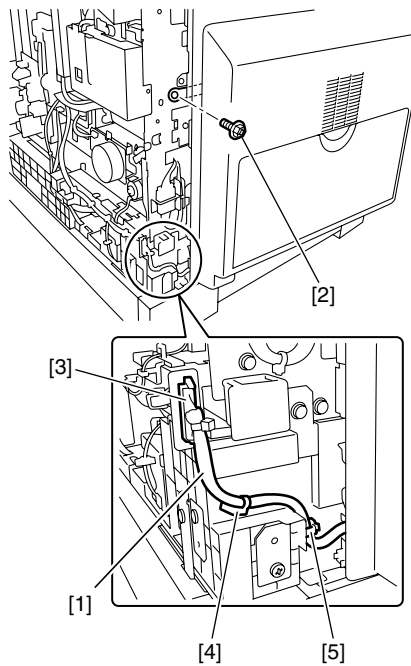
9.4.11 Left Door

9.4.11.1 Removing the Left Door (Non Duplex Unit Type)

- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).

4) Release the duplex unit harness [1].

- Screw [2] 1 pc.
- Connector [3] 1 pc.
- Reusable band [4] 1 pc.
- Wire saddle [5] 1 pc.

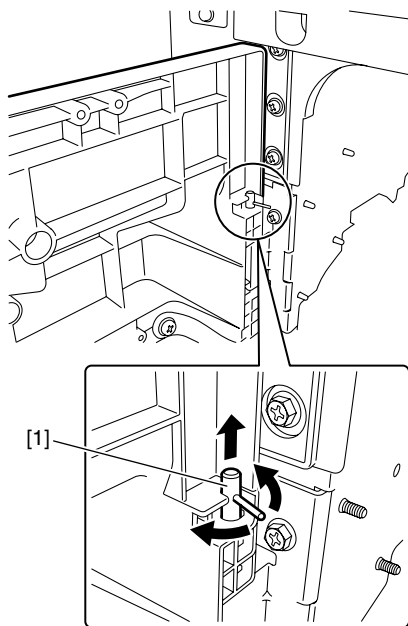


F-9-44

5) Open the left door until it stops and pull out the hinge shaft [1].

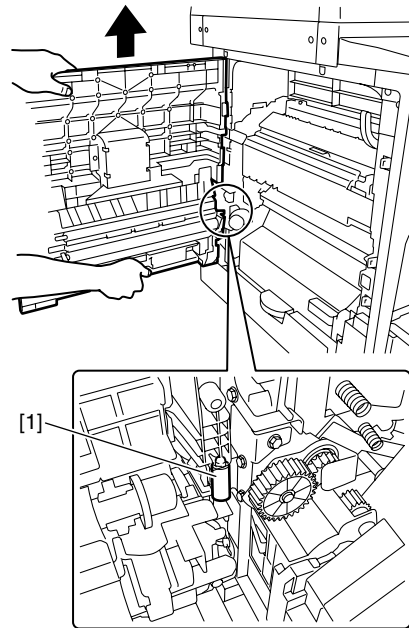
MEMO:

When a duplex unit (option) is installed, remove it before pulling out the hinge shaft for each access.



F-9-45

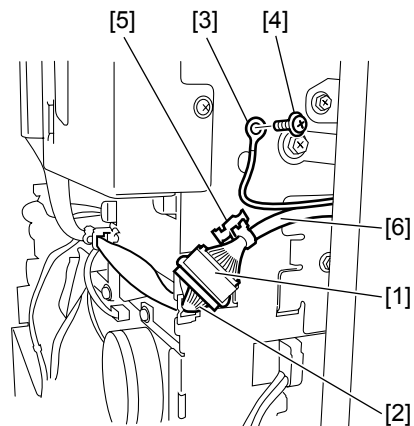
6) Lift the left door with both hands to release it from the door rotation shaft [1], and then remove the left door.



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9.4.11.2 Removing the Left Door (With Duplex Unit Type)

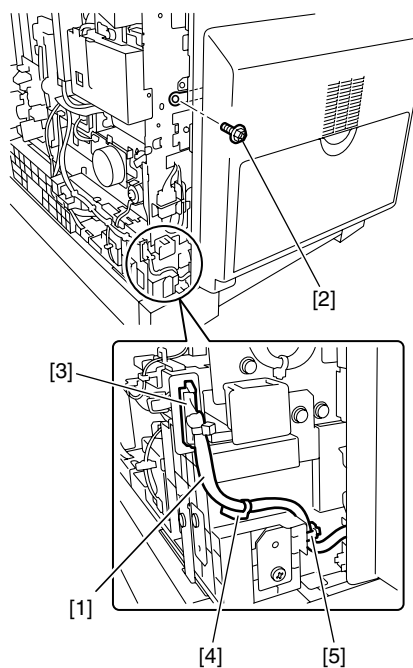
- 1) Draw out the drum unit.
- 2) Remove the rear cover.
- 3) Remove the left cover (rear).
- 4) Disconnect the relay harness [2] from the connector [1] of the duplex unit harness.
- 5) Disconnect the ground cable [3].
- Screw [4] 1 pc.
- 6) Remove the reusable band [5] from the duplex unit harness at the rear-left of the main body, and then return the duplex unit harness [6] to the left door side.



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7) Release the duplex unit harness [1].

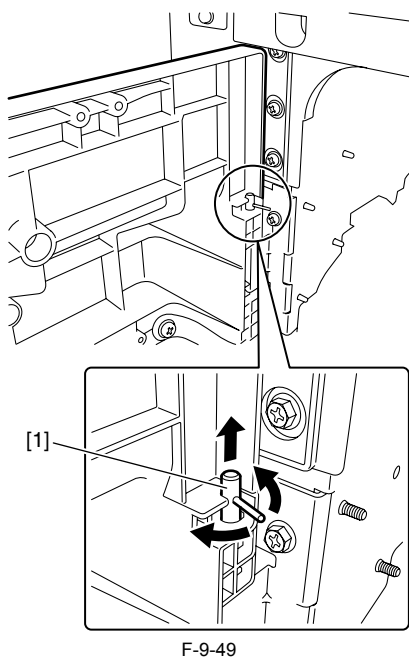
- Screw [2] 1 pc.
- Connector [3] 1 pc.
- Reusable band [4] 1 pc.
- Wire saddle [5] 1 pc.



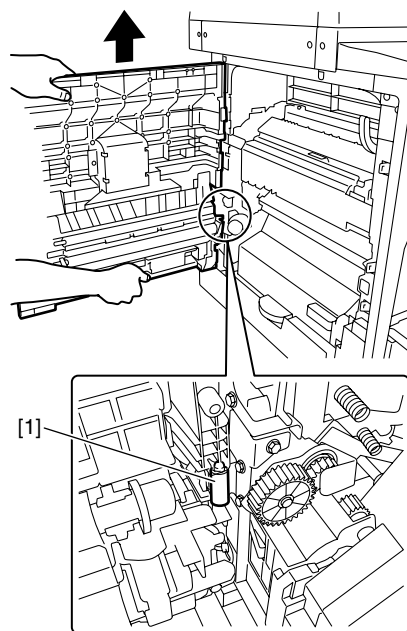
8) Open the left door until it stops and pull out the hinge shaft [1].

MEMO:

When a duplex unit is installed, remove it before pulling out the hinge shaft for each access.



9) Lift the left door with both hands to release it from the door rotation shaft [1], and then remove the left door.



Chapter 10 Maintenance and Inspection

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10.1 Periodically Replaced Parts

10.1.1 Overview

The machine has parts that must be replaced on a periodical basis to ensure a specific level of functional performance. (The loss of the function of any of these parts will significantly affect the machine performance, regardless of the presence/absence of external changes or damage.)
If possible, schedule the replacement so that it coincides with a scheduled service visit.



The timing of replacement may vary depending on the site environment or user habit.

10.1.2 Reader Unit

The reader unit does not have parts that require periodical replacement.

10.1.3 Printer Unit

The printer unit does not have parts that require periodical replacement.

10.2 Durables and Consumables

10.2.1 Overview

The machine has parts that may require replacement once or more during the period of product warranty because of wear or damage. Replace them as needed by referring to their indicated estimated lives.

- Checking the Timing of Replacement

Use the service mode item to check the timing of replacement

10.2.2 Reader Unit

The reader unit does not have parts that are classified as durables.

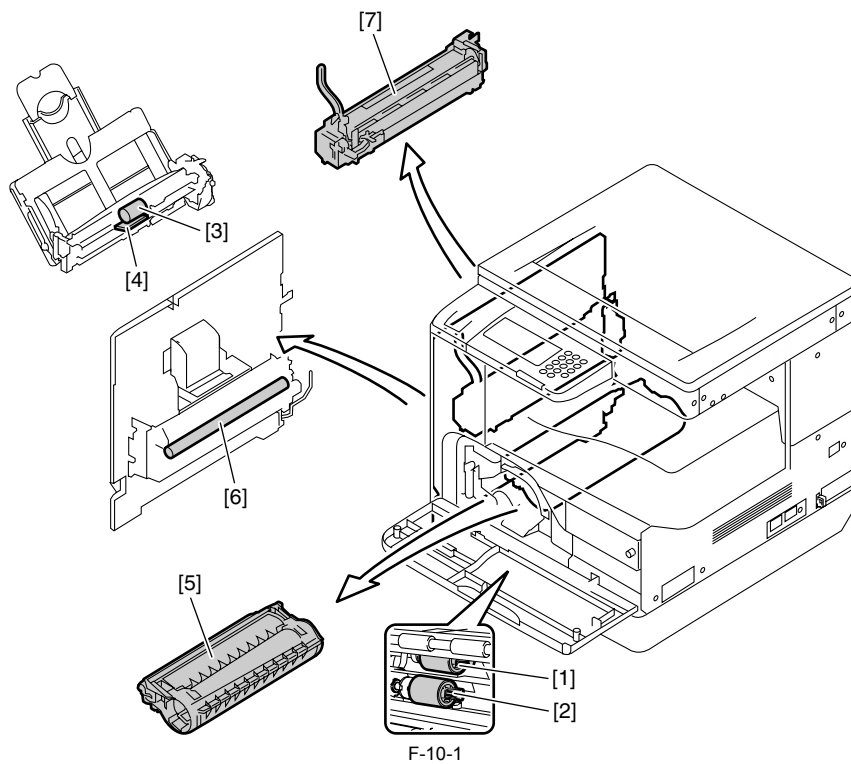
10.2.3 Printer Unit

As of Apr. 2011

No.	Parts name	Parts No.	Q'ty	Life	Remarks
[1]	Cassette feed roller	FF6-1621	1	100K	The 2-stage cassette type uses two rollers.
[2]	Cassette separation roller	FF6-1621	1	100K	The 2-stage cassette type uses two rollers.
[3]	Manual feed pickup roller	FL2-3202	1	150K	
[4]	Manual feed separation pad	FL2-3201	1	150K	
[5]	Devloping unit	FM3-3671	1	150K	
[6]	Transfer roller	FC6-4313	1	150K	
[7]	Fixing unit (120V)	FM2-3345	1	150K	
	Fixing unit (230V)	FM2-3352	1	150K	



The value is the mean value collected from the results of evaluation. The parts number may change because of changes in design.



10.3 Scheduled Servicing Basic Procedure

10.3.1 Scheduled Servicing

The reader and printer unit does not have items that require scheduled servicing.

Chapter 11 Standards and Adjustments

Contents

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11.2 Image Formation System	11-1
11.2.1 Procedure after Replacing the Developing Assembly	11-1
11.3 Electrical Components	11-1
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11.1 Scanning System

11.1.1 Procedure after Replacing the CIS

After replacing the contact image sensor (CIS), go through the following steps to perform inter-channel output correction:

- 1) Enter the service mode.
- 2) Sequentially press the Additional Functions, # key on the operation panel.
- 3) Using the upper/lower arrow keys on the operation panel, select "Test".
- 4) Press the OK key.
- 5) Using the upper/lower arrow keys on the operation panel, select "Scanner test".
- 6) Press the OK key.
- 7) Using the upper/lower arrow keys on the operation panel, select "CS Output Test".
- 8) Press the OK key.
- 9) Select "Yes" and then press the OK key.


After completion of the above steps, contact sensor output correction will be performed and parameters will be set automatically.

- 5) Press the OK key.
 - 6) Using the upper/lower arrow keys on the operation panel, select "CS Position Test".
 - 7) Press the OK key.
 - 8) Select "Yes" and press the OK key.
- The optical system starts scanning. Several seconds later, automatic adjustment of the reading position finishes and "OK" appears.

11.2 Image Formation System

11.2.1 Procedure after Replacing the Developing Assembly

<Going through the Developer Idling Mode>

 After replacing the developing assembly, go through the following steps in the developing assembly idle rotation mode before installing the toner cartridge.

- 1) Plug the power cord into the outlet.
- 2) Open the front cover.
- 3) With the front cover open, turn on the main power switch.
- 4) When a message appears on the operation panel display, press the following keys to enter the service mode:
Additional Functions key > # key
- 5) Select "Service's Choice" using the arrow key, and then press the OK key.
- 6) Select "Printer Setting" using the arrow key, and then press the OK key.
- 7) Select "BitSwitch14" using the arrow key, and then press the OK key.
- 8) Select "SW-14-1" using the arrow key, and then press the OK key.
- 9) Select "On" using the arrow key, and then press the OK key.
- 10) Press the Reset key to exit the service mode.
- 11) Close the front cover. The machine will run in the developer idling mode for about 1 minute.
- 12) When the machine stops, the idling mode ends.
Install the toner cartridge following the above-mentioned procedure.

