

Service Manual

FAX-L200 Series

FAX-L220

Canon

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TONER
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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.

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Caution

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
Symbols Used

This documentation uses the following symbols to indicate special information:

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

The following rules apply throughout this Service Manual:

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

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

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

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

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

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

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

Contents

Chapter 1 PRODUCT DESCRIPTION

1.1 Product Specifications	1- 1
1.1.1 Product Specifications	1- 1
1.2 Detailed Specifications	1- 5
1.2.1 Time required for transmission protocol	1- 5
1.2.2 Scanning Range	1- 5
1.2.3 Printing Range	1- 6
1.3 Names of Parts	1- 8
1.3.1 External View	1- 8
1.3.2 Operation Panel	1- 10
1.4 Safety	1- 11
1.4.1 Safety of Laser Light	1- 11
1.4.2 Handling the Laser Unit	1- 11
1.4.3 Safety of Toner	1- 11

Chapter 2 TECHNICAL REFERENCE

2.1 Document Feed and Exposure System	2- 1
2.1.1 Overview/Configuration	2- 1
2.2 Laser Exposure	2- 3
2.2.1 Overview/Configuration	2- 3
2.3 Image Formation	2- 5
2.3.1 Overview/Configuration	2- 5
2.4 Pickup and Feed System	2- 7
2.4.1 Overview/Configuration	2- 7
2.4.2 Detection Jams	2- 9
2.5 Fixing Unit	2- 12
2.5.1 Overview/Configuration	2- 12
2.5.2 Protective Function	2- 12

Chapter 3 DISASSEMBLY AND ASSEMBLY

3.1 EXTERNAL AND CONTROLS SYSTEM	3- 1
3.1.1 External Cover	3- 1
3.1.2 Power Supply Board	3- 1
3.1.3 Toner Sensor	3- 2
3.1.4 Operation Panel Unit	3- 4
3.1.5 SCNT Board	3- 5
3.1.6 PCNT Board	3- 6
3.1.7 Modular Board	3- 8
3.2 IMAGE FORMATION SYSTEM	3- 10
3.2.1 Transfer Charging Roller	3- 10
3.3 LASER EXPOSURE SYSTEM	3- 11

3.3.1 Laser/Scanner Unit.....	3- 11
3.4 PICKUP AND FEEDING SYSTEM.....	3- 12
3.4.1 Main Motor	3- 12
3.4.2 Separation Pad.....	3- 13
3.4.3 Pickup Roller.....	3- 15
3.5 FIXING SYSTEM.....	3- 17
3.5.1 Fixing Pressure Roller.....	3- 17
3.5.2 Fixing Film Unit.....	3- 19
3.6 DOCUMENT FEED/EXPOSURE SYSTEM	3- 21
3.6.1 Separation Guide Unit.....	3- 21
3.6.2 Contact Sensor.....	3- 22
3.6.3 Separation Roller.....	3- 24
3.6.4 Document Feed Motor	3- 25

Chapter 4 MAINTENANCE AND INSPECTION

4.1 Periodically Replaced Parts	4- 1
4.1.1Parts Requiring Periodical Replacement	4- 1
4.2 Consumables.....	4- 2
4.2.1Consumable	4- 2
4.3 Periodical Service	4- 3
4.3.1Items Requiring Scheduled Servicing	4- 3
4.4 Cleaning.....	4- 4
4.4.1Items Requiring Cleaning.....	4- 4
4.4.2Cleaning Method (external covers)	4- 5
4.4.3Cleaning Method (Reading unit)	4- 5
4.4.4Cleaning Method (Printer unit).....	4- 6
4.5 Lubrications	4- 8
4.5.1Areas Requiring Application of Grease.....	4- 8

Chapter 5 TROUBLESHOOTING

5.1 Phenomenon Table	5- 1
5.1.1Symptoms	5- 1
5.2 Countermeasure	5- 3
5.2.1 Image Faults	5- 3
5.2.2 Faulty Feeding.....	5- 12
5.2.3 Malfunction	5- 13
5.2.4 Jam (Main Unit)	5- 15
5.3 Measurement and Adjustment	5- 16
5.3.1 Basic Adjustments.....	5- 16
5.3.2 Nip Width.....	5- 16
5.4 Service Tools	5- 17
5.4.1Special tools.....	5- 17
5.5 Error Code	5- 18
5.5.1 Outline.....	5- 18
5.5.2 User Error Code	5- 18
5.5.3 Service Error Code.....	5- 22
5.6 Service Mode	5- 24

5.6.1 Outline.....	5- 24
5.6.2 Default Settings.....	5- 31
5.6.3 Service Soft Switch Settings (SSSW).....	5- 46
5.6.4 Numeric Parameter Settings (NUMERIC Param.)	5- 48
5.6.5 Test Mode (TEST)	5- 49

Chapter 6 APPENDIX

6.1 Outline of Electrical Components	6- 1
6.1.1 Sensor.....	6- 1
6.1.2 PCBs	6- 2

Chapter 1 PRODUCT DESCRIPTION

Contents

1.1 Product Specifications	1-1
1.1.1 Product Specifications	1-1
1.2 Detailed Specifications	1-5
1.2.1 Time required for transmission protocol	1-5
1.2.2 Scanning Range	1-5
1.2.3 Printing Range	1-6
1.3 Names of Parts	1-8
1.3.1 External View	1-8
1.3.2 Operation Panel	1-10
1.4 Safety	1-11
1.4.1 Safety of Laser Light	1-11
1.4.2 Handling the Laser Unit	1-11
1.4.3 Safety of Toner	1-11

1.1 Product Specifications

1.1.1 Product Specifications

0003-0804

Body installation method	Desktop
Exposure Method	Semi-conductor laser
Development Method	Toner projection
Transfer Method	Roller transfer
Fixing method	On-demand fixing
Delivery method	face-down/face-up
Toner level detection function	Yes (Toner out detect)
Toner supply type	Replace the Toner Cartridge (FX3)
Document type	Sheets
Maximum document size	Multiple pages: 216 x 355.6 mm / 1 pages: 216 x 1000 mm
Minimum document size	148 x 105 mm
Document thickness	Multiple pages: 0.06 to 0.13 mm (40 to 90 g/m2) / 1 pages: 0.06 to 0.23 mm (35 to 240 g/m2)
ADF capacity	Max. 30 sheets (A4/Letter) / Max. 10 sheets (Legal)
Effective scanning width	208 mm (A4) / 214 mm (Letter/Legal)
Scanning method	Contact sensor scanning method
Reading resolution	Facsimile: Standard: 8 dots/mm (203.2 dpi) x 3.85 line/mm (97.79 dpi) / Fine: 8 dots/mm (203.2 dpi) x 7.7 line/mm (195.58 dpi) / Super Fine: 8 dots/mm (203.2 dpi) x 15.4 line/mm (391.16 dpi)
Copying resolution	Scanning: 400 x 400 dpi (Direct copy) / 200 x 300 dpi (Memory copy)
Printing resolution	600 x 600 dpi
Print speed (A4)	Approx. 6 pages/minute
Multi-purpose tray paper size	A4, Letter, Legal

Multi-purpose tray paper type	Plain Paper
Multi-purpose tray capacity	Plain Paper: Approx. 100 sheets
Delivery tray stack	Approx. 50 sheets (Face-down delivery slot)
Continuous reproduction	99 copies
Energy save mode	None
Operating environment (Temperature range)	10 to 32.5 deg C
Operating environment (Humidity range)	20 to 80 % RH
Power supply rating	AC 200 to 240V, 50/60 Hz
Power consumption (Maximum)	500 W
Power consumption	Average during standby; approx. 3.5 W
Dimensions	372 (W)×578 (D)×404 (H) mm (including trays)
Weight	Approx. 10 kg (including attachments)
Option	Handset (CT-19)
Applicable lines	Analog line (one line) / PSTN (Public Switched Telephone Network)
Transmission method	Half-duplex
Transmission control protocol	ITU-T T.30 binary protocol / ITU-T V.8 protocol, V.34 protocol
Modulation method	G3 image signals: ITU-T V.27ter (4.8k, 2.4k bps) / ITU-T V.29 (9.6k, 7.2k bps) / ITU-T V.17 (14.4k, 12.0k, TC9.6k, TC7.2k bps) / ITU-T V.34 (33.6k, 31.2k, 28.8k, 26.4k, 24.0k, 21.6k, 19.2k, 16.8k, 14.4k, 12.0k, 9.6k, 7.2k, 4.8k, 2.4k bps) / G3 procedure signals: ITU-T V.21 (No.2) 300 bps / ITU-T V.8 300 bps / ITU-T V.34 1200 bps, 600 bps
Transmission speed	33.6k, 31.2k, 28.8k, 26.4k, 24k, 21.6k, 19.2k, 16.8k, 14.4k, 12k, TC9.6k, TC7.2k, 9.6k, 7.2k, 4.8k, 2.4k bps / (With automatic fallback function)
Coding method	MH, MR, MMR
Error correction method	ITU-T ECM

Minimum transmission time	10 msec. (MH/MR), 0 msec. (MMR)
Transmission output level	0 to -15 dBm
Reception input level	-9 to -43 dBm (V.34), 0 to -43 dBm (V.34 other)
Modem	CONEXANT FM336Plus
Half tone	64-gradation error diffusion system
Memory scanning	Approx. 350 sheets (When reading Canon FAX Standard Chart No.1)
Printer function	None
Dialing	Manual dialling: Numeric button / Auto dialling: Max. 39 digits, One-touch: 15, Coded speed: 100 / Group dial: Max.114 locations
Broadcast transmission	Max. 116 locations (One-touch:15, Coded speed:100, Numeric button:1)
Delayed transmission	No. of Destination: Max. 116 / No. of Reservation: Max. 20
Subaddress transmission	Subaddress: Max. 20 digits / Password: Max. 20 digits
Confidential transmission	Subaddress: Max. 20 digits / Password: Max. 20 digits
Relay broadcast originating transmission	Subaddress: Max. 20 digits / Password: Max. 20 digits
Relay broadcast transmission	None
Polling transmission	Direct transmission: None / Memory transmission: Yse
Dual access	Maximum reservation:20
FAX/TEL switching	Method:CNG detection / Message: None / Pseudo CI: None / Pseudo ring: Yse / Pseudo ringback tone: Yes
Answering machine connection	Yes
Remote reception	Method: ID call# (ID input method) / Remote ID (with ID call#): 2 digits
Memory reception	Approx. 350 page (Measured when receiving Canon FAX Standard Chart No.1)

Confidential reception	None
Polling reception	Subaddress: Max. 20 digits / Password: Max. 20 digits
Closed network communication	None
System data backup	Backup contents: dial registration data, user data, service data, time / Backup IC: 220 kbit SRAM / Backup battery: Lithium battery 3.0V DC/220 mAh / Battery life: Approx. 5 years
Image data backup	None
Activity management	User report: / - Activity management report (Every 20 transactions) / - Activity report (sending/receiving) / - One-touch speed dialling list / - Coded speed dialling list / - Group dialling list / - Memory clear list / - User's data list / - Multi activity report / - Document memory list / Service report / - System data list / - System dump list
Others	Directory function: Yes / Transmitting terminal identification: None/ Completion stamp: None / Completion stamp: None / Summer time function: Yes / Residual Cartridge detecting: Yes

1.2 Detailed Specifications

1.2.1 Time required for transmission protocol

0003-1068

T-1-1

Mode	Pre-message protocol	Post - m e s s a g e protocol (between pages)	Post - m e s s a g e protocol (after pages)
T.30 Standard	Approx.12s	Approx.4s	Approx.3.5s
V.34	Approx.9s	Approx.1s	Approx.1s

Pre-message protocol:

Time from when other facsimile is connected to the line until image transmission begins.

Post-message protocol (between pages):

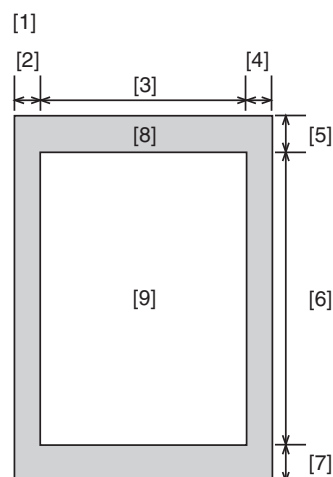
Time from after one document has been sent until transmission of the next document starts if several pages are transmitted.

Post-message protocol (after pages):

Time from after image transmission is completed until line is switched from facsimile to telephone.

