

# Service Manual

MF4100 Series



**Canon**

Aug 21 2006



## Application

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

## Corrections

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

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## Caution










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

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# Symbols Used



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This documentation uses the following symbols to indicate special information:

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

The following rules apply throughout this Service Manual:

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

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

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

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

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

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

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



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## Chapter 1 Introduction

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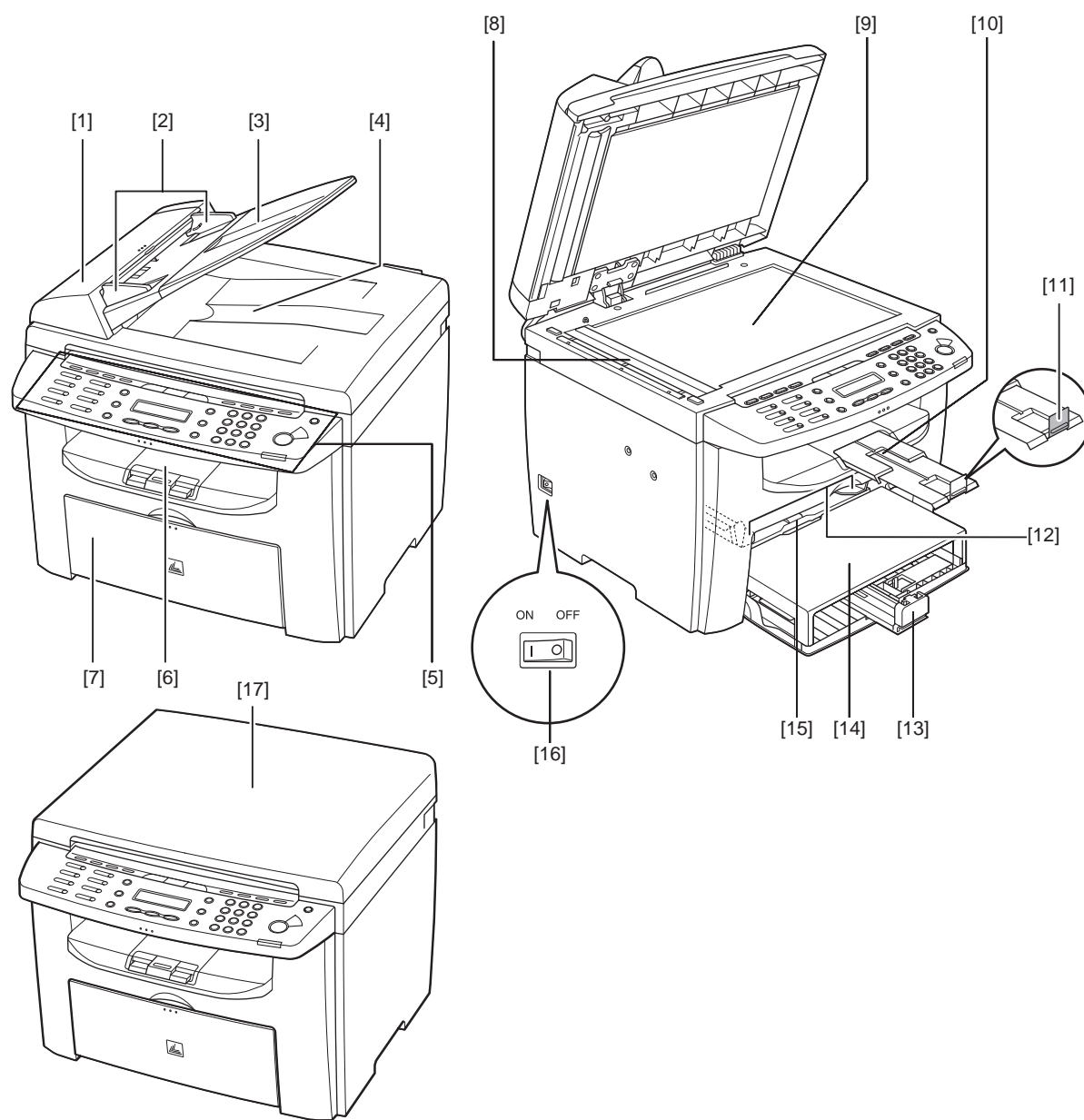
## 1.1 Product Specifications

### 1.1.1 Names of Parts

#### 1.1.1.1 External View

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120

##### Front View (Body)

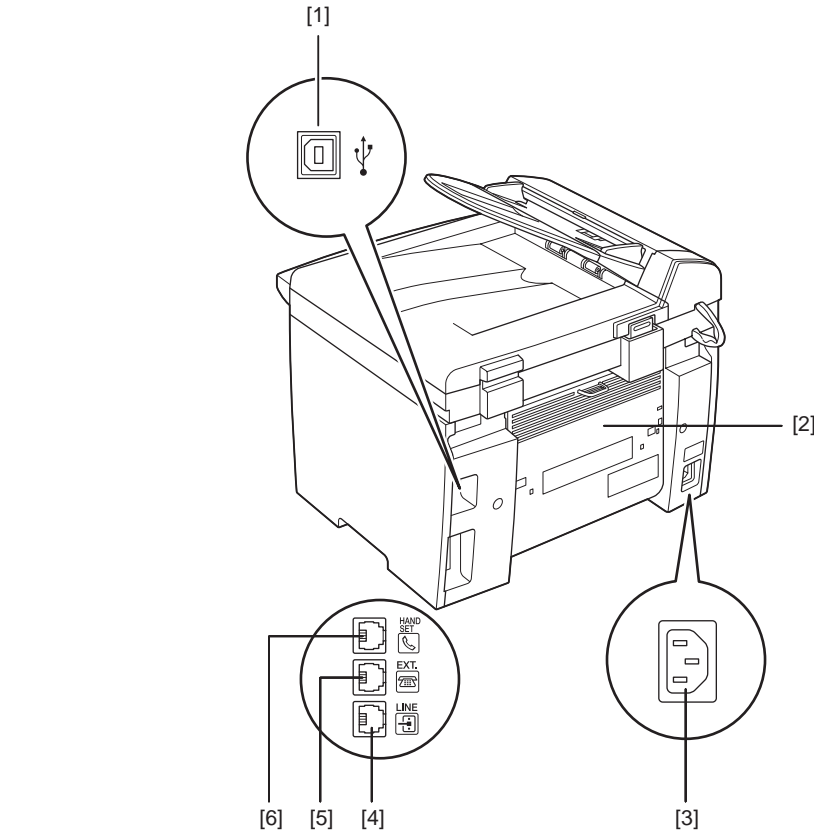


F-1-1

- [1] ADF (Automatic Document Feeder): MF4150 only
- [2] Document guide: MF4150 only
- [3] Document pick-up tray: MF4150 only
- [4] Document delivery tray: MF4150 only
- [5] Control panel
- [6] Delivery tray
- [7] Paper tray
- [8] Reading area (ADF): MF4150 only
- [9] Copyboard

- [10] Delivery auxiliary tray
- [11] Delivery stop
- [12] Manual feed tray paper guide
- [13] Paper trail edge guide
- [14] Paper cover
- [15] Manual feed tray
- [16] Power switch
- [17] Copyboard cover: MF4120/MF4122/MF4140

Rear View (Body)



F-1-2  
T-1-1

- [1] USB port

[2] Rear cover

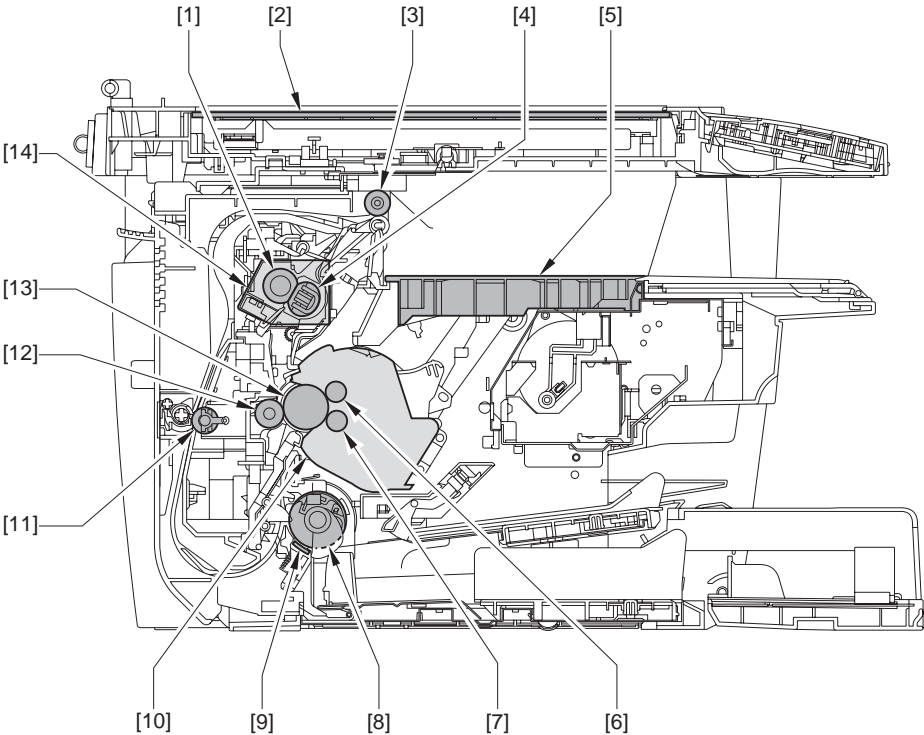
[3] Appliance inlet
- [4] Phone line terminal: MF4140/MF4150 only

[5] Phone teminal: MF4140/MF4150 only

[6] Handset terminal: MF4140/MF4150 only

1.1.1.2 Section View (Host Machine)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



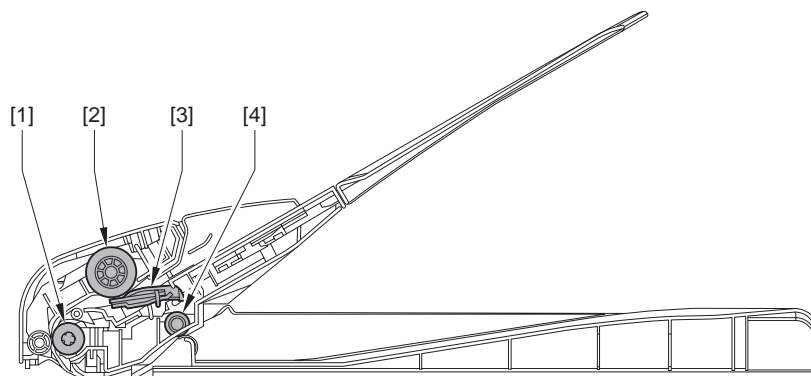
F-1-3

- [1] pressure roller
- [8] vertical path roller

[2]	copyboard glass (scanning glass)	[9]	separation pad
[3]	delivery roller	[10]	cartridge
[4]	fixing film unit	[11]	duplexing feeding roller
[5]	laser scanner unit	[12]	transfer charging roller
[6]	primary charging roller	[13]	photosensitive drum
[7]	developing cylinder	[14]	fixing unit

### 1.1.1.3 Section View (ADF)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



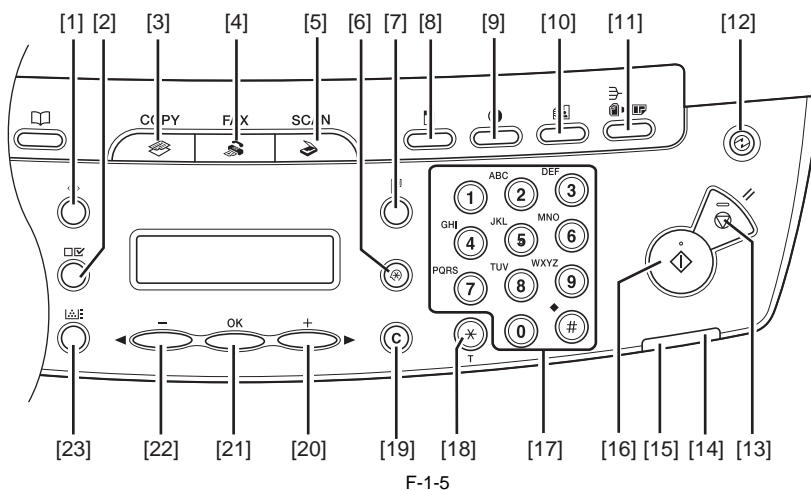
F-1-4

- [1] registration roller
- [2] pickup roller
- [3] separation pad
- [4] delivery roller

### 1.1.1.4 Control panel

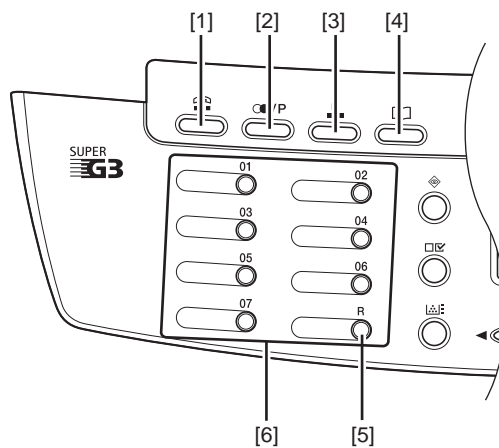
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120

MF4140/MF4150



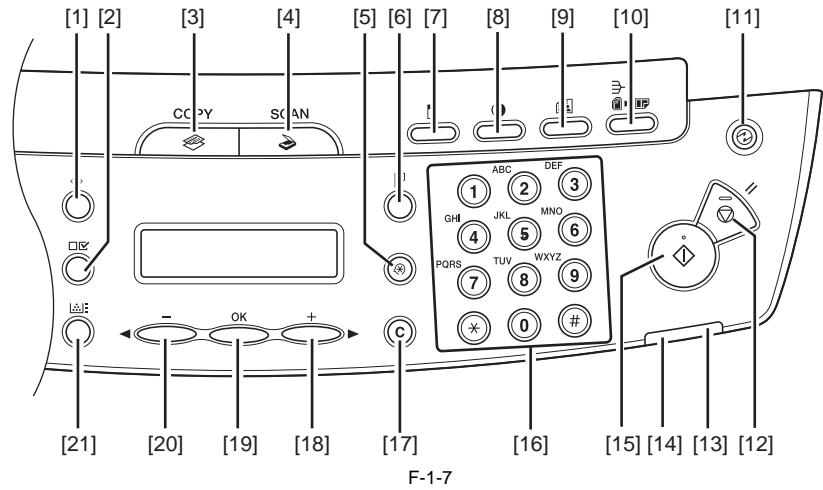
T-1-2

- |                                |                                |
|--------------------------------|--------------------------------|
| [1] [System Monitor] key       | [13] [Stop/Reset] key          |
| [2] [View Settings] key        | [14] Error indicator           |
| [3] [COPY] key                 | [15] Processing/Data indicator |
| [4] [FAX] key                  | [16] [Start] key               |
| [5] [SCAN] key                 | [17] Numeric key               |
| [6] [Additional Functions] key | [18] [Tone] key                |
| [7] [2-Sided] key              | [19] [Clear] key               |
| [8] [Enlarge/Reduce] key       | [20] [+] key                   |
| [9] [Density] key              | [21] [OK] key                  |
| [10] [Image Quality] key       | [22] [-] key                   |
| [11] [Collate/2 on 1] key      | [23] [Toner Gauge] key         |
| [12] [Energy Saver] key        |                                |



- |                        |                               |
|------------------------|-------------------------------|
| [1] [Hook] key         | [4] [Address Book] key        |
| [2] [Redial/Pause] key | [5] [R] key                   |
| [3] [Coded Dial] key   | [6] One-Touch Speed Dial keys |

MF4120/MF4122



T-1-4

- |                                |                                |
|--------------------------------|--------------------------------|
| [1] [System Monitor] key       | [12] [Stop/Reset] key          |
| [2] [View Settings] key        | [13] Error indicator           |
| [3] [COPY] key                 | [14] Processing/Data indicator |
| [4] [SCAN] key                 | [15] [Start] key               |
| [5] [Additional Functions] key | [16] Numeric key               |
| [6] [2-Sided] key              | [17] [Clear] key               |
| [7] [Enlarge/Reduce] key       | [18] [+] key                   |
| [8] [Density] key              | [19] [OK] key                  |
| [9] [Image Quality] key        | [20] [-] key                   |
| [10] [Collate/2 on 1] key      | [21] [Toner Gauge] key         |
| [11] [Energy Saver] key        |                                |

1.1.2 Safety

1.1.2.1 Safety of the Host Machine's Laser Mechanism

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Laser radiation can prove to be harmful to the human body. The host machine's laser scanning system is completely sealed by means of a protective housing and external covers so that its light will not leak outside the host machine as long as the host machine is used normally.

1.1.2.2 CDRH Regulations

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The Center for Devices and Radiological Health (CDRH) of the US Food and Drug Administrator put into forth regulations that relate to laser products on August 2nd, 1976.

These regulations apply to laser products produced on and after August 1st, 1976, and prohibit the sale of laser products without certification. The following labels certify compliance with the CDRH regulations, and must be attached to all laser products that are sold in the US.

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

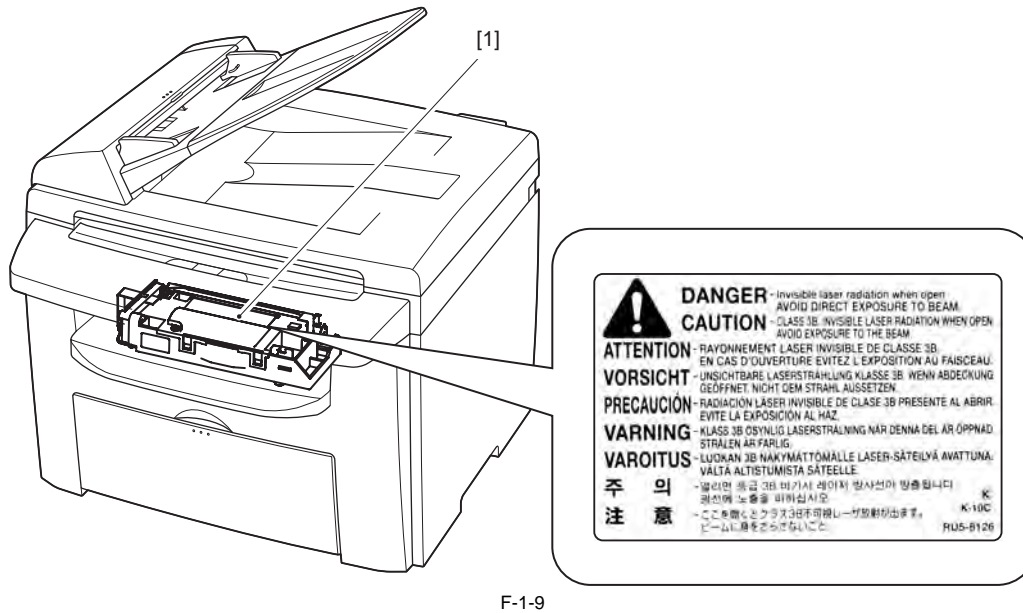
**MANUFACTURED:**  
THIS PRODUCT CONFORMS WITH DHHS RADIATION  
PERFORMANCE STANDARD 21CFR CHAPTER 1  
SUBCHAPTER J.

F-1-8

### 1.1.2.3 Handling of the Laser Assembly

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Invisible laser beam is radiated within the laser scanner unit. Laser beam radiation may pose damage to eyes. Be sure not to disassemble the laser scanner unit. The host machine's laser scanner unit cannot be adjusted in the field. The label [1] shown in the figure below is attached onto the cover of the laser scanner unit.



F-1-9

### 1.1.2.4 Safety of the Toner

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Toner in General

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



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

Contact with Toner

1. Toner on the skin or clothes must be removed by washing with water immediately.
2. The use of warm water must be avoided, doing so will cause the toner to turn gel-like and to permanently fuse with the fibers of the clothes.
3. Contact with vinyl must also be avoided, as toner can readily react.

### 1.1.2.5 Fire Attention

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

It is dangerous to throw the parts that include combustible materials such as lithium battery and toner cartridge etc., into fire. Any used battery must always be disposed according to the appropriate local regulations.

### 1.1.2.6 Points no Note when Replacing / Disposing the Lithium Battery

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



Replacing to wrong type of battery may cause explosion.  
 Dispose used battery according to the instruction manual.

### 1.1.3 Product Specifications

#### 1.1.3.1 Host Machine Specifications

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120

<b>Copyboard</b>	fixed type
<b>Body</b>	desktop (ADF standard type: MF4130/MF4150 only)
<b>Light source type</b>	LED
<b>Image reading method</b>	contact sensor scanning method
<b>Photosensitive medium</b>	OPC drum
<b>Reproduction method</b>	indirect static copying method
<b>Exposure method</b>	semiconductor laser
<b>Charging method</b>	roller contact charging method
<b>Development method</b>	dry/single-component projection development
<b>Transfer method</b>	roller transfer method
<b>Separation method</b>	electrostatic separation (static eliminator) + curvature separation
<b>Pickup method</b>	cassette pickup: 1 multi-manual feeder
<b>Cassette pickup method</b>	pad separation method
<b>Multifeeder pickup method</b>	pad separation method
<b>Drum cleaning method</b>	rubber blade
<b>Fixing method</b>	SURF (on-demand method) fusing
<b>Toner supply type</b>	built-in drum toner cartridge
<b>Toner type</b>	magnetic negative toner
<b>Toner save mode</b>	Yes
<b>Original type</b>	sheet, book, three dimensional objects (up to 2kg)
<b>Maximum original size</b>	fixed type: 216mm x 297mm ADF: 216mm x 356mm
<b>Reproduction ratio</b>	1: 1+/-1.0%, 1:2.00, 1:1.41, 1:0.70, 1:0.50 zoom: 0.50 to 2.00 (minimum unit: 1%)
<b>Reading resolution</b>	600 x 600 dpi
<b>Printing resolution</b>	600 x 600 dpi
<b>Warm-up time</b>	9.0 sec or less
<b>First print time</b>	9.6 sec or less (A4/LTR)
<b>Print speed</b>	1-side: approx. 20 ppm (A4) approx. 21 ppm (LTR) 2-side: approx. 10 ppm
<b>Cassette paper size</b>	LTR, LGL, A4, B5, A5, Executive, Envelope (COM10, Monarch, DL,ISO-C5), Oficio, Brazil-Oficio, Mexico-Oficio, Folio, Government-LTR, Government-LGL, Foolscap (76 x 127 to 216 x 356 mm)
<b>Multifeeder paper size</b>	LTR, LGL, A4, B5, A5, Executive, Envelope (COM10, Monarch, DL,ISO-C5), Oficio, Brazil-Oficio, Mexico-Oficio, Folio, Government-LTR, Government-LGL, Foolscap (76 x 127 to 216 x 356 mm)
<b>Cassette paper type</b>	plain paper (64 to 90 g/m2), thick paper (105 to 128 g/m2), recycled paper (64 to 80 g/m2), transparency, label, envelope, postcard
<b>Multifeeder tray paper type</b>	plain paper (64 to 90 g/m2), thick paper (105 to 163 g/m2), recycled paper (64 to 80 g/m2), transparency, label, envelope, postcard
<b>Cassette capacity</b>	250 sheets (80 g/m2)

<b>Multifeeder tray capacity</b>	10 sheets (plain paper: 80 g/m <sup>2</sup> ) 1 sheet (transparency, envelope)
<b>Delivery tray stack</b>	100 sheets (plain paper: 80 g/m <sup>2</sup> ) 50 sheets (thick paper: 91 to 105 g/m <sup>2</sup> ) 30 sheets (thick paper: 106 to 128 g/m <sup>2</sup> ) 10 sheets (label, transparency, envelope, postcard)
<b>Continuous reproduction</b>	1 to 99 print (s)
<b>Energy save mode</b>	Yes (manual ON/OFF, auto OFF at a certain period of time, auto ON at fax reception/print data reception)
<b>Operating environment (temperature range)</b>	15 to 30 degC
<b>Operating environment (humidity range)</b>	10 - 80 %
<b>Operating environment (atmospheric pressure)</b>	0.61 to 1.01 hpa (0.6 to 1 atm)
<b>Power supply rating</b>	- 220V - 240V (50/60Hz) - 120V, 60Hz
<b>Power consumption (maximum)</b>	maximum consumption: 670W or less
<b>Power consumption</b>	consumption at operation mode: approx. 340W or less(reference value) consumption at standby mode: approx. 8.5W (reference value) consumption at sleep mode: approx. 3W (reference value)
<b>Ozone</b>	max: 0.05 ppm or less, average: 0.02 ppm or less
<b>Dimensions</b>	MF4150: 390 (W) x 432 (D) x 370 (H) mm (document pickup tray attached)  MF4120/MF4122/MF4140: 390 (W) x 432 (D) x 303 (H) mm
<b>Weight</b>	MF4150: 13.4 kg approx. (toner cartridge included)  MF4120/MF4122/MF4140: 12.4 kg approx. (toner cartridge included)