11.3 Electrical Components

11.3.1 Procedure after Replacing the Image Processor PCB

If you have replaced the image processor PCB with a new one, perform the following operations:

- Using the user support tool, download the latest firmware (System/Boot).
- Input the all value printed on the service label affixed to the rear cover.

Make the following adjustments:

- Correction of output between CIS channels

- 1) Enter the service mode.
- 2) Sequentially press the Additional Functions, # key on the operation panel.
- 3) Using the upper/lower arrow keys on the operation panel, select "Test".
- 4) Press the OK key.
- 5) Using the upper/lower arrow keys on the operation panel, select "Scanner test".
- 6) Press the OK key.
- 7) Using the upper/lower arrow keys on the operation panel, select "CS Output Test".
- 8) Press the OK key.
- 9) Select "Yes" and then press the OK key.

After completion of the above steps, contact sensor output correction will be performed and parameters will be set automatically.

- Read position adjustment (Stream reading: Only when the ADF is installed)

- 1) Enter the service mode.
- 2) Sequentially press the Additional Functions, # key on the operation panel.
- 3) Using the upper/lower arrow keys on the operation panel, select "Test".
- 4) Press the OK key.
- 5) Using the upper/lower arrow keys on the operation panel, select "Scanner test".

Chapter 12 Correcting Faulty Images

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12.1 Making Initial Checks

12.1.1 Site Environment

- a. There must be a source of power whose voltage is as specified (+/-10%). The power plug must never be disconnected day and night.
- b. The machine must not be in an area subject to high humidity (near a water faucet, water boiler, humidifier). The site must not be too cold or subject to dust. The machine must not be near a source of fire.
- c. The site must not be subject to ammonium gas.
- d. The machine must not be exposed to the rays of the sun. As necessary, curtains must be provided.
- e. The area must be well ventilated. The machine must be on a level floor.
- f. Be sure that there is a source of power that can be used by the machine.

12.1.2 Checking the Paper

- a. Be sure the paper being used is of a type recommended by Canon.
- b. Be sure that the paper is not moist. Try using paper fresh out of package.

12.1.3 Checking the Placement of Paper

- a. There must be paper in the cassette or the tray deposited within a specific limit.
- b. If transparencies are used, be sure that they are placed in the manual feed tray in the correct orientation.

12.1.4 Checking the Durables

Refer to the table of durables, and replace those that have reached the end of their lives.

12.1.5 Checking the Units and Functional Systems

<Reader>

- Check whether the optical system (contact sensor/white panel/copyboard glass) is free from scratches, stain, foreign objects.
- Check whether the contact sensor unit moves smoothly. Check whether the rails are free from dirt.
- Check whether the contact sensor is not flickering.
- Check whether the optical system is free from dew condensation.

<Process>

- Check whether the drum unit and toner bottle are installed securely.
- Check whether the photoconductor drum is free from scratches and stain.

<Transfer>

- Check whether the transfer roller is free from scratches, stain, and deformation.

<Fixing>

- Check whether the fixing film and pressure roller are free from wear, scratches, dirt, and deformation.
- Check whether the fixing thermistor is broken.
- Check whether the thermo switch is conductive.

<Paper transport >

- Check whether the paper transport path is free from foreign objects such as paper chips.
- Check whether the paper pickup, feed, and separation rollers are free from paper dust. Also check whether these rollers are free from wear, scratches, dirt, and deformation.
- Check whether the registration roller and paper path are free from wear, scratches, dirt, and deformation.
- Check whether the transport guide is free from wear, scratches, dirt, and deformation.
- Check whether the leading edge of paper is not folded, curled, wavy, or damp.
- Check whether use of the Canon-recommended paper/transparency solves the problem.

<Machine>

- Check whether the drive system load is heavy.
- Check whether gears are worn or cracked?

<Cassette>

- Check whether the cassette is installed properly. Check whether the paper size is set properly. Check whether the same symptom occurs when the cassette is replaced with the cassette verified to be normal.
- Check whether the middle plate of the cassette moves smoothly. Check whether it is deformed.
- Check whether the side and rear alignment plates are adjusted properly.
- Check whether the cassette heater switch is turned on (when a cassette heater is installed).

<Service Mode>

- Check whether various adjustment values are the same as those printed on the service label.
- Check whether the output between CIS channels has been corrected.
- (Service mode>Test>Scanner test)>CS Output Test)
- Check whether the read position has been adjusted properly. (Stream reading: Only when the ADF is installed)
- (Service mode>Test>Scanner test)>CS Position Test)
- Check whether the error has been cleared.
- (Service mode>Clear Data>History Clear)

<General>

- Check whether the power cord is plugged in the outlet securely.
- Check whether the specified AC voltage is applied to the outlet.
- Check whether sensors, clutches, motors, and solenoids are operating normally. Check whether connectors are connected properly. (Check the power supply and signal routes with reference to the general circuit diagram.)
- Check whether all cables are routed properly and all screws are not loose.
- Check whether all outer covers are attached.
- Check whether the main power switch and the power switch on the operation pane are turned on.

- Check the power cables and signal cables of options are connected properly.
- Check whether no fuse on PCBs is blown.
- Check whether the user uses the machine properly.

12.1.6 Others

If a machine is brought from a cold to warm room, its inside can start to develop condensation, leading to various problems.

- condensation on the BD sensor is likely to cause problems associated with E100
- condensation on the dust-proof glass is likely to cause poor image density in sub scanning direction
- condensation on the contact sensor of the reader unit or on the copyboard glass can cause light images
- condensation on the pickup or feed guide can cause paper feed problems

If the problem given in d. above has occurred, dry wipe the units in the feed system. Do not open the package containing a toner cartridge, developing unit, or drum unit right after it has been brought in from a cold to warm place to avoid condensation. Be sure to leave it alone for a while (1 to 2 hr), opening it after it has become fully used to the temperature of the site.

12.2 Outline of Electrical Components

12.2.1 Clutch/Solenoid

12.2.1.1 List of Clutches/Solenoids

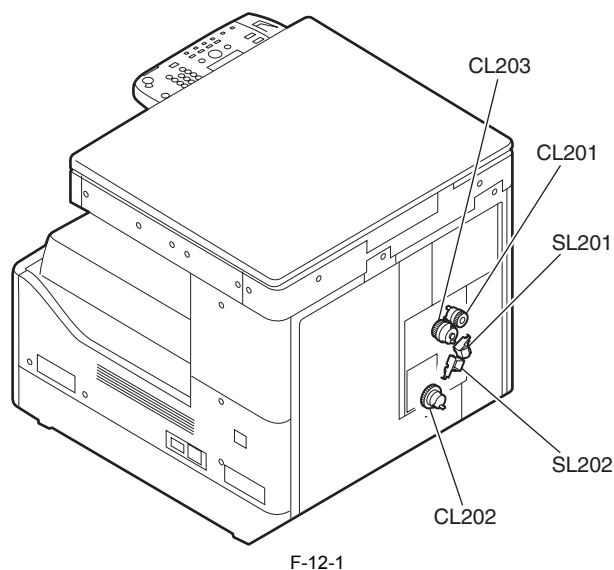
<Reader Unit>

The reader unit has no clutch/solenoid.

<Printer Unit>

Symbol	Name	Function
CL201	Manual pickup clutch	Drives the manual pickup roller.
CL202	Cassette feed clutch	Drives the cassette feed roller.
CL203	Registration clutch	Drives the registration clutch.
SL201	Manual pickup solenoid	Drives the manual pickup roller.
SL202	Cassette 1 pickup solenoid	Drives the cassette 1 pickup roller.

Symbol	Part No.	DC controller PCB
CL201	FK2-1070	J219
CL202	FK2-1068	J211
CL203	FK2-5349	J210
SL201	FK2-1072	J219
SL202	FK2-1082	J209



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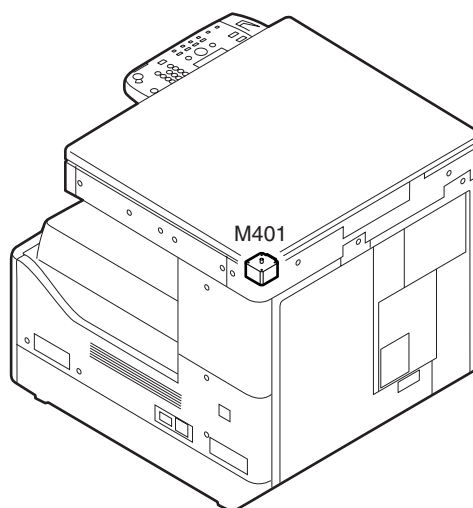
12.2.2 Motor

12.2.2.1 List of Motors

<Reader Unit>

Symbol	Name	Function
M401	Reader motor	Drives the carriage.

Symbol	Part No.	Reader controller PCB	Error
M401	FK2-1066	J409	

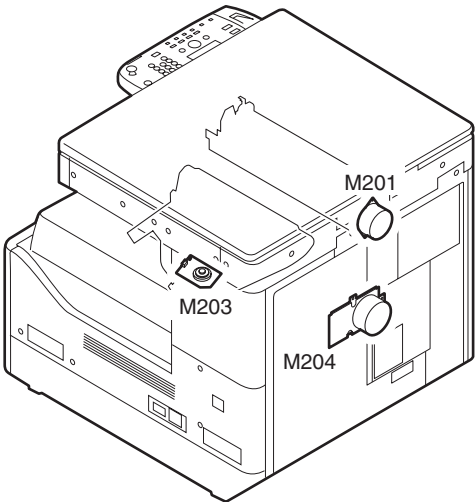


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<Printer Unit>

Symbol	Name	Function
M201	Fixing motor	Drives the fixing unit.
M203	Polygon motor	Drives the laser scanner.
M204	Main motor	Drives the main parts of the printer.

Symbol	Part No.	DC controller PCB	Error
M201	FK2-1067	J202	E007, E808
M203	Scanner unit FM2-3383	J205	
M204	FK2-8104	J208	E010



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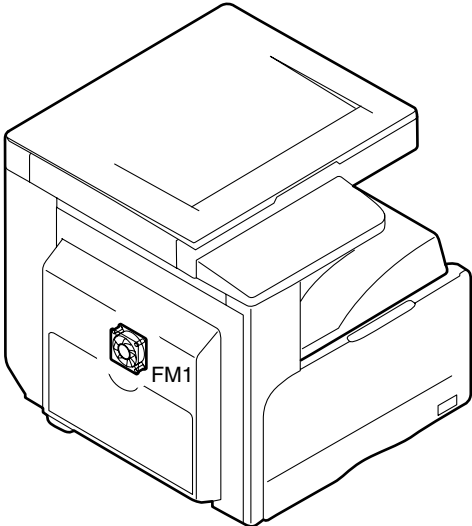
12.2.3 Fan

12.2.3.1 List of Fans

<Reader Unit>
The reader unit has no fan.
<Printer Unit>

Symbol	Name	Function
FM1	Heat discharge fan	Cools fixing unit.

Symbol	Part No.	DC controller PCB	Error
FM1	FK2-1073	J219	E805



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12.2.4 Sensor

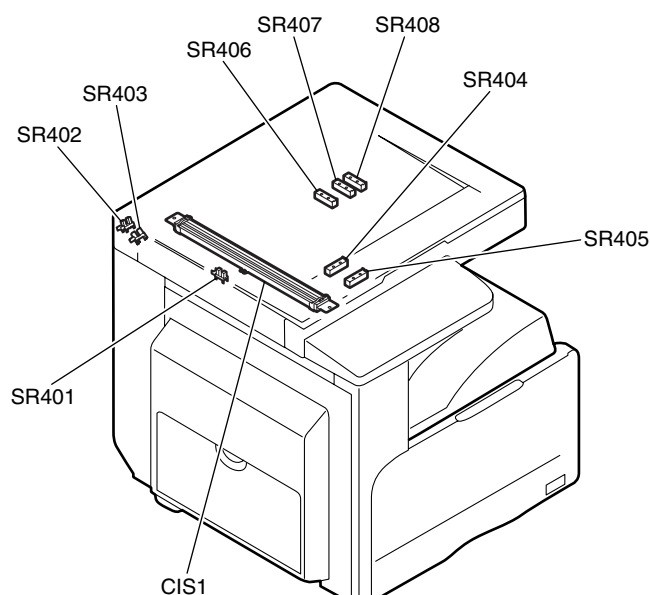
12.2.4.1 List of Sensors

<Reader Unit>

Symbol	Name	Function
SR401	CIS HP sensor	Detects the CIS home position.
SR402	Copyboard cover open/closed sensor (rear)	Detects opening/closing of the copyboard cover.
SR403	Copyboard cover open/closed sensor (front)	Detects opening/closing of the copyboard cover.

Symbol	Name	Function
SR404	Original sensor 1	Detects the original size (AB, INCH/A, or INCH/AB).
SR405	Original sensor 2	Detects the original size (AB, A, or INCH/AB).
SR406	Original sensor 3	Detects the original size (all destinations).
SR407	Original sensor 4	Detects the original size (AB or INCH/AB).
SR408	Original sensor 5	Detects the original size (INCH/A).
CIS1	CIS	Reads the original.