1.2.2 Scanning Range

0003-1109



F-1-1

T-1-2

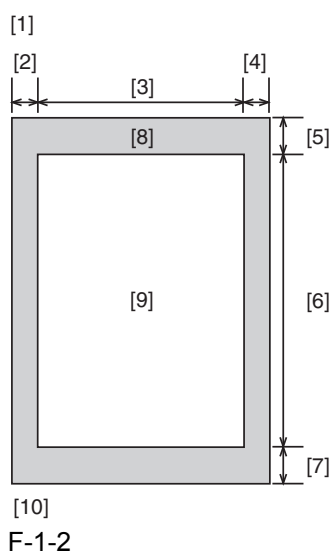
- | | |
|------------------------------|-------------------------------|
| [1] Document leading edge | [6] Effective scanning length |
| [2] Left margin | [7] Bottom margin |
| [3] Effective scanning width | [8] Scanning drop out range |
| [4] Right margin | [9] Scanning range |
| [5] Top margin | [10] Document trailing edge |

T-1-3

Item	A4	Letter	Legal
Effective scanning width	208+/-1.0mm	213.9+/-1.0mm	213.9+/-1.0mm
Effective scanning length	293+/-3.0mm	275.4+/-3.0mm	361.6+/-3.0mm
Left margin	1.0+/-2.0mm	1.0+/-2.0mm	1.0+/-2.0mm
Right margin	1.0+/-2.5mm	1.0+/-2.5mm	1.0+/-2.5mm
Top margin	2.0+/-2.0mm	2.0+/-2.0mm	2.0+/-2.0mm
Bottom margin	2.0+/-2.0mm	2.0+/-2.0mm	2.0+/-2.0mm

1.2.3 Printing Range

0003-1123



T-1-4

- | | |
|------------------------------|-------------------------------|
| [1] Paper leading edge | [6] Effective printing length |
| [2] Left margin | [7] Bottom margin |
| [3] Effective printing width | [8] Printing drop out range |
| [4] Right margin | [9] Printing range |
| [5] Top margin | [10] Paper trailing edge |

T-1-5

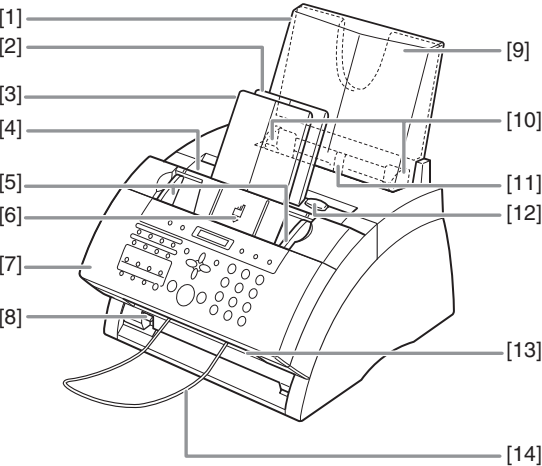
Item	A4	Letter	Legal
Effective printing width	206+/-2.0mm	207.9+/-2.0mm	207.9+/-2.0mm
Effective printing length	288.9+/-3.0mm	271.4+/-3.0mm	347.6+/-3.5mm
Left margin	2.0+/-2.0mm	4.0+/-2.0mm	4.0+/-2.0mm
Right margin	2.0+/-3.0mm	4.0+/-3.0mm	4.0+/-3.0mm
Top margin	2.0+/-2.0mm	2.0+/-2.0mm	2.0+/-2.0mm
Bottom margin	6.0+/-4.0mm	6.0+/-4.0mm	6.0+/-4.5mm

1.3 Names of Parts

1.3.1 External View

0003-1199

Front View

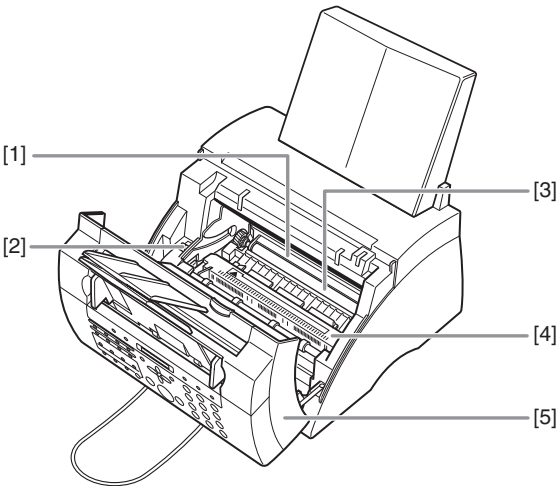


F-1-3

T-1-6

- | | |
|-------------------------------------|-----------------------------|
| [1] Multi-purpose tray cover | [8] Paper delivery selector |
| [2] Paper eject tray | [9] Multi-purpose tray |
| [3] Document tray | [10] Paper guide |
| [4] Face-down delivery slot | [11] Multi-purpose tray |
| [5] Document guide | [12] Latch |
| [6] Automatic Document Feeder (ADF) | [13] Face-up delivery slot |
| [7] Operation panel | [14] Document support |

Inside View

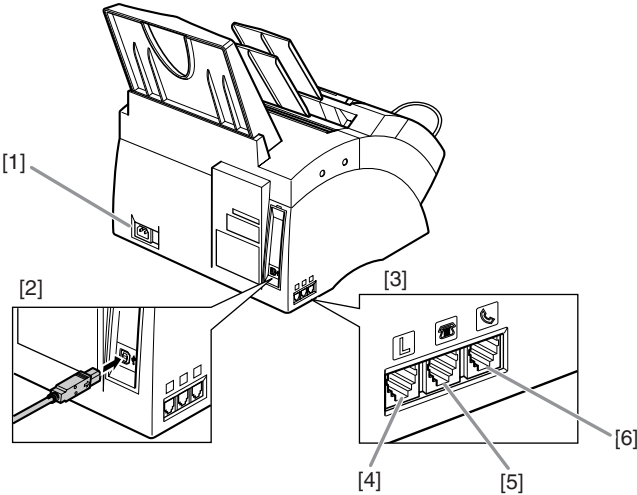


F-1-4

T-1-7

- [1] Toner cartridge compartment
- [2] Paper release lever
- [3] Transfer charging roller
- [4] Fixing ass'y
- [5] Front cover

Rear View



F-1-5

T-1-8

- [1] Power cord connector

[2] USB connector

[3] Connector jack

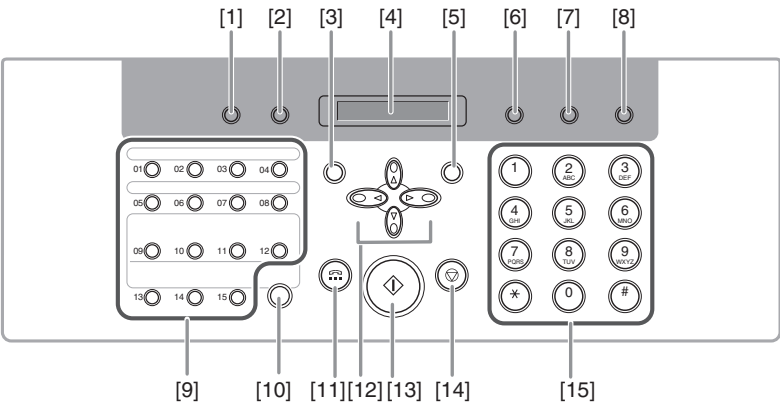
[4] Telephone line jack

[5] External device jack

[6] Handset jack
- FAX-L295 only

1.3.2 Operation Panel

0003-1291



F-1-6

T-1-9

- [1] Directory key

[2] Resolution key

[3] Clear key

[4] LCD display

[5] OK key

[6] Coded dial key

[7] Redial/Pause key

[8] R key
- [9] One-touch speed dialling key

[10] Function key

[11] Hook key

[12] Cursor key

[13] Start/Copy key

[14] Stop key

[15] Numeric key

1.4 Safety

1.4.1 Safety of Laser Light

0003-1317

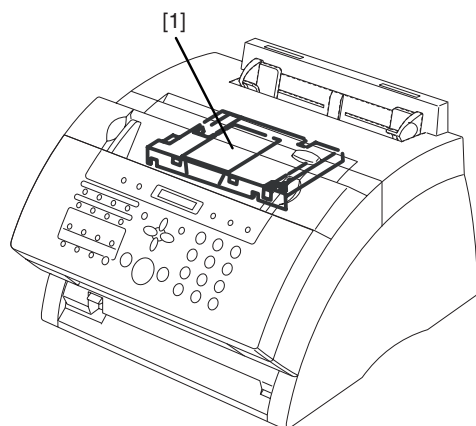
Laser radiation could be hazardous to the human body. For this reason, laser radiation emitted inside this machine is hermetically sealed within the protective housing and external cover. No radiation can leak from the machine in the normal operation of the product by the user.

1.4.2 Handling the Laser Unit

0003-1330

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

The covers around the laser scanner unit are identified by the following label [1].



F-1-7

1.4.3 Safety of Toner

0003-1346

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



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

Toner on the Skin or Clothes

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

Chapter 2 TECHNICAL REFERENCE

Contents

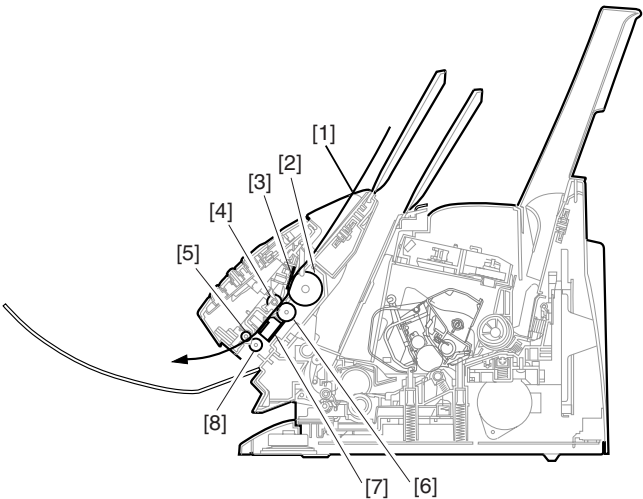
2.1 Document Feed and Exposure System.....	2-1
2.1.1 Overview/Configuration.....	2-1
2.1.1.1 Overview	2-1
2.1.1.2 Document Jam Detection	2-2
2.2 Laser Exposure.....	2-3
2.2.1 Overview/Configuration.....	2-3
2.2.1.1 Overview	2-3
2.3 Image Formation	2-5
2.3.1 Overview/Configuration.....	2-5
2.3.1.1 Overview	2-5
2.4 Pickup and Feed System.....	2-7
2.4.1 Overview/Configuration.....	2-7
2.4.1.1 Overview	2-7
2.4.1.2 Paper size error.....	2-8
2.4.1.3 Paper delivery slot switching.....	2-8
2.4.2 Detection Jams	2-9
2.4.2.1 Jam Detection Outline	2-9
2.4.2.1.1 Type so jams.....	2-9
2.4.2.2 Delay Jams.....	2-10
2.4.2.2.1 Pickup delay jam	2-10
2.4.2.2.2 Delivery delay jam	2-10
2.4.2.3 Stationary Jams.....	2-10
2.4.2.3.1 Pickup stationel jam	2-10
2.4.2.3.2 Delivery stationary jam	2-11
2.5 Fixing Unit	2-12
2.5.1 Overview/Configuration.....	2-12
2.5.1.1 Overview	2-12
2.5.2 Protective Function.....	2-12
2.5.2.1 Fixing heater failure	2-12

2.1 Document Feed and Exposure System

2.1.1 Overview/Configuration

2.1.1.1 Overview

0003-1640



F-2-1

T-2-1

- | | |
|----------------------------------|-----------------------------------|
| [1] Document path | [5] Document eject roller (upper) |
| [2] Separation roller | [6] Document feed roller (lower) |
| [3] Separation guide | [7] Contact sensor |
| [4] Document feed roller (upper) | [8] Document eject roller (lower) |

Scanning with the ADF

Documents inserted into the document tray are held in the horizontal position by the slide guides, so that they do not skew.

Documents are separated into single pages using the differential between the friction coefficients of the separation rollers, the document and the friction tab.

The document is fed to the scanning glass surface by the document feed rollers.

Then the image data are scanned by the contact sensor and the document is ejected by the delivery rollers.

The ADF motors are driven by the document feed motor.

Note

Initializing the upper document feed roller

When the separation roller starts to rotate, the position of the upper document feed roller is simultaneously initialized to raise the document stopper. Initialization is carried out when the power is turned ON, when documents are inserted and when documents are ejected.

2.1.1.2 Document Jam Detection

0003-1661

There are two types of document jam which may occur.

a) Feed jam

If the document edge sensor (DES) does not detect the leading edge of the document within 15 sec after the document is started, the condition will be identified as a pickup jam error and the movement of the document will be stopped.

b) Eject jam/document too long

If the trailing edge of the document cannot be detected within a period of time equivalent to 1 m after the document edge sensor has detected the leading edge of a document, the condition will be identified as an document eject jam/document too long error, and the movement of the document will be stopped.