### 1.1.3.2 ADF Specifications

i-SENSYS MF4150 /

<b>Original orientation</b>	Face-up method
<b>Original position</b>	center reference
<b>Original processing mode</b>	1-sided to 1-sided copy, 1-sided to 2-sided copy
<b>Original reading</b>	stream reading method
<b>Stack</b>	35 sheets (80 g/m <sup>2</sup> or less) 25 sheets (LGL size)
<b>Mixed original sizes</b>	No
<b>Original AE detection</b>	No
<b>Original size recognition</b>	No
<b>Stamp</b>	No
<b>Operating environment</b>	pursuant to the host machine

### 1.1.3.3 FAX Specifications

i-SENSYS MF4150 / i-SENSYS MF4140

<b>Applicable lines</b>	Analog line (single line) - Telephone subscriber line (PSTN)
<b>Transmission method</b>	Half-duplex communication

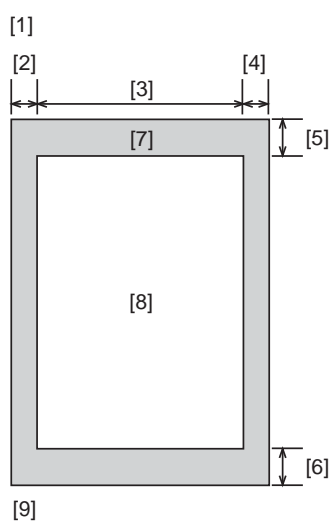


<b>Modulation method</b>	<G3 image signal> ITU-T V.27 ter (2.4Kbps, 4.8Kbps) ITU-T V.29 (7.2Kbps, 9.6Kbps) ITU-T V.17 (TC7.2Kbps, TC9.6Kbps, 12Kbps, 14.4Kbps) ITU-T V.34 (2.4Kbps, 4.8Kbps, 7.2Kbps, 9.6Kbps, 12Kbps, 14.4Kbps, 16.8Kbps, 19.2Kbps, 21.6Kbps, 24Kbps, 26.4Kbps, 28.8Kbps, 31.2Kbps, 33.6Kbps) <G3 procedure signal> ITU-T V.21 No.2 (300bps) ITU-T V.8, V.34 (300bps)
<b>Transmission speed</b>	33.6Kbps, 31.2Kbps, 28.8Kbps, 26.4Kbps, 24Kbps, 21.6Kbps, 19.2Kbps, 16.8Kbps, 14.4Kbps, 12Kbps, TC9.6Kbps, TC7.2Kbps, 9.6Kbps, 7.2Kbps, 4.8Kbps, 2.4Kbps With automatic fallback function
<b>Coding</b>	MMR, MR, MH
<b>Error correction</b>	ITU-T ECM
<b>Minimum receive input level</b>	V.17, V.27ter, V.29: -6 to -43 dBm V.34: -10 to -43 dBm
<b>Modem IC</b>	CONEXANT DFX336
<b>Scanning line density</b>	Standard: 8 dots / mm x 3.85 lines / mm Fine: 8 dots / mm x 7.7 lines / mm Super fine/ 8 dots / mm x 15.4 lines / mm
<b>Half tone</b>	256 gradation sequence
<b>Printing resolution</b>	600 dpi x 600 dpi
<b>Reduction for reception</b>	Fixed reduction: No Automatic reduction: 75 to 100%
<b>FAX/TEL switching</b>	Yes.
<b>Answering machine connection</b>	Yes.
<b>Remote reception</b>	ID entry method ID: 2 digits (default is 25)
<b>Auto dialing</b>	One-touch dial: 7 Speed dial: 100 Group dial: Maximum 106
<b>Delayed transmission</b>	No.
<b>Broadcast transmission</b>	Number of Destination: Maximum 123 (one-touch / speed dial: 107, ten key: 16)
<b>Dual access</b>	Reservation Capacity: Maximum 64 jobs
<b>Memory reception</b>	Approximately 256 sheets (Canon FAX standard chart No.1)
<b>Image data backup</b>	No.

## 1.1.4 Function List

### 1.1.4.1 Scanning Range (ADF)

i-SENSYS MF4150



F-1-10

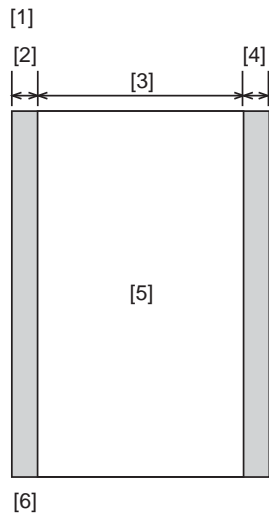
- |                              |                               |
|------------------------------|-------------------------------|
| [1] leading edge of original | [6] trailing edge margin      |
| [2] left margin              | [7] non-scanning area         |
| [3] effective scanning width | [8] scanning range            |
| [4] right margin             | [9] trailing edge of original |
| [5] leading edge margin      |                               |

T-1-5

item	A4	Letter	Legal
effective scanning width	206 +2.0/-2.0 mm	212 +2.0/-2.0 mm	212 +2.0/-2.0 mm
left margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
right margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
leading edge margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
trailing edge margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm

1.1.4.2 Scanning Range (copyboard)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120



F-1-11

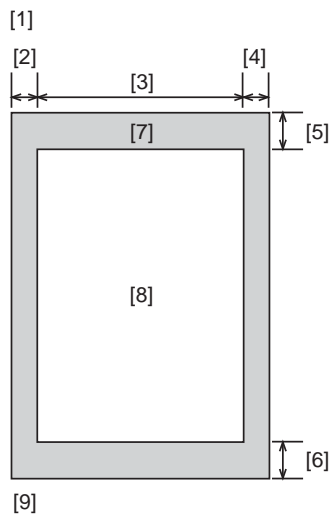
- [1] leading edge of document
- [4] right margin
- [2] left margin
- [5] scanning range
- [3] effective scanning width
- [6] trailing edge of document

T-1-6

item	A4	Letter
effective scanning width	206 mm	212 mm
left margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
right margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm

1.1.4.3 Recording Range (Copy)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120



F-1-12

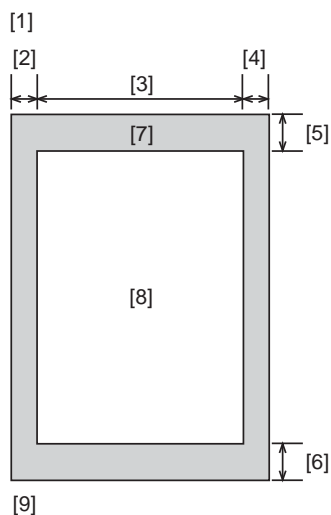
- [1] leading edge of document
- [6] trailing edge margin
- [2] left margin
- [7] non-scanning area
- [3] effective scanning width
- [8] scanning range
- [4] right margin
- [9] trailing edge of document
- [5] trailing edge margin

T-1-7

item	A4	Letter	Legal
effective recording width	204 +1.0/-2.0 mm	210 +2.0/-2.0 mm	210 +2.0/-2.0 mm
effective recording left margin	3.0 +2.0/-2.0 mm	3.0 +2.0/-2.0 mm	3.0 +2.0/-2.0 mm
right margin	3.0 +2.0/-2.0 mm	3.0 +2.0/-2.0 mm	3.0 +2.0/-2.0 mm
leading edge margin	4.0 +2.0/-2.0 mm	4.0 +2.0/-2.0 mm	4.0 +2.0/-2.0 mm
trailing edge margin	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm

#### 1.1.4.4 Recording Range (Reception)

i-SENSYS MF4150 / i-SENSYS MF4140



F-1-13

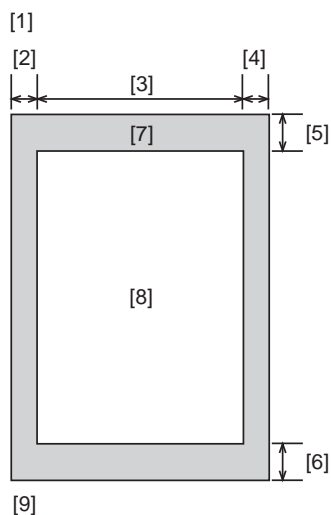
- [1] leading edge of document
- [2] left margin
- [3] effective scanning width
- [4] right margin
- [5] leading edge margin
- [6] trailing edge margin
- [7] non-scanning area
- [8] scanning range
- [9] trailing edge of document

T-1-8

item	A4	Letter	Legal
effective recording width	206 +1.0/-2.0 mm	212 +2.0/-2.0 mm	212 +2.0/-2.0 mm
left margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
right margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
leading edge margin	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm	2.0 +2.0/-2.0 mm
trailing edge margin	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm

#### 1.1.4.5 Recording Range (Printer)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120



F-1-14

- |                              |                               |
|------------------------------|-------------------------------|
| [1] leading edge of document | [6] trailing edge margin      |
| [2] left margin              | [7] non-scanning area         |
| [3] effective scanning width | [8] scanning range            |
| [4] right margin             | [9] trailing edge of document |
| [5] leading edge margin      |                               |

T-1-9

item	A4	Letter	Legal
left margin	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm
right margin	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm	5.0 +2.0/-2.0 mm
leading edge margin	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm
trailing edge margin	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm	6.0 +2.0/-2.0 mm

#### 1.1.4.6 Operation Environment of the Printer Driver

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

##### Operation environment

Windows 98/98SE, Windows Me, Windows 2000, Windows XP

##### Computer

Computer in which Windows 98/98SE, Windows Me, Windows 2000, or Windows XP runs properly.

##### Hardware environment

- IBM PC or IBM compatible PC
- CD-ROM drive or network environment accessible to CD-ROM
- PC equipped with USB port and installed with USB class driver

T-1-10

OS	CPU	RAM
Windows 98/98SE	Intel Pentium 90 MHz or more	128 MB or more
Windows Me	Intel Pentium 150 MHz or more	128 MB or more
Windows 2000	Intel Pentium 133 MHz or more	128 MB or more
Windows XP	Intel Pentium ii/ Celeron 300 MHz or more	128 MB or more

\* Log in as a user account to which the administrator's right is authorized.

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## Chapter 2 Basic Operation

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    2.1.1 Function Configuration ..... 2-1

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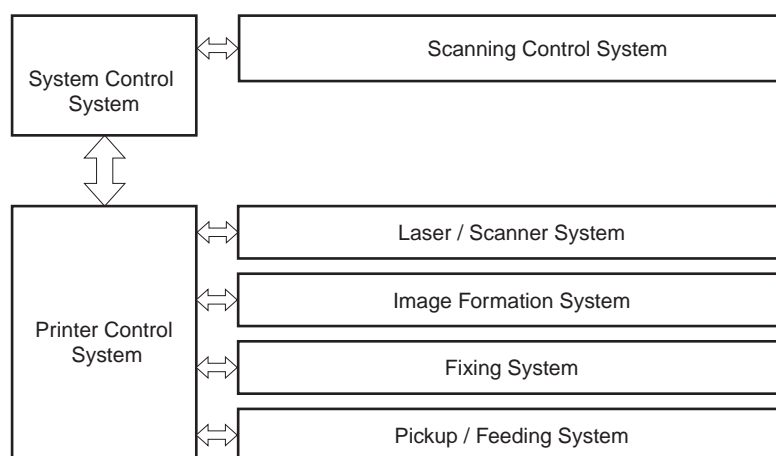


## 2.1 Construction

### 2.1.1 Function Configuration

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The functions of this host machine are mainly composed of the 7 blocks: System Control System, Scanning Control System, Printer Control System, Laser Scanner System, Image Formation System, Fixing System, Pickup/Feeding System. Below is the block diagram.



F-2-1

## 2.2 Basic Sequence

### 2.2.1 Basic Operation Sequence

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The operations of this host machine are controlled by CPUs of the SCNT board within the Reader Controller System and the DCNT board within the Engine Control System. The table below shows the purpose of each interval and the outline of the operations of reader unit and the engine from turnon of the power supply to stop of each motor after printing.

T-2-1

interval name	definition of interval	purpose	remarks
WAIT (wait)	Interval between turnon of the power supply and the end of the initial drive	To clear the drum surface potential and to execute the cleaning of transfer charging roller	Presence/absence of cartridge is detected during this interval.
STBY (standby)	Interval between the end of WAIT or LSTR and input of print command from SCNT board, or interval between the end of LSTR and turnoff of power supply	To make the host machine ready for printing	
INTR (initial rotation)	Interval between the input of print command from SCNT and turnon of the pickup solenoid	To stabilize the photosensitive drum as a preparation for printing Also to clean the transfer charging roller	
PRINT (print)	Interval between the end of initial rotation and turnoff of the primary high-voltage output	To form an image onto the photosensitive drum based on the video signal input from the SCNT board and to transfer the toner image onto media	
LSTR (last rotation)	Interval between turnoff of the primary high-voltage output and stop of the main motor	To fully deliver the final sheet printed Also to clean the transfer charging roller	On input of print command from the SCNT board, host machine enters INTR immediately after LSTR. However, depending on the conditions shown below, the host machine may not start INTR immediately. -media size -temperature of the fixing assembly



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## Chapter 3 Original Exposure System

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## 3.1 Basic Construction

### 3.1.1 Specifications / Control / Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-3-1

item	function / method
document exposure	LED
document scan	Book mode: scan by the shift of the contact Book mode: scan by the shift of the contact sensor (CS) ADF: document stream reading by fixed contact sensor (CS)
scanning resolution	600 dpi (horizontal scanner) X 600 dpi (vertical scanner)
number of gradations	256 gradations
magnification	50% to 200% horizontal: image processing by SCNT board vertical: change of carriage shift speed, image processing by SCNT board
lens	rod lens array
CMOS sensor	number of lines: 1 line number of pixels: 5184 pixels as total pixels (5107 pixels as effective pixels) maximum document scanning width: 216 mm
CS drive control	drive control by Book motor (M2)
document size detection	none

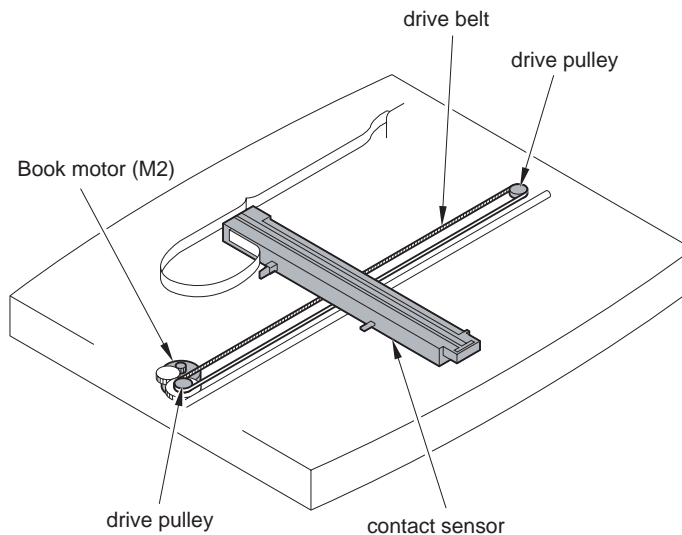
### 3.1.2 Major Components

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Followings are the major components for Document Exposure System.

- The contact sensor to scan document
- The Book motor (M2), the drive pulley, the drive belt, to shift the contact sensor

In image scanning control, the contact sensor is shifted by rotating the Book motor based on the drive signal from the DCNT board and scan the original on the copyboard glass. When ADF is in use, image is scanned by feeding the originals by ADF instead of shifting the contact sensor.



F-3-1

## 3.2 Parts Replacement Procedure

### 3.2.1 Scanner Unit

#### 3.2.1.1 Preparation for Removing the Control Panel Assembly

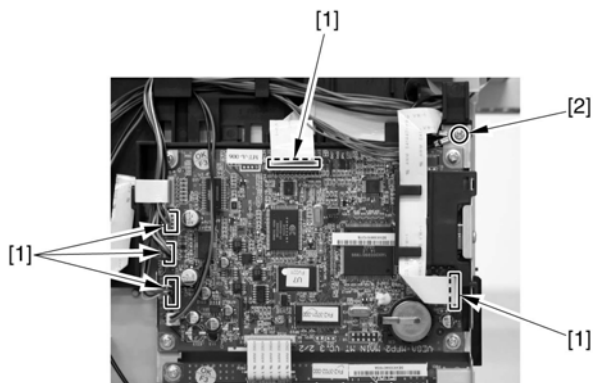
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.

#### 3.2.1.2 Removing the Control Panel Assembly

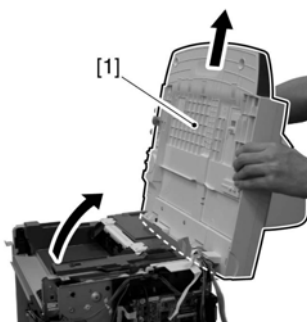
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Disconnect the 5 connectors [1], and remove the 1 screw [2] of the grounding wire.



F-3-2

- 2) Open the control panel assembly [1] to remove it upward.



F-3-3

### 3.2.2 Book Motor

#### 3.2.2.1 Preparation for Removing the Flat Bed Motor

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel assembly.

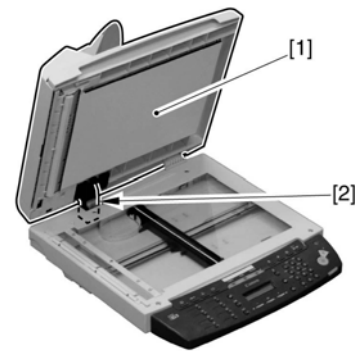
#### 3.2.2.2 Removing the Flat Bed Motor

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Open the copyboard glass cover [1], and remove it upward.  
Pull out the hinge [2] on the left side while keeping it tilted toward the back.

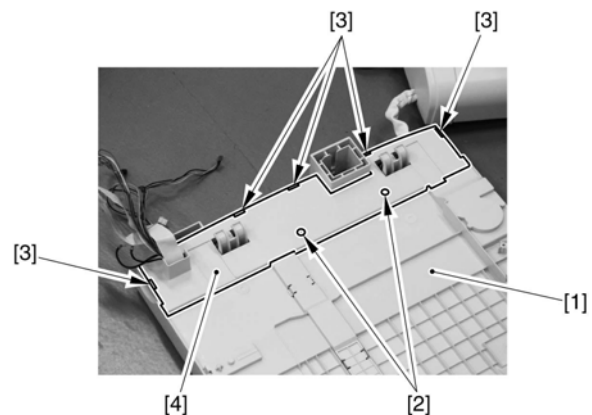


Place the detached copyboard glass cover on cloth etc. not to damage the bottom sheet.



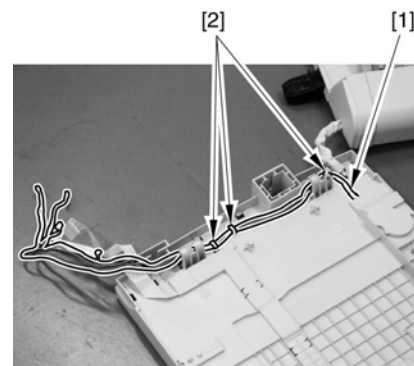
F-3-4

- 2) Reverse the copyboard [1] and detach the bottom cover [4].  
- 2 screws [2]  
- 5 claws [3]



F-3-5

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

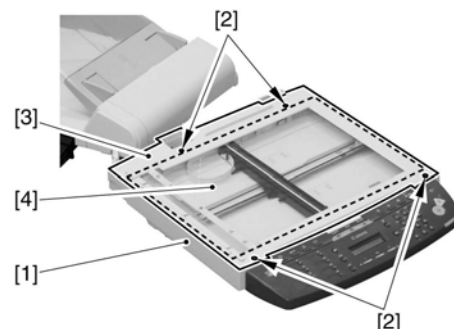


F-3-6

- 4) Reverse the copyboard [1] again.
- 5) Remove the 4 screws [2], and detach the copyboard cover [3].
- 6) Remove the copyboard glass [4].



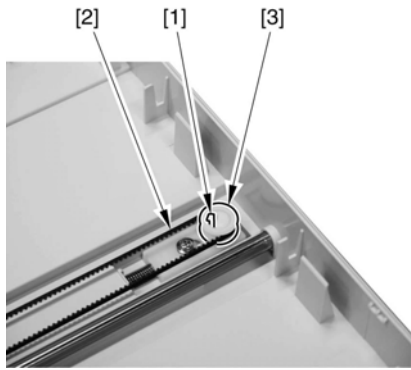
Do not make dirty the bottom of the copyboard glass.



F-3-7

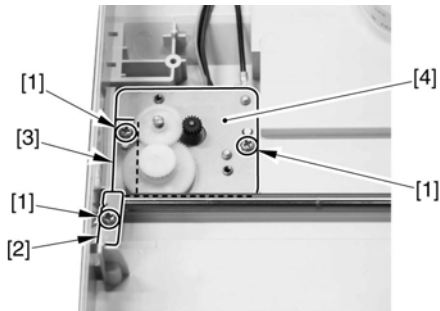


7) Unhook the 1 claw [1], and remove the gear [3] with the belt [2].



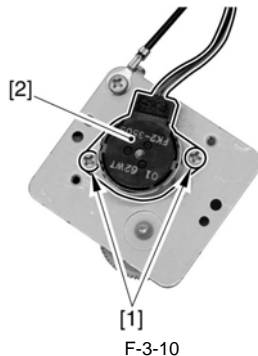
F-3-8

8) Remove the 3 screws [1] to remove the shaft retainer [2], the grounding plate [3] and the motor unit [4].



F-3-9

9) Remove the 2 screws [1] to remove the flat bed motor [2].



F-3-10

### 3.2.3 Contact Sensor

#### 3.2.3.1 Removing the Contact Sensor

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

1) Open the copyboard glass cover [1] and detach it upward.  
Pull out the hinge [2] on the left side while tilting it toward the rear side.

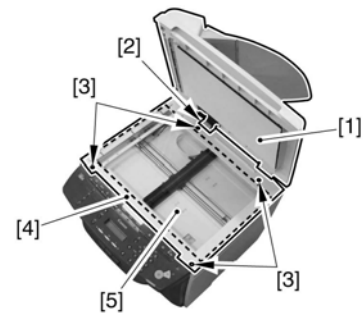


Be sure to put the copyboard glass cover that you detached onto the mount etc., so as not to damage the cable.

2) Remove the 4 screws [3], and detach the copyboard glass cover [4].  
3) Remove the copyboard glass cover [5].



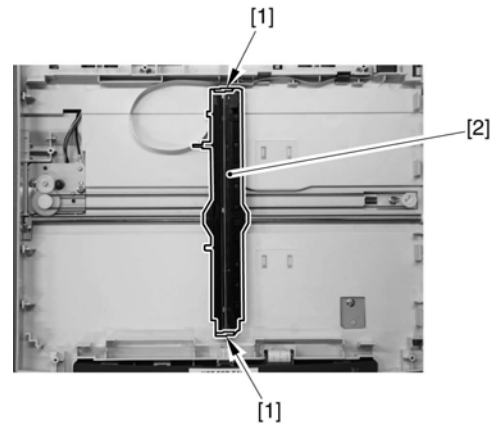
Be sure not to get the bottom surface of the scanner glass soiled.



F-3-11

4) Remove the 2 spacers [1].

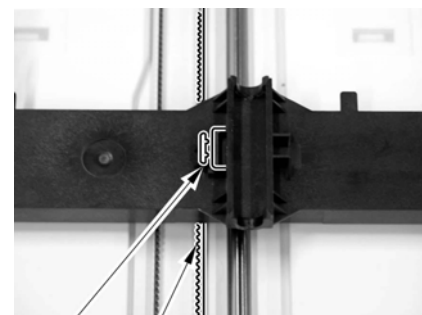
5) Remove the contact sensor unit [2] upward.



F-3-12

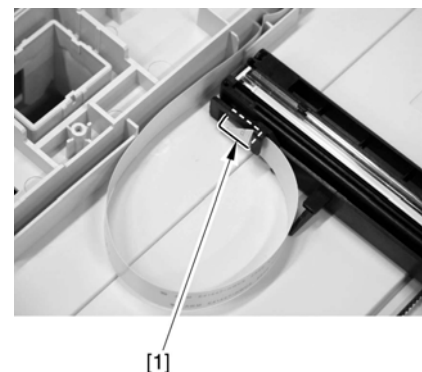
#### ⚠ Points to Note at Attaching

Be sure to fit the gear [1] of the belt with the gear [2] on the bottom surface of the contact sensor unit.