Symbol	Part No.	Reader controller PCB	Jam code
SR401	WG8-5696	J406	
SR402	WG8-5696	J405	
SR403	WG8-5696	J405	000f
SR404	FH7-7569	J407	
SR405	FH7-7569	J407	
SR406	FH7-7569	J413	
SR407	FH7-7569	J413	
SR408	FH7-7569	J413	
CIS1	FL2-3286	J408	



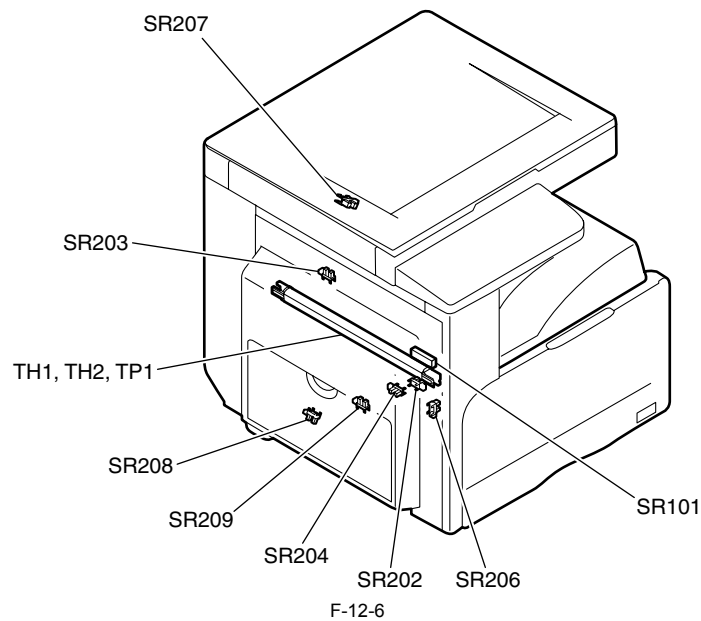
F-12-5

<Printer Unit>

Symbol	Name	Function
SR101	Fixing film speed sensor	Detects the fixing film speed.
SR202	Fixing delivery sensor	Detects fixing delivery.
SR203	No.1 delivery sensor	Detects delivery.
SR204	Cassette 1 paper sensor	Detects presence/absence of cassette 1 paper.
SR206	Waste toner full detection sensor	Detects the waste toner full status.
SR207	No.1 paper full sensor	Detects the No.1 paper full status.
SR208	Manual paper sensor	Detects presence/absence of manually fed paper.
SR209	Registration sensor	Detects registration paper.
TH1	Fixing main thermistor	Detects the fixing heater temperature.
TH2	Fixing sub thermistor	Detects the fixing heater temperature.
TP1	Thermo switch	Cuts off the heater power supply line when an abnormal temperature is detected.

Symbol	Part No.	DC controller PCB	Jam code
SR201	FG3-3501	J217	
SR202	WG8-5696	J217	010c, 0210, 0214, 1118
SR203	WG8-5696	J221	010c, 0210, 0214, 1118
SR204	WG8-5696	J213	
SR206	WG8-5696	J216	
SR207	WG8-5696	J201	
SR208	WG8-5696	J219	
SR209	WG8-5696	J212	0104, 0208, 010c, 0214, 1118

Symbol	Part No.	DC controller PCB	Power supply PCB
TH1,TH2	Fixing film unit FM2-3346(120V) FM2-3353(230V)	J217	
TP1			J13



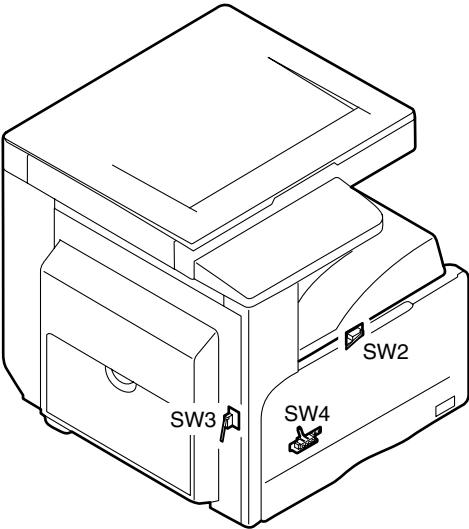
12.2.5 Switch

12.2.5.1 List of Switches

<Reader Unit>
The reader unit has no switch.
<Printer Unit>

Symbol	Name	Function
SW2	Front cover switch	Detects opening/closing of the front cover.
SW3	Left door switch	Detects opening/closing of the left door.
SW4	Cassette 1 size detection switch	Detects the cassette 1 paper size.

Symbol	Part No.	DC controller PCB	Power supply PCB
SW2	FM2-4433		J12
SW3	FM2-4020		J12
SW4	WC2-5332	J213	



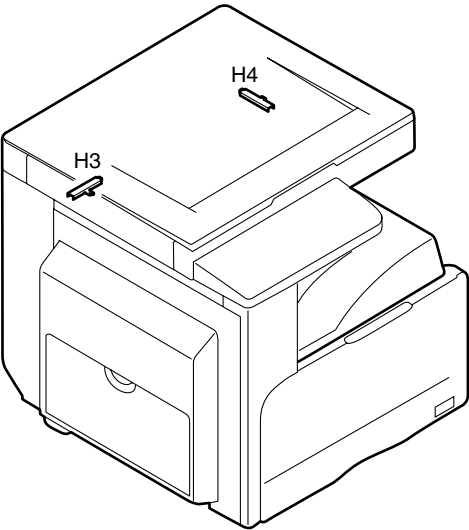
F-12-7

12.2.6 Lamps, Heaters, and Others

12.2.6.1 List of Lamps, Heaters, and Others

<Reader Unit>

Symbol	Name	Part No.	Function
H3	Reader heater (left)	NPN	Prevents dew condensation on the ADF reading glass.
H4	Reader heater (right)	NPN	Prevents dew condensation on the copyboard glass.



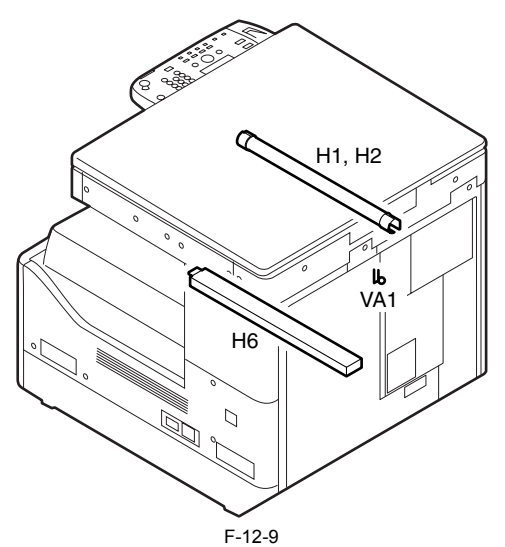
F-12-8

<Printer unit>

Symbol	Name	Function
H1	Fixing main heater	Used as the main heater for fixing.
H2	Fixing sub heater	Used as the sub heater for fixing.
H6	Cassette heater	Prevents paper in the cassette from absorbing moisture.
VA1	Varistor	Used as a varistor.

Symbol	Part No.
H1,H2	Fixing film unit FM2-3346(120V) FM2-3353(230V)
H6	FK2-1146(120V) FK2-1088(230V)

Symbol	Part No.
VA1	FH5-3543

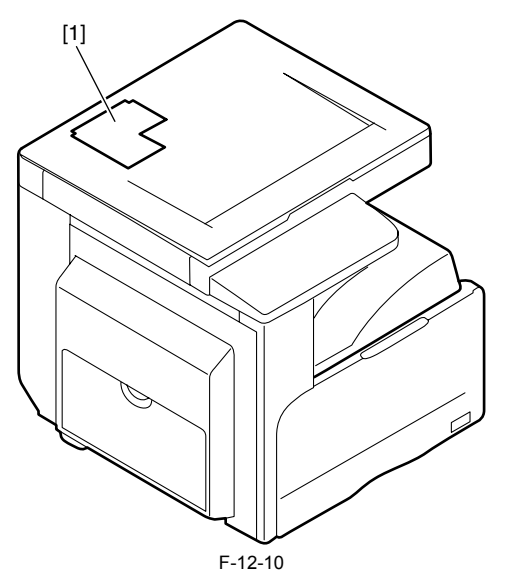


12.2.7 PCBs

12.2.7.1 List of PCBs

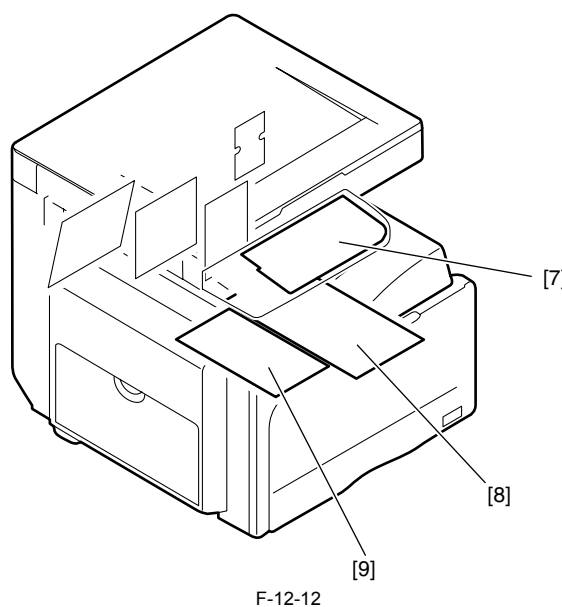
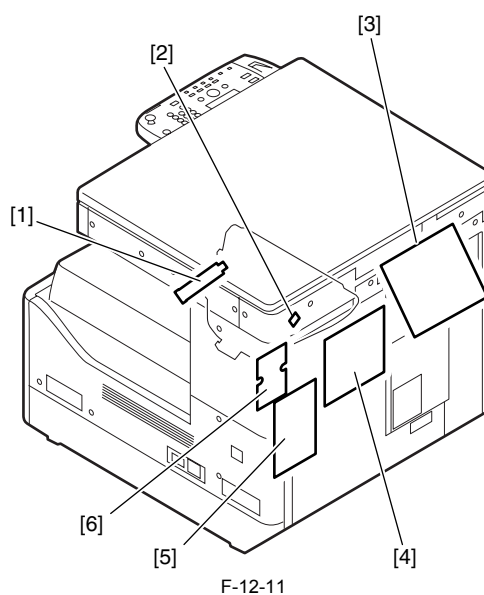
<Reader Unit>

Symbol	Name	Part No.	Function
[1]	Reader controller PCB	FM4-0660	controls the reader unit/ADF



<Printer unit>

Symbol	Name	Part No.	Function
[1]	Laser driver PCB	Scanner unit FM2-3383	controls the laser unit drive
[2]	BD PCB		generates the BD signal
[3]	Image processor PCB	---	processes output image data for the printer unit
[4]	DC controller PCB	FM4-0027: iR2318,iR2320L,iR2320N,iR2420D,iR2420L FM4-0028: iR2318L,iR2320 FM4-5267: iR2320J FM4-9837: iR2422L,iR2422D,iR2422N,iR2422 FM4-9838: iR2420L,iR2420P,iR2420	controls the printer unit/option
[5]	Option power supply PCB	FK2-1085(120V) FK2-1086(230V)	Option power supply
[6]	Heater PCB	FM2-4021	heater power switch
[7]	Operation panel PCB	FM4-0029	controls the operation panel
[8]	Power supply PCB	FK2-8101(120V) FK2-8102 (230V EQM,EQV) FK2-8103 (230V EQS,EQR,EQN,EQW)	printer power supply
[9]	HVT PCB	FM3-5746	high-voltage power supply



Chapter 13 Self Diagnosis

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13.1 Error Code Table

13.1.1 List of Error Codes

Error Code	Detail Code	Error Name/Explanation of Error
E000	0000	Fixing temperature abnormal rise
E001	0000	Fixing unit temperature rise detection (by main thermistor)
	0001	Fixing unit temperature rise detection (by sub thermistor)
E002	0000	Fixing unit temperature insufficient rise
E003	0000	Low fixing temperature detection after standby (by main thermistor)
	0001	Low fixing temperature detection after standby (by sub thermistor)
E007	0000	Fixing film rotation error
E010	0000	Main motor rotation error
E019	0001	Waste toner full detection
	0002	Waster toner full detection sensor failure
E052	0000	Duplex unit connection error
E100	0000	BD cycle out of range
E196	0001	Error on writing and readout ROM of image processor PCB (main ROM).
	0002	Error on writing and readout ROM of image processor PCB (option ROM).
E197	0000	Erroneous communication with printer engine
E500	0001	Finisher communication error
E520	0000	Offset error
E531	0000	Stapling error
E540	0001	Paper surface not detected (standard tray)
	0002	Not moved within the specified time (standard tray)
	0003	Sensor not reached within 3 seconds (standard tray)
	0005	Encoder clock failure (standard tray)
E542	0001	Paper surface not detected (optional tray)
	0002	Not moved within the specified time (optional tray)
	0003	Sensor not reached within 3 seconds (optional tray)
	0005	Encoder clock failure (optional tray)
E575	0000	Stack delivery error
E584	0000	Shutter failure
E716	0000	Erroneous communication with optional cassette
E719	0000	Erroneous communication with card reader (serial communication)
	0002	Erroneous communication with coin vender (serial communication)
E733	0000	Erroneous communication between controller and printer
E736	0000	CCU communication error
E739	0000	Erroneous communication between controller and network board
E744	0001	Language file/boot ROM/USB memory error
	0002	
	0003	
	0004	
E805	0000	Fan failure
E808	0000	Fixing drive circuit failure

13.2 Error Code Details

13.2.1 Error Code Details

MEMO:

The detail code of the error code of this machine can be confirmed in the following service mode.
Service mode>Error Code Display

Display Code	Detail Code	Main Cause/Symptom	Countermeasure
E000	0000	Startup error	
		The temperature detected by the main or sub thermistor does not rise to the specified value during startup control.	<ul style="list-style-type: none"> - Check the fixing film connector. - Replace the fixing film unit. - Replace the DC controller PCB.