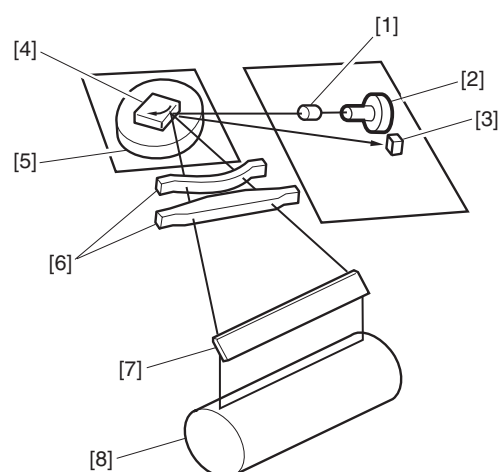
When one of these types of jams occurs, all data which have been read and stored in memory (except pages that have already been completely transmitted or copied) are erased.

2.2 Laser Exposure

2.2.1 Overview/Configuration

2.2.1.1 Overview

0003-1517



F-2-2

T-2-2

[1] Cylindrical lens	[5] Scanner motor
[2] Laser unit	[6] Imaging lens
[3] BD sensor	[7] Reflection mirror
[4] 4-faced mirror	[8] Photosensitive drum

The laser scanner ass'y is made up of the laser unit and scanner motor, etc. It is controlled by signals input from the PCNT board.

The laser driver, in accordance with the laser control signals and video signals from the SCNT board, causes the laser diode to emit light.

The laser beams pass through a collimator lens and cylindrical lens and illuminate the 4-faced mirror, which rotates at a fixed speed.

The beams reflected by the 4-faced mirror pass through the imaging lens and the reflection mirror and then focus on the photosensitive drum.

As the 4-faced mirror rotates at a fixed speed, the laser beams on the photosensitive drum run along the surface of the drum at a fixed speed.

As the photosensitive drum rotates at a fixed speed and the laser beams run along the surface of the drum at a fixed speed, a latent image is formed on the drum.

Memo

BD failue

If, while the scanner motor is rotating at a fixed speed, the BD signal from the BD cycle is out of synch 2.0 sec. or longer, during laser drive, a BD failure is judged to have happened.

Scanner motor failure

If the scanner motor rotation speed has not reached the prescribed speed within 63.4 sec. of starting to rotate, a scanner motor failure is judged to have happened.



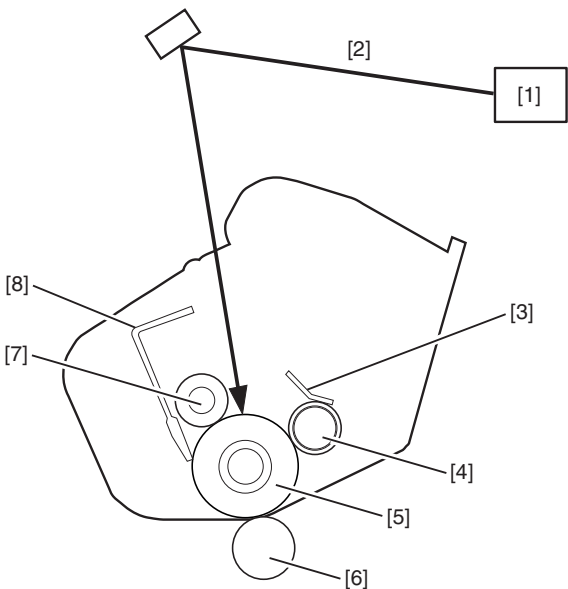
The laser scanner unit includes parts that cannot be adjusted in the field. For this reason, the laser scanner unit must never be opened.

2.3 Image Formation

2.3.1 Overview/Configuration

2.3.1.1 Overview

0003-1364



F-2-3

T-2-3

- | | |
|-------------------------|------------------------------|
| [1] Laser scanner unit | [5] Photosensitive drum |
| [2] Laser beam | [6] Transfer charging roller |
| [3] Blade | [7] Primary charging roller |
| [4] Developing cylinder | [8] Cleaner blade |

When the PCNT board receives print control signals from the SCNT board, it drives the main motor, causing the photosensitive drum, developing cylinder, primary charging roller and transfer charging roller to rotate. Then, the primary charging roller uniformly applies a negative charge to the surface of the photosensitive drum and the laser beams, modulated by the video signals, irradiate the surface of the photosensitive drum so that a latent image can be formed by the laser diode. After the latent image on the surface of the drum is rendered visible on the developing cylinder by the toner, the image is then transferred to the paper by the transfer charging roller and then fed on to the fixing assembly. Also, after residual toner has been removed from the surface of the photosensitive drum by the cleaner blade, the electropotential of the drum is made even by the primary charging roller and the drum is made ready to receive a new latent image.



Drum cover shutter

If the photosensitive drum is subjected to strong light, optical memory can cause dropout areas or black bands to occur. To prevent the photosensitive drum from strong light, a drum cover shutter is attached. Do not open this cover unless absolutely necessary.

Memo

No-toner detection

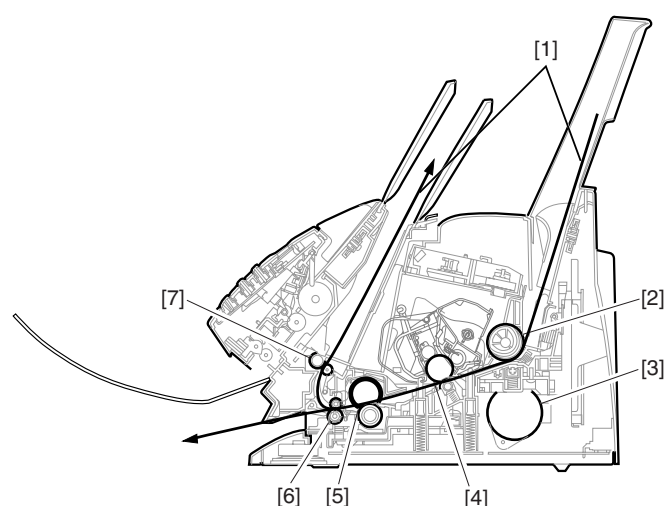
The no-toner state is detected by the toner sensor (magnetic sensor) located on the pickup roller shaft. If a toner cartridge is installed, the toner sensor touches the side of the cartridge. The part of the cartridge which the toner sensor touches is made thinner to increase the sensor output. When the toner sensor detects no toner, the sensor output goes low.

2.4 Pickup and Feed System

2.4.1 Overview/Configuration

2.4.1.1 Overview

0003-1537



F-2-4

T-2-4

- | | |
|----------------------|-------------------------------|
| [1] Paper path | [5] Fixing section |
| [2] Pickup roller | [6] Face-up delivery roller |
| [3] Main motor | [7] Face-down delivery roller |
| [4] Transfer section | |

The main motor rotates and the pickup solenoid comes ON. Then, the main motor rotation is transferred to the pickup roller, which rotates, and the pickup cam rotates to match the rotation of the pickup roller. Once the pick-up cam tabs are clear of the lifting plate, the strength of the spring pushes up the lifting plate. One sheet of the paper raised up by the lifting plate is picked up by the pickup roller and then fed on from the transfer section to the fixing section and finally ejected by the delivery roller.

Memo

Paper feed jam detection retry function

Because the recording paper on this machine is loaded upright, the paper is sometimes difficult to feed when there is little recording paper left or the recording paper curls. For this reason even if the paper edge sensor

does not detect the leading edge of the recording paper within 3.5 seconds after the pickup solenoid releases the pickup roller the machine tries to repeat the same operation before judging that a jam has occurred. If the paper edge sensor still cannot detect the leading edge of the recording paper, a paper feed delay jam is detected.

2.4.1.2 Paper size error

0003-1615

The machine does not have a paper size sensor. It recognizes the paper sizes (A4, Letter, Legal) according to the user data setting.

A paper size error occurs if the specified paper size is different from the size of the paper placed in the sheet feeder when one page is actually printed. In this case, a message [CHECK PAPER SIZE] appears on the display, the following operation is carried out.

If the specified paper length is greater than the actual paper length:

All received data (i.e., all pages) will be received in memory mode.

To reset a recording paper size error, match the settings of the user data to the size of the actual recording paper so that the pages that have been received in memory mode will automatically be generated.

If the specified paper length is less than the actual paper length:

In direct copy mode, no error message will be identified even if the size setting differs from the size of the actual recording paper.

In memory copy mode, an error condition will be indicated if the size setting and the size of the actual recording paper are different and indicated by the message [CHECK PAPER SIZE].

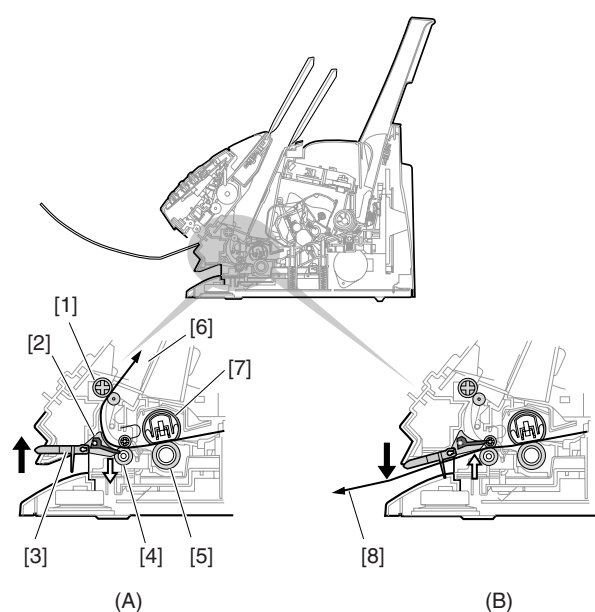
2.4.1.3 Paper delivery slot switching

0003-1627

The outlets of recording paper are switched over by means of a flapper, which is operated by the delivery selector found at the left bottom of the face-up delivery slot.

When the delivery selector is pulled to the front, the flapper faces the direction indicated in Figure A, causing the recording paper on the move to make a U-turn toward the face-down delivery slot.

When the delivery selector is pushed in the opposite direction, the flapper will then face the direction indicated in Figure B, and the recording paper on the move will move under the flapper to reach the face-up delivery slot.



F-2-5

T-2-5

- | | |
|-------------------------------|-----------------------------|
| [1] Face-down delivery roller | [5] Fixing pressure roller |
| [2] Flapper | [6] Face-down delivery slot |
| [3] Paper delivery selector | [7] Fixing heater |
| [4] Face-up delivery roller | [8] Face-up delivery slot |

2.4.2 Detection Jams

2.4.2.1 Jam Detection Outline

2.4.2.1.1 Type so jams

0003-1592

This machine will detect the following types of jams.

Pickup delay jam

The leading edge of the paper is not detected within a prescribed time after pickup has started.

Pickup stationary jam

After detection of the leading edge, the trailing edge of the paper is not detected within a prescribed time.

Delivery delay jam

After the paper edge sensor comes ON, the paper eject sensor does not come ON within a prescribed time.

Delivery stationary jam

After the paper edge sensor comes ON, the paper eject sensor does not go OFF within a prescribed time.

2.4.2.2 Delay Jams

2.4.2.2.1 Pickup delay jam

0003-1594

If the paper edge sensor cannot detect the leading edge of the paper within 3.5 seconds of pickup starting, pickup is attempted once more. If the paper edge sensor cannot detect the leading edge of the paper within 3.5 seconds of the second pickup starting, a pickup delay jam is judged.

When this kind of jam is detected, the display reads [CLEAR PAPER JAM]. Reception data go into memory reception, from the page where the jam occurred. Copy image data are cleared.

To clear pickup jams, open the front cover and take out the jammed paper. When the front cover is closed, the image data in memory will automatically be output. Also, if the jammed paper is removed without opening the front cover, open the front cover and close it again, in order to reset the printer.

2.4.2.2.2 Delivery delay jam

0003-1596

If the paper eject sensor does not detect the leading edge of the paper within 5 seconds of the edge detector detecting the leading edge, or if the edge detector does not detect the trailing edge within 2.5 seconds of the paper eject sensor detecting the leading edge, a delivery delay jam is judged.

When this kind of jam is detected, the display reads [CLEAR PAPER JAM]. Reception data go into memory reception, from the page where the jam occurred. Copy image data are cleared.

To clear pickup jams, open the front cover and take out the jammed paper. When the front cover is closed, the image data in memory will automatically be output. Also, if the jammed paper is removed without opening the front cover, open the front cover and close it again, in order to reset the printer.

2.4.2.3 Stationary Jams

2.4.2.3.1 Pickup stationel jam

0003-1599

If the paper edge sensor does not detect the trailing edge within approx. 11.7 seconds of detecting the leading edge, a pickup stationary jam is judged.