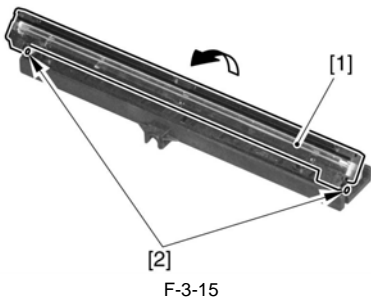
F-3-13

6) Disconnect the connector [1].



F-3-14

7) Turn the contact sensor [1] in the direction shown by the arrow, remove the 2 shafts [2], and then remove the contact sensor [1].



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## Chapter 4 Original Feeding System

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## 4.1 Basic Operation

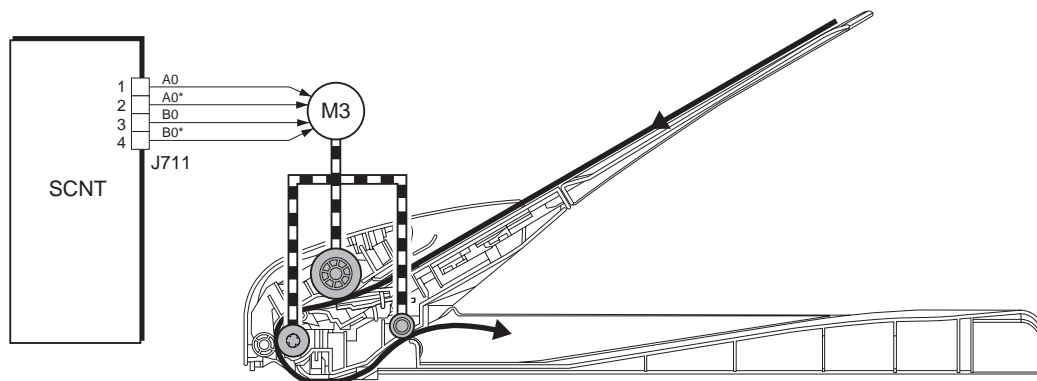
### 4.1.1 Basic Operation

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The Auto Document Feeder (ADF) mounted onto this host machine is dedicated to stream-reading.

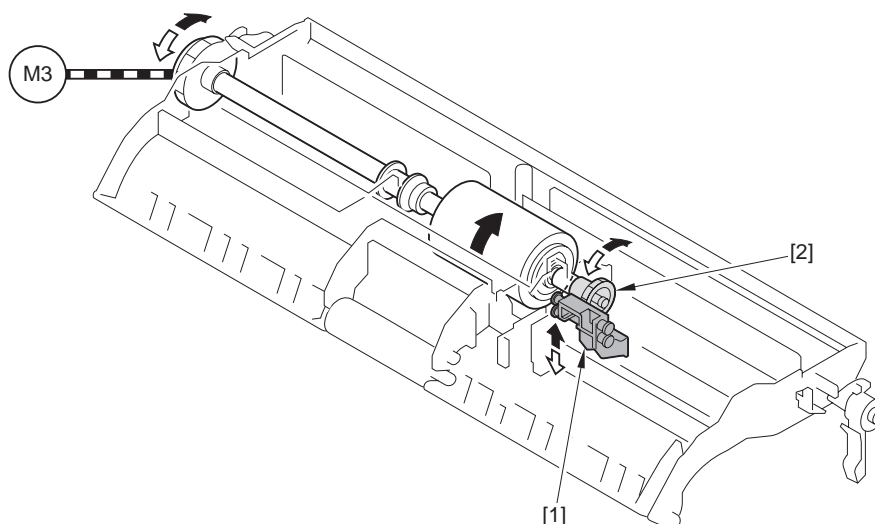
1 motor (DF motor: M3) is engaged in pickup/feeding/delivery.

At the start of copy/fax/scan, the DF motor (M3) is driven by the drive command from the SCNT to pickup/feed the originals set face up on the original tray one by one in order from the top. The original is scanned by the contact sensor when moving through the copyboard glass, and then delivered face down to the original delivery assembly.



F-4-1

Within the ADF pickup assembly is the stop [1] for the purpose of preventing the push-in of original, which descends/ascends in conjunction with the gear [2] on the end of the pickup roller shaft.



F-4-2

- When the originals are moving through the machine



By the CW drive of the DF motor (M3), which is transmitted to the pickup roller via the gear/spring clutch and results in positive rotation of the pickup roller, original pickup is performed. At this point, the gear on the pickup roller shaft rotates positively as well, ascending the stop. When the originals are moving through the equipment, the stop is kept ascended.

- At detection of original being set and after delivery of the last sheet of the original

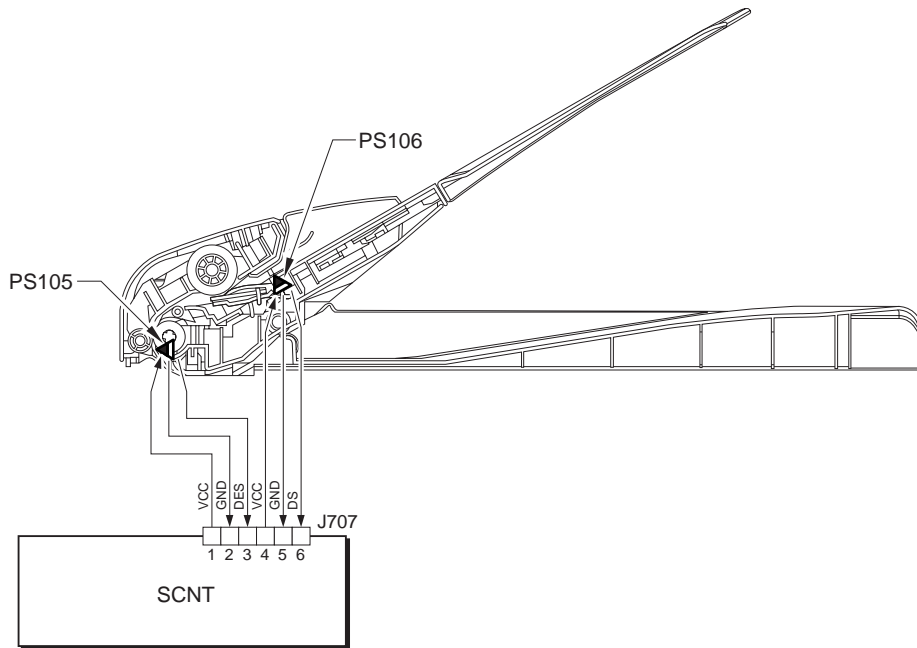


The gear on the pickup roller shaft rotates negatively by the CCW drive of the DF motor (M3), descending the stop. At the CCW drive, the drive is not transmitted to the pickup roller via the spring clutch, leaving the pickup roller stopped.

### 4.1.2 Original Detection

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

There are two types of original detection in this equipment.



F-4-3

#### 1. Original Presence / Absence Detection

Detected by DS (Document Sensor: PS106)

Setting the original onto the original tray pushes up the actuator, activating (light shielded => light transmitted) the DS (PS106), and resulting in detection of the presence of original.

#### 2. Detection of the End of the Original

Detected by the DES (Document End Sensor: PS105)

The leading edge of the original that is fed pushes up the actuator, activating the DES (PS105) (light shielded => light transmitted) and resulting in detection of the reach of the leading edge of original. Furthermore, when the trailing edge of the original passes the actuator position, the actuator returns to the original position, inactivating the DES (PS105) (light transmitted => light shielded). The trailing edge of the original is detected by this mechanism. The original length that can be scanned with this equipment is less than 400 mm. Passing of the original longer than this results in jam stop. The original length is calculated by the time it takes from detection of the leading edge of the original to detection of the trailing edge of the original.

#### MEMO:

There is no function to detect the original size (original width, length) in this equipment.

## 4.2 Detection Jams

### 4.2.1 Jam Detection

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The following cases are judged as jam.

1. In case of delay in reaching DS/DES or stationary during scanning of original
2. In case DS/DES is detected as ON at power-on (residual paper jam)
3. In case of detecting original of which length is 400 mm or longer

#### - Operation after Detection of Jam

The host machine stops scanning operation and displays "CHECK DOCUMENT" on the control panel. No jam code is displayed. In case of the model equipped with fax function (with built-in speaker), the warning beep occurs at the detection of jam.

#### - How to release Jam

Remove the jammed paper and open / close the ADF upper cover



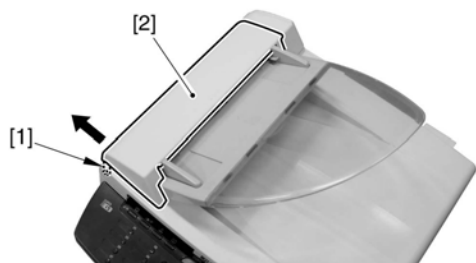
## 4.3 ADF

### 4.3.1 Pick-up Roller

#### 4.3.1.1 Removing the Pickup Roller

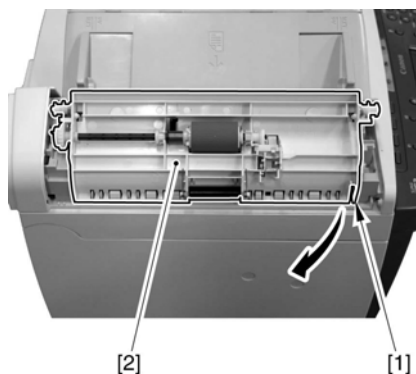
i-SENSYS MF4150 / i-SENSYS MF4140 /

- 1) Remove the shaft [1] with driver etc., and detach the ADF cover [2] in the direction of the arrow.



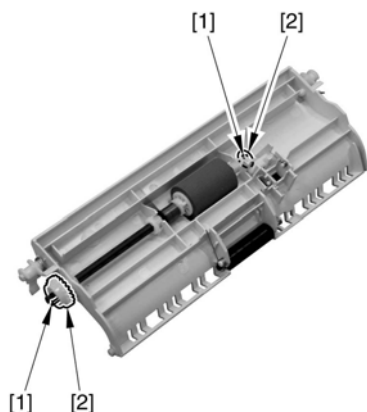
F-4-4

- 2) Remove the shaft [1] with driver etc., and remove the pick-up assembly [2] in the direction of the arrow.



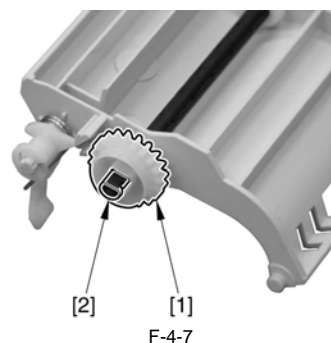
F-4-5

- 3) Unhook one each of the claws [1] to remove the 2 gears [2].



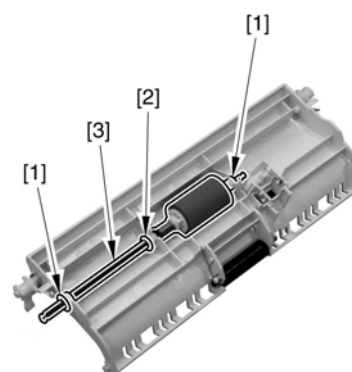
F-4-6

**⚠ Points to Note when Attaching**  
Match the gear [1] with the D cut surface of the pickup roller shaft [2].



F-4-7

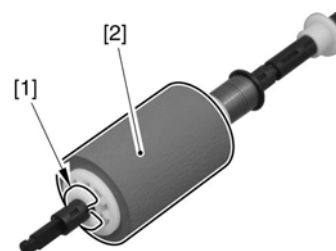
- 4) Remove the 2 bushings [1].
- 5) Remove the 1 E ring [2] to remove the pick-up roller shaft [3].



F-4-8

- 6) Remove the 1 E ring [1] to remove the pickup roller [2].

**⚠**  
Do not touch the roller with bare hands.



F-4-9

### 4.3.2 ADF Motor

#### 4.3.2.1 Preparation for Removing the ADF Motor

i-SENSYS MF4150 / i-SENSYS MF4140 /

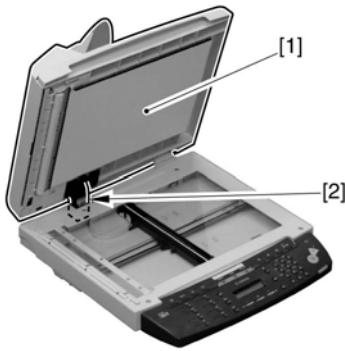
- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel assembly.

#### 4.3.2.2 Removing the ADF Motor

i-SENSYS MF4150 / i-SENSYS MF4140 /

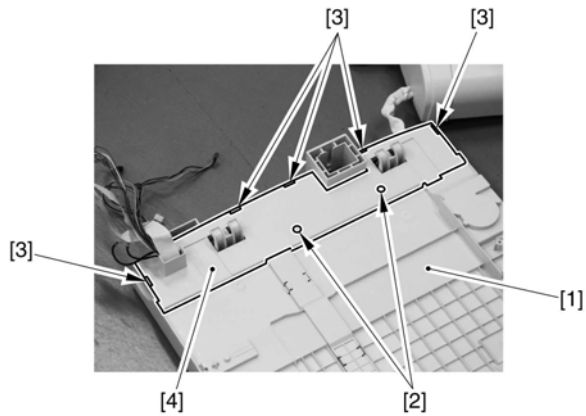
- 1) Open the copyboard glass cover [1] to detach it upward.  
Pull out the hinge [2] on the left side while keeping it tilted toward the back.

**⚠**  
Place the detached copyboard glass cover on cloth etc. not to damage the bottom sheet.



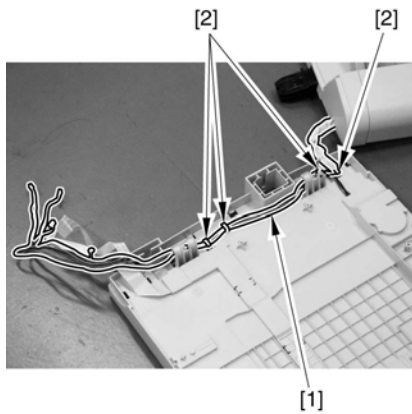
F-4-10

- 2) Reverse the copyboard [1] and detach the bottom cover [4].
- 2 screws [2]
  - 5 claws [3]



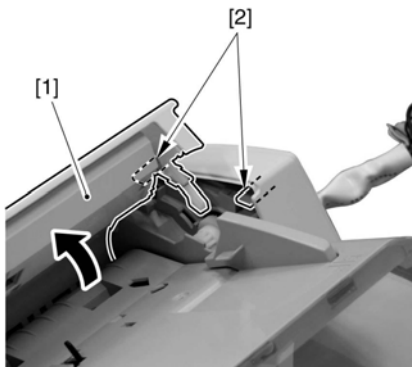
F-4-11

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



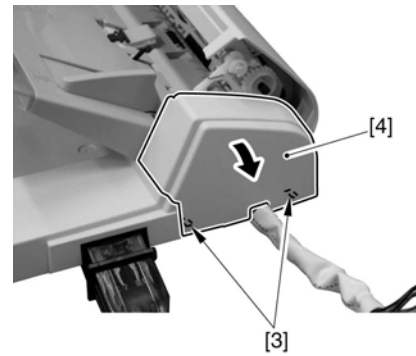
F-4-12

- 4) Open the ADF cover [1], and unhook the 2 claws [2].



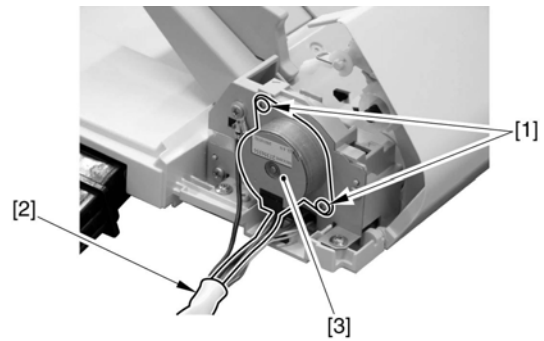
F-4-13

- 5) Unhook the 2 claws [3] to remove the ADF motor cover [4].



F-4-14

- 6) Remove the ADF motor [3].
- 2 screws [1]
  - 1 cable tube [2]



F-4-15

### 4.3.3 Separation Pad

#### 4.3.3.1 Removing the Separation Pad

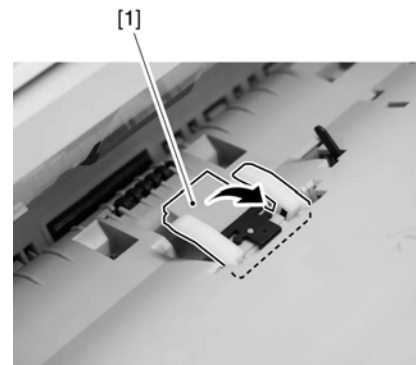
i-SENSYS MF4150 / i-SENSYS MF4140 /

- 1) Open the ADF cover [1].



F-4-16

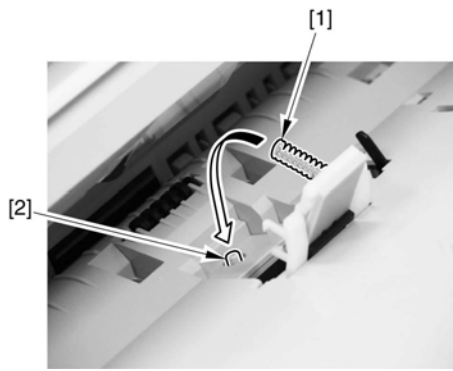
- 2) Remove the separation pad [1] in the direction of the arrow.



F-4-17

#### ⚠ Points to Note when Attaching

Insert the spring [1] of the separation pad into the boss [2].



F-4-18



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## Chapter 5 Laser Exposure

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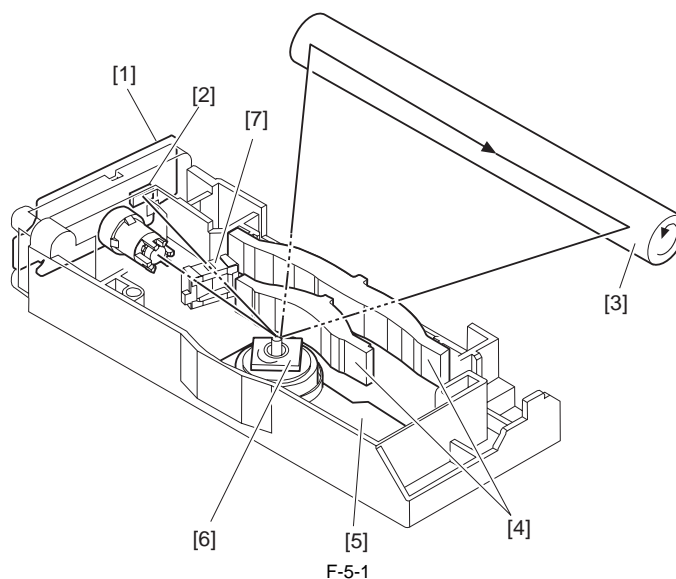




## 5.1 Overview/Configuration

### 5.1.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



- |                         |                         |
|-------------------------|-------------------------|
| [1] Laser driver PCB    | [5] Scanner motor       |
| [2] BD sensor           | [6] Four-surface mirror |
| [3] Photosensitive drum | [7] Cylindrical lens    |
| [4] Condensing lens     |                         |

The laser scanner assembly is composed of the laser driver and the scanner motor etc., and controlled by the signal input from the DCNT board.

The laser driver emits laser diode according to the laser control signal and the video signal from the DCNT board.

The laser beam passes the collimator lens and the cylindrical lens, and reaches the four-surface mirror rotating at constant speed.

The laser beam reflected by the four-surface mirror passes through the condensing lens placed in front of the four-surface mirror and focuses on the photosensitive drum.

When the four-surface mirror rotates at constant speed, the laser beam on the photosensitive drum scans the photosensitive drum at constant speed.

When the photosensitive drum rotates at constant speed and the laser beam scans the photosensitive drum at constant speed, the latent image is formed on the photosensitive drum.

#### MEMO:

**E100AF** When the error related to the following laser exposure occurs, error code (E100) is lit.

##### BD fault

If /BDI signal cannot be detected in 0.1 sec after forced acceleration of the scanner motor or the specified value of /BDI signal cycle cannot be detected for 2 sec or more after the scanner motor reached the specified rotation, it should be judged as BD fault.

##### Scanner fault

If /BDI signal cannot be detected 1.5 sec after completing forced acceleration of the scanner motor, extend the detection time by 120 sec. If the specified value of /BDI signal cycle cannot be detected during that time, it should be judged as scanner fault.

##### BD error

If /BDI signal cannot be detected at the specified cycle during /BDI signal output, it should be judged as BD error.

If the case of the following conditions, it should not be judged as BD error.

In the case that door open is detected in 0.2 sec after BD error was detected.



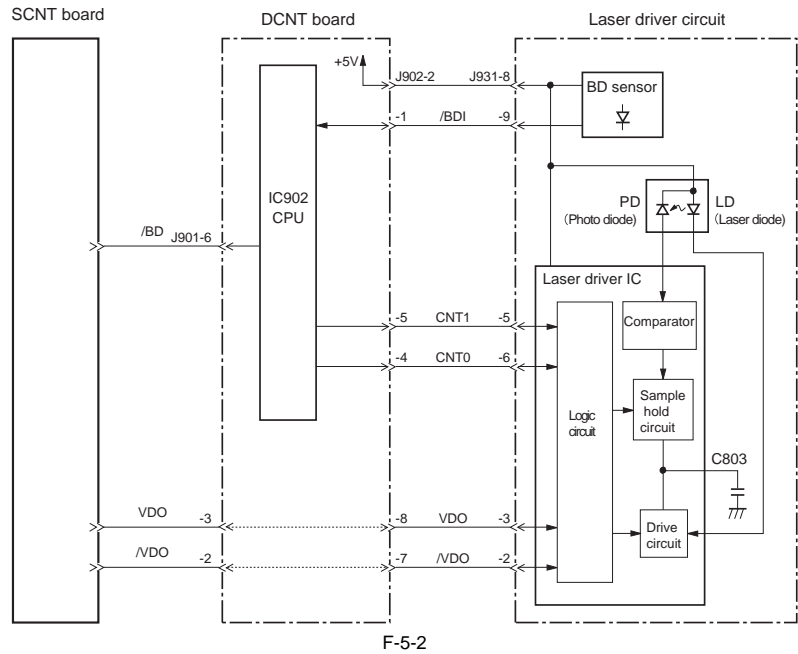
The laser scanner has the components unadjustable in the field. Never disassemble the laser scanner unit.

5.2 Controlling the Laser Activation Timing

5.2.1 Laser ON / OFF Control

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

This is the control where the laser driver turns on / off the laser diode (LD) based on the laser control signal sent from the DCNT board. The following is the circuit diagram for laser control.



The DCNT board sends the video signal (VDO, /VDO) for image formation and the laser control signal (CNT0, CNT1) for switching the laser operation mode to the logic circuit in the laser driver IC. The laser driver IC performs laser control based on the combination of CNT0 and CNT1 signals. The following chart shows the combination of the laser control signals (CNT0, CNT1).

T-5-1

Operation mode	CNT0	CNT1	Remarks
Discharge mode	L	L	Discharge of C803
Print mode	H	L	Use at normal printing
LD APC mode	L	H	Use at LD APC
LD forced OFF mode	H	H	Use at masking image

5.3 Controlling the Intensity of Laser Light

5.3.1 Auto Photoelectric Current Control (APC)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

This is the control to emit the definite level of laser diode. There are initial APC during initial rotation (note 1) and line space APC during printing (note 2), which are performed in the same procedure. The following is its procedure.

- 1) When the laser control signal (CNT0, CNT1) turned into LD APC mode, the laser driver emits LD forcedly.
- 2) After being detected with the photodiode (PD), the LD emission level as current is converted to the one as voltage and compared with the reference voltage (the voltage equivalent to the target laser level).
- 3) The laser driver controls the laser current until it reaches the voltage of LD target level.
- 4) When the laser control signal turns into LD forced OFF mode, LD is forcedly off and the laser driver converts the adjusted laser level to the voltage of the condenser and keeps it.



Note 1. Initial APC  
APC during initial rotation. Laser level is adjusted by APC.  
Note 2. Line space APC  
APC during printing. Adjustment of laser level for one line is performed before writing one line.