Display Code	Detail Code	Main Cause/Symptom	Countermeasure
E001	0000	Abnormally high temperature (detected by main thermistor)	
		The main thermistor detected an abnormally high temperature (240 deg C) during temperature control.	<ul style="list-style-type: none"> - Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the DC controller PCB.
	0001	Abnormally high temperature (detected by sub thermistor)	
		The sub thermistor detected an abnormally high temperature (295 deg C) during temperature control.	<ul style="list-style-type: none"> - Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the DC controller PCB.
E002	0000	Low temperature during temperature control.	
		The target temperature is not reached during temperature control.	<ul style="list-style-type: none"> - Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the DC controller PCB.
E003	0000	Abnormally low temperature (detected by main thermistor)	
		After the temperature detected by the main thermistor has reached the specified value, it does not reach the specified value during initial rotation.	<ul style="list-style-type: none"> - Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the DC controller PCB.
	0001	Abnormally low temperature (detected by sub thermistor)	
		After the temperature detected by the sub thermistor has reached the specified value, it does not reach the specified value during initial rotation.	<ul style="list-style-type: none"> - Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the DC controller PCB.
E007	0000	Fixing film sensor failure	
		The fixing film sensor is faulty.	<ul style="list-style-type: none"> - Check the connector of the fixing film sensor. - Replace the fixing film sensor. - Replace the DC controller PCB.
E010	0000	Main motor failure	
		The main motor is faulty.	<ul style="list-style-type: none"> - Check the connector of the main motor. - Replace the main motor. - Replace the DC controller PCB.
E019	0001	Waste toner full detection	
		The waste toner full state was detected.	Replace the drum unit.
	0002	Waster toner full detection sensor is faulty.	
		The waste toner full state was detected continuously for five or more seconds while the main motor was turning.	<ul style="list-style-type: none"> - Check the connector of the waster toner full sensor. - Replace the waste toner full sensor. - Replace the DC controller PCB.
E052	0000	Erroneous connection to duplex unit	
		Disconnection of the duplex unit was detected after power-on, detection of normal connection to the duplex unit, and start of communication.	<ul style="list-style-type: none"> - Check the connectors of the duplex unit and DC controller PCB. - Replace the duplex controller PCB. - Replace the DC controller PCB.
E100	0000	BD detection PCB failure	
		The BD detection PCB is faulty.	<ul style="list-style-type: none"> - Check the connector of the BD detection PCB. - Replace the laser scanner unit. - Replace the DC controller PCB.
E196	0001	Image processor PCB failure	
		Error on writing and readout ROM of image processor PCB (mainn ROM).	<ul style="list-style-type: none"> - Putting the switch on/off of the power supply. - Replace the image processor PCB.
	0002	Image processor PCB failure	
		Error on writing and readout ROM of image processor PCB (option ROM).	<ul style="list-style-type: none"> - Putting the switch on/off of the power supply. - Replace the image processor PCB.
E197	0000	Printer engine communication error	
		Erroneous communication between the DC controller PCB and image processor PCB was detected.	<ul style="list-style-type: none"> - Check the connectors of the DC controller PCB and image processor PCB. - Replace the DC controller PCB for normal connection. - Replace the image processor PCB.
E716	0000	Erroneous communication with optional cassette	
		Disconnection of the optional cassette was detected after power-on, detection of normal connection to the optional cassette, and start of communication.	<ul style="list-style-type: none"> - Check the connectors of the optional cassette PCB and DC controller PCB. - Replace the optional cassette PCB for normal connection. - Replace the DC controller PCB.

Display Code	Detail Code	Main Cause/Symptom	Countermeasure
E719	0000	Erroneous communication with card reader (serial communication) - Disconnection from the card reader has been detected since communication started after confirmation of normal connection to the card reader (after power-on). - A serial communication error has occurred. (The serial communication error cannot be recovered.)	- Check the connectors of the card reader and image processor PCB. - Replace the card reader for normal connection. - Replace the image processor PCB.
	0002	Erroneous communication with coin vendor (serial communication) - Disconnection from the coin vendor has been detected since communication started after confirmation of normal connection to the coin vendor (after power-on). - A serial communication error has occurred. (The serial communication error cannot be recovered.)	- Check the connection between the image processor PCB and serial PCB. - Check the connectors of the serial PCB and coin vendor for normal connection. - Replace the serial PCB. - Check the coin vendor. - Replace the image processor PCB.
E733	0000	Erroneous communication between controller and printer	
		Cannot communicate with the printer at startup.	- Check the connectors of the DC controller PCB and image processor PCB for normal connection. - Check the power supply of the printer (Check whether initialization is performed at startup). - Replace the DC controller PCB or image processor PCB.
E736	0000	CCU communication error	
		The installed modem PCB is incompatible.	- Check the connectors of the image processor PCB and modem. - Replace the modem PCB. - Replace the image processor PCB.
E739	0000	Erroneous communication between controller and network board	
		The installed network board is incompatible.	- Check the connectors of the image processor PCB and LAN PCB for normal connection. - Replace the LAN PCB. - Replace the image processor PCB.
E744		Language file/boot ROM/USB memory error	
	0001	The language file version does not match Bootable.	Download a language file of the correct version.
	0002	The language file is longer than the permitted size.	Download a language file of the correct version.
	0003	The language file version does not match Bootable.	Download a language file of the correct version.
	0004	Language file read error	Download a language file of the correct version.
E805	0000	Fan failure	
		The fan is faulty.	- Check the fan connector. - Replace the fan. - Replace the DC controller PCB.
E808	0000	Fixing drive circuit failure	
		- The heater does not turn on. - A fixing drive motor failure was detected.	- Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the fixing drive motor. - Replace the DC controller PCB. - Replace the power supply PCB.

13.3 Jam Code

13.3.1 Jam Codes (Related to Printer Unit)

Code	Name	Sensor No.	Description
0104	Delay jam in paper pickup section	SR209	The registration sensor cannot detect the leading edge of paper from the moment paper pickup starts to the moment the jam detection time is reached.
0208	Stationary jam in paper pickup section	SR209	The registration sensor cannot detect the no paper status specified time before the leading edge of the picked up paper reaches this sensor.
010c	Delay jam in deliver section	SR202, SR203, SR209	<ul style="list-style-type: none"> - The fixing delivery sensor cannot detect presence of paper within the specified time after turning on of the registration clutch. - The fixing delivery sensor detected absence of paper within the specified time after the sensor had detected presence of paper within the specified time after turning on of the registration clutch. - The No.1 delivery sensor cannot detect presence of paper within the specified time after turning on of the fixing delivery sensor.
0210	Stationary jam in delivery section	SR202, SR203	<ul style="list-style-type: none"> - The fixing delivery sensor cannot detect absence of paper within the specified time after turning off of the registration clutch. - The fixing delivery sensor cannot detect absence of paper within the specified time after the sensor detected the leading edge of paper. - The No.1 delivery sensor cannot detect absence of paper within the specified time after the sensor detected the leading edge of paper.
0214	Stationary jam in machine	SR202, SR203, SR209	Paper was detected in the paper transport path during initial rotation, during automatic delivery, at the end of cleaning, or at reception of an emergency stop command.
1118	Door open jam	SR202, SR203, SR209, SW2, SW3	The door was opened when there was printing paper in the transport path.

13.3.2 Jam Codes (Related to Finisher)

Code	Name	Sensor No.	Description
0130	Delayed feed jam	PI5	The inlet sensor is not turned on within the specified time after reception of a paper ejection signal from the host machine.
0231	Staying paper jam	PI5	The inlet sensor is not turned off even if paper is fed by the specified distance after the leading edge of the paper from the host machine has passed through the sensor.
0033	Stack ejection jam	PI1	When a paper stack is ejected, the HP sensor is not turned off within the specified time.
0035	Staple jam	Stapler HP sensor (built in stapler)	The stapler HP sensor was turned off once after start of stapler operation, but the HP has not been reached within the specified time.
1036	Power-on jam	PI5	The inlet sensor detected paper at power-on.
1137	Door open jam	SW1	The front cover switch detected opening of the front cover during standby or copy operation.

13.3.3 Jam Codes (Related to ADF)

Code	Name	Sensor No.	Description
0000	Unknown jam	-	Other errors
0007	Initial stationary	PI6,PI7,PI8	Paper is detected in the transport path before the DADF starts initial operation.
0008	Read sensor delay	PI7,PI8	The read sensor does not detect paper when the paper has been fed by the predetermined distance since reception of a pickup request.
0009	Read sensor stationary	PI7	The trailing edge of paper is not detected when the paper has been fed by the predetermined distance since detection of it by the read sensor.
000a	Paper absence (Pull out the document.)	PI11	The Document set sensor has been held off since start of pickup.
000c	Delivery reversal sensor delay	PI6,PI7	The delivery reversal sensor does not detect paper since the paper has been fed by the predetermined distance since the read sensor was turned on.

Code	Name	Sensor No.	Description
000d	Delivery reversal sensor stationary	PI6	The trailing edge of paper is not detected when the paper has been fed by the predetermined distance since the delivery reversal sensor detected the paper.
000e	ADF cover open	PI10	The feeder cover was opened during operation (of the drive system).
000f	User ADF open	sensor of the reader unit	The ADF was opened during operation (of the drive system).
0010	Pickup NG	-	The registration sensor has been held off since paper pickup started.

13.3.4 Jam Codes (Related to Duplex Unit)

Code	Name	Sensor No.	Description
0120	Delay jam at duplex paper sensor 1	SR1002	The duplex paper sensor 1 does not turn on within the specified time after the delivery sensor on the main unit side turns on.
0124	Delay jam at duplex paper sensor 2	SR1003	The duplex paper sensor 2 does not turn on within the specified time after the duplex reverse motor starts.
0221	Stationary jam at duplex paper sensor 1	SR1002	- The duplex paper sensor 1 does not turn off when the specified time has lapsed since the duplex paper sensor 2 turned on. - The duplex paper sensor 1 does not turn off when the paper with a longitudinal length of 280 mm reaches the standby position (about 90 mm from the duplex paper sensor 2).
0228	Stationary jam at duplex paper sensor 2	SR1003	The duplex paper sensor 2 does not turn off when the specified time has lapsed since the feed motor started.

13.3.5 Jam Codes (Related to Inner 2-way Tray)

Code	Name	Sensor No.	Description
010e	Delay jam at No.2 delivery section	SR1101	The No.2 delivery sensor does not detect presence of paper within the specified time after turning on of the fixing delivery sensor.
0212	Stationary jam at No.2 delivery section	SR1101	Absence of paper is not detected within the specified time after turning on of the No.2 delivery sensor.

13.4 Finisher Error Codes

13.4.1 Error Code Details

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E500	0001	Finisher communication error	
		Data communication could not be performed normally. It has been retried three times in vain.	- Check the connectors of the finisher controller PCB and DC controller PCB for normal connection. - Replace the finisher controller PCB. - Replace the DC controller PCB.
E520	0001	- Offset motor or finisher controller PCB failure - Offset HP sensor failure	
		- The offset motor was driven for 1000 ms in the HP sensor approach direction, but the offset HP sensor did not turn on.	- Check the connector of the offset HP sensor. - Check the connector of the offset motor. - Replace the offset HP sensor. - Replace the offset motor. - Replace the finisher controller PCB.
	0002	- Offset motor or finisher controller PCB failure - Offset HP sensor failure	
		- The offset motor was driven for 1000 ms in the HP sensor escape direction, but the offset HP sensor did not turn off.	- Check the connector of the offset HP sensor. - Check the connector of the offset motor. - Replace the offset HP sensor. - Replace the offset motor. - Replace the finisher controller PCB.

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E531	0001	- Staple unit failure - Staple HP sensor failure - Finisher controller PCB failure	
		- The staple home position was not left when 400 ms have lapsed since start of staple operation.	- Check the connector of the staple unit. - Replace the staple unit. - Replace the finisher controller PCB.
	0002	- Staple unit failure - Staple HP sensor failure - Finisher controller PCB failure	
		- The staple home position had been left once, but it was not reached again when 400 ms have lapsed since start of staple operation. In addition, the staple home position could not be reached by performing reverse operation for 400 ms.	- Check the connector of the staple unit. - Replace the staple unit. - Replace the finisher controller PCB.
E540	0001	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure	
		The standard tray was moved but the paper surface was not detected.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.
	0002	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure	
		Cannot move (to the pickup position) within the specified time.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.
	0003	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure	
		The standard tray was operated, but it did not reach the sensor within 300 ms.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.
	0005	- Standard tray shift motor or finisher controller PCB failure - Standard tray HP sensor failure - Standard tray clock sensor failure - Standard tray shift motor load failure	
		The encoder clock signal was not detected two or more times when the standard tray was operated for 300 ms.	- Check the connector of the standard tray HP sensor. - Check the connector of the standard tray clock sensor. - Check the connector of the standard tray shift motor. - Replace the standard tray HP sensor. - Replace the standard tray clock sensor. - Replace the standard tray shift motor. - Replace the finisher controller PCB.