When this kind of jam is detected, the display reads [CLEAR PAPER JAM]. Reception data go into memory reception, from the page where the jam occurred. Copy image data are cleared.

To clear pickup jams, open the front cover and take out the jammed paper. When the front cover is closed, the image data in memory will automatically be output. Also, if the jammed paper is removed without opening the front cover, open the front cover and close it again, in order to reset the printer.

2.4.2.3.2 Delivery stationary jam

0003-1603

If the paper edge sensor still detects paper within 3.3 to 4.7 seconds of detecting the trailing edge, a delivery stationary jam is judged.

When this kind of jam is detected, the display reads [CLEAR PAPER JAM]. Reception data go into memory reception, from the page where the jam occurred. Copy image data are cleared.

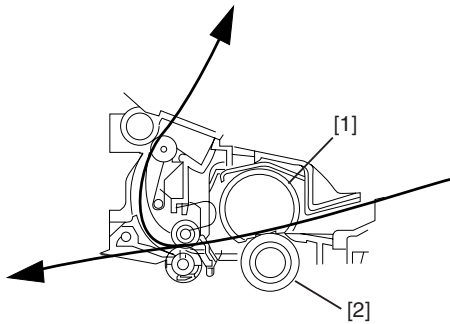
To clear pickup jams, open the front cover and take out the jammed paper. When the front cover is closed, the image data in memory will automatically be output. Also, if the jammed paper is removed without opening the front cover, open the front cover and close it again, in order to reset the printer.

2.5 Fixing Unit

2.5.1 Overview/Configuration

2.5.1.1 Overview

0003-1365



F-2-6

T-2-6

[1] Fixing film unit

[2] Pressure roller

The fixing assembly uses an on-demand fixing method and comprises the fixing film unit, made up of a fixing heater, thermistor and temperature fuse, and the pressure rollers.

The toner transferred to the surface of the paper is heated by fixing heater, through the fixing film. Then, the paper passes through the pressure rollers and the toner is fixed to the paper.

2.5.2 Protective Function

2.5.2.1 Fixing heater failure

0003-1630

The printer controller on the PCNT board detects a fixing heater failure in the following instances.

- a) The thermistor does not detect 150 deg C or higher 30 sec. after temperature control starts.
- b) The thermistor detects 195 deg C or higher for 150 msec. while temperture control is under way.
- c) The thermistor does not detect 20 deg C or higher after temperature control starts.
- d) The thermistor detects 20 deg C or lower for 138 msec. while the fixing heater is placed under control.
- e) The thermistor detects 100 deg C or lower for 3 sec. while temperature control in under way.

Chapter 3 DISASSEMBLY AND ASSEMBLY

Contents

3.1 EXTERNAL AND CONTROLS SYSTEM	3-1
3.1.1 External Cover	3-1
3.1.1.1 Removing the External cover	3-1
3.1.2 Power Supply Board	3-1
3.1.2.1 Removing the External cover	3-1
3.1.2.2 Removing the Reading ass'y	3-1
3.1.2.3 Removing the SCNT board / frame	3-2
3.1.2.4 Removing the main frame	3-2
3.1.2.5 Removing the Power supply unit	3-2
3.1.3 Toner Sensor	3-2
3.1.3.1 Removing the External cover	3-2
3.1.3.2 Removing the Reading ass'y	3-3
3.1.3.3 Removing the SCNT board / frame	3-3
3.1.3.4 Removing the Paper supply section	3-3
3.1.3.5 Removing the Pickup roller ass'y	3-4
3.1.3.6 Removing the Toner sensor	3-4
3.1.4 Operation Panel Unit	3-4
3.1.4.1 Removing the External cover	3-4
3.1.4.2 Removing the Reading ass'y	3-4
3.1.4.3 Removing the Operation panel ass'y	3-5
3.1.4.4 Removing the Operation panel unit	3-5
3.1.5 SCNT Board	3-5
3.1.5.1 Removing the External cover	3-5
3.1.5.2 Removing the SCNT board	3-6
3.1.6 PCNT Board	3-6
3.1.6.1 Removing the External cover	3-6
3.1.6.2 Removing the Reading ass'y	3-6
3.1.6.3 Removing the SCNT board / frame	3-7
3.1.6.4 Removing the main frame	3-7
3.1.6.5 Removing the PCNT board	3-7
3.1.7 Modular Board	3-8
3.1.7.1 Removing the External cover	3-8
3.1.7.2 Removing the Reading ass'y	3-8
3.1.7.3 Removing the SCNT board / frame	3-8
3.1.7.4 Removing the main frame	3-9
3.1.7.5 Removing the Modular board	3-9
3.2 IMAGE FORMATION SYSTEM	3-10
3.2.1 Transfer Charging Roller	3-10
3.2.1.1 Removing the External cover	3-10
3.2.1.2 Removing the Reading ass'y	3-10
3.2.1.3 Removing the Transfer charging roller	3-10
3.3 LASER EXPOSURE SYSTEM	3-11
3.3.1 Laser/Scanner Unit	3-11
3.3.1.1 Removing the External cover	3-11

3.3.1.2 Removing the Laser scanner unit.....	3-11
3.4 PICKUP AND FEEDING SYSTEM.....	3-12
3.4.1 Main Motor.....	3-12
3.4.1.1 Removing the External cover	3-12
3.4.1.2 Removing the Reading ass'y.....	3-12
3.4.1.3 Removing the SCNT board / frame.....	3-12
3.4.1.4 Removing the main frame.....	3-13
3.4.1.5 Removing the Main motor.....	3-13
3.4.2 Separation Pad	3-13
3.4.2.1 Removing the External cover	3-13
3.4.2.2 Removing the Reading ass'y.....	3-13
3.4.2.3 Removing the SCNT board / frame.....	3-14
3.4.2.4 Removing the Paper supply section.....	3-14
3.4.2.5 Removing the Pickup roller ass'y	3-14
3.4.2.6 Removing the Separation pad.....	3-14
3.4.3 Pickup Roller	3-15
3.4.3.1 Removing the External cover	3-15
3.4.3.2 Removing the Reading ass'y.....	3-15
3.4.3.3 Removing the SCNT board / frame.....	3-15
3.4.3.4 Removing the Paper supply section.....	3-16
3.4.3.5 Removing the Pickup roller ass'y	3-16
3.4.3.6 Removing the Pickup roller	3-16
3.5 FIXING SYSTEM.....	3-17
3.5.1 Fixing Pressure Roller	3-17
3.5.1.1 Removing the External cover	3-17
3.5.1.2 Removing the Reading ass'y.....	3-17
3.5.1.3 Removing the SCNT board / frame.....	3-17
3.5.1.4 Removing the main frame.....	3-18
3.5.1.5 Removing the Fixing film unit	3-18
3.5.1.6 Removing the Fixing pressure roller	3-18
3.5.2 Fixing Film Unit	3-19
3.5.2.1 Removing the External cover	3-19
3.5.2.2 Removing the Reading ass'y.....	3-19
3.5.2.3 Removing the SCNT board / frame.....	3-19
3.5.2.4 Removing the main frame.....	3-20
3.5.2.5 Removing the Fixing film unit	3-20
3.6 DOCUMENT FEED/EXPOSURE SYSTEM	3-21
3.6.1 Separation Guide Unit	3-21
3.6.1.1 Removing the External cover	3-21
3.6.1.2 Removing the Reading ass'y.....	3-21
3.6.1.3 Removing the Operation panel ass'y.....	3-21
3.6.1.4 Removing the Operation panel unit.....	3-22
3.6.1.5 Removing the Separation guide unit.....	3-22
3.6.2 Contact Sensor	3-22
3.6.2.1 Removing the External cover	3-22
3.6.2.2 Removing the Reading ass'y.....	3-23
3.6.2.3 Removing the Operation panel ass'y.....	3-23
3.6.2.4 Removing the Contact sensor	3-23
3.6.3 Separation Roller	3-24

3.6.3.1 Removing the External cover	3-24
3.6.3.2 Removing the Reading ass'y	3-24
3.6.3.3 Removing the Operation panel ass'y	3-24
3.6.3.4 Removing the Document separation roller	3-25
3.6.4 Document Feed Motor	3-25
3.6.4.1 Removing the External cover	3-25
3.6.4.2 Removing the Reading ass'y	3-25
3.6.4.3 Removing the Operation panel ass'y	3-26
3.6.4.4 Removing the Document feed motor	3-26

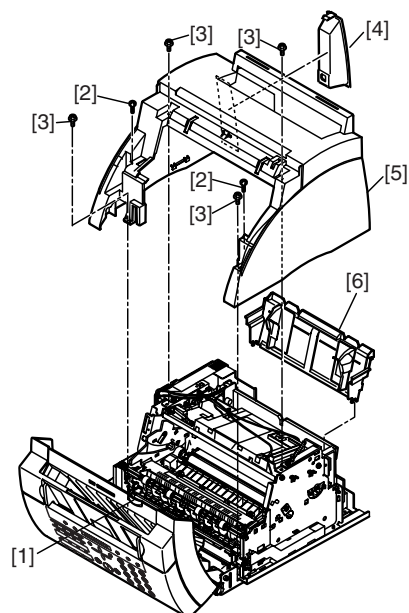
3.1 EXTERNAL AND CONTROLS SYSTEM

3.1.1 External Cover

3.1.1.1 Removing the External cover

0003-1905

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



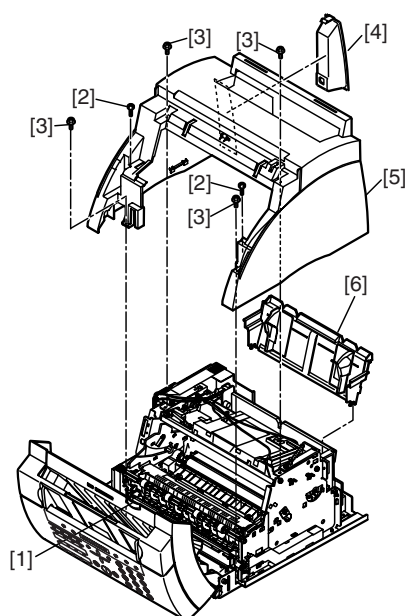
F-3-1

3.1.2 Power Supply Board

3.1.2.1 Removing the External cover

0003-3491

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

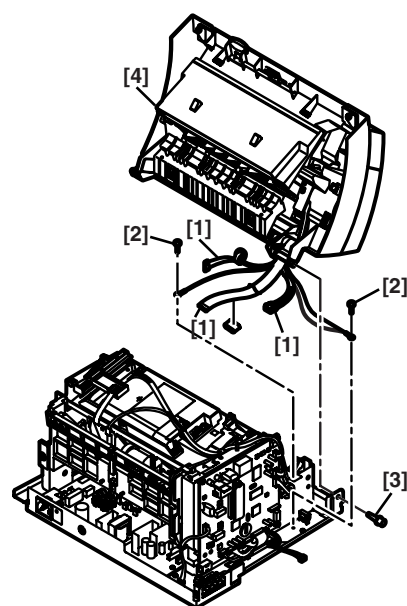


F-3-2

3.1.2.2 Removing the Reading ass'y

0003-3492

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].



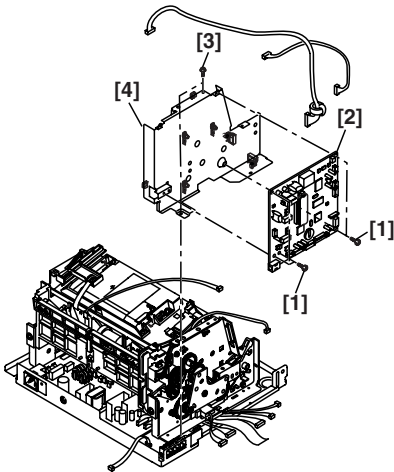
F-3-3

3.1.2.3 Removing the SCNT

board / frame

0003-3494

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].



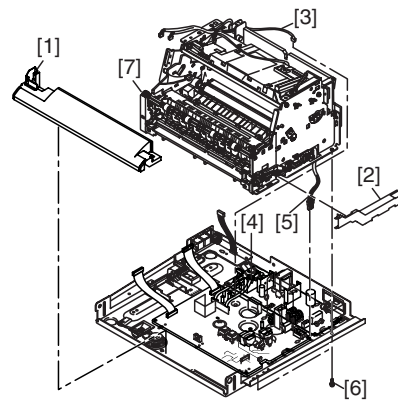
F-3-4

3.1.2.4 Removing the main

frame

0003-3582

- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].