## 5.4 Controlling the Laser Scanner Motor

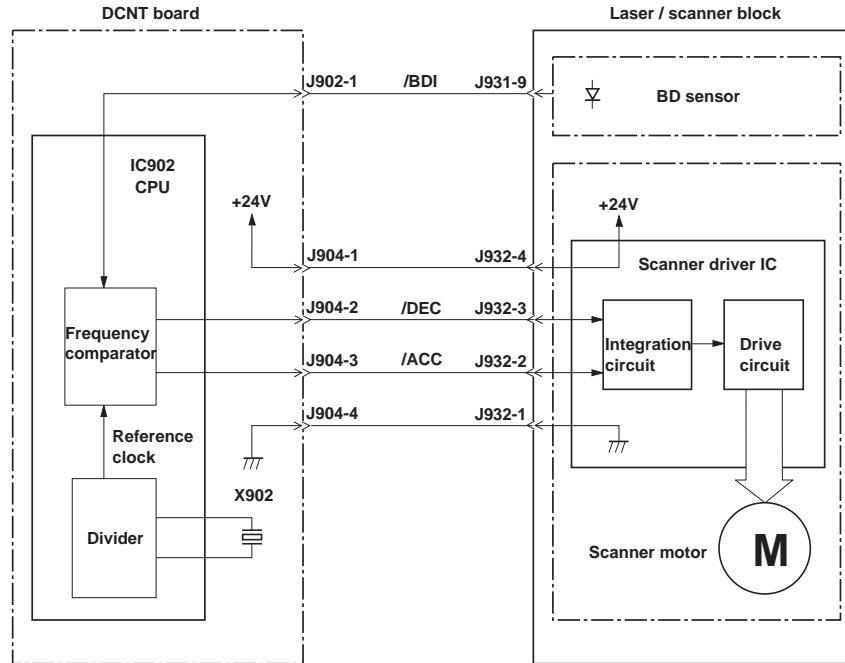
### 5.4.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

This is the control to rotate the scanner motor at constant speed.

The scanner motor is the 3-phase DC brush-less motor with hall element included, and is combined with the drive circuit.

The following chart shows the control circuit for the scanner motor.



F-5-3

### 5.4.2 Scanner Motor Speed Control

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

This is the control to rotate the scanner motor at constant speed.

The following is the procedure of this control.

- 1) At activating the scanner motor, CPU outputs /ACC signal to the scanner driver IC to accelerate the scanner motor forcedly. The scanner motor will start rotating.
- 2) CPU periodically turns on the laser, and compares /BDI signal and the cycle of the reference clock to detect the rotation of the scanner motor.
- 3) When the rotation of the scanner motor exceeds the specified value, CPU outputs /DEC signal to decelerate the scanner motor. CPU controls /ACC or /DEC signal to control the rotation of the scanner motor until it becomes its specified value.

### 5.4.3 Detection of Fault of the Scanner Motor

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

CPU of the DCNT board monitors the frequency comparator to judge if the scanner motor rotates at the specified rotation frequency.

When the following statuses occur, CPU judges that there is a fault or error and stops the engine. At the same time, it notices the details of the error to the SCNT board.

#### 1) Scanner fault

If /BDI signal cannot be detected 1.5 sec after completing forced acceleration of the scanner motor, extend the detection time by 120sec. If the specified cycle of /BDI signal cannot be detected, it should be judged as scanner fault.

#### 2) BD fault

If /BDI signal cannot be detected in 100msec after forced acceleration of the scanner motor or the specified cycle of /BDI signal cannot be detected for 2 sec or more after the scanner motor reached its specified rotation, it should be judged as BD fault.

#### 3) BD error

If /BDI signal cannot be detected at the specified cycle while CPU outputs /BD signal to the SCNT board, it should be judged as BD error.

If door open is detected in 200msec after BD error was detected, CPU does not transmit BD error to the SCNT board.

## 5.5 Parts Replacement Procedure

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### 5.5.1 Laser/Scanner Unit

#### 5.5.1.1 Preparation for Removing the Laser Scanner Unit

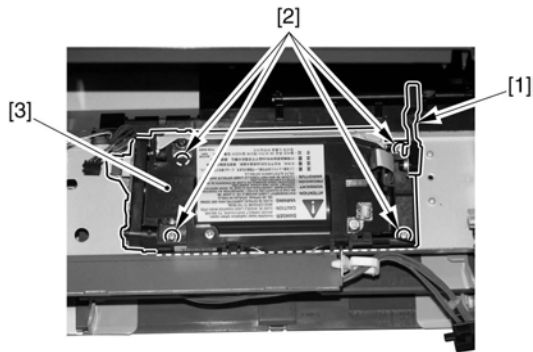
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the DCNT board.

#### 5.5.1.2 Removing the Laser Scanner Unit

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the shutter arm [1].
- 2) Remove the 4 screws [2] to remove the laser scanner unit [3].



F-5-4

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## Chapter 6 Image Formation

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## 6.1 Overview/Configuration

### 6.1.1 Configuration

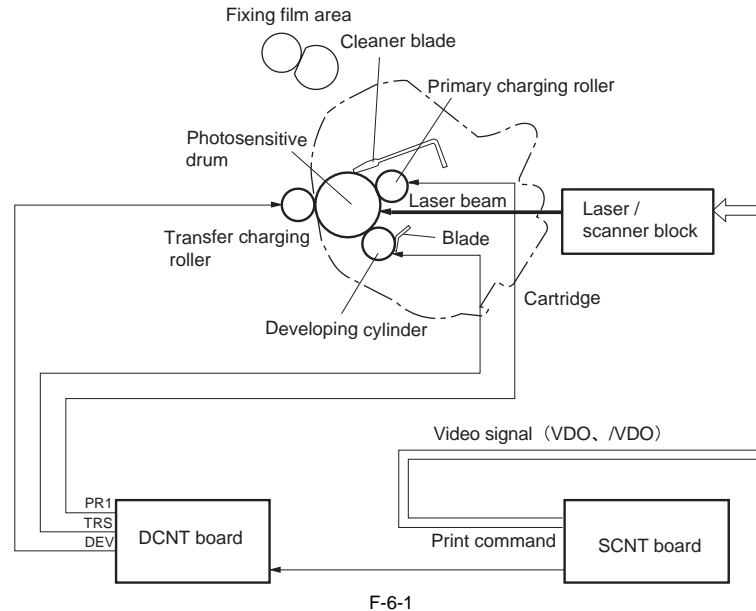
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The image forming system is the core part of this machine, and is composed of the cartridge, the transfer charging roller, the fixing assembly, etc.

When receiving the print command from the SCNT board, the DCNT board activates the main motor to rotate the photosensitive drum, the developing cylinder, the primary charging roller, the transfer charging roller and the pressure roller.

The surface of the photosensitive drum is evenly charged negative by the primary charging roller, and the laser beam converted with the video signal (VDO, /VDO) is reflected to the surface of the photosensitive drum to form the latent image by the laser diode.

The latent image formed on the photosensitive drum is turned visible with the toner on the developing cylinder and is transferred on the paper by the transfer charging roller. The transferred toner turns into the permanent image on the paper when the heat and pressure are applied there at the fixing assembly. The cleaner blade removes the residual toner on the surface of the photosensitive drum, whose potential is made even by the primary charging roller to be ready for the formation of the next latent image.



F-6-1

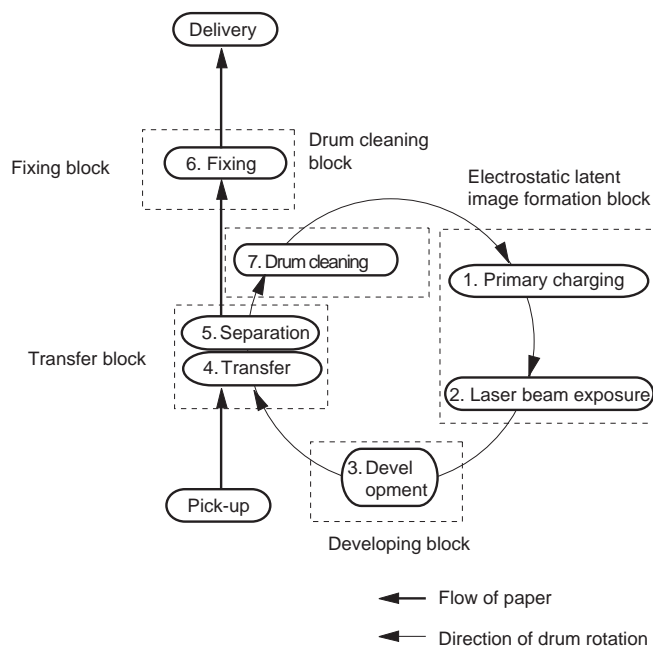
### 6.1.2 Print Process

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The print process shows the basic operation process for image formation by the printer.

The print process of this machine has the main 5 blocks and 7 steps. The toner image is formed on papers by following the steps of each block.

The following is the outline of the blocks and steps of the print process.



F-6-2

#### 1) Electrostatic latent image formation block

Electrostatic images are formed on the photosensitive drum.

Step1: Primary charging (Charges negative potential evenly on the surface of the photosensitive drum)

Step 2: Laser beam exposure (Forms electrostatic images on the photosensitive drum)

#### 2) Developing block

Put the toner on the electrostatic latent image on the surface of the photosensitive drum to visualize

Step 3: Development

### 3) Transfer block

The toner image on the surface of the photosensitive drum is transferred to papers.

Step 4: Transfer (Transfers the toner on the photosensitive drum to a paper)

Step 5: Separation (Separates the paper from the photosensitive drum)

### 4) Fixing block

The toner image is fixed on the paper.

Step 6: Fixing

### 5) Drum cleaning block

The residual toner on the photosensitive drum is removed.

Step 7: Drum cleaning (Removes the residual toner on the photosensitive drum)

## 6.2 Driving and Controlling the High-Voltage System

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### 6.2.1 Generation of Transfer Charging Bias

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The transfer charging bias (TRS) is output to transfer the toner on the photosensitive drum to papers.

There are transfer charging DC positive bias and transfer charging DC negative bias generated at the transfer charging bias generation circuit in the high-voltage power supply circuit. The transfer charging DC positive bias is output to the transfer charging roller at transferring the toner. The transfer charging DC negative bias is applied to the transfer charging roller at cleaning the transfer charging roller.

The transfer charging bias generation circuit applies these transfer charging biases to the transfer charging roller according to each print sequence.

The following are the biases for print sequences.

#### - Cleaning bias:

This is the bias for transferring the toner on the photosensitive drum to the paper at the time of print sequence. The transfer charging DC positive bias is applied to the transfer charging roller.

#### - Sheet-to-sheet bias:

This is the bias to prevent the residual toner on the photosensitive drum from being attracted to the transfer charging roller, at between sheets during continuous printing. Faint transfer charging DC positive bias is applied to the transfer charging roller.

#### - Cleaning bias:

This is the bias to return the residual toner on the transfer charging roller to the photosensitive drum at the time of warm-up or last rotation sequence. The transfer charging DC negative bias is applied to the transfer charging roller.

The transfer charging DC positive bias is changed due to the instruction of the DCNT board. To realize appropriate transfer density, the DCNT board changes the voltage of the transfer charging DC positive bias for constant current control according to the transfer current feedback signal (TRCRNT) sent from the transfer charging bias generation circuit.

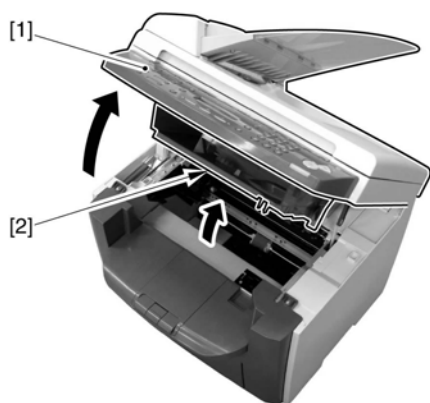
## 6.3 Parts Replacement Procedure

### 6.3.1 Transfer Charging Roller

#### 6.3.1.1 Removing the Transfer Charging Roller

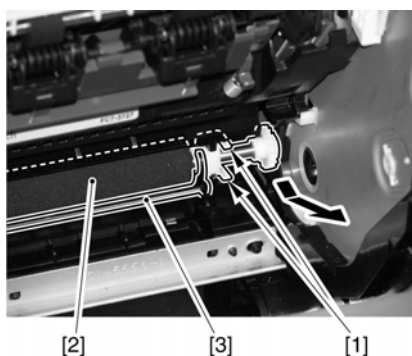
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Open the control panel assembly [1].
- 2) Open the cartridge cover [2].



F-6-3

- 3) Unhook the 2 claws [1] to remove the transfer charging roller [2] with the transfer guide [3] in the direction of the arrow.



F-6-4



Do not touch the roller with bare hands.



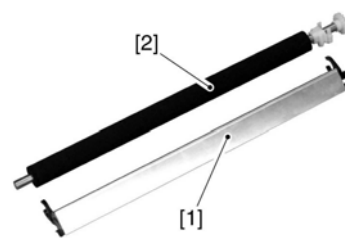
#### Points to Note when Attaching

Insert the spring [1] into the boss [2] of the bushing.



F-6-5

- 4) Remove the transfer charging roller [2] from the transfer guide [1].



F-6-6



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## Chapter 7 Pickup and Feed System

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## 7.1 Overview/Configuration

### 7.1.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The pickup/feeding system is the part to pickup and feed a paper, and it is composed of the main motor, solenoid, and various motors.

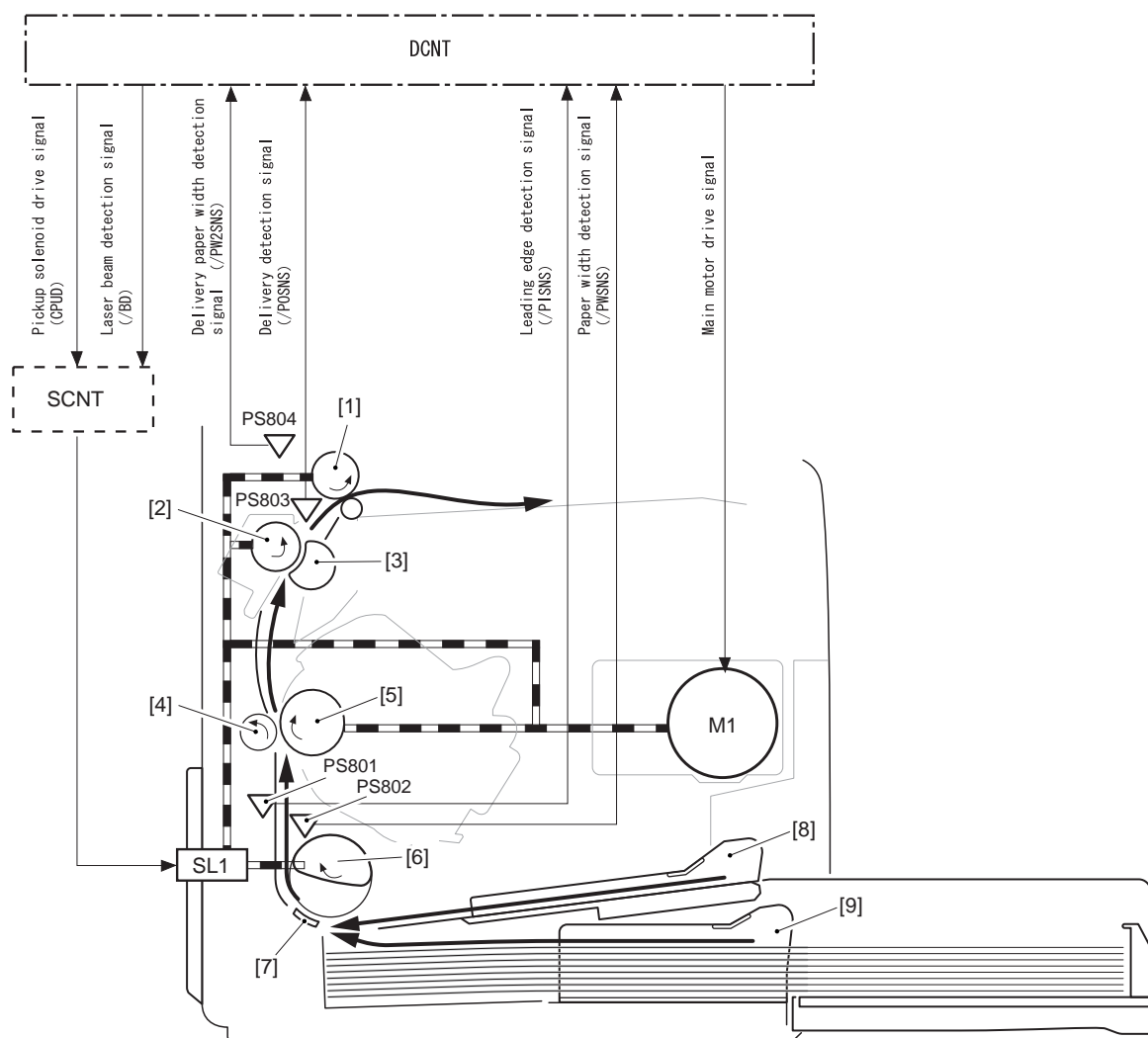
In this machine, a paper is picked up from either the pickup tray or the manual feed tray, and it is delivered from the delivery tray.

A paper set in either the pickup tray or the manual feed tray is picked up with the same pickup roller. Then, it is fed to the photosensitive drum, transfer charging roller, fixing film, pressure roller, and face-down delivery roller, in that order, and is delivered to the delivery tray.

On the feed path of a paper, the following 4 photointerrupters are allocated: the leading edge/paper width sensor (PS801, PS802), delivery sensor (PS803), and delivery paper width sensor (PS804), and they detect either the arrival or passage of paper.

If a paper does not arrive or pass each sensor, except the fixing paper width sensor, within the predetermined time, CPU on the DCNT board judges as a jam and notify the occurrence of jam to the SCNT board.

The diagrammatic illustration for each motor, solenoid, and sensor is shown below.



F-7-1

- [1] Face-down delivery roller
- [2] Pressure roller
- [3] Fixing film unit
- [4] Transfer charging roller
- [5] Photosensitive drum
- [6] Pickup roller
- [7] Separation pad
- [8] Manual feed tray
- [9] Pickup tray
- M1: Main motor
- SL1: Pickup solenoid
- PS801: Leading edge sensor
- PS802: Paper width sensor
- PS803: Delivery sensor
- PS804: Delivery paper width sensor

## 7.2 Other Control

### 7.2.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

#### Pickup/Feed Operation

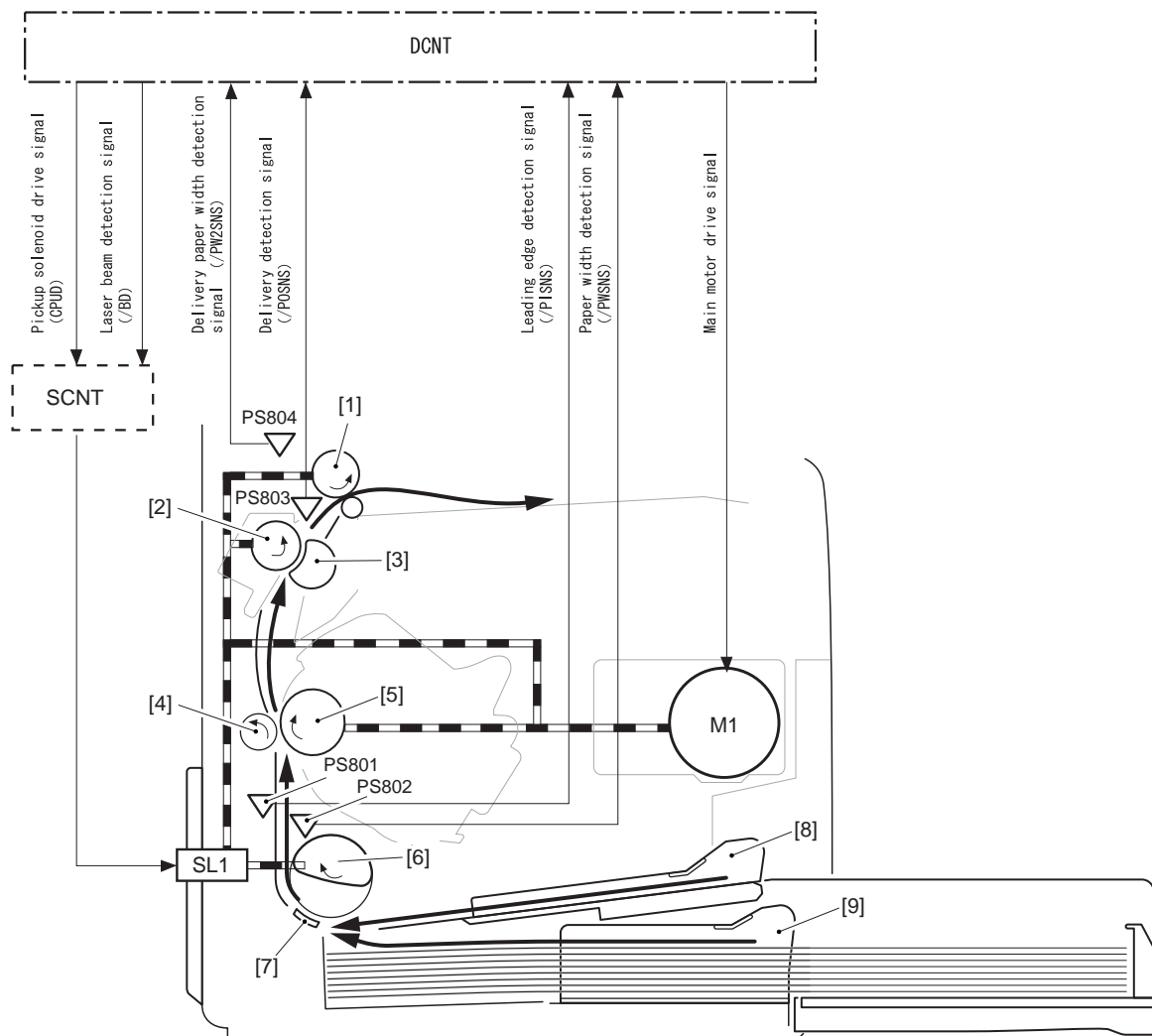
The pickup/feed assembly is the mechanism to pickup and feed paper one at a time from the pickup tray or the manual feed tray. The pickup/feed operation of the machine is explained below.

- 1) Right after the DCNT board receives a print command from the SCNT board, it rotates the main motor (M1). By doing so, other rollers, except the pickup roller, start to rotate.
- 2) When it becomes initial rotation ready state, the pickup solenoid (SL1) turns ON for about 0.2 sec. As a result of that, the rotation of the main motor is transferred and the pickup roller starts to rotate.

#### Initial Rotation Ready

It indicates the following state: the main motor drives, and after a certain period of time, the temperature of the fixing assembly reaches to the specified value and the scanner motor reaches to the specified number of rotation.

- 3) The pickup cam rotates along with the rotation of the pickup roller, and by following the shape of the pickup cam, the lifting plate is pushed up with the force of the spring. A paper pushed up with the lifting plate is picked up by the rotation of the pickup roller and fed to inside of the machine.
- 1) After a certain period of time that the leading edge sensor (PS801) detects the leading edge of picked up paper, the DCNT board transmits the laser beam detection signal (/BD) to the SCNT board.
- 5) Based on the /BD signal, the SCNT board transmits the video signal to the laser/scanner assembly and an image is formed on the photosensitive drum. Because of that, it is controlled to match the leading edges of an image and a paper.
- 6) A paper is delivered to the delivery tray with the rotation of the photosensitive drum, pressure roller, and face-down delivery roller.



F-7-2

- [1] Face-down delivery roller
- [2] Pressure roller
- [3] Fixing film unit
- [4] Transfer charging roller
- [5] Photosensitive drum
- [6] Pickup roller
- [7] Separation pad
- [8] Manual feed tray
- [9] Pickup tray
- M1: Main motor
- SL1: Pickup solenoid

PS801: Leading edge sensor  
 PS802: Paper width sensor  
 PS803: Delivery sensor  
 PS804: Delivery paper width sensor

## 7.3 Detection Jams

### 7.3.1 Jam Detection Outline

#### 7.3.1.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The machine has the following paper sensors to detect the presence/absence of paper at the time of startup, opening the door, or feeding a paper, as well as to detect whether a paper is fed normally.

1. Leading edge sensor (PS801)
2. Paper width sensor (PS802)
3. Delivery sensor (PS803)
4. Delivery paper width sensor (PS804)

In terms of jam, it is judged by whether a paper is at the sensor assembly at the time of the check time memorized in the CPU beforehand. If the CPU judges as the occurrence of jam, the printing operation is aborted and at the same time, it notifies it to the SCNT board.