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E542	0001	- Optional tray motor or finisher controller PCB failure - Optional tray HP sensor failure - Optional tray clock sensor failure - Optional tray shift motor load failure	
		The optional tray was operated, but the paper surface was not detected.	- Check the connector of the optional tray HP sensor. - Check the connector of the optional tray clock sensor. - Check the connector of the optional tray shift motor. - Replace the optional tray HP sensor. - Replace the optional tray clock sensor. - Replace the optional tray shift motor. - Replace the finisher controller PCB.
	0002	- Optional tray motor or finisher controller PCB failure - Optional tray HP sensor failure - Optional tray clock sensor failure - Optional tray shift motor load failure	
		Cannot move (to the pickup position) within the specified time.	- Check the connector of the optional tray HP sensor. - Check the connector of the optional tray clock sensor. - Check the connector of the optional tray shift motor. - Replace the optional tray HP sensor. - Replace the optional tray clock sensor. - Replace the optional tray shift motor. - Replace the finisher controller PCB.
	0003	- Optional tray motor or finisher controller PCB failure - Optional tray HP sensor failure - Optional tray clock sensor failure - Optional tray shift motor load failure	
		- The optional tray was moved upward, but it did not reach the HP sensor within 3000 ms.	- Check the connector of the optional tray HP sensor. - Check the connector of the optional tray clock sensor. - Check the connector of the optional tray shift motor. - Replace the optional tray HP sensor. - Replace the optional tray clock sensor. - Replace the optional tray shift motor. - Replace the finisher controller PCB.
	0005	- Optional tray motor or finisher controller PCB failure - Optional tray HP sensor failure - Optional tray clock sensor failure - Optional tray shift motor load failure	
		- The encoder clock signal was not detected two or more times when the optional tray was operated for 300 ms.	- Check the connector of the optional tray HP sensor. - Check the connector of the optional tray clock sensor. - Check the connector of the optional tray shift motor. - Replace the optional tray HP sensor. - Replace the optional tray clock sensor. - Replace the optional tray shift motor. - Replace the finisher controller PCB.
	0001	- Stack delivery motor or finisher controller PCB failure - Stack delivery HP sensor failure	
		- The stack delivery motor was driven for 2000 ms in the stack delivery direction (HP sensor approach direction), but the stack delivery HP sensor did not turn on.	- Check the connector of the stack delivery HP sensor. - Check the connector of the stack delivery motor. - Check the connector of the stack delivery HP sensor. - Replace the stack delivery motor. - Replace the finisher controller PCB.
E575	0002	- Stack delivery motor or finisher controller PCB failure - Stack delivery HP sensor failure	
		- The stack delivery motor was driven for 2000 ms in the HP sensor escape direction, but the stack delivery HP sensor did not turn off.	- Check the connector of the stack delivery HP sensor. - Check the connector of the stack delivery motor. - Check the connector of the stack delivery HP sensor. - Replace the stack delivery motor. - Replace the finisher controller PCB.

Display code	Detail Code	Main Cause/Symptom	Countermeasure
E584	0001	- Shutter drive motor or finisher controller PCB failure - Shutter open detection sensor failure - Shutter clutch failure	
		- The shutter open sensor did not turn on when 1000 ms have lapsed since the shutter unit had performed open operation, resulting in incomplete open operation.	- Check the connector of the shutter open sensor. - Check the connector of the shutter clutch. - Check the connector of the shutter motor. - Replace the shutter open sensor. - Replace the shutter clutch. - Replace the shutter drive motor. - Replace the finisher controller PCB.
	0002	- Shutter drive motor or finisher controller PCB failure - Shutter open detection sensor failure - Shutter clutch failure	
		- The shutter open sensor did not turn off when 1000 ms have lapsed since the shutter unit had performed close operation, resulting in incomplete close operation.	- Check the connector of the shutter open sensor. - Check the connector of the shutter clutch. - Check the connector of the shutter motor. - Replace the shutter open sensor. - Replace the shutter clutch. - Replace the shutter drive motor. - Replace the finisher controller PCB.

Chapter 14 Service Mode

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14.1 Outline

14.1.1 Outline of Service Mode

The items that follow may be checked/set using the machine's service mode, which is designed the way the service mode used in fax machines is designed in terms of contents and operation.

Service's Choice

These setting items are for image adjustment in printer assembly and for special mode for the field-related measures.

Adjust

These setting items are for image adjustment in scanning.

Counter

Use it to check estimates for maintenance/parts replacement.

Display

Displays ROM information, such as version numbers, and an error code is displayed when a service error has occurred.

Report

Use it to generate reports on various service data.

Clear Data

Use it to reset various data to initial settings.

Test

Makes various status checks, such as contact sensor, sensor and print status.

14.1.2 Using the Service Mode

[Method of entering the service mode]

Press the Additional Functions key and # key, then enter the service mode.

[Method of operation the service mode]

Select the service menu using the upper/lower/left/right keys and OK key.

14.2 Default settings

14.2.1 Service Mode Menus

Title	Item	Sub item	Initial setting	Range of setting	Function
Service's Choice	Scan Setting			Legal, Foolscap, M-Officio, A-Foolscap, Folio, G-Legal, A-Officio, B-Officio, Officio, E-Officio	ADF special paper, standardized size: LGL misidentification-ready
		Define LGL Size	Legal		
		Define LTR Size	LTR	LTR, G-LTR, A-LTR	ADF special paper, standardized size: LTR misidentification-ready
		Define LTR-R Size	LTR-R	LTR-R, Foolscap, Officio, E-Officio, G-LTR-R, A-LTR-R	ADF special paper, standardized size: LTR_R misidentification-ready
		Shading Value-R	272	0 to 511	shading target value (red)
		Shading Value-G	272	0 to 511	shading target value (green)
		Shading Value-B	272	0 to 511	shading target value (blue)
	Printer Setting	BitSwitch14	All off	On, Off	Special mode setting
		BitSwitch15	All off	On, Off	Delivery setting
		Fuser Temp.-Bypass	6	0 to 12, 1 unit = 5 deg C	Target fixing temperature adjustment (multi)
		Fuser Temp.-Tray1	6	0 to 12, 1 unit = 5 deg C	Target fixing temperature adjustment (cassette 1)
		Fuser Temp.-Tray2	6	0 to 12, 1 unit = 5 deg C	Target fixing temperature adjustment (cassette 2)
		Fuser Temp.-Tray3	6	0 to 12, 1 unit = 5 deg C	Target fixing temperature adjustment (cassette 3)
		Fuser Temp.-Tray4	6	0 to 12, 1 unit = 5 deg C	Target fixing temperature adjustment (cassette 4)
		Film Speed-Bypass	15	0 to 30, 1 unit = 0.4%	Fixing film speed adjustment (manual paper feed tray)
		Film Speed-Tray	15	0 to 30, 1 unit = 0.4%	Fixing film speed adjustment (cassette)
		Define U1 Paper Size	G-LTR	A-LTR, G-LTR, 8K	Paper size group U1 special, standard-size paper entry
		Define U2 Paper Size	Foolscap	Foolscap, Officio, E-Officio, B-Officio, A-Officio, M-Officio, 16K	Paper size group U2 special, standard-size paper entry
		Define U3 Paper Size	G-LGL	A-Foolscap, A-LTR-R, G-LTR-R, G-LGL, Folio, 16KR	Paper size group U3 special, standard-size paper entry
		Print Test-Page	-	-	Not used.
		Print Test-Interval	-	-	Not used.
		B4-Large/Small	Small	Large, Small	Counter function setting
		Waste Toner Full	EUR:Operator call, Other country/region:Service call	Operator call, Service call	Waste toner full display setting
Adjust	CIS Position Adjust	Shading Position	22	6 to 48, one unit=0.1mm	Distance from the standby position of CIS to the shading start point.
		Sheet Position	385	300 to 450, one unit=0.1mm	CIS scan position during ADF scanning.
	Reading Adjust	Book Main Regist	35	0 to 70, one unit=0.1mm	Vertical scan start position adjustment
		Book Sub Regist	115	50 to 150, one unit=0.1mm	Horizontal scan start position adjustment
		Book Mian Zoom	16	0 to 32, one unit=0.1%	Horizontal scan magnification correction
		Book Sub Zoom	16	0 to 32, one unit=0.1%	Vertical scan magnification correction
		Motor Phase2-1(CW)	474	0 to 999, one unit=0.0001mm	Adjust motor speed (CW)
		Motor Phase2-1(CCW)	474	0 to 999, one unit=0.0001mm	Adjust motor speed (CCW)
		ADF Main Regist	35	0 to 70, one unit=0.1mm	Adjust ADF horizontal scanning start position
		ADF Sub Regist-DES	220	170 to 270, one unit=0.1mm	Adjust ADF vertical scan start position from DES
		ADF Sub Regist-Copy	24	0 to 200, one unit=0.1mm	Adjust ADF vertical scan start position from DES (Copy)
		ADF Main Zoom	16	0 to 32, one unit=0.1%	Adjust ADF horizontal Magnification correction
		ADF Sub Zoom	16	0 to 32, one unit=0.1%	Adjust ADF vertical scan end position
		ADF Motor Zoom	16	0 to 32, one unit=0.1%	Adjust ADF motor magnification correction
	Print Position	Top-Bypass	50	0 to 100, one unit=0.1mm	Top registration adjustment (manual paper feed tray)
		Top-Tray	50	0 to 100, one unit=0.1mm	Top registration adjustment (cassette)
		Top-Duplex	50	0 to 100, one unit=0.1mm	Top registration adjustment (duplex unit)
		Left-Bypass	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (manual paper feed tray)
		Left-Tray1	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (cassette 1)
		Left-Tray2	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (cassette 2)
		Left-Tray3	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (cassette 3)
		Left-Tray4	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (cassette 4)
		Left-Duplex	100	0 to 200, one unit=0.1mm	Left-end registration adjustment (duplex unit)

Title	Item	Sub item	Initial setting	Range of setting	Function
Counter	Total Counter		-	-	Total counter
	Pick-Up Counter		-	-	Pickup-related counter
	Feeder Counter		-	-	Feeder counter
	Jam Counter		-	-	Jam-related counter
	MISC Counter		-	-	Other counter
Display	Version Display	Main	-	-	Use it to indicate the version of the ROM (SYSTEM) on the image processor PCB.
		Main2	-	-	Use it to indicate the version of the ROM (BOOT) on the image processor PCB.
		ECONT	-	-	Use it to indicate the version of the ROM on the DC controller PCB.
		Tray2	-	-	Not used.
		Tray3	-	-	Not used.
		Tray4	-	-	Not used.
		Duplex	-	-	Not used.
		Finisher	-	-	Use it to indicate the version of the ROM on the finisher controller PCB.
	Error Code Display		-	-	Display last time occurred fatal.
Report	Service Data List		-	-	Output of service data list
	Service Label		-	-	Output of service label
	Error Log Report		-	-	Output of error log list
Clear Data	Service Data Clear		-	-	Initializes service data.(Clear the service mode data of 'Service Choice' and 'Adust' menu.)
	Type Clear		-	-	Initializes user data.
	History Clear		-	-	Clears the jam/error history and the user data('System Settings' -> 'Dept. ID Management' -> 'Page Totals' menu).
	PWD Clear		-	-	Clears the system administrator's password.
	All Clear		-	-	Clears user and service data (except for some scan parameters and the user data ('System Settings' -> 'Dept. ID Management' -> 'Page Totals' menu)).
Test	DRAM Test		-	-	Checks to see if data can be correctly written to and read from DRAM.
	Scanner Test	CS Output Test	-	-	Execute CS output compensation.
		CS Position Test	-	-	CS moves to ADF reading position.
		Dirty Detect	-	-	Shading area dirty detect
		Initial Read Adjust	-	-	Reset all reading system adjustment value to initial. (ADF + Book)
		Initial ADF Adjust	-	-	Initial ADF scan adjust value.
		Initial Book Adjust	-	-	Initial book scan adjust value.
	Printer Test	White Pattern	-	-	Not used.
		Black Pattern	-	-	All-black output
		Stripe Pattern	-	-	Not used.
		Endurance Pattern	-	-	Back belt output
		Black/White Pattern	-	-	Not used.
		CRG Test Pattern	-	-	Not used.
		Grid Pattern	-	-	Not used.
		White/Black Pattern	-	-	Not used.
		Arrow Pattern	-	-	Not used.
		E Pattern	-	-	Not used.
	Aging Test		-	-	Not used.
	Factory Test	Sensor Test	-	-	Sensor checks
		ADF Feed Test	-	-	ADF delivery operation test
		Book Feed Test	-	-	Book copy operation test
		Panel Test	-	-	Operation panel key, LCD and LED test
		Lamp Test	-	-	Lamp test
	Roller Clear Mode		-	-	Printer and ADF roller cleaning
	Video I/F Test		-	-	Not used.

14.3 Services Choice

14.3.1 Scan Setting

[Define LGL size]

Set to use special standard-sized paper that is not otherwise identifiable to the ADF (because it is misidentified as "LGL").

- Legal
- Foolscap
- M-Officio
- A-Foolscap
- Folio
- G-Legal
- A-Officio
- B-Officio
- Officio
- E-Officio

[Define LTR size]

Set to use special standard-sized paper that is not otherwise identifiable to the ADF (because it is misidentified as "LTR").