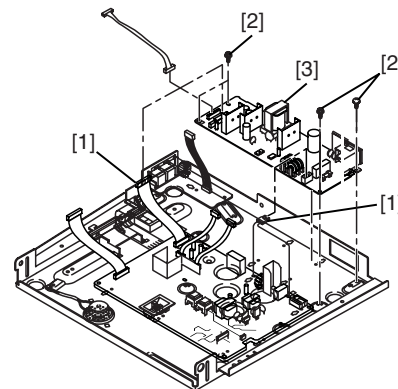
F-3-5

3.1.2.5 Removing the Power

supply unit

0003-3615

- 1) Remove the cable [1] attached to the Power supply unit.
- 2) Remove the 4 screws [2] and then remove the Power supply unit [3].



F-3-6

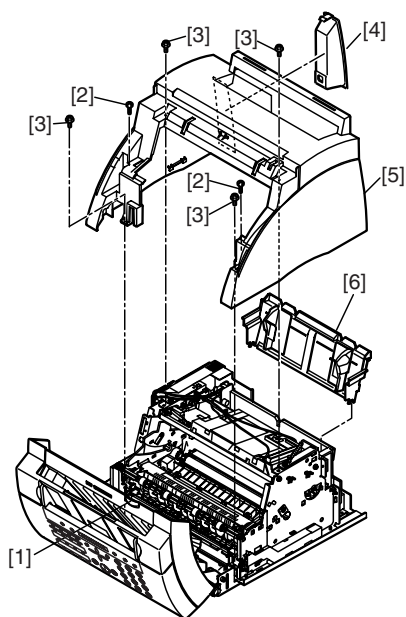
3.1.3 Toner Sensor

3.1.3.1 Removing the External

cover

0003-4077

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

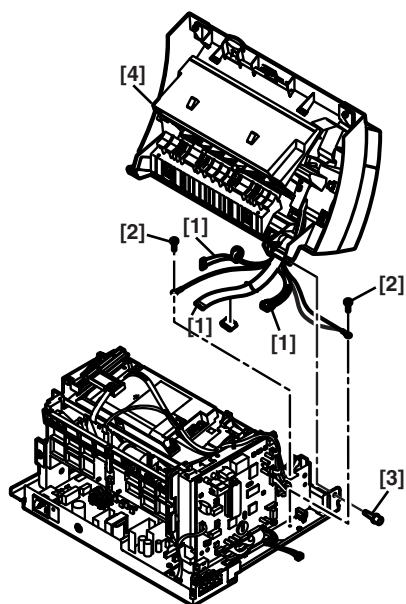


F-3-7

3.1.3.2 Removing the Reading ass'y

0003-4079

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

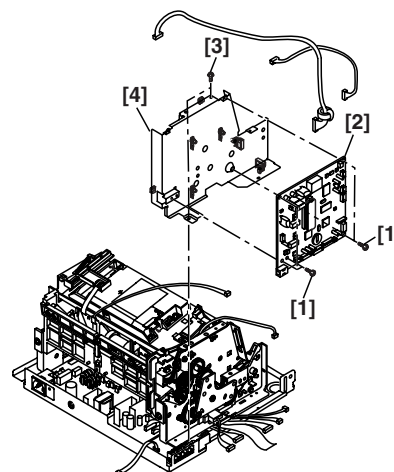


F-3-8

3.1.3.3 Removing the SCNT board / frame

0003-4081

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

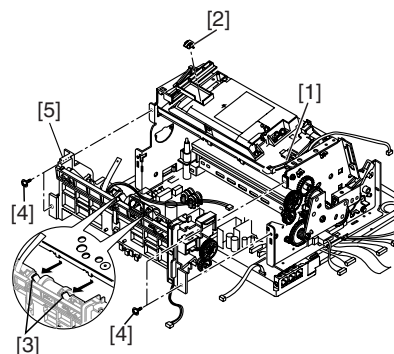


F-3-9

3.1.3.4 Removing the Paper supply section

0003-4082

- 1) Remove the cable [1] attached to the switch lever.
- 2) Remove the stopper [2] and remove the paper edge sensor cable.
- 3) Open the tabs [3] and the 4 screws [4].
- 4) Detach the Paper supply section [5].

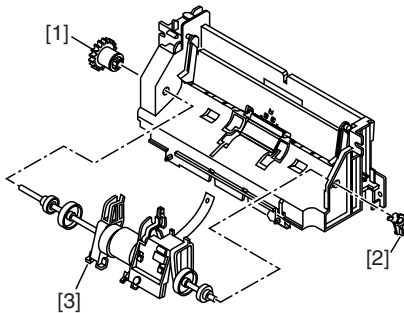


F-3-10

3.1.3.5 Removing the Pickup roller ass'y

0003-4083

- 1) Remove the gear [1] and detach the pin [2].
- 2) Remove the Pickup roller ass'y [3].

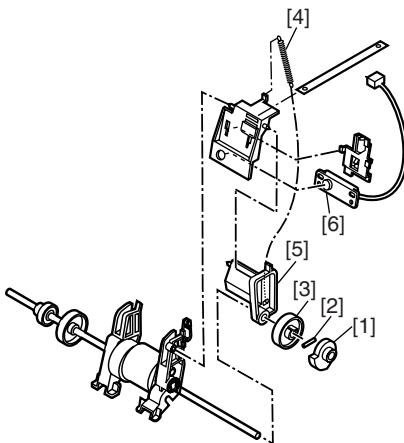


F-3-11

3.1.3.6 Removing the Toner sensor

0003-4084

- 1) Remove the cam [1] and then detach the pin [2].
- 2) Remove the roller [3] and the spring [4].
- 3) Open the tabs and detach the holder [5].
- 4) Remove the Toner sensor [6].



F-3-12

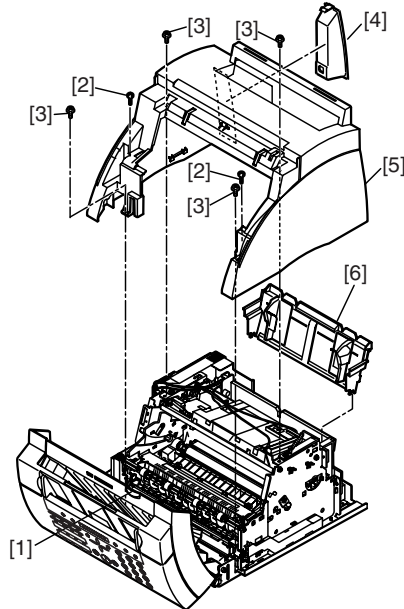
3.1.4 Operation Panel Unit

3.1.4.1 Removing the External cover

0003-3421

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].

- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

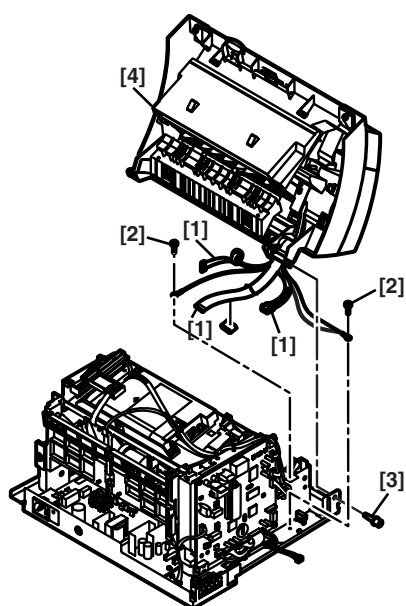


F-3-13

3.1.4.2 Removing the Reading ass'y

0003-3487

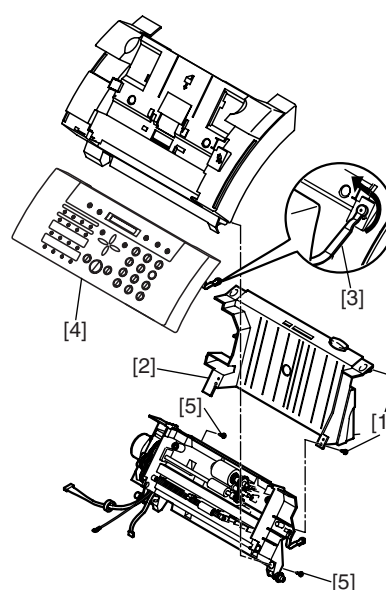
- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].



F-3-14

3.1.4.3 Removing the Operation panel ass'y 0003-3490

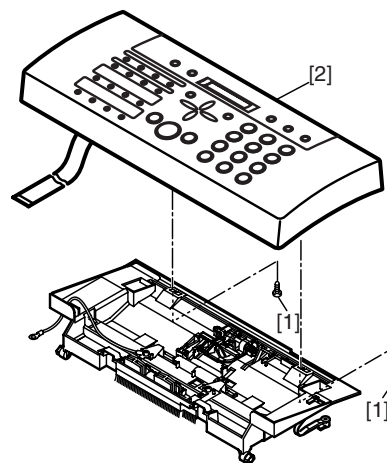
- 1) Remove the 4 screws [1] and then the duct cover [2].
- 2) Open the Operation panel ass'y and detach the stopper [3] and then remove the Operation panel ass'y [4].
- 3) Remove the 4 screws [5] and take out the lower ADF ass'y.
- 4) Remove the Operation panel ass'y [4].



F-3-15

3.1.4.4 Removing the Operation panel unit 0003-3675

- 1) Remove the 2 screws [1] and then the Operation panel unit [2].



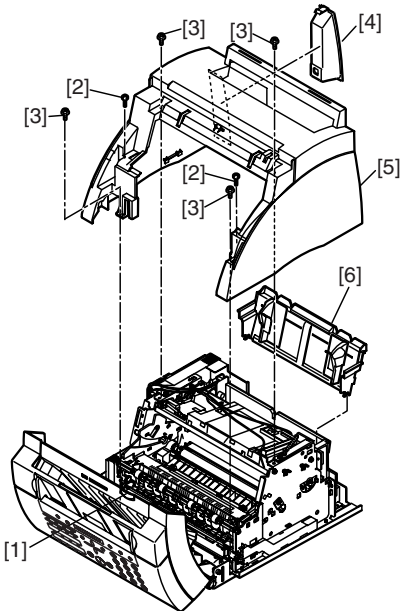
F-3-16

3.1.5 SCNT Board

3.1.5.1 Removing the External cover 0003-3425

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].

- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

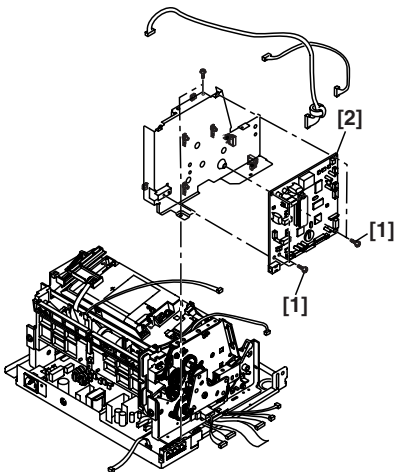


F-3-17

3.1.5.2 Removing the SCNT board

0003-3449

- 1) Remove the all connectors from the SCNT board.
- 2) Remove the 5 screws [1] and detach the SCNT board.



F-3-18

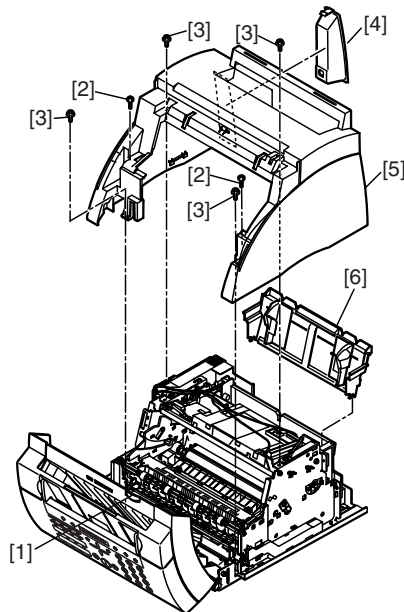
3.1.6 PCNT Board

3.1.6.1 Removing the External

cover

0003-3624

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



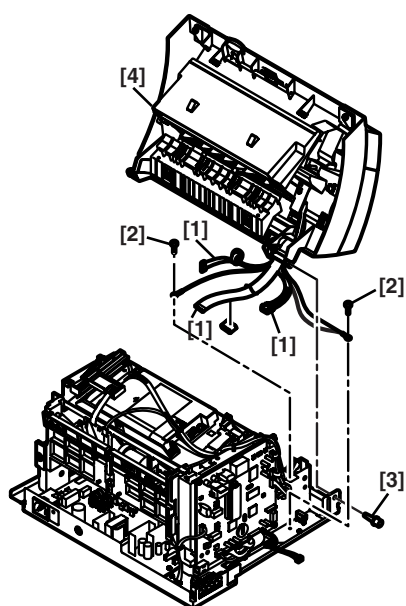
F-3-19

3.1.6.2 Removing the Reading

ass'y

0003-3625

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

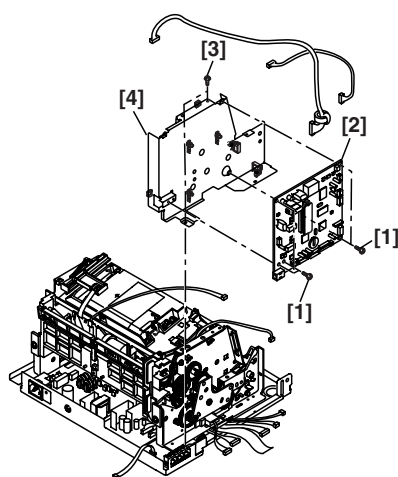


F-3-20

3.1.6.3 Removing the SCNT board / frame

0003-3626

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

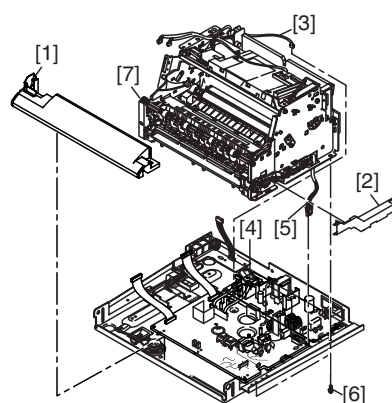


F-3-21

3.1.6.4 Removing the main frame

0003-3627

- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].