### 7.3.2 Delay Jams

#### 7.3.2.1 Pickup Delay Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

In order to prevent the pickup delay jam due to the pickup failure, the machine executes the retry control that performs the pickup operation up to twice. In the second pickup operation, if the leading edge sensor (PS801) cannot detect the leading edge of paper within about 1.45 sec since the pickup solenoid (SL1) turns ON, the DCNT board judges as the pickup delay jam.

#### 7.3.2.2 Delivery Delay Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If the delivery sensor (PS803) cannot detect the leading edge of paper after passing about 1.65 sec from the detection of the leading edge of paper with the leading edge sensor (PS801), the DCNT board judges as the delivery delay jam.

### 7.3.3 Stationary Jams

#### 7.3.3.1 Pickup Stationary Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If the trailing edge of paper cannot be detected after passing about 5.4 sec since the leading edge sensor (PS801) detects the leading edge of paper, the DCNT board judges as the pickup stationary jam.

#### 7.3.3.2 Delivery Stationary Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If the delivery sensor (PS803) cannot detect the leading edge of paper within about 1.48 sec after the leading edge sensor (PS801) detects the trailing edge of paper, the DCNT board judges as the delivery stationary jam.

### 7.3.4 Other Jams

#### 7.3.4.1 Door Open Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If the leading edge sensor (PS801) or the delivery sensor (PS803) detects a paper when door open is detected, the DCNT board judges as the door open jam.

#### 7.3.4.2 Wrapping Jam

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

CPU executes the wrapping jam detection after it judges there is no delivery delay jam present.

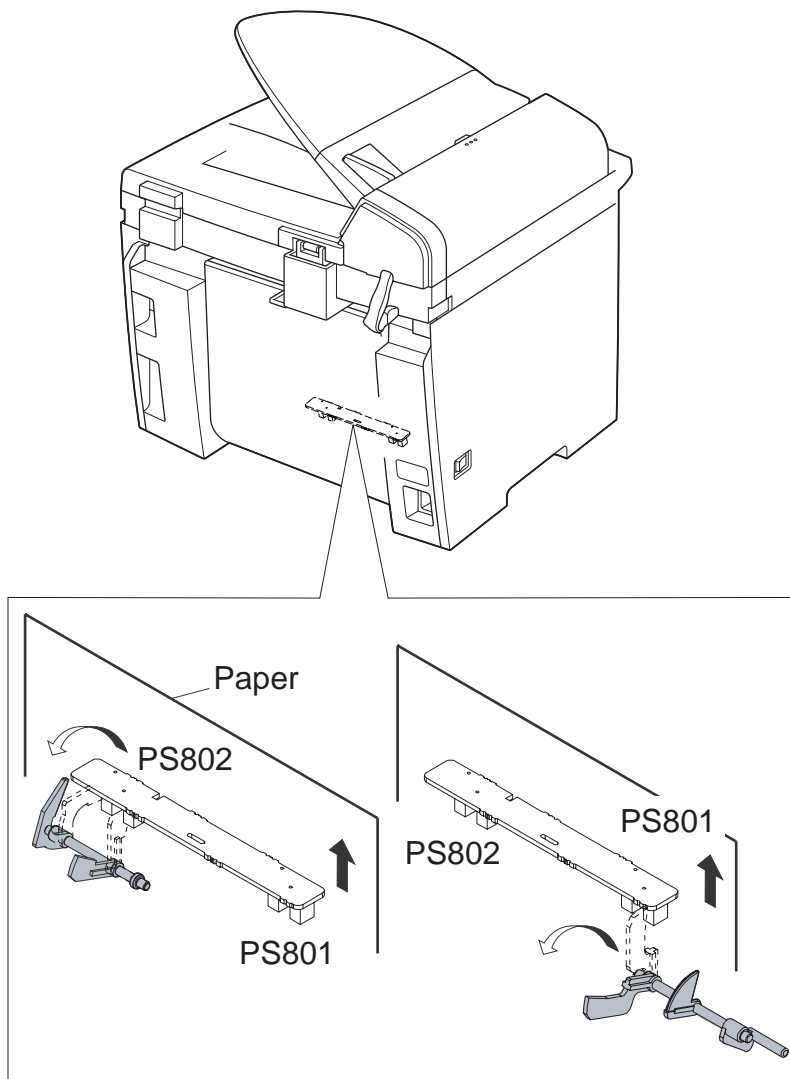
If the delivery sensor (PS803) detects the trailing edge of paper within the predetermined time (from after about 0.08 sec since the detection of the paper leading edge by the delivery sensor (PS803) until about 1.09 sec after the detection of the paper trailing edge by the leading edge sensor (PS801)), CPU judges as the wrapping jam.

If it judges as the wrapping jam, it notifies the occurrence of the delivery stationary jam to the SCNT board.

### 7.3.4.3 Residual Jam at Startup

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If either the leading edge sensor (PS801) or the paper width sensor (PS802) detects a paper at the start of initial rotation, CPU judges as the residual jam at startup. When there is paper in inside the machine, the leading edge sensor flag is pushed up with paper, and paper having is judged.



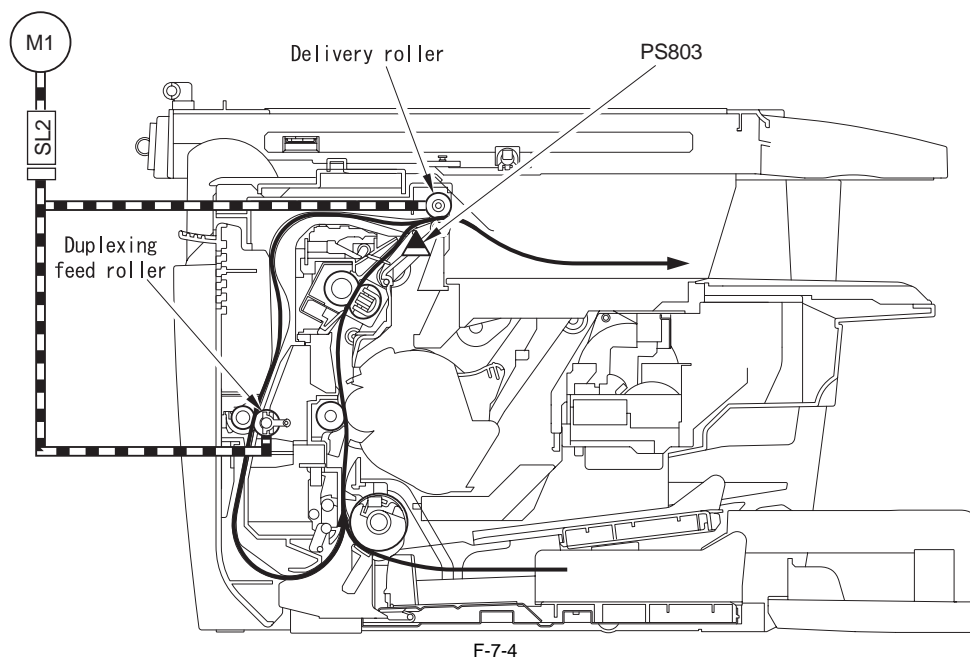
F-7-3

## 7.4 Duplex Unit

### 7.4.1 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The duplexing pick up operation of this machine is performed by the drive of the main motor (M1) under CPU control of the DCNT board. After the machine completes the 1st print and the paper's trailing edge passes over the delivery sensor (PS803), the duplexing drive solenoid (SL2) is turned on and the drive of the main motor (M1) is transmitted to the delivery roller and the duplexing feed roller. By turning the delivery roller in reverse direction, the paper is lead to the duplexing feed unit, and sent to the feed roller via duplexing feed roller. There is no sensor on the duplexing paper's feeding path to detect the arrival/passage of paper. There is no stationary function to stop and retain paper in duplexing unit.



## 7.5 Parts Replacement Procedure

### 7.5.1 Main Motor

#### 7.5.1.1 Preparation for Removing Main Motor

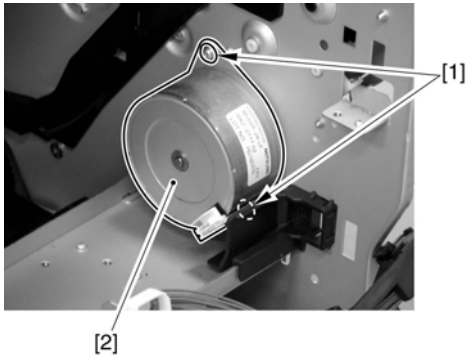
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the DCNT board.
- 5) Remove the laser scanner unit.

#### 7.5.1.2 Removing Main Motor

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the 2 screws [1], and remove the main motor [2].



F-7-5

### 7.5.2 Separation Pad

#### 7.5.2.1 Preparation for Removing Separation Pad

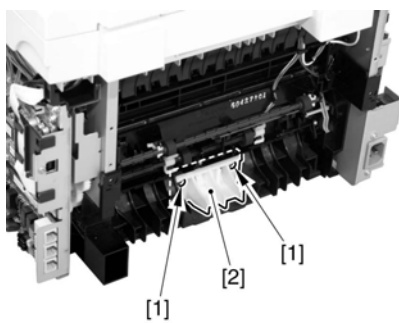
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.

#### 7.5.2.2 Removing Separation Pad

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the 2 screws [1], and remove the separation pad [2].



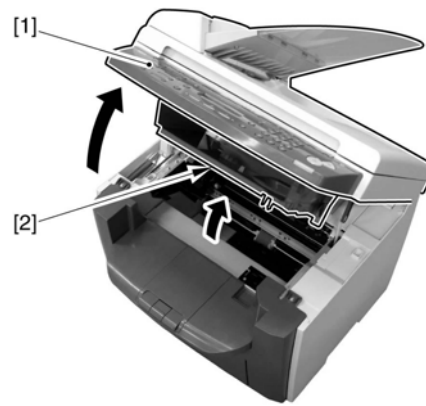
F-7-6

### 7.5.3 Pickup Roller

#### 7.5.3.1 Removing Pickup Roller

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Open the control panel [1].
- 2) Open the cartridge cover [2].

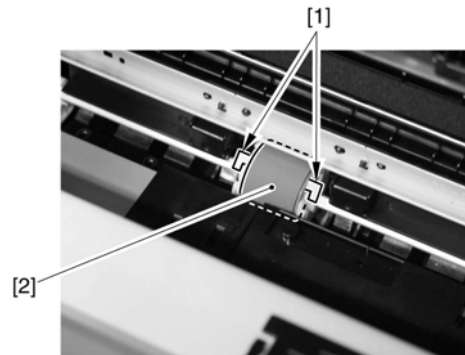


F-7-7

- 3) Unhook the 2 claws [1] toward outside, and remove the pickup roller [2].



Do not touch the roller with bare hands.



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## Chapter 8 Fixing System

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8.1 Overview/Configuration

8.1.1 Specification/Control/Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-8-1

Item	Function/Method
Fixing method	On-demand fixing
Fixing heater	Flat heater
Fixing temperature detection	Thermistor (TH1): temperature control, detection of abnormality Temperature fuse (TP1): detection of abnormality
Fixing temperature control	Temperature control at startup Temperature control at normal times Temperature control at sheet-to-sheet interval
Protection function	Temperature error detection with the thermistor Temperature rise detection with the temperature fuse

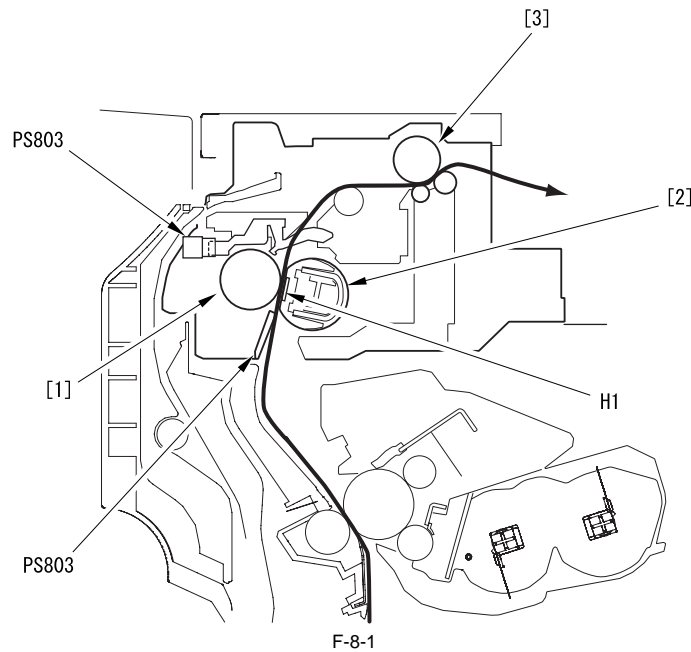
8.1.2 Overview

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The fixing unit employs the on-demand fixing method, and it is composed of fixing film unit, in which the fixing heater, thermistor, and temperature fuse are incorporated, and the pressure roller.

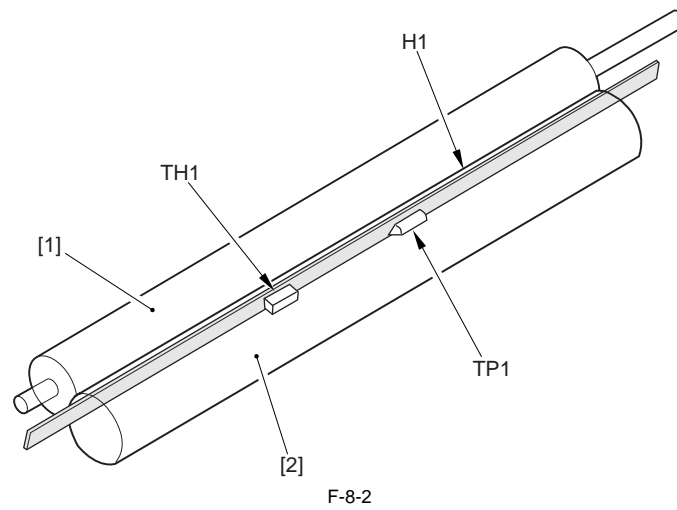
The pressure roller and the delivery roller are driven with the main motor (M1).

A paper separated from the photosensitive drum is fed to inside of the fixing assembly, and the toner is fixed on a paper with the fixing film and the pressure roller. A paper being fixed is detected with the delivery sensor (PS803); then, delivered to outside of the machine via the delivery roller.



- [1] Pressure roller
- [2] Fixing film
- [3] Delivery roller
- H1: Fixing heater
- PS803: Delivery sensor

The fixing heater is the heater (ceramic heater) that the heating pattern is deposited on the ceramic plate. By heating the fixing film with the fixing heater, it gives heat to passing papers. The thermistor (TH1) locates at the center of the fixing heater (H1), and detects the temperature of the heater. The temperature fuse (TP1) locates at the top center of the fixing heater. If the temperature of the fixing heater increases abnormally, it blocks power supply to the heater by meltdown. The temperature control of the fixing assembly composed of the foregoing components is executed at the fixing control circuit on the DCNT board with the instruction of the CPU (IC902). There are the fixing heater drive circuit and the fixing heater safety circuit in the fixing control circuit.



## 8.2 Various Control Mechanisms

### 8.2.1 Controlling the Temperature of the Fixing Unit

#### 8.2.1.1 Fixing Temperature Control

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

With this control, the surface temperature of the fixing heater is detected, and also the drive signal of the fixing heater is controlled to maintain the target temperature of the fixing heater.

The temperature control of the fixing heater is executed with the following 3 modes:

##### Temperature Control at Startup:

The temperature control at startup is executed from the entry of print command to the DCNT board until the temperature of the fixing heater reaches the fixing target temperature.

The fixing target temperature is set to execute fixing with appropriate fixing temperature in accordance with paper type, size, thickness, and shape.

##### Temperature Control at Normal Times:

The temperature control at normal times is executed during printing to maintain the temperature of the fixing heater as its target temperature.

##### Temperature Control at Sheet-to-sheet Interval:

The temperature control at sheet-to-sheet interval is executed to keep the temperature lower than the target temperature in order to prevent the temperature raise at the area between a preceding sheet and a succeeding sheet in case of the envelop mode and the small size mode.

The temperature of the fixing heater is detected with the thermistor located on the fixing heater. When the surface temperature of the fixing heater increases, the resistance value of the thermistor is decreased, and the voltage of the fixing heater temperature detection signal of the thermistor is decreased.

The CPU (IC902) on the DCNT board monitors the voltage of the FSRTH signal. By outputting the fixing heater drive signal (FSRD) in accordance with the voltage, the CPU makes the phototriac coupler to turn ON/OFF, and it controls the temperature of the fixing heater to be the specified value.

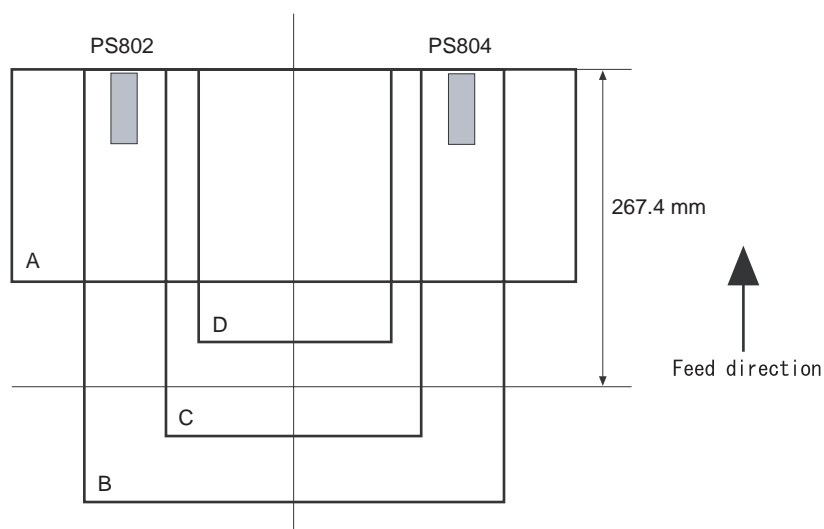
The CPU starts the fixing heater temperature control to be 100 deg C when the power is ON.

Because the viscosity of grease inside of the fixing film unit is high, melting the grease fully prevents feed fault inside of the fixing assembly or faulty image.

##### Fixing Mode:

In this machine, the fixing mode is determined by detecting paper size based on the time that a paper needs to go through the paper leading edge sensor, the paper width sensor, and the delivery paper width sensor.

The relationship between paper size being detected and the fixing mode is shown below. (From A to D indicate paper size.)

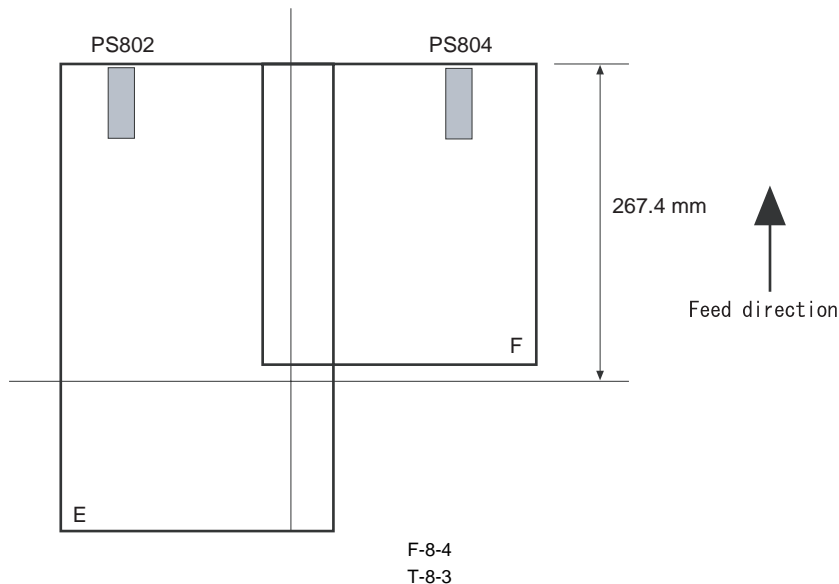


F-8-3  
T-8-2

	Paper length	Paper width sensor PS802	Delivery paper width sensor PS804	Fixing mode
A	Less than 267.4 mm	Detect	Detect	Envelop
B	267.4 mm or above	Detect	Detect	Normal*1
C	267.4 mm or above	Not detect	Not detect	Small size paper
D	Less than 267.4 mm	Not detect	Not detect	Envelop

In order to prevent temperature increase at the end of the fixing film that occurs when putting papers on one side and passing them through the machine while the paper width guide is fully opened, the machine has the delivery paper width sensor.

The relationship between paper size when putting papers on one side and passing them through the machine and the fixing mode is shown below. (E and F indicate paper size.)



	Paper length	Paper width sensor	Delivery paper width sensor	Fixing mode
E	No object *2	Detect	Not detect	Small size paper mode
F	No object *2	Not detect	Detect	Small size paper mode

\*1: Eight modes, except envelop/small size paper

\*2: When setting papers at the end of the paper guide and passing them through the machine, it becomes the small size paper mode regardless of paper length.

## 8.3 Protection Function

### 8.3.1 Protection Function

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

In order to prevent the fixing heater runaway, the machine has the following 3 protection functions.

1. Protection function with CPU
2. Protection function with the fixing heater safety circuit
3. Protection function with the temperature fuse

The description of each function is as follow:

#### 1. Protection Function with CPU

CPU always monitors voltage of the fixing heater temperature detection signal sent from the thermistor. If the fixing temperature greatly exceeds the specified value, CPU judges as failure of the fixing assembly, and it blocks the power distribution to the fixing heater.

Moreover, error (E000) is displayed in the operation part at the same time.

T-8-4

Failure of fixing assembly	Thermistor temperature	Heater temperature detection time
From the start of temperature control until 1.47 sec	Less than 55 deg C	
Normal times	230 deg C or above	0.15 sec in a row
During normal temperature control	Less than 100 deg C	1.2 sec in a row
During temperature control at sheet-to-sheet interval, during cleaning mode	Less than 55 deg C	1.2 sec in a row
After the thermistor temperature exceeds 50 deg C	Less than 20 deg C	0.3 sec in a row
From the start of power distribution to the fixing heater until 23 sec	Less than 100 deg C	
While a paper is nipped in the fixing assembly	Less than 210 deg C	30 sec in a row
	Less than 145 deg C	30 sec in a row

#### 2. Protection function with the fixing heater safety circuit

The circuit always monitors voltage of the fixing heater temperature detection signal sent from the thermistor. If the fixing temperature greatly exceeds the specified value, it blocks the power distribution to the fixing heater regardless of the instruction from CPU.

If the temperature of the fixing heater abnormally increases and the voltage of the fixing heater temperature detection signal sent from the thermistor becomes less than about 0.57V (equivalent of 265 deg C), the output of the comparator becomes 'L' and the transistor turns OFF. As a result of that, the relay is turned OFF to block the power distribution to the fixing heater regardless the relay drive signal sent from the CPU.

#### 3. Protection function with the temperature fuse

If the temperature of the fixing heater abnormally increases and the temperature of the temperature fuse exceeds about 230 deg C, the temperature fuse meltdown to block the power distribution to the fixing heater.

## 8.4 Parts Replacement Procedure

### 8.4.1 Fixing Unit

#### 8.4.1.1 Preparation for Removing Fixing Assembly

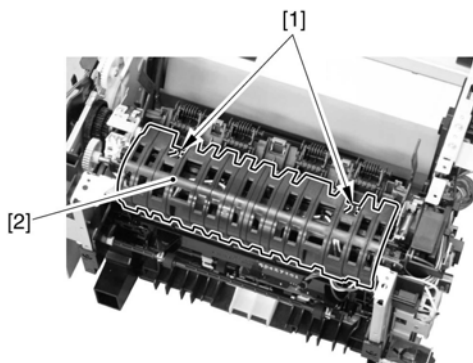
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel.
- 6) Remove the cartridge cover.
- 7) Remove the upper cover.

#### 8.4.1.2 Removing Fixing Assembly

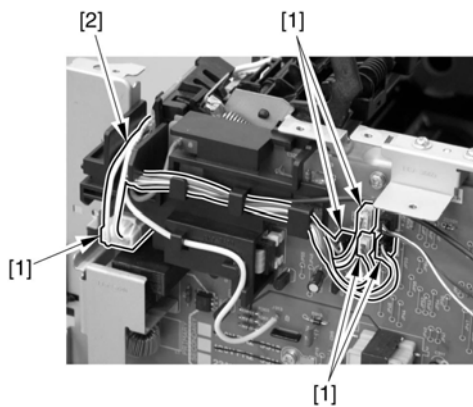
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Unhook the 2 claws [1], and remove the fixing guide [2].