- LTR
- G-LTR
- A-LTR

[Define LTR-R size]

Set to use special standard-sized paper that is not otherwise identifiable to the ADF (because it is misidentified as "LTR-R").

- LTR-R
- Foolscap
- Officio
- E-Officio
- G-LTR-R
- A-LTR-R

[Shading value-R]

This is market-related measures taken to improve shadow images generated by a thick original such as a book or a folded or wrinkled original. When taking the measures, assign the same values for R, G, and B. After changing the values, be sure to turn off the power and turn it on again.

[Shading value-G]

This is market-related measures taken to improve shadow images generated by a thick original such as a book or a folded or wrinkled original. When taking the measures, assign the same values for R, G, and B. After changing the values, be sure to turn off the power and turn it on again.

[Shading value-B]

This is market-related measures taken to improve shadow images generated by a thick original such as a book or a folded or wrinkled original. When taking the measures, assign the same values for R, G, and B. After changing the values, be sure to turn off the power and turn it on again.

14.3.2 Printer Setting

[BitSwitch 14]

Setting item.	Function	Setting value
SW14-0	Transfer bias pressure reduction mode	On, Off
SW14-1	Developing assembly idling mode	On, Off
SW14-2	Black belt addition mode	On, Off
SW14-3	Post-rotation reduction mode	On, Off
SW14-4	Flicker reduction mode	On, Off
SW14-5	Silent mode	On, Off
SW14-6	Terminal temperature rise noise reduction mode	On, Off

[Detailed Discussions of BitSW14-0]

Select whether to enable or disable transfer bias pressure reduction mode.

Select "On" to avoid image defects (black spots) produced by transfer bias leaks occurring in a low-pressure region, such as one at a high altitude. This setting regulates the transfer bias to keep it from exceeding a predetermined level during printing.

[Detailed Discussions of BitSW14-1]

Select whether to enable or disable developing assembly idling mode. Select "On" to drive the main motor for a specified period of time to apply idling and developing bias (AC + DC) to prevent the thinning of the image density when the unit is installed or the developing unit is replaced in a low-temperature, low-humidity region. This mode works only on a new developing assembly and before a toner cartridge is loaded.

[Detailed Discussions of BitSW14-2]

Select whether to enable or disable black belt addition mode. If the user uses paper that causes fixed toner on paper to be fused and adhered to drum, selecting "On" will clean the drum by forming a black band on the drum surface during the reverse rotation which is performed after printing on 50 sheets.



Implementation of this mode could result in a drum life falling short of its life expectancy.

[Detailed Discussions of BitSW14-3]

Select whether to enable or disable post-rotation reduction mode. Selecting "On" will reduce the noise caused by the polygon motor by stopping the motor immediately after post-rotation.

[Detailed Discussions of BitSW14-4]

Select whether to enable or disable flicker reduction mode. Select "On" and enter a count to modify fusing temperature control to cancel fluorescent flicking during printing.



Implementation of this mode would degrade the throughput.

[Detailed Discussions of BitSW14-5]

Select whether to enable or disable silent mode. Select "On" to modify the registration loop amount and thus reduce noises or squeaks the registration rollers produce after picking paper from the individual paper inlets.

[Detailed Discussions of BitSW14-6]

Select whether to enable or disable noise reduction mode during terminal temperature rises. Select "On" to start slowdown at a temperature lower than normal when printing on smaller-sized paper than B4. Slowdown control thus enabled prevents the thermal degradation of the fusing film grease, assuring smooth sliding among the fixing film, heater and film guide to cut squeaks.

[BitSwitch 15]

Setting item.	Function	Setting value
SW15-0	Inhibit automatic delivery tray replacement while running jobs	On, Off
SW15-1	Halt stapling job when out of staples	On, Off
SW15-2	Inhibit tray full indication while the stapled document count is exceeded	On, Off

[Detailed Discussions of BitSW15-0]

Select whether to inhibit automatic delivery tray replacement while running jobs with an inner two-way tray mounted in position. Select "On" to inhibit automatic tray replacement.

[Detailed Discussions of BitSW15-1]

Select whether to halt stapling job when a finisher installed has run out of staples. Select "On" to halt staple jobs when the finisher has run out of staples.

[Detailed Discussions of BitSW15-2]

Select whether to display a tray full message when the maximum allowable stapled document count is exceeded with a finisher installed. Select "On" not to display the message.

[Fuser temp.-Bypass]

Lower the fixing temperature from the target temperature setting to reduce the chances of fixing offsets and curled or stuck delivered sheets occurring with paper picked from a manual feed tray.

[Fuser temp.-Tray1]

Lower the fixing temperature from the target temperature setting to reduce the chances of fixing offsets and curled or stuck delivered sheets occurring with paper picked from cassette 1.

[Fuser temp.-Tray2]

Lower the fixing temperature from the target temperature setting to reduce the chances of fixing offsets and curled or stuck delivered sheets occurring with paper picked from cassette 2.

[Fuser temp.-Tray3]

Lower the fixing temperature from the target temperature setting to reduce the chances of fixing offsets and curled or stuck delivered sheets occurring with paper picked from cassette 3.

[Fuser temp.-Tray4]

Lower the fixing temperature from the target temperature setting to reduce the chances of fixing offsets and curled or stuck delivered sheets occurring with paper picked from cassette 4.

[Film Speed-Bypass]

Change the fixing film speed to reduce the chances of streaks appearing in the trailing edge of images caused by shocks from the fixing roller out of position while picking paper from a manual feed tray.

[Film Speed-Tray]

Change the fixing film speed to reduce the chances of streaks appearing in the trailing edge of images caused by shocks from the fixing roller out of position while picking paper from a cassette.

[Define U1 Paper Size]**[Define U2 Paper Size]****[Define U3 Paper Size]**

With a special paper compatibility kit (cassette size adjuster) installed, set the cassette paper size lever to paper size groups U1 to U3 to set the paper sizes listed below.

Paper size group	Setting (*default)	Paper name
U1	29	A-LTR
	31*	G-LTR
	40	8K
U2	24*	Foolscap
	26	Officio
	27	E-Officio
	28	B-Officio
	36	A-Offico
	37	M-Officio
	39	16K
U3	25	A-Foolscap
	30	A-LTR-R
	32	G-LTR-R
	34*	G-LGL
	35	Folio
		16KR

[Print Test-Page]

Not used.

[Print Test-Interval]

Not used.

[B4-Large/Small]

Use it to specify whether B4 paper should be counted as large-size paper.

If 'Large' is selected, B4 paper will be counted as large-size paper.

If 'Small' is selected, on the other hand, B4 paper will be counted as small-size paper.

[Waste Toner Full]

Select whether to display the waste toner full warning as a drum replacement required message or as service call displayed on the control panel. Select 'Operation call' to display a drum replacement required message on an operation call. Select 'Service call' to display service call.

14.4 Adjust

14.4.1 CIS Position Adjust

[Shading Position]

White shading can be adjusted finely.



Normally, do not change the setting value. If any operation error occurs after changing the setting value, change the setting value to the original one.

[Sheet Position]

This value is used when automatic scan position adjustment (Test>Scanner Test>CS Position Test) fails.

14.4.2 Reading Position Adjust

[Book Main Regist]

Adjust the position at which vertical scanning of a book starts. The larger the adjustment value, the narrower the left-side margin of the image becomes.

[Book Sub Regist]

Adjust the position at which horizontal scanning of a book starts. The larger the adjustment value, the narrower the top margin in the image becomes.

[Book Main Zoom]

Correct the magnification of vertical scanning of a book. The larger the adjustment value, the more the image stretches in the vertical scanning direction.

[Book Sub Zoom]

Not used.

[Motor Phase2-1(CW)]

Though no market adjustment work needs to be carried out, enter factory defaults at image processor PCB replacement.

[Motor Phase2-1(CCW)]

Though no market adjustment work needs to be carried out, enter factory defaults at image processor PCB replacement.

[ADF Main Regist]

Adjust the position at which vertical scanning of a document fed from the ADF starts. The larger the adjustment value, the narrower the left-side margin of the image becomes.

[ADF Sub Regist-DES]

Adjust the position at which horizontal scanning of a document fed from the ADF starts. The larger the adjustment value, the narrower the top margin of the image becomes.

[ADF Sub Regist-Copy]

Adjust the position at which horizontal scanning of a document being copied ends (when scanning on a document fed from ADF). The larger the adjustment value, the narrower the bottom margin of the image becomes.

[ADF Main Zoom]

Correct the magnification of vertical scanning of a document fed from the ADF. The larger the adjustment value, the more the image stretches in the vertical scanning direction.

[ADF Sub Zoom]

Correct the magnification of horizontal scanning of a document fed from the ADF. The smaller the adjustment value, the more the image stretches in the horizontal scanning direction.

This menu is used to adjust the ADF feed motor speed. If you changed the adjustment value in this mode, the adjustment value selected for 'ADF Motor Zoom' must also be incremented/decremented by the same amount.



Do not change the adjustment value extremely.

[ADF Motor Zoom]

This menu is used to adjust the ADF pickup motor speed. If you have adjusted the ADF feed motor speed by selecting 'ADF Sub Zoom', the ADF pickup motor speed must also be incremented/decremented by the same amount.



Do not change the adjustment value extremely.

14.4.3 Print Position

[Top-Bypass]

Adjust the top registration margin of paper picked from a manual feed tray. The larger the adjustment value, the wider the top margin of the image becomes.

[Top-Tray]

Adjust the top registration margin of paper picked from cassettes. The larger the adjustment value, the wider the top margin of the image becomes.

[Top-Duplex]

Adjust the top registration margin of paper picked from a duplex unit. The larger the adjustment value, the wider the top margin of the image becomes.

[Left-Bypass]

Adjust the left-end registration margin of paper picked from a manual feed tray. The larger the adjustment value, the wider the left-end margin of the image becomes.

[Left-Tray1]

Adjust the left-end registration margin of paper picked from cassette 1. The larger the adjustment value, the wider the left-end margin of the image becomes.

[Left-Tray2]

Adjust the left-end registration margin of paper picked from cassette 2. The larger the adjustment value, the wider the left-end margin of the image becomes.

[Left-Tray3]

Adjust the left-end registration margin of paper picked from cassette 3. The larger the adjustment value, the wider the left-end margin of the image becomes.

[Left-Tray4]

Adjust the left-end registration margin of paper picked from cassette 4. The larger the adjustment value, the wider the left-end margin of the image becomes.

[Left-Duplex]

Adjust the left-end registration margin of paper picked from a duplex unit. The larger the adjustment value, the wider the left-end margin of the image becomes.

14.5 Counter

14.5.1 Outline

This copier is furnished with a counter, which can be used to gain rough measures of when to replace supplies. The counter set increments by one on counting each sheet of small-sized paper (up to A4/LTR) and by two on counting each sheet of large-sized paper (larger than A4/LTR).

Item	Counter	Explanation
Total Counter	TTL	Total counter
	COPY	Total copy counter
	PDL-PRT	PDL print counter
	REP-PRT	Report print counter
	2-SIDE	Double-sided copy/print counter
	SCAN	Scan counter
Pick-up Counter	C1	Cassette 1 jam counter
	C2	Cassette 2 jam counter
	C3	Cassette 3 jam counter
	C4	Cassette 4 jam counter
	MF	Manual feed tray pickup total counter
Feeder Counter	FEED	Feeder pickup total counter
	DFOP-CNT	ADF open/close hinge counter
Jam Counter	TTL	Unit total jam count
	FEEDER	Feeder total jam count
	SORTER	Finisher total jam count
	2-SIDE	Duplex unit jam counter
	MF	Manual feed tray jam counter
	C1	Cassette 1 jam counter
	C2	Cassette 2 jam counter
	C3	Cassette 3 jam counter
	C4	Cassette 4 jam counter
MISC counter	WST-TNR	Waste toner counter
	TR-ROLL	Transfer roller counter
	DV-UNIT-C	Developing unit counter
	M-PU-RL	Manual feed pickup roller counter
	M-SP-PD	Manual feed separation pad counter
	FX-UNIT	Fixing unit counter

14.6 Display

14.6.1 Version Display

The table below lists the items of ROM display mode that are supported.

Item	Explanation
MAIN	Displays the version number of the ROM (SYSTEM) mounted on the image processor PCB.
MAIN2	Displays the version of the ROM (BOOT) mounted on the image processor PCB.
ECONT	Displays the version number of the ROM mounted on the DC controller PCB.
Tray2	Not used.
Tray3	Not used.
Tray4	Not used.
Duplex	Not used.
Finisher	Displays the version number of the ROM mounted on the finisher controller PCB.

14.6.2 Error Code Display

Indicate the error code on the operation panel.

14.7 Report

14.7.1 Outline

The table below lists the kinds of reports that are supported.

Item	Explanation
Service Data List	Service data list output
Service Label	Output of an entry format for the service label affixed to the rear cover as shipped
Error Log Report	Jam and error history output

14.7.2 Service Data List

Use it to check the settings associated with the service soft switch and service parameters.