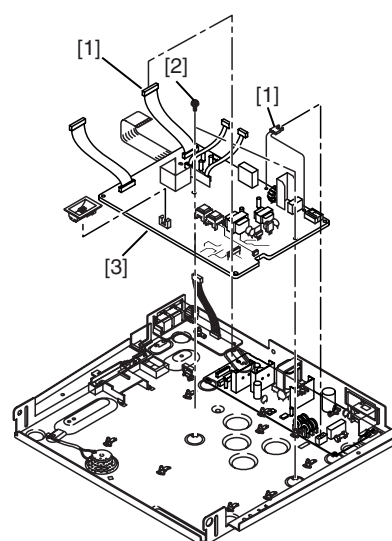


F-3-22

3.1.6.5 Removing the PCNT board

0003-3629

- 1) Disconnect the cable [1] from the Power supply unit.
- 2) Remove the 2 screws [2] and remove the PCNT board.



F-3-23

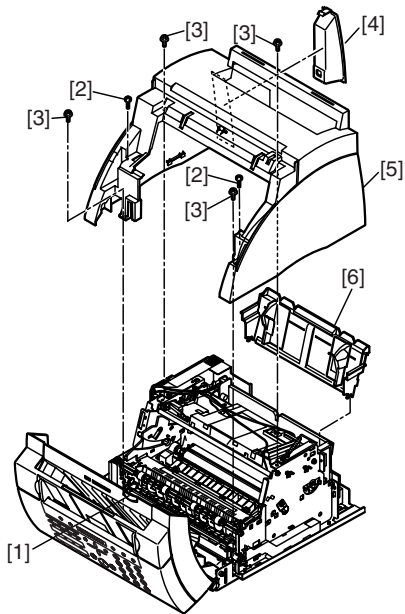
3.1.7 Modular Board

3.1.7.1 Removing the External

cover

0003-3659

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



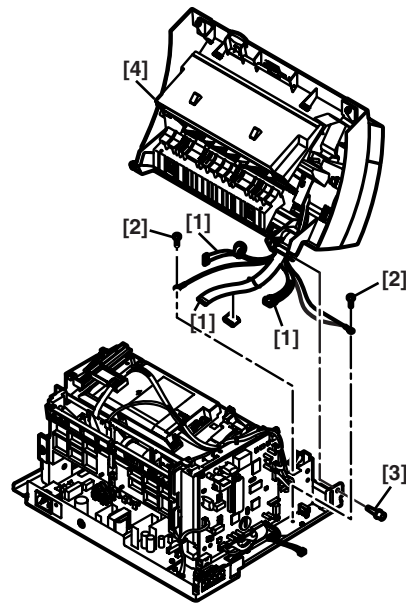
F-3-24

3.1.7.2 Removing the Reading

ass'y

0003-3662

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].



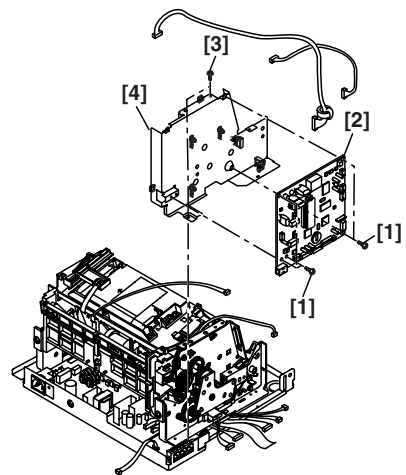
F-3-25

3.1.7.3 Removing the SCNT

board / frame

0003-3664

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].



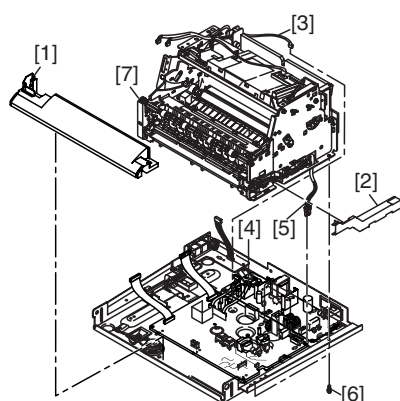
F-3-26

3.1.7.4 Removing the main

frame

0003-3665

- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].



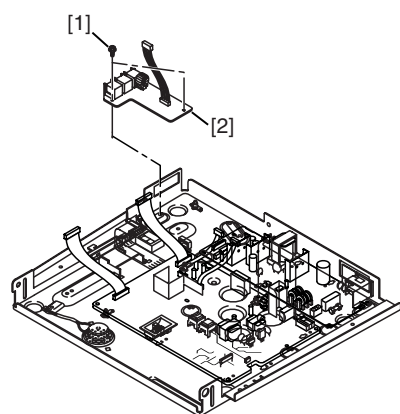
F-3-27

3.1.7.5 Removing the Modular

board

0003-3674

- 1) Remove the 2 screws [1] and then detach the Modular board [2].



F-3-28

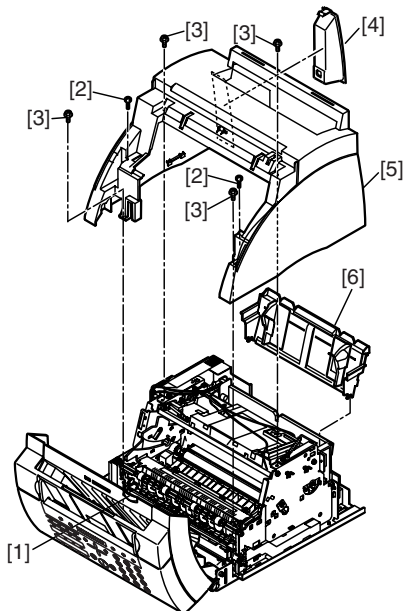
3.2 IMAGE FORMATION SYSTEM

3.2.1 Transfer Charging Roller

3.2.1.1 Removing the External cover

0003-4098

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

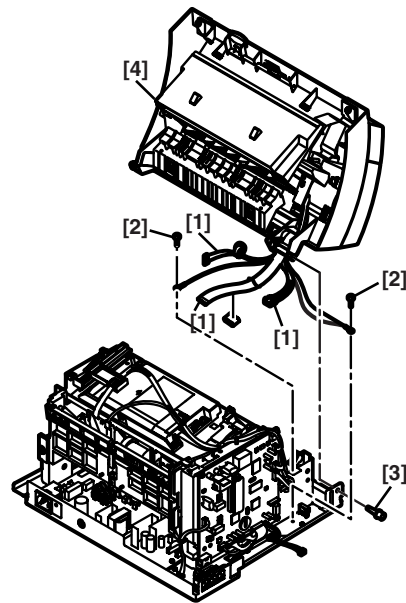


F-3-29

3.2.1.2 Removing the Reading ass'y

0003-4099

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

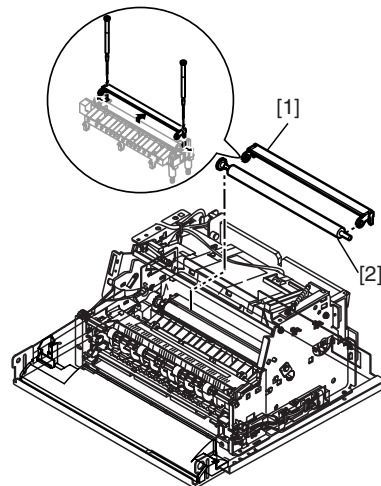


F-3-30

3.2.1.3 Removing the Transfer charging roller

0003-4103

- 1) Use a precision screwdriver or similar to remove the transfer guide [1].
- 2) Remove the Transfer charging roller [2]. Be careful not to touch the sponge section.



F-3-31

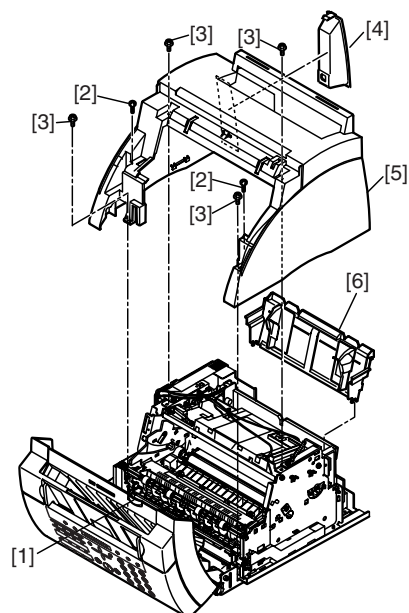
3.3 LASER EXPOSURE SYSTEM

3.3.1 Laser/Scanner Unit

3.3.1.1 Removing the External cover

0003-3719

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



F-3-32

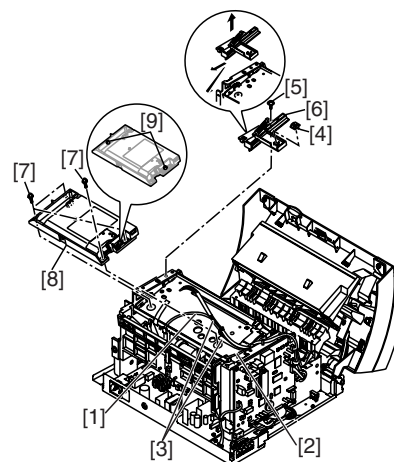
3.3.1.2 Removing the Laser scanner unit

0003-3847

- 1) Remove the toner sensor cable [1] from the SCNT board.
- 2) Remove the switch sensor cable [2].
- 3) Remove the cables [3] attached to the Laser scanner unit [8].
- 4) Remove the stopper [4].
- 5) Remove the screw [5] and then detach the actuator

unit [6].

- 6) Remove the screw [7] and detach the Laser scanner unit [8]. Do not remove the screw [9].



F-3-33

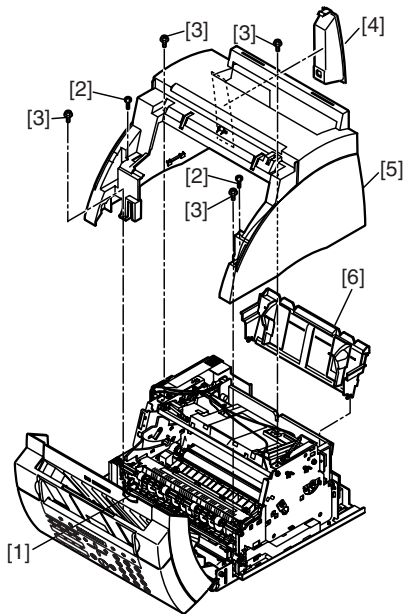
3.4 PICKUP AND FEEDING SYSTEM

3.4.1 Main Motor

3.4.1.1 Removing the External cover

0003-3888

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

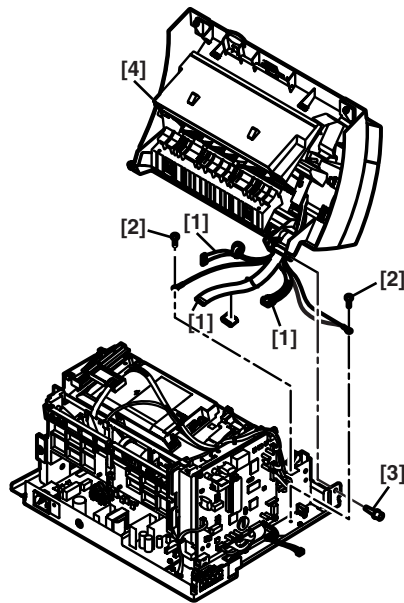


F-3-34

3.4.1.2 Removing the Reading ass'y

0003-3889

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

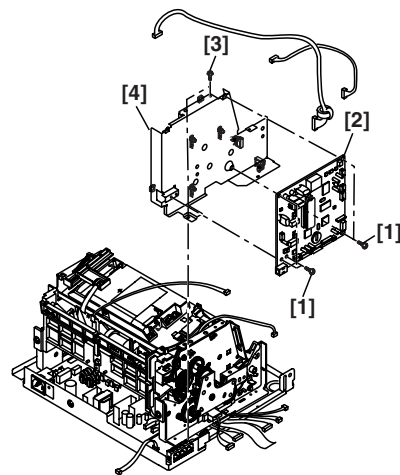


F-3-35

3.4.1.3 Removing the SCNT board / frame

0003-3890

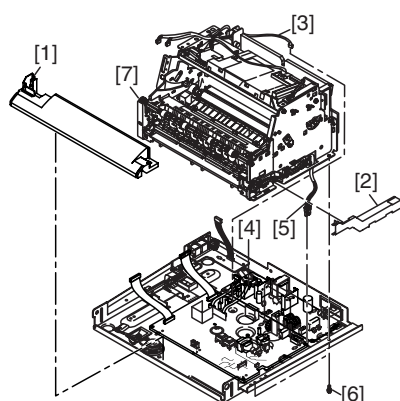
- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].