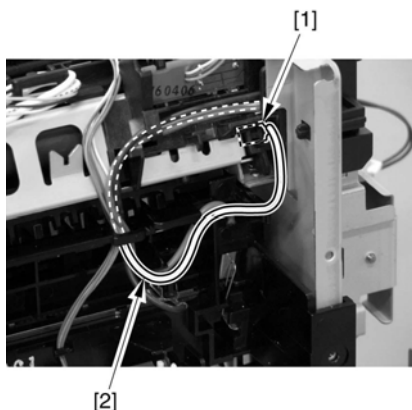
F-8-5

- 2) Disconnect the 5 connectors [1] on the left side, and remove the cable [2] from the cable guide.



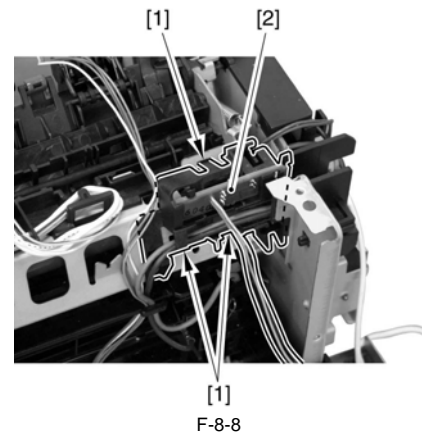
F-8-6

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



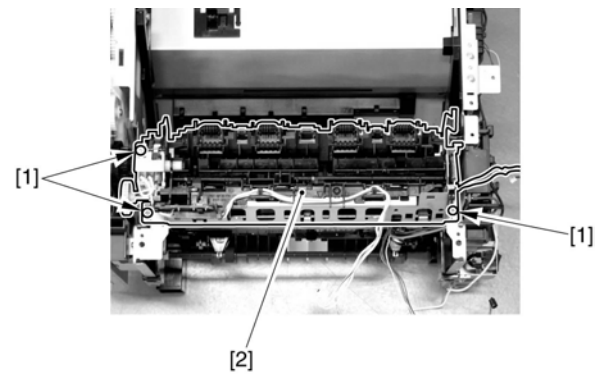
F-8-7

- 4) Unhook the 3 claws [1], and remove the delivery sensor [2].



F-8-8

- 5) Remove the 3 screws [1], and remove the fixing assembly [2].



F-8-9

### 8.4.2 Fixing Film Unit

#### 8.4.2.1 Preparation for Removing Fixing Film Unit

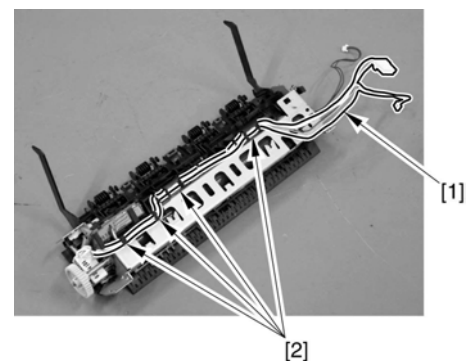
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel.
- 6) Remove the cartridge cover.
- 7) Remove the fixing assembly.

#### 8.4.2.2 Removing Fixing Film Unit

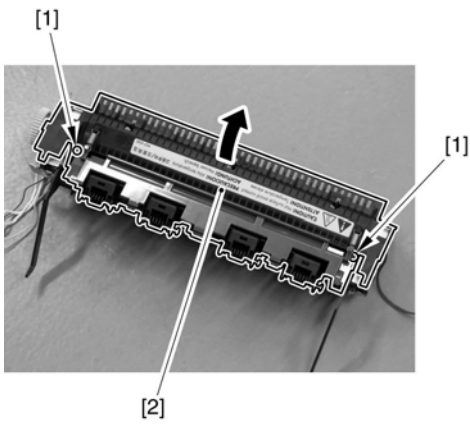
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Free the cable [1] from the cable guide [2].



F-8-10

- 2) Remove the 2 screws [1], and detach the fixing cover [2] by opening it in the direction of the arrow.



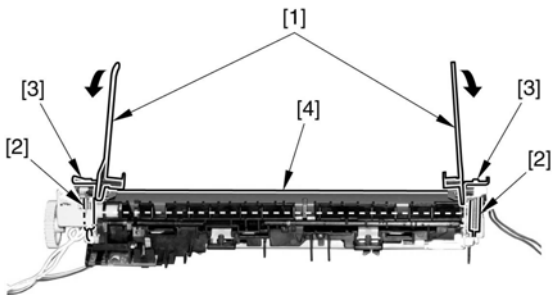
F-8-11

- 3) Recline the 2 pressure release levers [1], and remove the 2 springs [2].  
4) Remove the fixing film unit [4].  
- 2 pressure release levers [1]  
- 2 pressure plates [3]
- 



Do NOT touch the roller with bare hands.

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## Chapter 9 External and Controls

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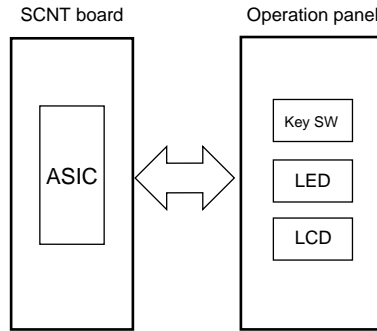
## 9.1 Control Panel

---

### 9.1.1 Outline

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The machine's control panel consists of the following PCBs, and is controlled by the SCNT board.



F-9-1

---

## 9.2 Power Supply

---

### 9.2.1 Protection Function

#### 9.2.1.1 Protecting Function

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

In the case of troubles with power supply PCB such as short circuit to loads, and resulted in occurring overcurrent or over overvoltage, there is a protecting function for overcurrent/overvoltage to automatically shut the output voltage to avoid fault of power supply PCB.

In the case that the protecting function for overcurrent/overvoltage is activated, it recovers by turning off the main power switch to handle the load trouble, and then, turning on the main switch again. Also, there are 2 pc of fuses in PCB. If there is overcurrent in AC line, fuse is blown out and power distribution is shutdown.

## 9.3 Parts Replacement Procedure

### 9.3.1 Front Cover

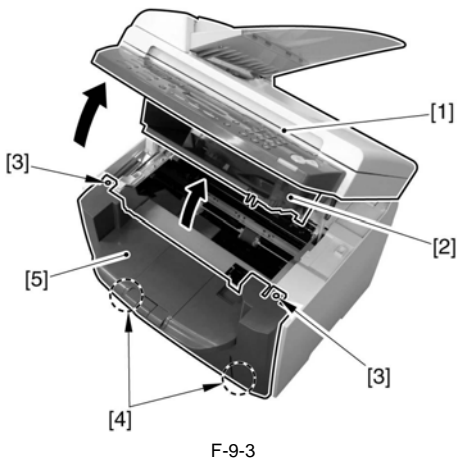
#### 9.3.1.1 Removing the Front Cover

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Open the paper tray [1].
- 2) Pull out the paper cover [2], and close the paper tray [1].



- 3) Open the control panel [1].
- 4) Open the cartridge cover [2].
- 5) Remove the front cover [5].
  - 2 screws [3]
  - 2 claws [4]



### 9.3.2 Rear Cover

#### 9.3.2.1 Preparation for Removing the Rear Cover

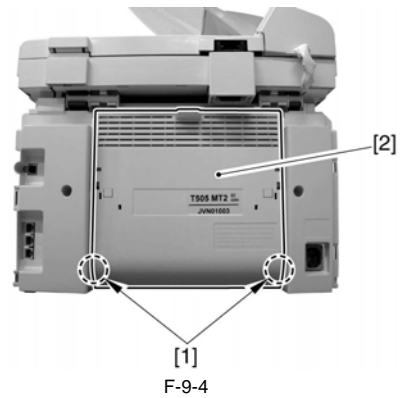
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.

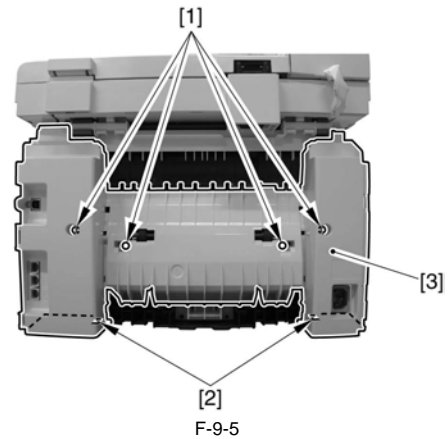
#### 9.3.2.2 Removing the Rear Cover

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the 2 shafts [1], and detach the feeding cover [2].



- 2) Remove the rear cover [3].
  - 4 screws [1]
  - 2 claws [2]

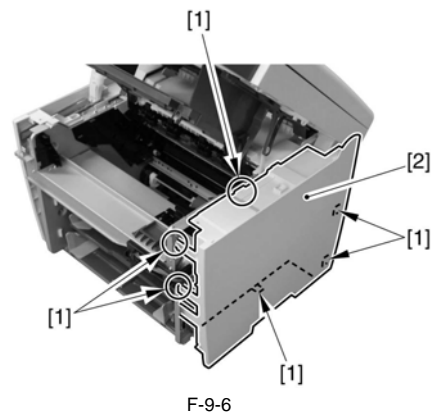


### 9.3.3 Right Cover

#### 9.3.3.1 Removing the Right Cover

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Unhook the 6 claws [1], and detach the right cover [2].

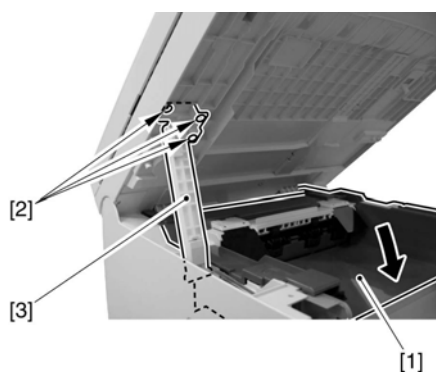


### 9.3.4 Left Cover

#### 9.3.4.1 Removing the Left Cover

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front over.
- 2) Close the cartridge cover [1].
- 3) Remove the 3 screws [2] to remove the damper [3].

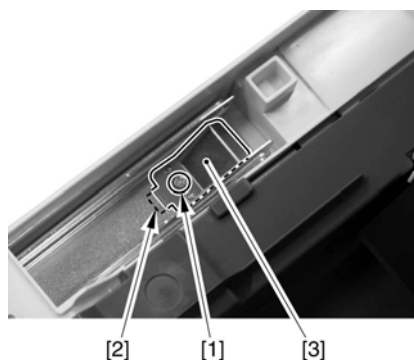


F-9-7



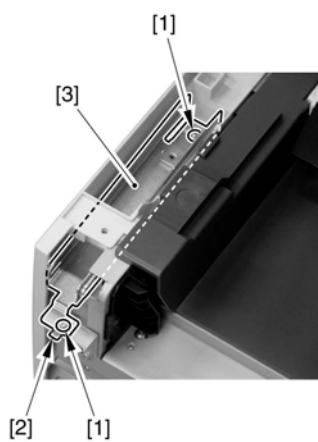
Once removing the damper, the control panel cannot be fixed. Take care not to catch your hands in the control panel since you have to perform operations with the control panel opened afterwards.

- 4) Remove the damper stopper [3].  
 -1 screw [1]  
 -1 claw [2]



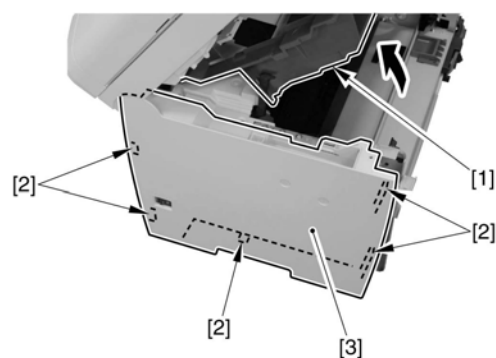
F-9-8

- 5) Remove the damper rail [3].  
 -2 screws [1]  
 -1 claw [2]



F-9-9

- 6) Open the cartridge cover [1].  
 7) Unhook the 5 claws [2], and detach the left cover [3].



F-9-10

### 9.3.5 Upper Cover

#### 9.3.5.1 Preparation for Removing the Upper Cover

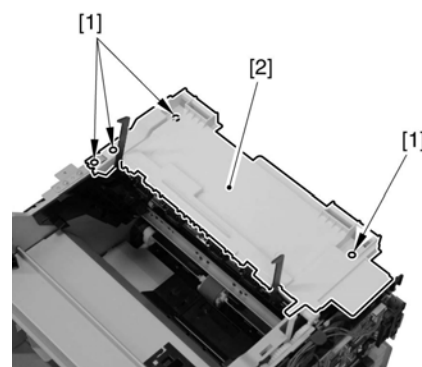
i-SENSYS MF4150 / i-SENSYS MF4140 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel.
- 6) Remove the cartridge cover.

#### 9.3.5.2 Removing the Upper Cover

i-SENSYS MF4150 / i-SENSYS MF4140 /

- 1) Remove the 4 screws [1], and detach the upper cover [2].



F-9-11

### 9.3.6 Cartridge Cover

#### 9.3.6.1 Preparation for Removing the Cartridge Cover

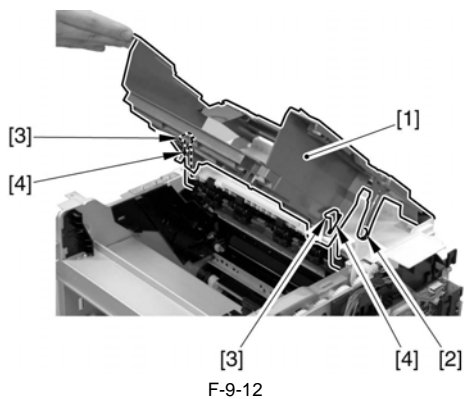
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel.

#### 9.3.6.2 Removing the Cartridge Cover

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

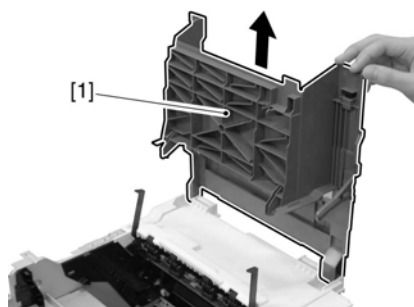
- 1) Open the cartridge cover [1].
- 2) Remove the link stopper [2].
- 3) Remove the 2 pressure release levers [3] through the 2 holes [4].



### ⚠ Points to Note When Attaching

Make sure to attach the link stopper [2] after attaching the right cover. If attaching the link stopper while attaching the cartridge cover, it may drop inside the machine.

- 4) With the cartridge cover [1] opened, detach it upward.

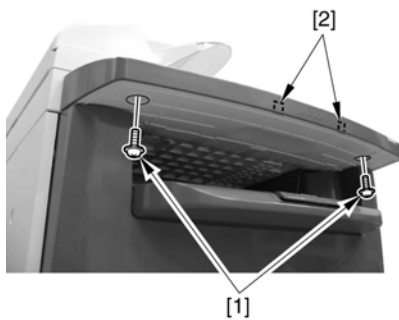


## 9.3.7 Operation Panel Unit

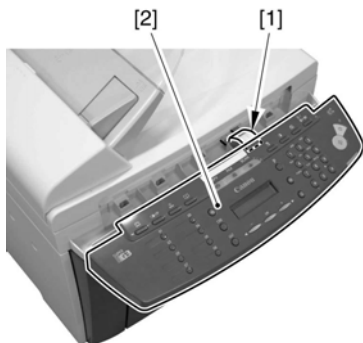
### 9.3.7.1 Removing the Control Panel Unit

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the 2 screws [1] and the 2 claws [2].



- 2) Disconnect the connector [1], and remove the control panel unit [2].



## 9.3.8 SCNT Board

### 9.3.8.1 Preparation for Removing the SCNT Board

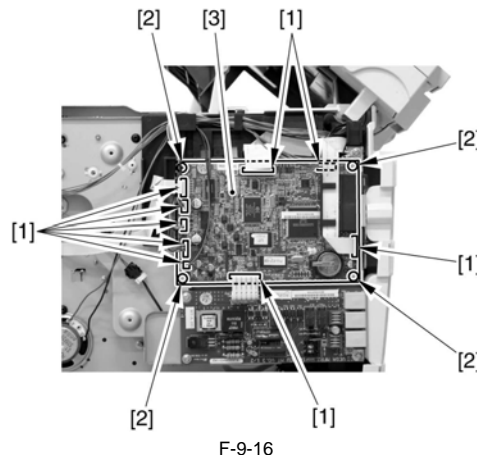
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.

### 9.3.8.2 Removing the SCNT Board

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the SCNT board [3].
  - 9 connectors [1]
  - 4 screws [2]



## 9.3.9 DCNT Board

### 9.3.9.1 Preparation for Removing the DCNT Board

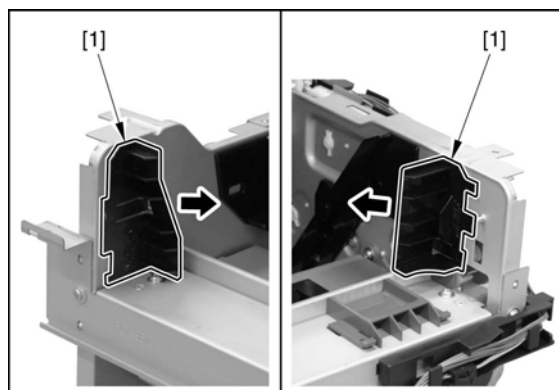
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.

### 9.3.9.2 Removing the DCNT Board

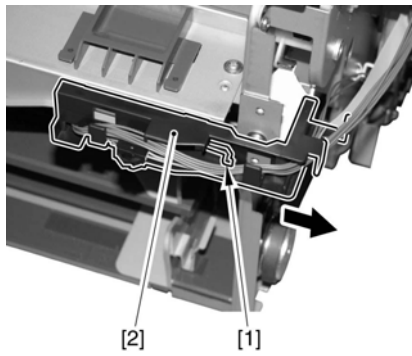
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the 2 guides [1] in the direction of the arrow.



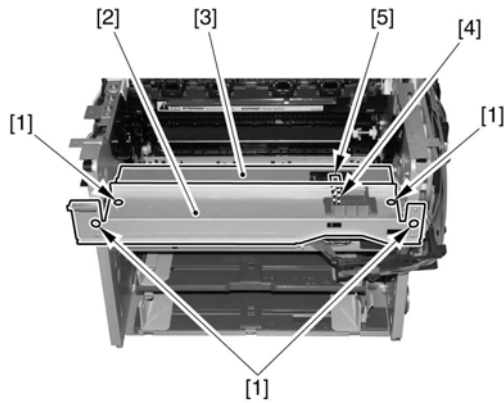
- 2) Unhook the claw [1], and remove the cable guide [2] in the direction of the arrow.





F-9-18

- 3) Remove the 4 screws [1], and detach the scanner cover (front) [2] and the scanner cover (rear) [3].

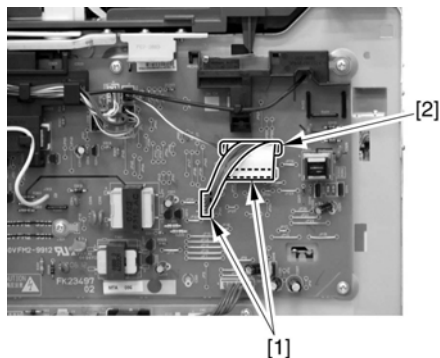


F-9-19

#### **⚠ Points to Note When Attaching**

Make sure to insert the shutter arm [4] through the hole [5] of the scanner cover (rear).

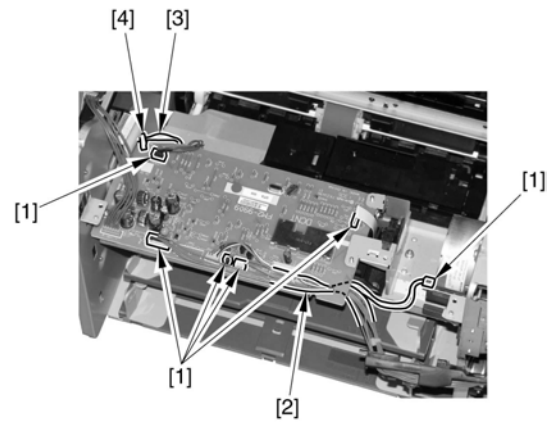
- 4) Disconnect the 2 connectors [1] located at the left side, and put them inside the left side plate through the holes [2].



F-9-20

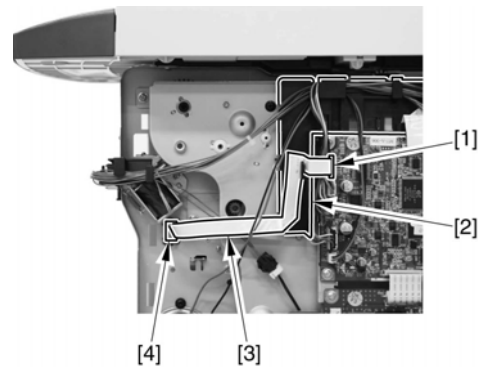
- 5) Disconnect the 6 connectors [1], and free the cable [2] through the hole of PCB.

- 6) Free the cable [3] from the cable clamp [4].



F-9-21

- 7) Disconnect the connector [1], and free the flat cable [3] from the cable guide [2].

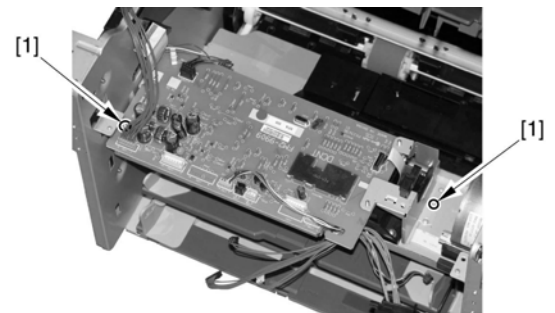


F-9-22

#### **⚠ Points to Note When Attaching**

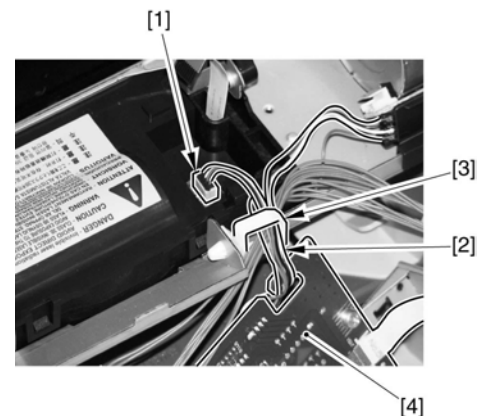
Make sure to put the flat cable [3] through the hole [4].

- 8) Remove the 2 screws [1].



F-9-23

- 9) Disconnect the connector [1], put the cable [2] through the cable clamp [3], and remove the DCNT board [4].



F-9-24

### 9.3.10 NCU Board

#### 9.3.10.1 Preparation for Removing the NCU Board

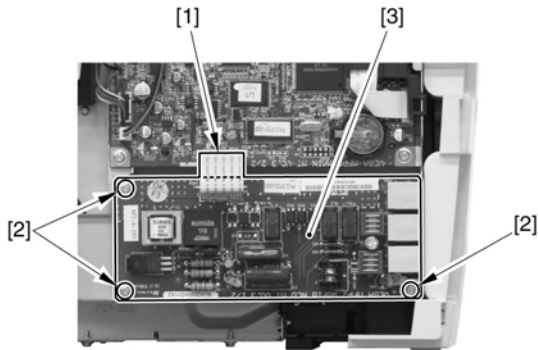
i-SENSYS MF4150 / i-SENSYS MF4140

- 1) Remove the front cover.
- 2) Remove the right cover.

#### 9.3.10.2 Removing the NCU Board

i-SENSYS MF4150 / i-SENSYS MF4140

- 1) Remove the NCU board [3].
  - 1 connector [1]
  - 3 screws [2]



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### 9.3.11 Power Supply PCB

#### 9.3.11.1 Preparation for Removing the Power Supply Board

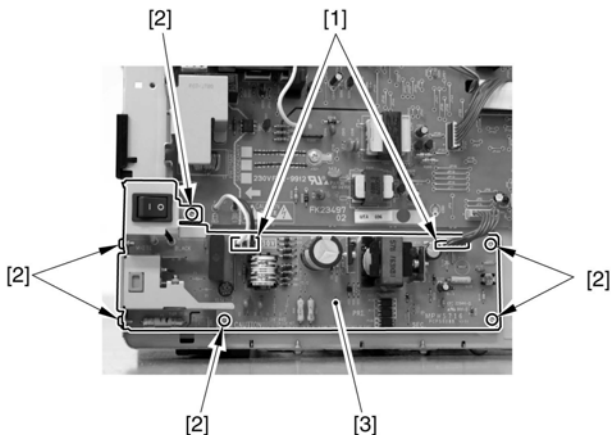
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.