***** SERVICE DATA LIST *****	
COUNTRY/REGION CODE=SINGAPORE	
---- SERVICE'S CHOICE ----	
Scan Setting	
Define LGL Size	LGL
Define LTR Size	LTR
Define LTR-R Size	LTR-R
Shading Value-R	272
Shading Value-G	272
Shading Value-B	272
Printer Setting	
BitSwitch14	00000000
BitSwitch15	00000000
Fuser Temp.-Bypass	6
Fuser Temp.-Tray1	6
Fuser Temp.-Tray2	6
Fuser Temp.-Tray3	6
Fuser Temp.-Tray4	6
Film Speed-Bypass	15
Film Speed-Tray	15
COPY-Leading adjust	30
COPY-Trailing adjust	50
COPY-Right adjust	30
COPY-Left adjust	30
U1 Paper Size	G-LTR
U2 Paper Size	Foolscape
U3 Paper Size	G-LGL
Print Test-Page	1
Print Test-Interval	300
Network Setting	
BitSwitch10	00000000
---- ADJUST ----	
CIS Position Adjust	
Shading Position	22
Sheet Position	385
Reading Position	
Book Main Regist	35
Book Sub Regist	115
Book Main Zoom	16
Book Sub Zoom	16
Motor Phase2-1(CW)	474
Motor Phase2-1(CCW)	474
ADF Main Regist	35
ADF Sub Regist-DES	220
ADF Sub Regist-Copy	24
ADF Main Zoom	16
ADF Sub Zoom	16
ADF Motor Zoom	16
Print Position	
TOP-Bypass	50
TOP-Tray	50
TOP-Duplex	50
Left-Bypass	100
Left-Tray1	100
Left-Tray2	100
Left-Tray3	100
Left-Tray4	100
Left-Duplex	100
---- VERSION ----	
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14.7.3 Service Label

Enter the value given in the service label affixed to the rear cover when it has been replaced with a new one.

ADJUST>Print Position					ADJUST>Reading Adjust				
	Def	1	2	3		Def	1	2	3
TOP-B	50				BOOK-M-R	35			
TOP-T	50				BOOK-S-R	115			
TOP-D	50				BOOK-M-Z	16			
Left-B	100				BOOK-S-Z	16			
Left-T1	100				ADF-M-R	35			
Left-T2	100				ADF-S-R-D	220			
Left-T3	100				ADF-S-R-C	24			
Left-T4	100				ADF-M-Z	16			
Left-D	100				ADF-S-Z	16			
					ADF-MO-Z	16			
					SCAN-X	8273			
					SCAN-Y	8737			
ADJUST>CIS Position Adjust					SCAN-Z	9427			
Shad-P	22								

14.7.4 Error Log Report

*** JAM/ERR LOG REPORT ***					

JAM	001	4	1	0000	1 A4R
	[1]	[2]	[3]	[4]	[5][6]
ERR	001	3	E000	0000	
	[7][8]		[9]		

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Jam history description (JAM)		
	Item	Explanation
[1]	No.	Jam occurred sequence
[2]	Position	3:Main body, 4:Feeder, 5:Finisher
[3]	Occurred area	0:Main body, 1:Feeder, 2:Finisher
[4]	Jam code	
[5]	Feeder tray	0:Manual feed tray, 1:Cassette 1, 2:Cassette 2, 3:Cassette 3, 4:Cassette 4, 7:Duplex
[6]	Paper size	

Error history description (ERR)		
	Item	Explanation
[7]	No.	Error occurred sequence.
[8]	Position	3:Main body, 5:Finisher
[9]	Error code	Error code and detail code

14.8 Clear Data

14.8.1 Outline

Item	Explanation
Service Data Clear	Initializes service data.(Clear the service mode data of 'Service Choice' and 'Adust' menu.)
Type Clear	Initializes user data.
History Clear	Clears the jam/error history and the user data('System Settings' -> 'Dept. ID Management' -> 'Page Totals' menu).
PWD Clear	Clears the system administrator's password.
All Clear	Clears user and service data (except for some scan parameters and the user data ('System Settings' -> 'Dept. ID Management' -> 'Page Totals' menu)).

14.9 Test

14.9.1 Outline

Test mode must be executed by keeping track the flow of menu items appearing on the LCD. Menu items in test mode are organized into seven blocks as described below.

- DRAM test

Checks to see if data can be correctly written to and read from DRAM.

- Scanner test

Used to adjust contact sensor output and the position at which a document fed from the ADF is scanned.

- Printer test

Used to generate service test patterns.

- Aging test

Not used.

- Factory test

Used to verify the operations of microswitches, sensors, and ADF functions.

- Roller clear mode

Used to clean the delivery roller or ADF pickup roller by idling them.

- Video I/F Test

Not used.

14.9.2 DRAM Test

Read write installed DRAM.

When test finishes and every thing is OK, it Will display 'OK' and automatically clear DRAM. After DRAM clears finish, LCD will display 'Data is Clear'.

14.9.3 Scanner Test

Item	Explanation
CS Output Test	Execute CS output compensation.
CS Position Test	CS moves to ADF reading position.
Dirty Detect	Shading area dirty detect.
Initial Read Adjust	Reset all reading system adjustment value to initial. (ADF + Book)
Initial ADF Adjust	Initial ADF scan adjust value.
Initial Book Adjust	Initial Book scan adjust value.

14.9.4 Printer Test

Select the item to generate test patterns as described below. Two kinds of service test patterns are available. Other test patterns are reserved for factory/development purposes.

- White Pattern

Not used.

- Black Pattern

This pattern is used.

- Stripe Pattern

Not used.

- Endurance Pattern

This pattern is used.

- Black/White Pattern

Not used.

- CRG Test Pattern

Not used.

- Grid Pattern

Not used.

- White/Black Pattern

Not used.

- Arrow Pattern

Not used.

- E Pattern

Not used.



Use it to make sure that the print pattern does not have white lines or uneven image.

Use it to make sure that the print pattern does not have contraction/elongation of an image or dirt/black lines.

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14.9.5 Aging Test

Not used.

14.9.6 Factory Test

Item	Explanation
Sensor Check	Sensor actuation test
ADF Feed test	ADF operation test
Book Feed test	Host machine operation test
Panel test	LCD, LED and control key operation test
Lamp test	Contact sensor illumination test

Sensor Check

This mode is used to verify the status of the unit sensors from LCD indications. LCD indications change as the associated sensors turn on and off.

- Sensor [1]

Display	Position	Sensor Name	Explanation
CAS	-	Cassette 1 paper sensor (SR204)	0:Document presence, 1:Document absence
REG	-	Registration sensor (SR209)	0:Document presence, 1:Document absence
DEL(left)	-	Fixing delivery sensor (SR202)	0:Document presence, 1:Document absence
DEL(right)	-	No.1 delivery sensor (SR203)	1:Document presence, 0:Document absence
MULTI	-	Manual paper sensor (SR208)	1:Document presence, 0:Document absence
TONER	-	Waste toner full sensor (SR206)	0:Full, 1:Available
2ND-DEL	-	No.1 paper full sensor (SR207)	0:Document presence, 1:Document absence
OP1(left)	Left	Cassette 2 retry sensor (SR6)	0:Document presence, 1:Document absence
OP1(right)	Right	Cassette 2 paper sensor (SR5)	0:Document presence, 1:Document absence
OP2(left)	Left	Cassette 3 retry sensor (SR6)	0:Document presence, 1:Document absence
OP2(right)	Right	Cassette 3 paper sensor (SR5)	0:Document presence, 1:Document absence
OP3(left)	Left	Cassette 4 retry sensor (SR6)	0:Document presence, 1:Document absence
OP3(right)	Right	Cassette 4 paper sensor (SR5)	0:Document presence, 1:Document absence
D.PATH(left)	Left	Duplex paper sensor 1 (SR1002)	0:Document presence, 1:Document absence
D.PATH(right)	Right	Duplex paper sensor 2 (SR1003)	0:Document presence, 1:Document absence

- Sensor [2]

Display	Position	Sensor Name	Explanation
CAS	SW4(left)	Cassette 1 size switch	1:Pressed, 0:Not pressed
	SW3(middle left)		1:Pressed, 0:Not pressed
	SW2(middle right)		1:Pressed, 0:Not pressed
	SW1(right)		1:Pressed, 0:Not pressed
LOCK	-	Cover switch (SW2 and SW3)	1:Cover open, 0: Cover closed
OP1	SW4(left)	Cassette 2 size switch	1:Pressed, 0:Not pressed
	SW3(middle left)		1:Pressed, 0:Not pressed
	SW2(middle right)		1:Pressed, 0:Not pressed
	SW1(right)		1:Pressed, 0:Not pressed
OP2	SW4(left)	Cassette 3 size switch	1:Pressed, 0:Not pressed
	SW3(middle left)		1:Pressed, 0:Not pressed
	SW2(middle right)		1:Pressed, 0:Not pressed
	SW1(right)		1:Pressed, 0:Not pressed
OP3	SW4(left)	Cassette 4 size switch	1:Pressed, 0:Not pressed
	SW3(middle left)		1:Pressed, 0:Not pressed
	SW2(middle right)		1:Pressed, 0:Not pressed
	SW1(right)		1:Pressed, 0:Not pressed

- Sensor [3]

Display	Position	Sensor Name	Explanation
DS	-	ADF document sensor (PI11)	On:Paper presence, Of:Paper absence
DES	-	ADF read sensor (PI7)	On:Paper presence, Of:Paper absence
HPS	-	CIS HP sensor (SR401)	On:Paper presence, Of:Paper absence
BCVS	-	Copyboard cover open/closed sensor (front) (SR403)	On:Cover open, Of:Cover closed

- Sensor [4]

Display	Position	Sensor Name	Explanation
REF	-	-	Toner reference voltage
ANT	-	-	Toner antenna voltage
[ANT-REF]	-	-	Differential voltage

- Sensor [5]

Display	Position	Sensor Name	Explanation
BSCT	-	Copyboard cover open/closed sensor (rear) (SR402)	On:Cover open, Of:Cover closed
BDOC	-	-	Document size: Paper size indicated in a mix of document size sensors
BDSS	left	Original sensor 4 or 5 (SR407 or SR408)	On:Document presence, Of:Document absence
	middle left	Original sensor 3 (SR406)	On:Document presence, Of:Document absence
	middle right	Original sensor 1 (SR404)	On:Document presence, Of:Document absence
	right	Original sensor 2 (SR405)	On:Document presence, Of:Document absence

- Sensor [6]

Display	Position	Sensor Name	Explanation
LAST	-	Last document detection sensor (PI3)	On:Paper absence, Off:Paper presence
EXIT	-	Delivery reversal sensor (PI6)	On:Paper presence, Off:Paper absence
REG	-	Registration paper sensor (PI8)	On:Paper presence, Off:Paper absence
CVR	-	Cover open/close sensor (PI10)	On:Cover open, Of:Cover closed

- Sensor [7]

Display	Position	Sensor Name	Explanation
WID1	-	Document width sensor 1 (PI2)	On:Paper presence, Off:Paper absence
WID2	-	Document width sensor 2 (PI1)	On:Paper presence, Off:Paper absence
LEN1	-	Document length sensor 1 (PI4)	On:Paper presence, Off:Paper absence
LEN2	-	Document length sensor 2 (PI5)	On:Paper presence, Off:Paper absence

ADF Feed Test

ADF operation verification mode. Place a document on the document platen and press the start key to transfer the document at the speed matched to the magnification setting.

Book Feed Test

Performs a book feed operation with a specified magnification and in a specified size.

Panel test

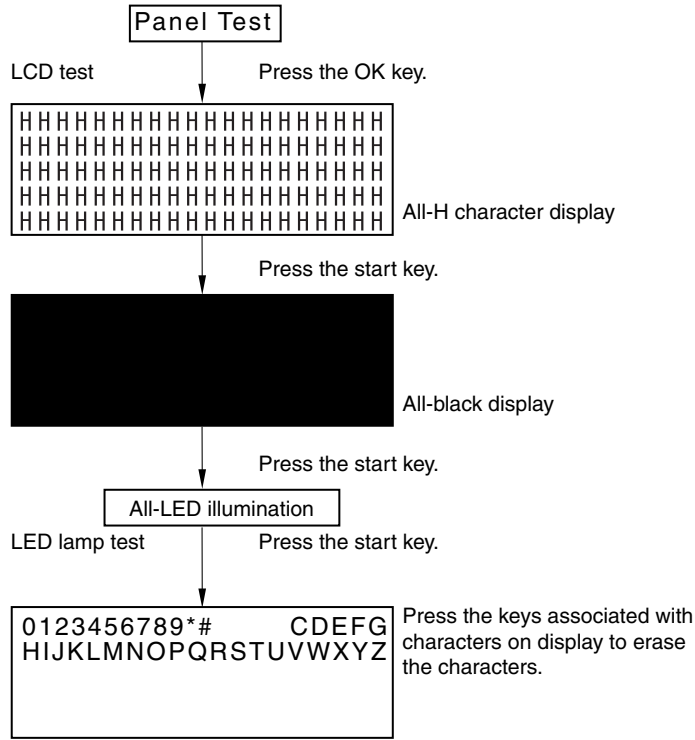
Operation panel operation verification mode. Functions that can be verified from this menu are listed below.

- LCD/LED test

Start the Panel test by pressing the OK key. The LCD test is carried out first, displaying all-H characters. Press the start key once again to produce a total black display. And then, Press the start key, turn on all LED.