F-3-36

3.4.1.4 Removing the main frame 0003-3891

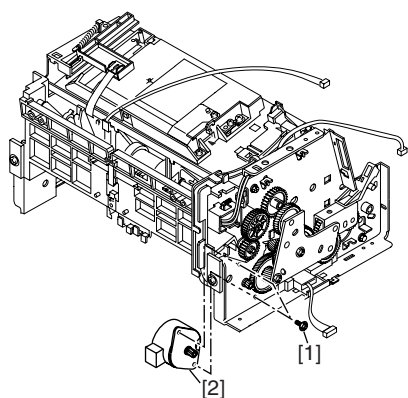
- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].



F-3-37

3.4.1.5 Removing the Main motor 0003-3892

- 1) Remove the 2 screws [1] and then detach the Main motor [2].

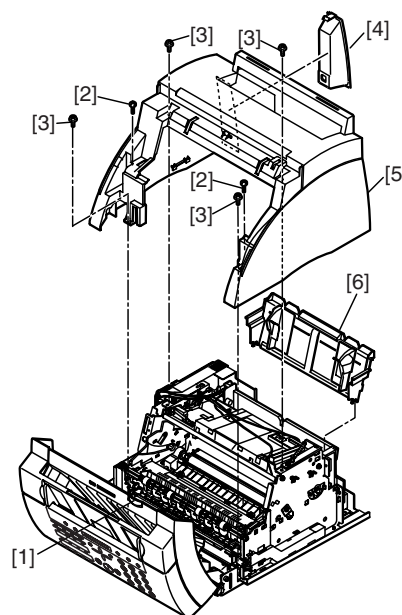


F-3-38

3.4.2 Separation Pad

3.4.2.1 Removing the External cover 0003-3978

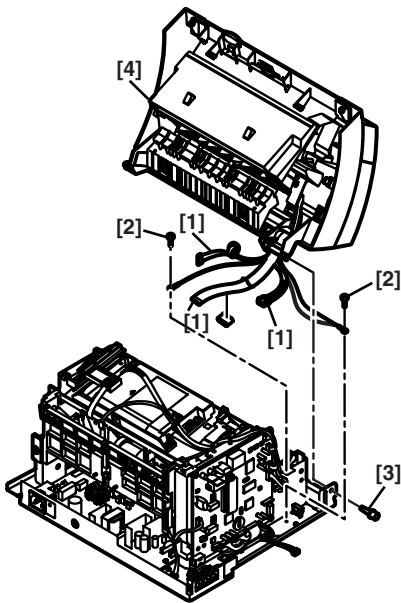
- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



F-3-39

3.4.2.2 Removing the Reading ass'y 0003-3979

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

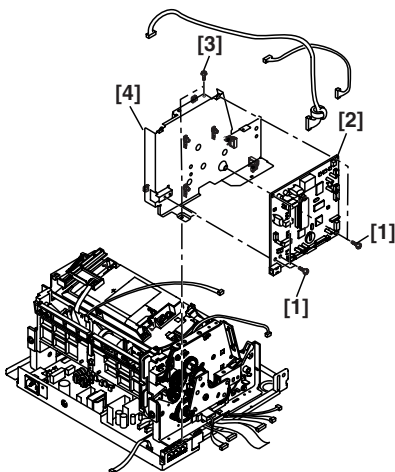


F-3-40

3.4.2.3 Removing the SCNT board / frame

0003-3980

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

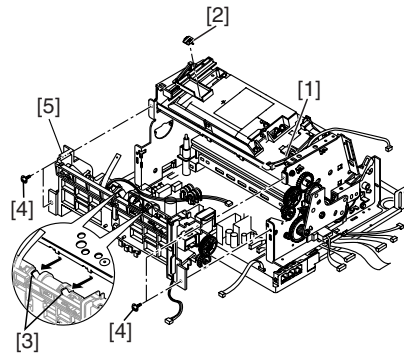


F-3-41

3.4.2.4 Removing the Paper supply section

0003-3982

- 1) Remove the cable [1] attached to the switch lever.
- 2) Remove the stopper [2] and remove the paper edge sensor cable.
- 3) Open the tabs [3] and the 4 screws [4].
- 4) Detach the Paper supply section [5].

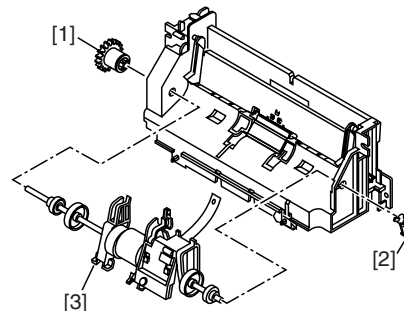


F-3-42

3.4.2.5 Removing the Pickup roller ass'y

0003-4030

- 1) Remove the gear [1] and detach the pin [2].
- 2) Remove the Pickup roller ass'y [3].

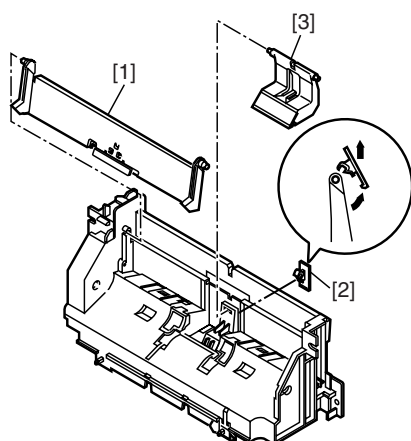


F-3-43

3.4.2.6 Removing the Separation pad

0003-4038

- 1) Remove the guide plate [1] and then detach the stopper [2].
- 2) Remove the Separation pad [3].



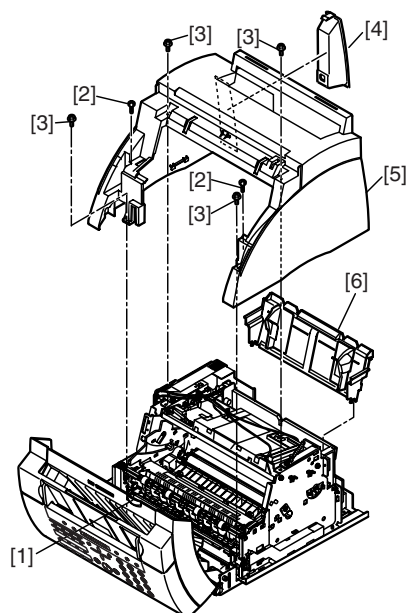
F-3-44

3.4.3 Pickup Roller

3.4.3.1 Removing the External cover

0003-4041

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

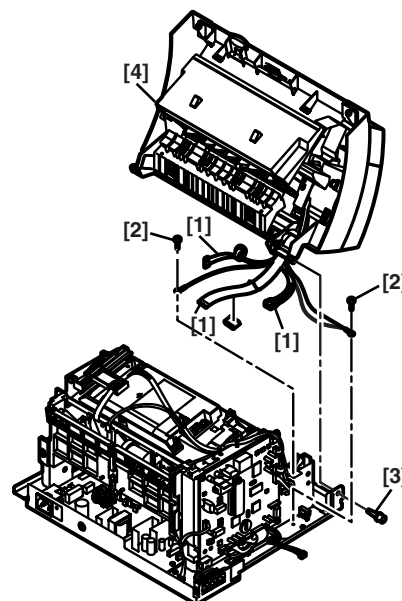


F-3-45

3.4.3.2 Removing the Reading ass'y

0003-4043

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

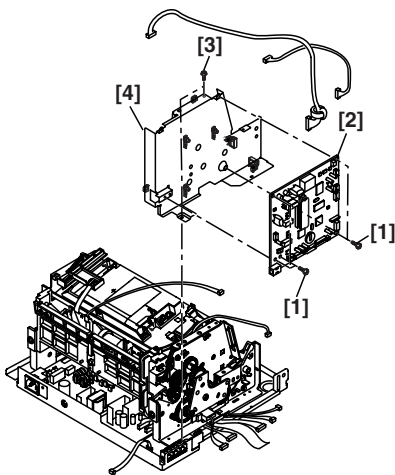


F-3-46

3.4.3.3 Removing the SCNT board / frame

0003-4044

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

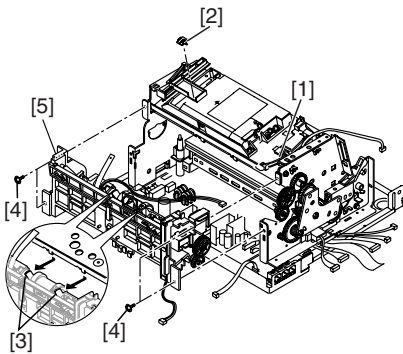


F-3-47

3.4.3.4 Removing the Paper supply section

0003-4045

- 1) Remove the cable [1] attached to the switch lever.
- 2) Remove the stopper [2] and remove the paper edge sensor cable.
- 3) Open the tabs [3] and the 4 screws [4].
- 4) Detach the Paper supply section [5].

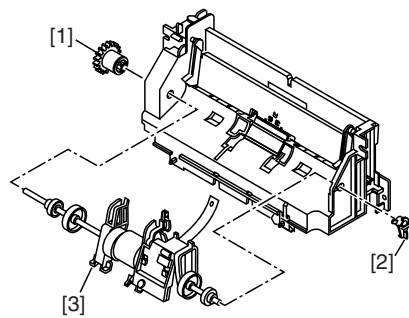


F-3-48

3.4.3.5 Removing the Pickup roller ass'y

0003-4046

- 1) Remove the gear [1] and detach the pin [2].
- 2) Remove the Pickup roller ass'y [3].

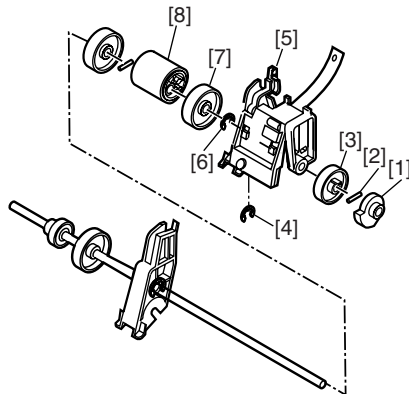


F-3-49

3.4.3.6 Removing the Pickup roller

0003-4052

- 1) Remove the cam [1] and then pull out the pin [2].
- 2) Remove the roller [3] and then remove the E-ring [4].
- 3) Remove the toner sensor holder [5] and the E-ring [6] and then detach the roller stopper [7].
- 4) Open the tabs and detach the Pickup roller [8].