#### 9.3.11.2 Removing the Power Supply Board

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Remove the power supply board [3].
  - 2 connectors [1]
  - 6 screws [2]



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### 9.3.12 High-voltage Power Supply PCB

#### 9.3.12.1 Preparation for Removing the High Voltage Power Supply Board

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

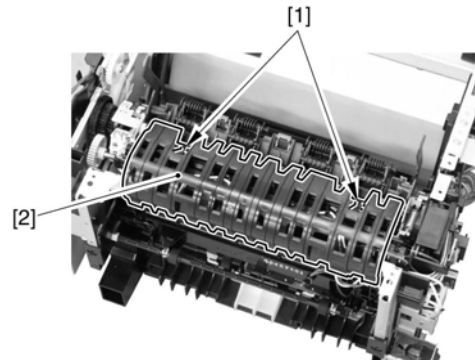
- 1) Remove the front cover.
- 2) Remove the right cover.
- 3) Remove the left cover.
- 4) Remove the rear cover.
- 5) Remove the control panel.

- 6) Remove the cartridge cover.
- 7) Remove the upper cover.

#### 9.3.12.2 Removing the High Voltage Power Supply Board

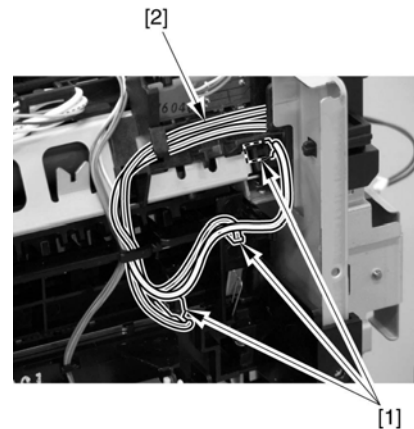
i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

- 1) Unhook the 2 claws [1], and remove the fixing guide [2].



F-9-27

- 2) Disconnect the 3 connectors [1] located at the backside, and free the cable [2] from the cable guide.

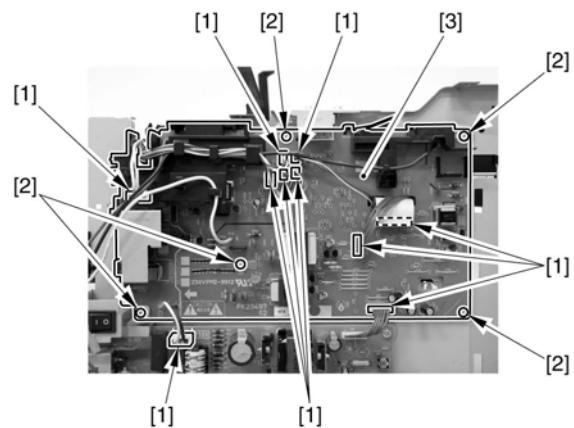


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#### ⚠ Points to Note When Attaching

Do not confuse the connecting target for the black cable and the red cable. Make sure to connect to the respective terminals stamped as 'RED' and 'BLACK'.

- 3) Remove the high voltage power supply board [3].
  - 10 connectors [1]
  - 5 screws [2]



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## Chapter 10 Maintenance and Inspection

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## 10.1 Periodically Replaced Parts

### 10.1.1 Periodically Replaced Parts

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

There are no periodically replaced parts with this machine.

## 10.2 Consumables

### 10.2.1 Consumable

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120

T-10-1		
Charge	Consumable	Standard of exchange
User	Toner cartridge FX-10	The toner disappears and.
Field engineer	-	-

## 10.3 Periodical Service

### 10.3.1 Periodically Service Items

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

There are no periodically service items with this machine.

## 10.4 Cleaning

### 10.4.1 Cleaning Items

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-10-2		
Responsible by:Cleaning area	Cleaning area	Cleaning timing
User	External covers	When they are smudged
	Copyboard glass	When the image read from the copyboard is smudged
	Backside of copyboard cover	When the image read from the copyboard is smudged
	ADF reading area	When the image read from the ADF has a black line in vertical direction
Service Technician	Document pickup roller	When document pickup performance drops away
	Scraper	When document separating performance drops away
	Document feed roller	When document feeding performance drops away
	Document delivery roller	When document delivery performance drops away
	Reading white area	When the image read from ADF is lighter
	Pickup roller	When paper pickup performance drops away
	Separation pad	When paper separating performance drops away
	Feed roller	When paper feeding performance drops away
	Transfer charging roller	When there is smudge at the back of the paper, or when there are white spots at the constant intervals of approx. 46mm in the image.
	Static eliminator	When there are dot patterns in the image
	Fixing inlet guide	When there is smudge in the paper, when there are irregular black lines in vertical direction, when there is paper jam, when there are wrinkles in the paper



Make sure to turn off the power and disconnect the power supply plug upon cleaning. It may cause fire/electric shock if failing turning off the power.

### 10.4.2 Cleaning Method (External Covers)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

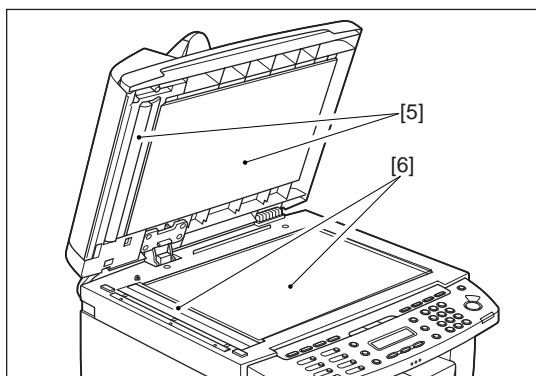
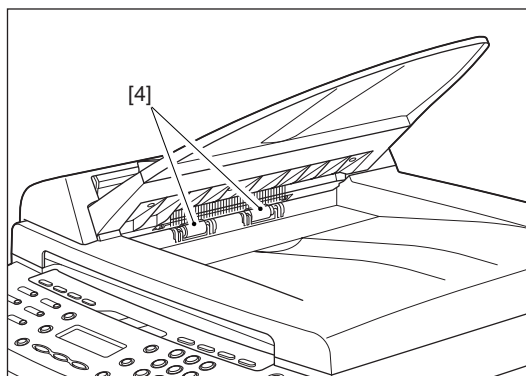
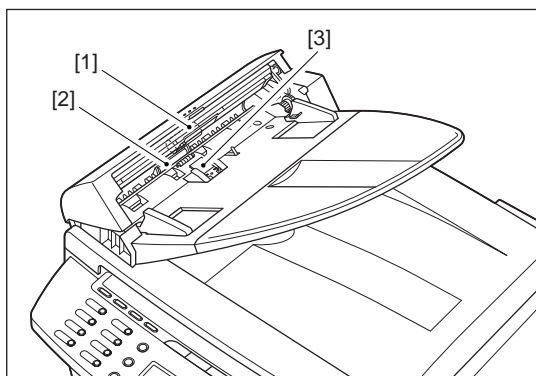
Wring of the cloth moistened with water or mild detergent, and wipe off the smudges.

In the case of using mild detergent, make sure to wipe off the detergent with the cloth moistened with water afterward.

Once the smudge is removed, dry with the soft dry cloth.

### 10.4.3 Cleaning Method (Reader Unit)

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



F-10-1

**[1] Document pickup roller**

Open the ADF and wipe off the smudge with the soft dry cloth.

**[2] Document feed roller**

Open the ADF and wipe off the smudge with the soft dry cloth.

**[3] Scraper**

Open the ADF and wipe off the smudge with the soft dry cloth.

**[4] Document delivery roller**

Wipe off the smudge with the soft dry cloth.

**[5] Backside of copyboard cover**

Open the copyboard cover and wipe off the smudge with the soft dry cloth.

**[6] Copyboard glass**

Open the copyboard cover and wipe off the smudge with the soft dry cloth.

**[7] Backside of copyboard cover**

Open the copyboard cover and wipe off the smudge with the soft dry cloth.



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## Chapter 11 Measurement and Adjustments

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## 11.1 Basic Adjustments

### 11.1.1 Adjustment Items

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

There are no adjustment items with this machine.

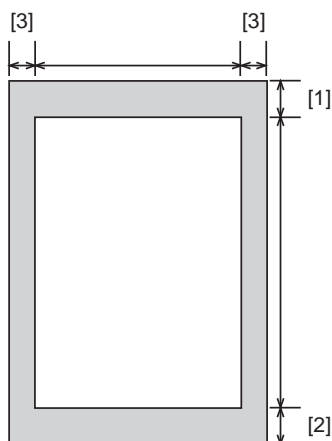
### 11.1.2 Paper Margin Adjustment

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

After pressing 'Additional Functions' button and '#' button to select 'SERVICE MODE', select 'SERVICE'S CHOICE' with the cursor button and press 'OK' button.

Select the item to adjust by the cursor buttons (+/-).

Effective only when using 'COPY' function



F-11-1

T-11-1

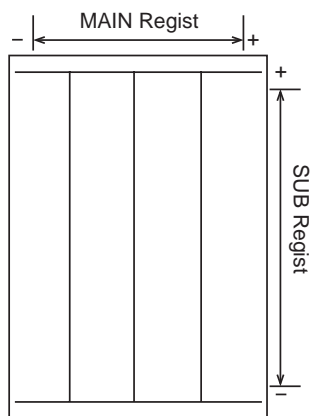
[1] Leading edge erase	4mm (0-5)
[2] Trailing edge erase	5mm (0-5)
[3] Vertical edge erase	3mm (0-5)

### 11.1.3 Reading Adjustment

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

After pressing 'Additional Functions' button and '#' button to select 'ADJUST', press 'OK' button.

Select the item to adjust by the cursor buttons (+/-).



F-11-2

#### BOOK MAIN REGIST

Item to enable adjusting the reading start position of horizontal scanning at Book reading

#### BOOK SUB REGIST

Item to enable adjusting the reading start position of vertical scanning at Book reading

#### ADF MAIN REGIST

Item to enable adjusting reading start position of horizontal scanning at ADF reading

T-11-2

Setting value	Contents
70	-30 (-3.0 mm)
71	-29 (-2.9 mm)

Setting value	Contents
:	:
98	-2 (-0.2 mm)
99	-1 (-0.1 mm)
100	0
101	+1 (+0.1 mm)
102	+2 (+0.2 mm)
:	:
129	+29 (+2.9 mm)
130	+30 (+3.0 mm)

#### ADF SUB REGIST DES

Item to enable adjusting reading start position of vertical scanning at ADF reading

T-11-3

Setting value	Contents
65	-35 (-3.5 mm)
66	-34 (-3.4 mm)
:	:
98	-2 (-0.2 mm)
99	-1 (-0.1 mm)
100	0
101	+1 (+0.1 mm)
102	+2 (+0.2 mm)
:	:
134	+34 (+3.4 mm)
135	+35 (+3.5 mm)

#### ADF SUB REGIST COPY

Item to enable adjusting reading end position of vertical scanning at making copy/ADF reading

#### ADF SUB REGIST SFINE

#### ADF SUB REGIST FINE

#### ADF SUB REGIST STD

Item to enable adjusting reading end position of vertical scanning at FAX transmission&reception/ADF reading

T-11-4

Setting value	Contents
50	-50 (-5.0 mm)
51	-49 (-4.9 mm)
:	:
98	-2 (-0.2 mm)
99	-1 (-0.1 mm)
100	0
101	+1 (+0.1 mm)
102	+2 (+0.2 mm)
:	:
149	+49 (+4.9 mm)
150	+50 (+5.0 mm)

#### ADF SUB ZOOM

Item to perform reduction of vertical scanning direction only at ADF reading

T-11-5

Setting value	Contents
95	98.0%
96	98.4%
97	98.8%
98	99.2%
99	99.6%
100	100.0%
101	100.4%
102	100.8%
103	101.2%
104	101.6%
105	102.0%

#### BOOK SCAN L/R

#### BOOK COPY L/R

#### BOOK FAX L/R

Item of setting range to enable adjusting right/left margins at Book reading (0 to 4mm)

**ADF SCAN L/R****ADF COPY L/R****ADF FAX L/R**

Item of setting range to enable adjusting right/left margins at Book reading (0 to 4mm)

**11.1.4 Print Adjustment**

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

After pressing the 'Additional Functions' button and '#' button, select 'ADJUST', and then, press 'OK' button.

Select the item to adjust with the cursor buttons (+/-).

**TOP-MP**

Item to enable adjusting recording start position of vertical scanning when making prints from the manual feeder tray

**TOP-CASSETTE**

Item to enable adjusting recording start position of vertical scanning when making prints from the pickup tray

**TOP-DUPLEX MP**

Item to enable adjusting recording start position of vertical scanning when making duplex prints from the manual feeder tray

**TOP-DUPLEX CAS.**

Item to enable adjusting recording start position of vertical scanning when making duplex prints from the pickup tray

**LEFT-MP**

Item to enable adjusting recording start position of horizontal scanning when making prints from the manual feeder tray

**LEFT-CASSETTE**

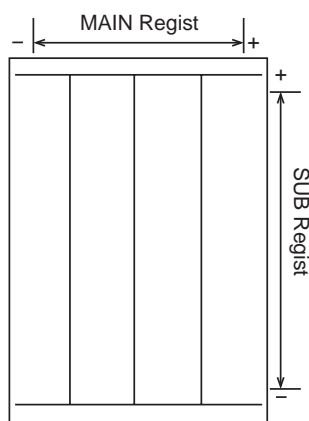
Item to enable adjusting recording start position of horizontal scanning when making prints from the pickup tray

**LEFT-DUPLEX MP**

Item to enable adjusting recording start position of horizontal scanning when making duplex prints from the manual feeder tray

**LEFT-DUPLEX CAS.**

Item to enable adjusting recording start position of horizontal scanning when making duplex prints from the pickup tray



F-11-3

T-11-6

Setting value	Contents
70	-30 (-3.0 mm)
71	-29 (-2.9 mm)
:	:
98	-2 (-0.2 mm)
99	-1 (-0.1 mm)
100	0
101	+1 (+0.1 mm)
102	+2 (+0.2 mm)
:	:
129	+29 (+2.9 mm)
130	+30 (+3.0 mm)

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## Chapter 12 Error Code

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## 12.1 Error Code

### 12.1.1 Error Code Outline

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

An error code is used to indicate a fault in a machine, and is indicated in the machine's LCD, showing the nature (symptoms) of the fault. Using the error code, the service man can readily find out how to correct the fault by simply referring to the service manual.

An error code may be either of the following two types:

#### Service Error Codes

If a fault calls for a service man for correction, it is indicated as a service man error code in the form of "SYSTEM ERROR E+number."

### 12.1.2 Error Code

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

#### System error code

T-12-1

Error code	Major cause/detection	Remedy
E198	Flash ROM write error.	- Turn the power OFF and then back ON.. - Replace the SCNT board.
E674	Modem error.	- Turn the power OFF and then back ON.. - Replace the SCNT board.

#### Scanner error code

T-12-2

Error code	Major cause/detection	Remedy
E225	CIS lamp has a fault.	- Turn the power OFF and then back ON.. - Replace the CIS unit.

#### Printer error code

T-12-3

Error code	Major cause/detection	Remedy
E000	The thermistor has an open circuit or a short circuit.	- Check the connector of the fixing film unit. - Replace the fixing film unit. - Replace the High-voltage power supply board. - Replace the DCNT board.
	The heater has an open circuit. The thermal fuse has blown.	
	The High-voltage power supply board has a fault.	
	The DCNT board has a fault.	
E100	The scanner assembly has a fault.	- Check the connector of the laser scanner assembly. - Replace the laser scanner assembly. - Replace the HVT unit. - Replace the DCNT board.

#### Communication error code

T-12-4

Error Code	Description
0001	Nothing G3 signal received within 35 sec.
0003	Received DIS after sending DIS signal
0004	Received DCN after sending DTC signal
0009	Can't receive any signal within 35 sec. in manual polling mode.
0010	Received DCN signal after sending DTC signal in Polling Rx.
0011	Can't receive any correct response after sending DTC signal.
0012	Remote side Password not match in Polling Rx/our side no any file to be polling.
0013	Can't receive carrier within 6 sec. after sending CFR in date phase C.
0014	Can't receive T.30 signal after sending FTT signal.
0016	Receive DCN signal after sending PTT signal.
0017	Can't receive any response from remote side after sending DIS
0018	Can't detect energy within 6 sec after sending FTT command
0019	Received DCN signal sending CFR signal
001A	No energy on line over 6 sec. within phase C before any corrected ECM frame.
001D	Can't detect flag after sending CFR signal
001E	Timeout in V.17 ECM Rx phase C
0020	Can't correct frame within 6 sec at phase C.
0021	File full.
0022	Owing to noise interference on the line, receiving side can't receive correct data within specified time (no ECM)
0023	Can't receive correct signal after sending CFR signal
0030	Can't receive any signal within 6 sec. At phase D.
0031	Received incorrect signal at phase D (not EOP, MPS, EOM, DCN, PPS_Q, PPS_Q,etc)
0032	Can't receive carrier within 6 sec after sending MCF or RTP, RTN signal
0033	Received DCN signal at ophase D within pages (not last page).
0039	In non_ECM mode, when machine already received the data doesn't receive 13.1 seconds
001F	Can't detect any G3 signal within 35 sec after sending DTC signal
003F	Remote side TSI not define in machine one touch or speed dial directory
0040	Can't receive carrier within 6 sec. after sending CTR.

Error Code	Description
0041	Can't receive carrier within 6 sec. after sending PPR.
0042	Can't receive correct signal after sending RNR signal
0043	Receive incorrect signal at phase D in ECM mode.
0044	Can't receive carrier/FSK signal within 6 sec. After sending MCF. In ECM mode.
0047	Can't receive correct signal or DCN received after sending ERR signal.
0048	Can't receive correct signal after receive PPS_PRI_Q
004B	Can't detect correct FSK signal even through detected FSK tone within 6 sec.
004C	Handshake fail during re-train or between page in V.34 Rx.
004E	Receive DCN signal after sending DIS in V.34.
004F	Remote side disconnected after sending ANSam in V.8 phase.
0050	Can't receive any correct signal after detected CJ signal in V.8 phase.
0051	Can't receive phase 3 signal after phase 2 within 20 seconds in V.34.
0053	Modem disconnect after phase 4 in V.34.
0054	Remote side disconnect after phase 4 in V.8
0055	Receive incorrect signal after sending DIS signal in V.34
0056	Modem disconnect after sending CFR in V.34
0058	Can't detect image signal within 6 sec after modem enter to primary phase in V.34
005A	Modem cannot detect any correct ECM frame with 3 minutes in phase C.
005B	Modem can't detect control channel with 12 sec in phase C
005C	Detect busy tone within control channel after phase C.
005D	Modem can't detect any correct ECM frame with 12 sec in phase C.
005E	Can't detect control channel signal after received RCP frame within 6 sec
005F	Can't detect silence after sending JM signal for polling TX function.
0060	There are no any bulletin files to be polled in V.34.
0061	Machine cannot detect V.21 or V.8 signal with 35 sec.
0062	Modem disconnect in phase D after our side sending out flags sequence in control channel.
0063	Can't receive any flag sequence in control channel within 25 sec in phase D.
0064	Can't detect any control channel signal in phase D within 60 sec even through energy still on the line.
0065	Can't detect any control channel signal within 60 sec after detect sillence in phase D.
0066	Can't receive T.30 signal or carrier after sending CFR in V.34.
0069	Capability no match paper size after received is DCS signal.
0070	User press stop key within receiving.
0071	Memory full within receiving.
0080	Can't detect any G3 signal within 35 sec. specified by ITU-T in phase B.
0081	Received DTC signal in transmission phase.
0082	Transmitting unit receives a signal other than DIS or DTC. And DCN in phase B.
0083	Detected FSK signal, but Can't receive any signal within 35 sec.
0084	Detect DCN signal in phase B.
0085	Transmitting unit sending DCS 3 times consecutively, but each time responds with DIS/DTC
0086	Detected responds signal other than DTC,DIS,FTT,DCN or CFR after sending DCS.
0087	Training attempt has failed because speed unit can't adjust to low lower speed.
0088	Received DCN signal after sending out DCS signal
008B	Receivers protocol of DIS is received, but it is not compatible with our machine.
008C	Remote side or our side not support capability.
008D	Receivers protocol of DIS is received, but remote side can't receive document temporary, may because by run out of paper or other reason.
008F	Modem not ready to received V.34 data within 6 sec after received CFR signal.
0090	Called side document not ready for our polling.
0091	Can't receive any commabd after send DCN signal 3 times consecutively
0093	Received DCN signal after sending out DCN signal
0094	Time out during transmit ECM frame or RCP command.
0095	Wrong ID number
0096	SUBADDRESS/PASSWORD capability not match in polling Rx mode.
009A	Can't detect any signal after sending CI signal.
009D	Remote side hang up before V.34 modem enter phase 2 state in V.34 polling Rx.
009E	Manual Tx over 15 minutes whin in phase C by non-ECM mode.
00A0	User stop or cancel transmission job.
00A1	Document JAM within transmission
00AE	Can't finished V.8 procedure or detect V.21 signal after CM signal
00AF	Modem can't enter into control channel after TX side sending out RCP signal for V34
00B1	Can't finish V.8 procedure or detect V.21 signal after ANSam signal within 35 sec.
00B2	Can't detect phase 2 signal after our side sending CJ signal within 30 sec
00B3	Can't detect correct V.21 or JM signal after sending CM or CJ signal.
00B4	Can't detect correct phase 2 signal within 25 second after CM/JM signal exchange.
00B5	Can't detect phase 3 signal after Phase 2
00B6	Can't detect phase 4 signal within 25 sec after CM/JM exchange.

Error Code	Description
00B8	Remote side disconnect after our side sending DCS signal in V.34.
00BA	Cannot received correct signal after our side sending DTC signal in V.34.
00BB	Every time our side received DIS signal after sending DTC in V.34.
00BC	Modem can't ready within 10 second after entering primary channel in V.34.
00BD	Can't detect correct V.21 or JM signal after detected FSK frequency.
00BE	Remote side no document to be polled after V.8 handshaking.
00BF	Capability no match after V.8 handshaking
00C1	At phase-D, transmitting units out EOP 3 times consecutively, but receive no answer from receiving unit.
00C2	Remote side disconnect after sending out V.8 CM signal.
00C4	After sending MPS signal, the received is not one of MCF, RTN, PIP, PIN, RTP, DCN.
00C5	Received DCN signal after sending MPS signal.
00C9	At phase D, sending MPS 3 times consecutively, but no answer from receiveing unit.
00CA	After sending EOP signal, the received is not one of MCF, RTN, PIP, PIN, PRI-EOP, DCN, RTP.
00CB	After sending EOP signal, the received is DCN signal.
00CF	Received incorrect signal after sending DTC signal for V.34 polling.
00D0	Received ERR signal after sending EOR_NULL.
00D1	Received incorrect response after sending PPS_EOP signal
00D2	Received DCN after sending PPS_EOP signal
00D3	Received DCN after sending PPS_NULL signal
00D8	Can't detect correct phase 3 signal for poling.
00D9	Can't detect correct phase 3 signal after detect silence after phase 2.
00DA	Can't detect phase 4 signal within 30 sec.
00DB	Can't received any T.30 signal within 30 sec within phase 4.
00DC	Received T.30 signal in phase 4 other than DCS, DIS or DTC
00DE	Remote side no SUB capability.
00E0	At phase-D, transmitting units out PPS_NULL 3 times consecutively but receive not answer.
00E1	Received incorrect response after sending PPS_NULL.
00E2	Can't receive any response in RR response procedure after sending PPS_NULL.
00E4	At phase D, transmitting units out PPS_MPS 3 times consecutively but receive no answer.
00E5	Received incorrect response after sending PPS_MPS signal
00E6	Can't receive any response in RR response procedure after sending PPS_MPS.
00E7	Reseived DCN after sending PPS_MPS.
00E8	At phase-D, transmitting units out PPS_EOP 3 times consecutively but receive no answer.
00E9	Receive PIN signal after sent last page data.
00EA	Can't receive any response in RR response procedure after sending PPS_EOP.
00EE	At phase-D, transmitting units out EOR_NULL 3 times consecutively but receive no answer.
00EF	Received incorrect response after sending EOR_NULL.
00F0	Can't receive any response in RR response procedure after sending EOR_NULL.
00F1	At phasa-D, transmitting units out EOR_MPS 3 times consecutively but receive no answer.
00F2	Received incorrect response after sending EOR_MPS.
00F3	Received ERR signal after sending EOR_MPS.
00F4	Can't receive any response in RR response procedure after sending EOR_MPS.
00F5	At phasa-D, transmitting units out EOR_EOP 3 times consecutively but receive no answer.
00F6	Received incorrect response after sending EOR_EOP
00F7	After Received ERR, our side can't received response after sending EOR_EOP command.
00FC	Can't receive any response after sending CTC.
00FD	Can't speed down to lower speed.
00FE	Memory full for transmission
00FF	REDAIL ALL FAIL



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## Chapter 13 Service Mode

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# 13.1 Outline

## 13.1.1 Setting Service Data

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Service Mode contains the following service data items. Each service data can be viewed or modified using the menu items displayed on the screen.