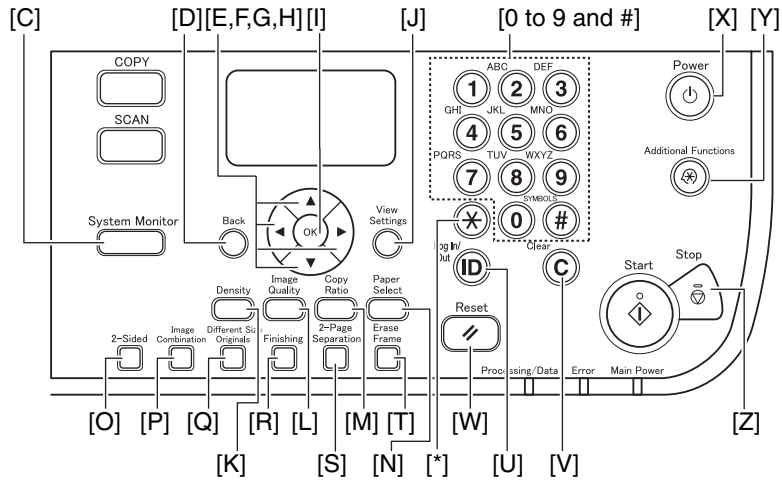
- Key test

Press the start key after the LED lamp test. The test succeeds if the characters appearing in the LCD are erased when the corresponding keys are pressed. The flow of operation panel testing is shown below.



F-14-4

Key test correspondence diagram



F-14-5

Lamp test

This test checks to see if the scan lamp is on or not. Press the start key to turn on all scan lamps.

14.9.7 Roller Clear Mode

Divide to Printer and ADF two parts. Press 'OK' key execute clear function. Press 'STOP' can stop clear function. Select the 'Printer' menu and start the cleaning of the transfer roller by idling. Select the 'ADF' menu and start the cleaning the ADF pickup/feed rollers by idling.

14.9.8 Video I/F Test

Not used.

Chapter 15 Upgrading

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15.1 Outline

15.1.1 Overview of Upgrade

This machine can be upgraded by downloading system software programs from the personal computer (hereafter called as the PC) in which a user support tool (hereafter called UST) has been loaded. The option can be upgraded by downloading system software programs from the personal computer (hereafter called as the PC) in which a service support tool (hereafter called SST) has been loaded. System software programs and upgrade tools are listed in the following table:

Type	System software type	Upgrade tool	Remarks
Main unit	System (main controller)	UST	The main controller also controls the reader.
	Boot (boot program)	UST	Boot program is upgraded automatically at the same time with System version up.
Option	Fin_U2 (Finisher-U2)	SST+Downloader PCB	Dedicated service tool (Downloader PCB: FY9-2034) Refer to finisher service manual about the method of version up.

15.2 Downloading System Software

15.2.1 Downloading System

15.2.1.1 Downloading Procedure

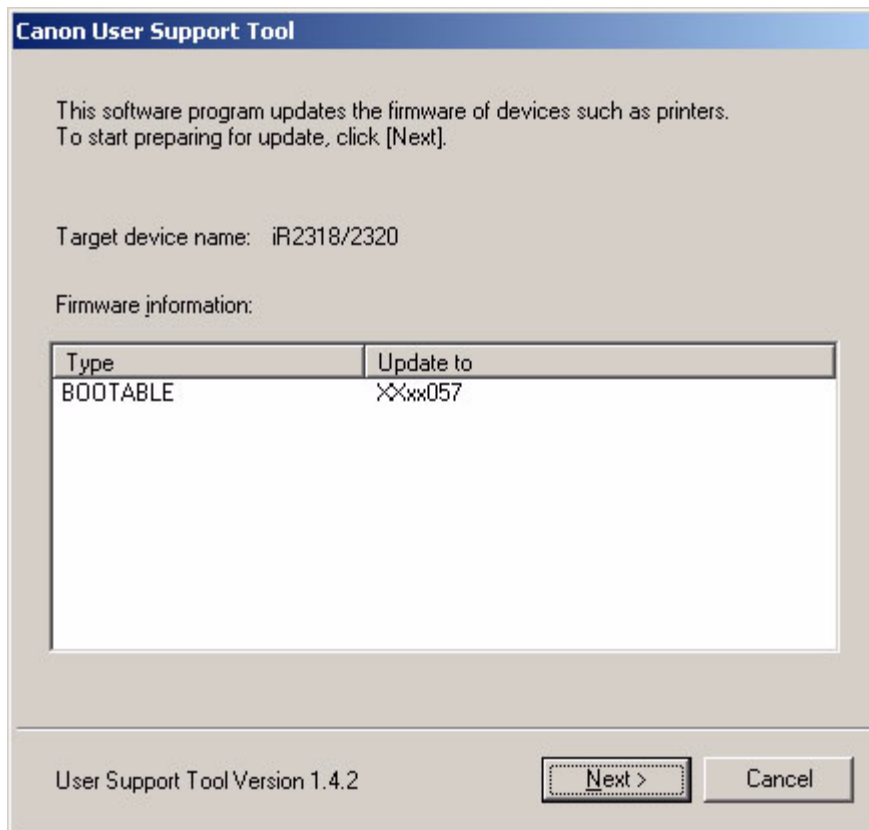
- 1) Turn on the power switch of the PC and start UST.
- 2) When the power switch is turned on, the Found New hardware Wizard appears. Click "Cancel".



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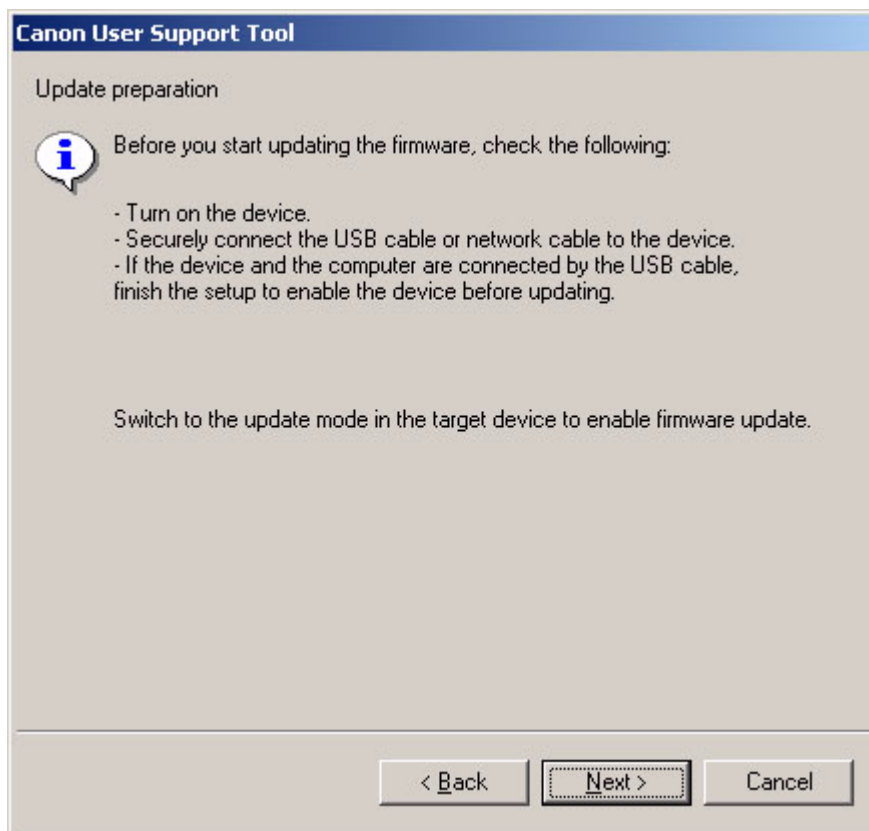
- 3) Press the Additional Functions key on the control panel of this machine to enter into the user mode.
- 4) Press the down-arrow key to select "System Settings", and then press the OK key.
- 5) Press the down-arrow key to select "Update Firmware", and then press the OK key.
- 6) When "OK to update" appears, select "Yes" and then press the OK key.
- 7) When "PLEASE WAIT WAITING" appears, start the UST.

8) Select "Next" following the instruction shown on the screen.



F-15-2

9) Select "Next" following the instruction shown on the screen.



F-15-3

10) Select “Next” following the instruction shown on the screen.

Canon User Support Tool

Select device

Select a printer name from the following list, or enter the IP address to select the device to update.

☒ Specify by printer name

Printer name	Port name
iR2318/2320 (UFR II LT)	USB001

☐ Specify by IP address

< Back Next > Cancel

F-15-4

11) Select “Start” following the instruction shown on the screen.

Canon User Support Tool

Confirm update details

This software program will update the firmware of the selected device with the following details. Check the details.

Target device: iR2318/2320 (UFR II LT)

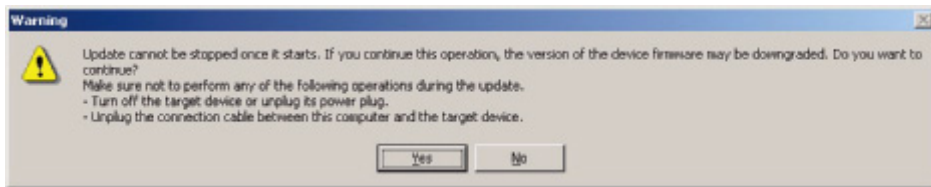
Port name: USB001

Click [Start] to update.

< Back Start Cancel

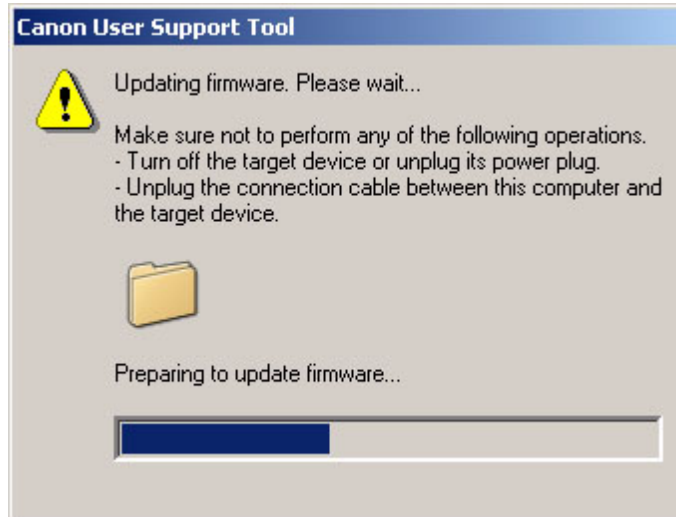
F-15-5

12) Select "Yes" following the instruction shown on the screen.



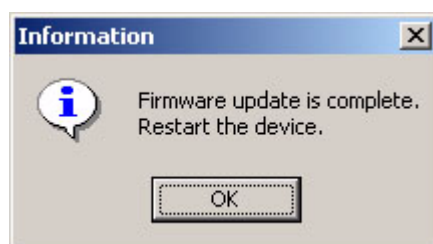
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13) The following screen appears. "UPDATING FIRMWARE" appears on the control panel of this machine.



F-15-7

14) When version update is completed, the following screen appears. Turn off this machine and then turn it on again to allow the new firmware to take effect.



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15.2.2 Downloading BOOT

15.2.2.1 Downloading Procedure

Boot program is upgraded automatically at the same time with System version up.

Chapter 16 Service Tools

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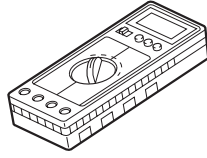
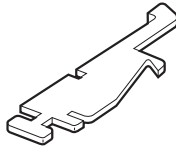
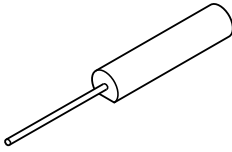
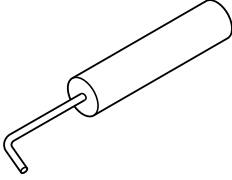
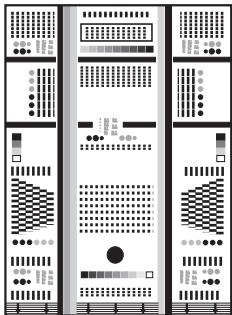
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16.1 Service Tools

16.1.1 Special Tools

In addition to the standard tools set, you will need the following special tools for servicing of the machine:

Tool name	Tool No.	Rank	Shape	Uses
Digital multimeter	FY9-2002	A		For making electrical checks.
Cover switch	TKN-0093	A		
Tester extension pin	FY9-3038	A		As an addition when making an electrical check.
Tester extension pin (L-shipped)	FY9-3039	A		As an addition when making an electrical check.
NA-3 Test Chart	FY9-9196	A		For checking and adjusting images.

Key to Notation (rank)

A: each service engineer is expected to carry one.

B: each group of 5 service engineers is expected to carry one.

C: each workshop is expected to carry one.

16.1.2 Oils and Solvents

Name	Uses	Composition	Remarks
Alcohol	cleaning; e.g., glass, plastic, rubber; external covers	fluoride-family hydrocarbon alcohol surface activating agent water	- Do not bring near fire. - Procure locally. - IPA (isopropyl alcohol) may be substituted.
Solvent	cleaning; e.g., metal; soiling with oil or toner	fluorine-family hydrocarbon chlorine-family hydrocarbon alcohol	- Do not bring near fire. - Procure locally. - MEK may be substituted.
Lubricant		mineral oil (paraffin family)	- CK-0524 (100 cc)

Name	Uses	Composition	Remarks
Lubricant	drive mechanism, sliding mechanism, scanner rail	silicone oil	- CK-0551 (20 g)
Lubricant (EM-50L)	gear	special oil special solid lubricating agent lithium soap	- HY9-0007

Apr 20 2011

Canon