### SERVICE'S CHOICE

Contains items such as service data, formatting to the user data, data transmission / reception speed setting etc.

### ADJUST

Contains a margin adjustment item in printing and scanning.

### VERSION DISPLAY

Displays version information on the screen.

### SOFT SWITCH

Contains basic service function setting items for facsimile such as communication trouble measure.

### REPORT

Generates service reports.

### CLEAR DATA

Formats each data.

### FUNCTION

Runs print pattern output and ADF feeding tests.

### H/W TEST

Runs sensor tests and key tests.



## 13.1.2 How to Activate Service Mode

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

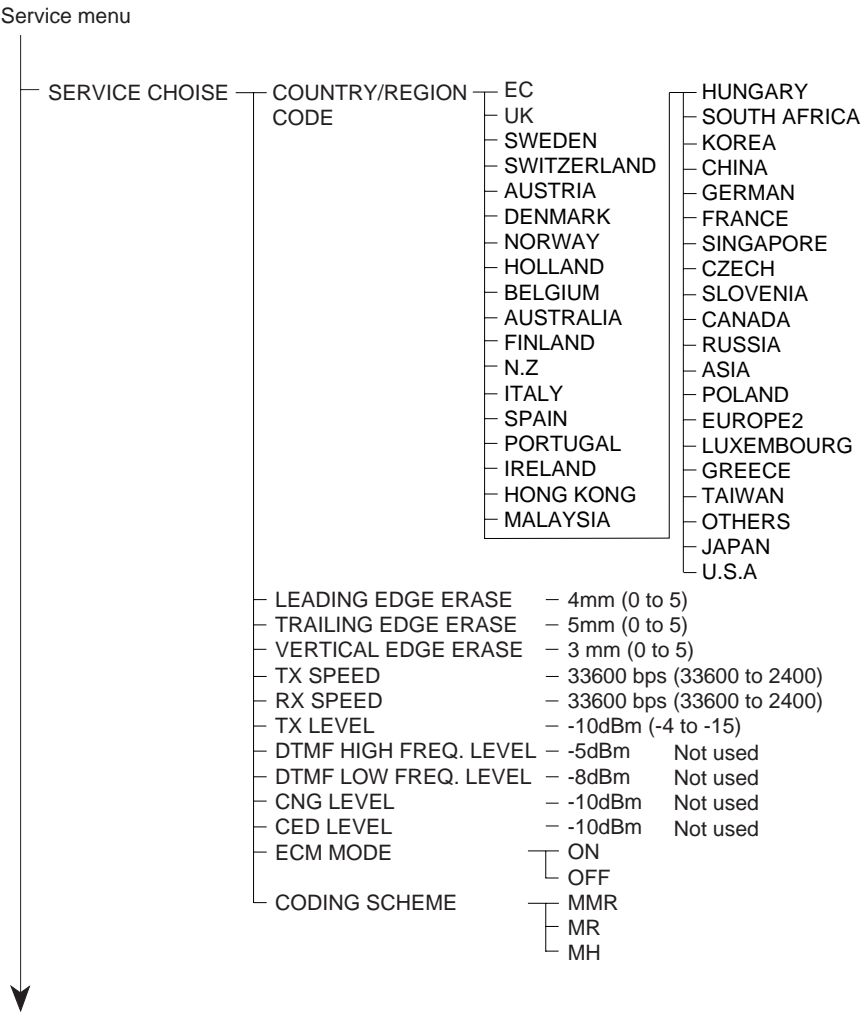
The following flow chart shows how to activate Service Mode.



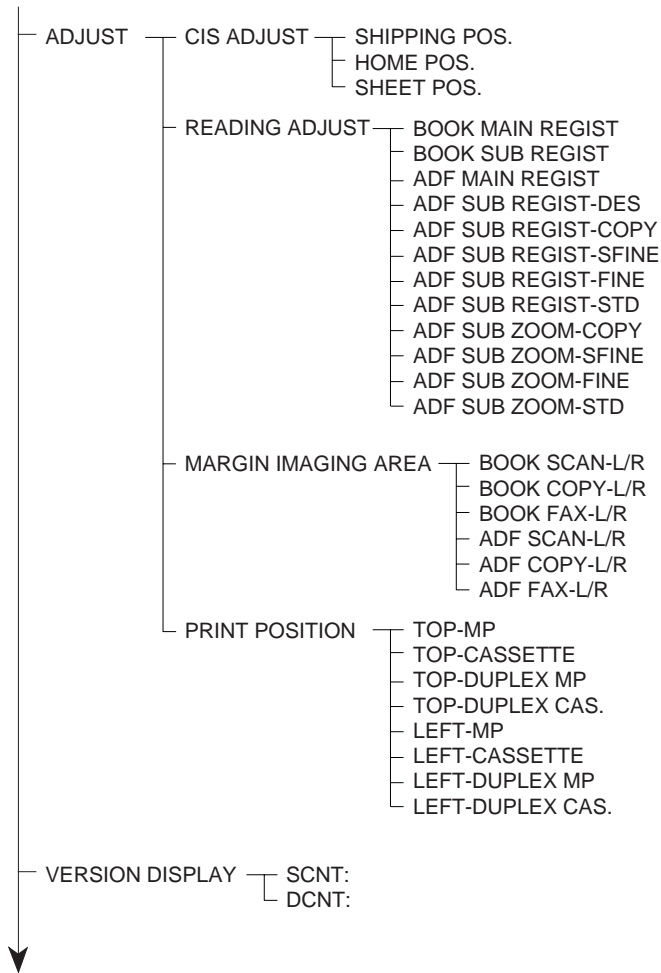
F-13-1

13.1.3 Service Data Menu

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



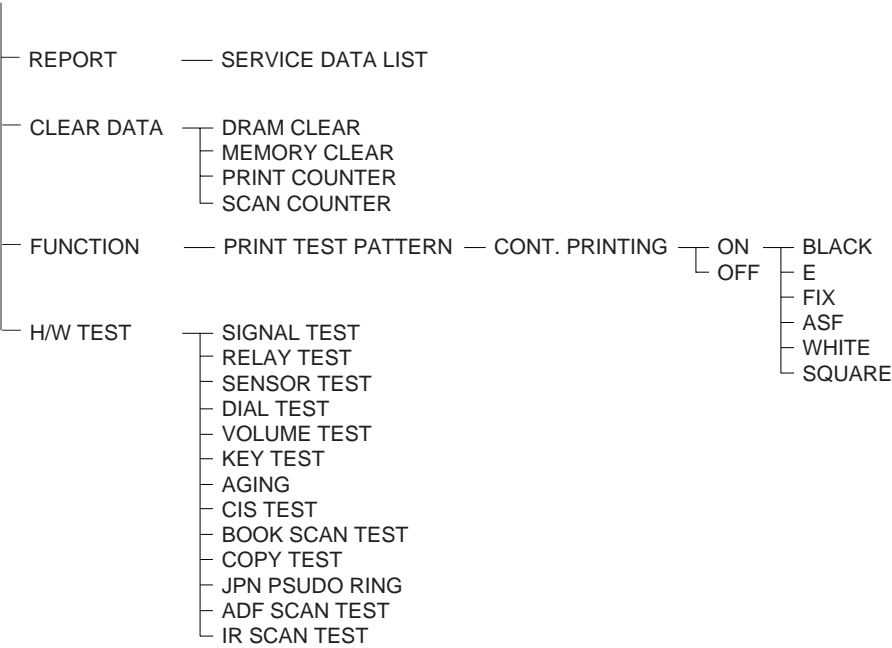
F-13-2



F-13-3

		Bit							
		1	2	3	4	5	6	7	8
SOFT SWITCH	SW01	-	-	-	-	-	-	-	Not used
	SW02	-	0	0	-	-	-	-	
	SW03~SW06:								Not used
	SW07	-	-	-	-	-	-	-	Not used
	SW08	-	-	-	-	-	-	-	Not used
	SW09	-	-	-	-	-	-	-	Not used
	SW10	1	0	-	-	-	-	-	
	SW11~SW15:								Not used
	SW16	-	-	0	-	-	-	-	
	SW17	-	-	-	-	-	-	-	Not used
	SW18	-	-	-	-	-	-	-	Not used
	SW19	-	-	-	-	-	-	-	Not used
	SW20	-	-	-	-	-	-	-	Not used
	SW21	-	-	-	-	-	-	-	Not used
	SW22	-	-	-	-	-	-	-	Not used
	SW23	-	-	-	-	-	-	-	Not used
	SW24	-	-	-	-	-	-	-	Not used
	SW25~SW29:								Not used
	SW30	-	-	-	-	-	-	1	0
	SW31~SW36:								Not used
	SW37	-	-	-	0	0	0	-	-
	SW38~SW50:								Not used
	SW51	-	-	0	0	-	-	-	
	SW52	-	-	-	-	-	-	-	Not used
	SW53	-	-	-	-	-	-	-	Not used
	SW54	-	-	-	-	0	1	0	
	SW55~SW64:								Not used

F-13-4



F-13-5

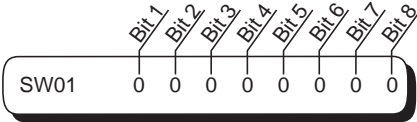
13.2 Service Soft Switch Settings (SSSW)

13.2.1 Outline

13.2.1.1 SOFT SWITCH Explained

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Each entry / setting item of SOFT SWITCH consists of 8 bitswitches. Each bitswitch displayed on the screen has an assigned number as shown in the figure below. Each Bit has a value - either 0 or 1.



F-13-6

Shown below is what each number and data indicates in the bitswitch table.

Bit	Function	1	0
1	Not in Use		
2	Not in Use		
3	Original Reading Width	Letter	A4*
4	Not in Use		
5	Not in Use		
6	Not in Use		
7	Not in Use		
8	Not in Use		

F-13-7

### 13.2.2 SSSW-SW02:

#### 13.2.2.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-1

Bit	Function	1	0
1	Not in Use	-	-
2	RTN Transmission Condition	1	0*
3	RTN Transmission Condition	1	0*
4	Not in Use	-	-
5	Change the Message Language	Displayed	Not displayed
6	Not in Use	-	-
7	Not in Use	-	-
8	Not in Use	-	-

#### 13.2.2.2 Bit 2 and 3 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If errors resulting from RTN signal transmission occur frequently while receiving, increase the parameter and ease the RTN transmission condition. The RTN transmission condition is defined as a percentage of the number of error lines in the total number of lines of a received image page. It is a combination of Bit 2 and Bit 3 and the percentages are shown below.

T-13-2

(Bit2, Bit3)=	(0, 0) 10%
	(1, 0) 15%
	(0, 1) 20%
	(1, 1) 25%

#### 13.2.2.3 Bit 5 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

If 'displayed' is selected, an item is added to the user data so that the message language can be changed. By doing so, the language in which messages displayed on the screen and printed on the reports can be selected from a list of languages.

### 13.2.3 SSSW-SW04

#### 13.2.3.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-3

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Not in Use	-	-
4	Not in Use	-	-
5	Not in Use	-	-
6	Not in Use	-	-
7	Not in Use	-	-
8	Alarm at the Completion of Transmission	ON	OFF *

#### 13.2.3.2 Bit 8 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

An alarm can be set to go off when the transmission has been completed without a problem. Change the setting to ON in order to activate this alarm.

### 13.2.4 SSSW-SW10

#### 13.2.4.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-4

Bit	Function	1	0
1	Alarm at Termination due to Error	ON *	OFF
2	Page Timer in Manual Sending	8 minutes	No Limit *
3	Not in Use	-	-
4	Not in Use	-	-
5	Not in Use	-	-
6	Not in Use	-	-
7	Not in Use	-	-
8	Not in Use	-	-

### 13.2.4.2 Bit 1 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

An alarm goes off when the transmission has been terminated due to some error. Change the setting to OFF in order to make this alarm inactive.

### 13.2.4.3 Bit 2 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to select a page timer used during manual sending.

### 13.2.5 SSSW-SW16

#### 13.2.5.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-5

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Original Reading Width	Letter	A4*
4	Not in Use	-	-
5	Not in Use	-	-
6	Not in Use	-	-
7	Not in Use	-	-
8	Not in Use	-	-

#### 13.2.5.2 Bit 3 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to select the width of original reading.  
When 'Letter' is selected, a letter-sized original will be read with the letter width (214mm).

### 13.2.6 SSSW-SW21

#### 13.2.6.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-6

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Not in Use	-	-
4	Received data in G3 mode contains 100 lines or less.	Print	Do Not Print*
5	Not in Use	-	-
6	Not in Use	-	-
7	Not in Use	-	-
8	Not in Use	-	-

#### 13.2.6.2 Bit 4 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

When received data in G3 mode consists 100 lines or less, the data can be chosen to print or not to print. If the setting is changed to 'Do Not Print,' received data with 100 or less lines will be canceled and will not be printed out.

### 13.2.7 SSSW-SW30

#### 13.2.7.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-7

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Not in Use	-	-
4	Not in Use	-	-
5	Not in Use	-	-
6	Not in Use	-	-
7	Duration of Pause	1*	0
8	Duration of Pause	1	0*



### 13.2.7.2 Bit 7 and 8 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to set the duration of pause.

It is a combination of Bit 7 and Bit 8 and the duration is as listed below.

T-13-8

(Bit7, Bit8)=	(0, 0) 2.0 seconds
	(1, 0) 2.5 seconds
	(0, 1) 3.0 seconds
	(1, 1) 3.5 seconds

### 13.2.8 SSSW-SW37

#### 13.2.8.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-9

Bit	Function	1	0
1	V.34 Maximum Baud Rate (TX)	1	0*
2	V.34 Maximum Baud Rate (TX)	1	0*
3	V.34 Maximum Baud Rate (TX)	1	0*
4	V.34 Maximum Baud Rate (RX)	1	0*
5	V.34 Maximum Baud Rate (RX)	1	0*
6	V.34 Maximum Baud Rate (RX)	1	0*
7	Not in Use	-	-
8	Not in Use	-	-

#### 13.2.8.2 Bit 1 to Bit 6 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to select the maximum baud rate in V.34 primary channel from 2400, 2800, 3000, 3200, 3429 baud. Different combinations of Bit 1 to Bit 6 lead to different baud rates as shown below.

In Sending

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(Bit1, Bit2, Bit3)=	(0, 0, 0) 3429
	(1, 0, 0) 3200
	(0, 1, 0) 3000
	(1, 1, 0) 2800
	(0, 0, 1) 2400

In Receiving

T-13-11

(Bit4, Bit5, Bit6)=	(0, 0, 0) 3429
	(1, 0, 0) 3200
	(0, 1, 0) 3000
	(1, 1, 0) 2800
	(0, 0, 1) 2400

### 13.2.9 SSSW-SW39

#### 13.2.9.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-12

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Not in Use	-	-
4	Not in Use	-	-
5	Not in Use	-	-
6	Not in Use	-	-
7	V8 Procedure at Incoming Call	Yes	No *
8	V8 Procedure at Outgoing Call	Yes	No *

#### 13.2.9.2 Bit 7 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to choose whether or not to carry out V.8 procedure during incoming calls.

Change the setting to 'No' and V.8 procedure will not be carried out and T.30 procedure will start.

### 13.2.9.3 Bit 8 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to choose whether or not to carry out V.8 procedure during outgoing calls.

Change the setting to 'No' and V.8 procedure will not be carried out even if V.8 procedur has been received from the caller and T.30 procedure will be initiated.

### 13.2.10 SSSW-SW51

#### 13.2.10.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-13

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Protocol Monitor Report Output	1	0*
4	Protocol Monitor Report Output	1	0*
5	Not in Use	-	-
6	Not in Use	-	-
7	Not in Use	-	-
8	Not in Use	-	-

#### 13.2.10.2 Bit 3 and 4 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to specify the output setting of protocol monitor report.

Each combination of Bit 3 and Bit 4 as shown below determines the output setting.

T-13-14

(Bit3, Bit4)=	(0, 0) Do not print
	(1, 0) Print
	(0, 1) Print when error occurs
	(1, 1) Not in use

### 13.2.11 SSSW-SW54

#### 13.2.11.1 Function List

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

T-13-15

Bit	Function	1	0
1	Not in Use	-	-
2	Not in Use	-	-
3	Not in Use	-	-
4	Not in Use	-	-
5	Not in Use	-	-
6	Time and Date Display in Reports	1	0*
7	Time and Date Display in Reports	1*	0
8	Not in Use	-	-

#### 13.2.11.2 Bit 6 and 7 Elaborated

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

Enables to select from different types of time and date display used in reports.

Each combination of Bit 6 and Bit7 as shown below determines the type.

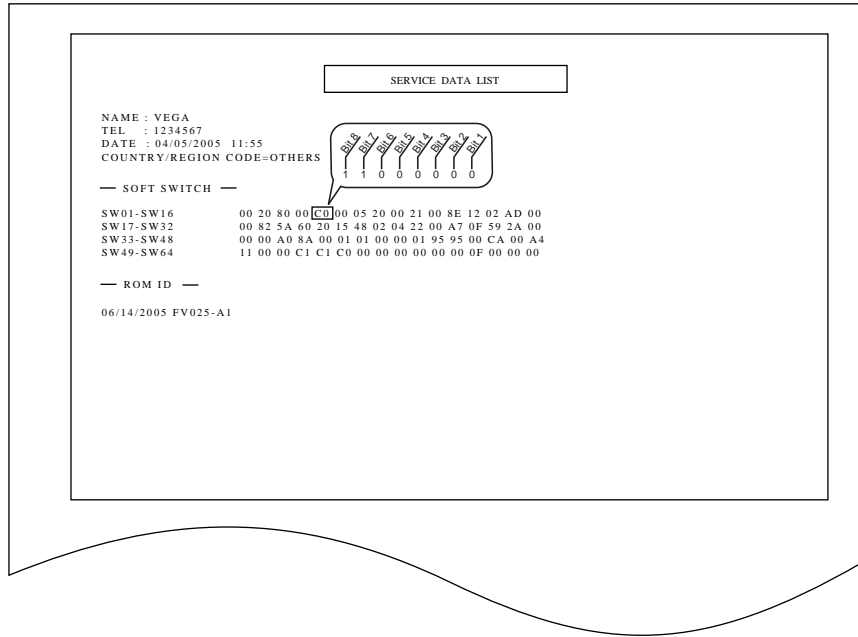
T-13-16

(Bit6, Bit7)=	(0, 0) YYYY MM/DD
	(1, 0) MM/DD YYYY
	(0, 1) DD/MM YYYY
	(1, 1) Not in Use

## 13.3 Report Output (REPORT)

### 13.3.1 Service data list

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /



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## 13.4 Test Mode (TEST)

### 13.4.1 Overview

#### 13.4.1.1 Outline of test mode

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

The static test mode can be operated according to the menu item displayed on the display.

##### Print test

The test pattern is printed in the print area.

##### H/W TEST

The function of the sensor and the operation panel can test.

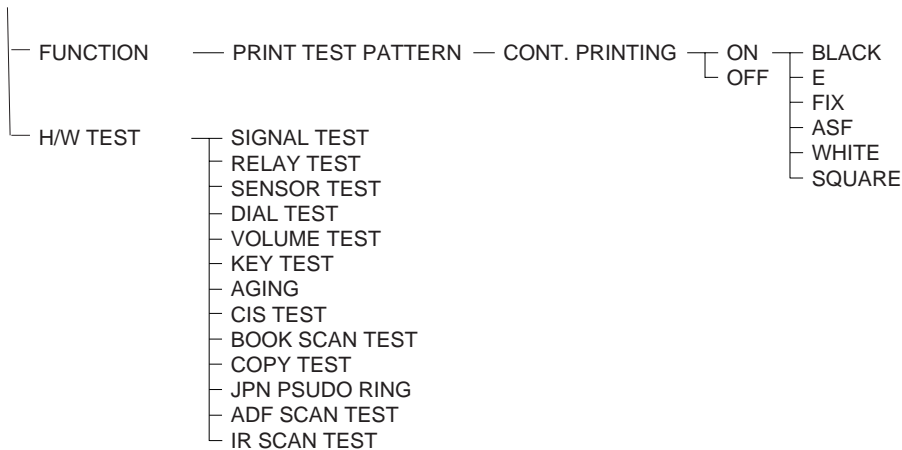
#### 13.4.1.2 Test mode menu

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

To operate the test mode,

- 1) Push the additional functions key and # key to enter SERVICE MODE.
- 2) Select FUNCTION or H/W TEST by the cursor button, and push the OK button.

Stopbotaning is pushed when coming off the test mode.



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### 13.4.2 Faculty Test

#### 13.4.2.1 Print test pattern

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

From the FUNCTION menu, select PRINT TEST PATTERN.

In this test, the printer unit will be used to print various patterns. For service work, be sure to use the BLACK pattern and the SQUARE pattern.

Use the BLACK print pattern to make sure that the printout is free of white lines and unevenness; on the other hand, use the SQUARE printout to make sure that the printout is free of image contraction, elongation, and soiling.

#### MEMO

After completion of the print test, if the printing was normal, copy a document. If there is any defect in the copied image, there is a defect in the scan section.

#### 13.4.2.2 Sensor test

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

SENSOR TEST is selected from the H/W TEST menu. In this test, the state of each sensor of this machine can be checked on the display. For the sensor that uses the sensor arm and the microswitch, the output of the sensor can be confirmed by moving them by the hand.

SENSOR TEST	HOOK1 TEST	: handset status
	HOOK2 TEST	
	ADF DS TEST	:
	ADF DES TEST	: ADF detect
	CRG TEST	: ADF detect
	TN VALUE	: toner remain value (0-255)
	RING DETECT	
	CNG DETECT(AnsMode)	
	CNG DETECT(FAX/TEL)	

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#### 13.4.2.3 Key test

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

KEY TEST is selected from the H/W TEST menu. In this test, whether the button on the operation panel works correctly can be checked.

#### Operation key test

In this test, the character on the display disappears when the key corresponding to the character is pushed. The correspondence table of the character and the key is as follows.

When the key is pushed for all keys, it is checked that the corresponding character on the display disappears.

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Character	Operation button	Character	Operation button	Character	Operation button
0-9,*,#	Numeric key, tone key	K	[Start] key	V	[Hook] key
A	[COPY] key	L	[Clear] key	a	One-Touch Speed Dial [01] key
B	[SCAN] key	M	[Energy Saver] key	b	One-Touch Speed Dial [02] key
C	[Additional Functions] key	N	[View Settings] key	c	One-Touch Speed Dial [03] key
D	[System Monitor] key	O	[2-Sided] key	d	One-Touch Speed Dial [04] key
E	[Enlarge/Reduce] key	P	[Toner Gauge] key	e	One-Touch Speed Dial [05] key
F	[Density] key	Q	[OK] key	f	One-Touch Speed Dial [06] key
G	[Image Quality] key	R	[FAX] key	g	One-Touch Speed Dial [07] key
H	[Collate/2 on 1] key	S	[Address Book] key	h	One-Touch Speed Dial [08] key or [Reset] key
I	[+] key	T	[Coded Dial] key		
J	[-] key	U	[Redial/Pause] key		

#### One-touch dial key test

When the OK button is pushed, it becomes an one-touch dial key test.

The a through h characters corresponding to One-touch01 through 08 key are displayed. The character corresponding to respectively disappears when an one-touch key is pushed. Check that all characters disappear after all one-touch keys are pressed.

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## Chapter 14 Service Tools

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## 14.1 Service Tools

### 14.1.1 Solvents / Lubricants Table

i-SENSYS MF4150 / i-SENSYS MF4140 / i-SENSYS MF4120 /

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No.	Name	Purpose of Use	Component	Remarks
1	Alcohol	Cleaning E.g.) Plastics Rubber Metals Grease Buildup Toner Buildup	Alcohols	- Do not put close to fire. - Source locally
2	Lubricating Oil	- Apply to the gear - Apply in-between the shaft and the shaft support	Special oil Special solid lubricant agent Lithium soap	- Molykote EM-50L (Produced by Dow Corning Corporation) - Tool number: HY9-0007
3	Lubricating Oil	- Apply in-between the pressure roller shaft and the grounding plate	Carbon black Graphite Highly refined mineral oil	- Molykote 41 (Produced by Dow Corning Corporation) - Tool number: CK-8007



Use a rag to clean the exterior of the machine. Soak a rag in water and wring it out as completely as possible before cleaning.



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