F-3-50

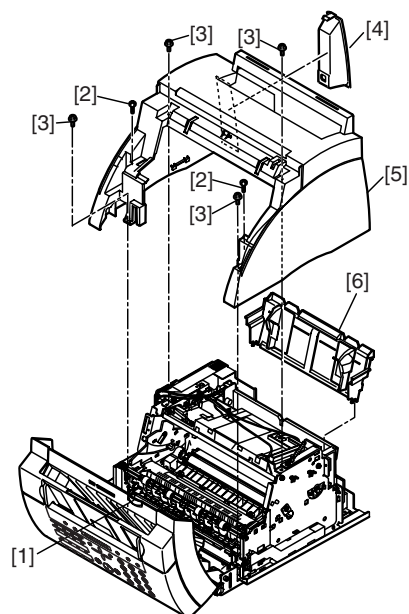
3.5 FIXING SYSTEM

3.5.1 Fixing Pressure Roller

3.5.1.1 Removing the External cover

0003-4112

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

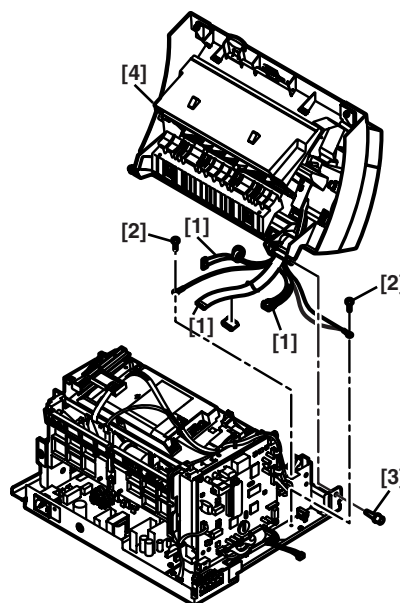


F-3-51

3.5.1.2 Removing the Reading ass'y

0003-4113

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

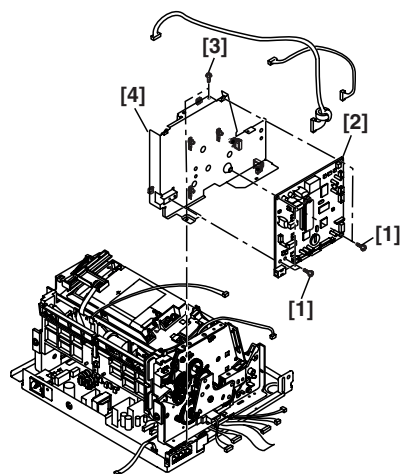


F-3-52

3.5.1.3 Removing the SCNT board / frame

0003-4114

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

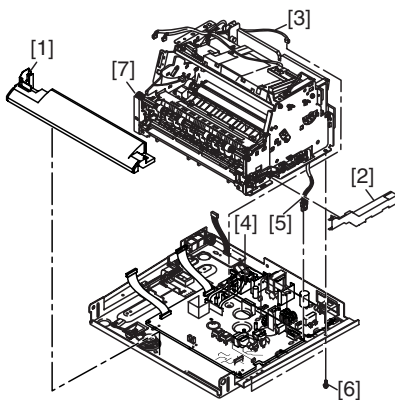


F-3-53

3.5.1.4 Removing the main frame

0003-4115

- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].

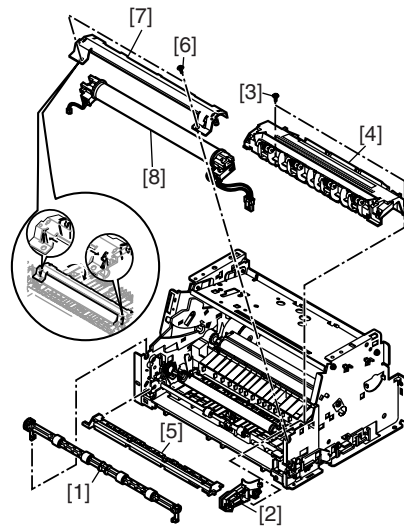


F-3-54

3.5.1.5 Removing the Fixing film unit

0003-4116

- 1) Remove the feed roller [1] and the cartridge guide [2].
- 2) Remove the 2 screws [3] and detach the delivery ass'y [4].
- 3) Remove the flapper [5].
- 4) Remove the 2 screws [6] and detach the fixing film guide [7].
- 5) Remove the cable and then detach the Fixing film unit [8].

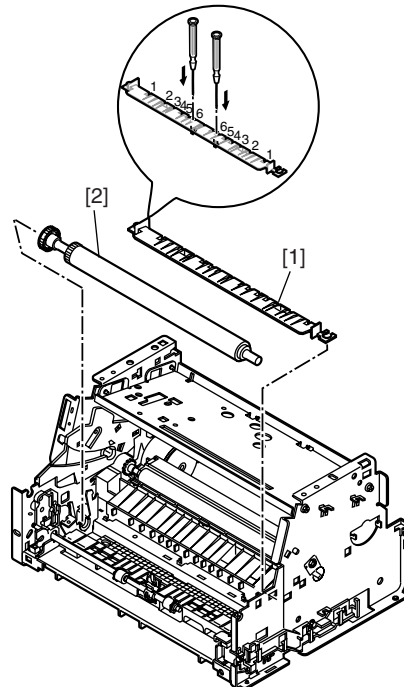


F-3-55

3.5.1.6 Removing the Fixing pressure roller

0003-4117

- 1) Remove the paper guide [1].
- 2) Remove the Fixing pressure roller [2]. When removing the roller, be careful not to touch the rubber part.



F-3-56

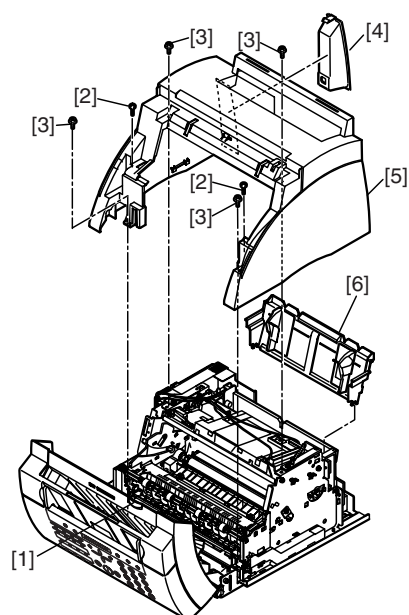
3.5.2 Fixing Film Unit

3.5.2.1 Removing the External

cover

0003-4106

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



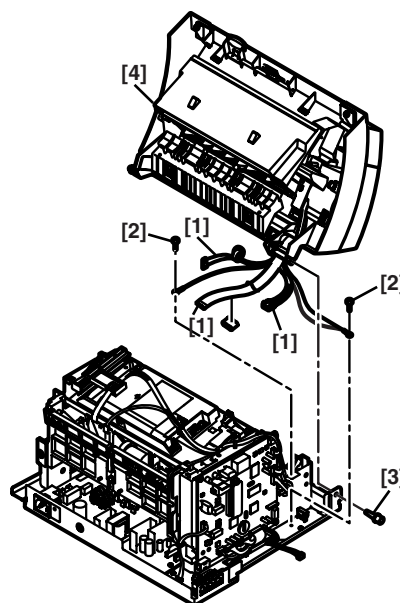
F-3-57

3.5.2.2 Removing the Reading

ass'y

0003-4107

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].



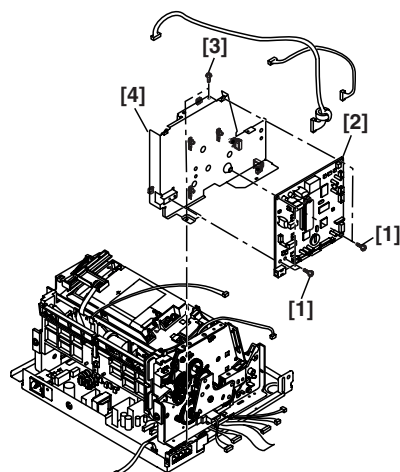
F-3-58

3.5.2.3 Removing the SCNT

board / frame

0003-4108

- 1) Remove the all connectors connected to the SCNT board.
- 2) Remove the 5 screws [1] and remove the SCNT board [2].
- 3) Remove the 2 screws [3] and then remove the frame [4].

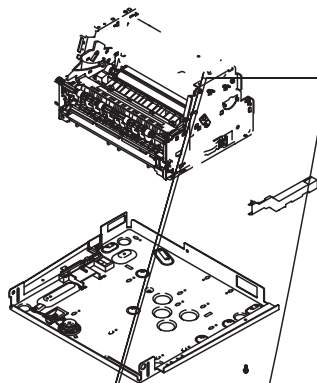


F-3-59

3.5.2.4 Removing the main frame

0003-4109

- 1) Remove the front cover [1] and the cable cover [2].
- 2) Remove the cable [3] attached to the switch lever and the cable [4] attached to the main motor and the cable [5] attached to the PCNT board.
- 3) Remove the 4 screws [6] and remove the main frame [7].



F-3-61

F-3-60

3.5.2.5 Removing the Fixing film unit

0003-4111

- 1) Remove the feed roller [1] and the cartridge guide [2].
- 2) Remove the 2 screws [3] and detach the delivery ass'y [4].
- 3) Remove the flapper [5].
- 4) Remove the 2 screws [6] and detach the fixing film guide [7].
- 5) Remove the cable and then detach the Fixing film unit [8].

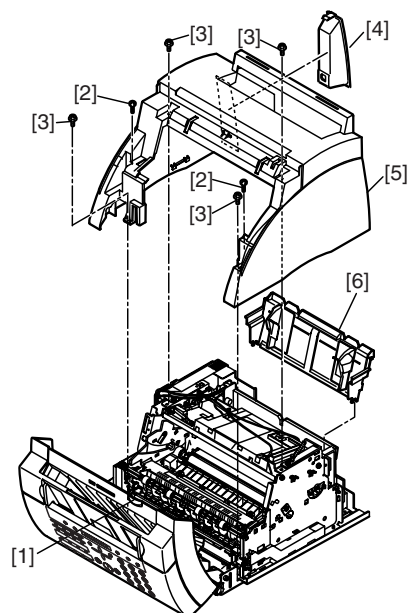
3.6 DOCUMENT FEED/ EXPOSURE SYSTEM

3.6.1 Separation Guide Unit

3.6.1.1 Removing the External cover

0003-3676

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

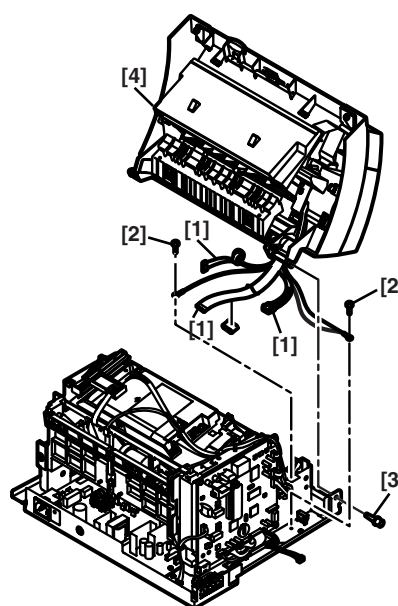


F-3-62

3.6.1.2 Removing the Reading ass'y

0003-3677

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

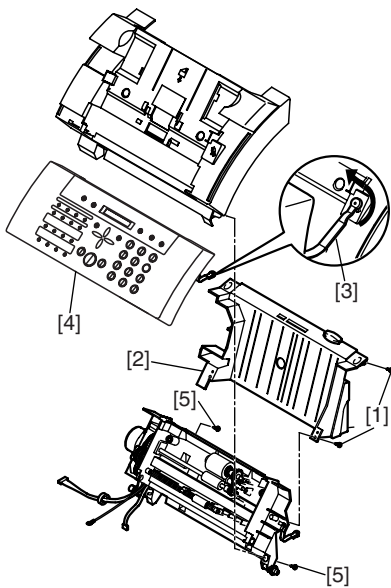


F-3-63

3.6.1.3 Removing the Operation panel ass'y

0003-3678

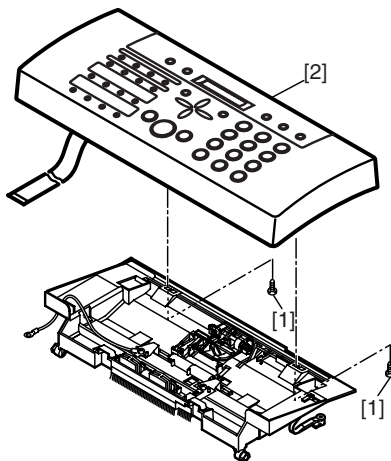
- 1) Remove the 4 screws [1] and then the duct cover [2].
- 2) Open the Operation panel ass'y and detach the stopper [3] and then remove the Operation panel ass'y [4].
- 3) Remove the 4 screws [5] and take out the lower ADF ass'y.
- 4) Remove the Operation panel ass'y [4].



F-3-64

3.6.1.4 Removing the Operation panel unit 0003-3679

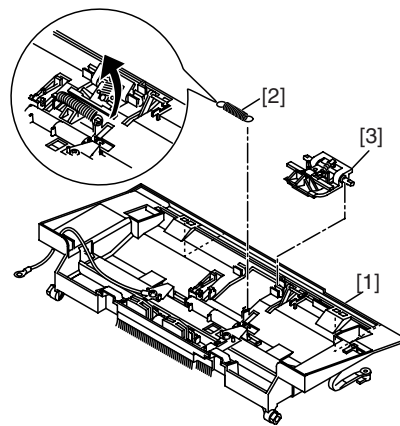
- 1) Remove the 2 screws [1] and then the Operation panel unit [2].



F-3-65

3.6.1.5 Removing the Separation guide unit 0003-3680

- 1) Remove the spring [2] from ADF upper [1] and detach the Separation guide unit [3].

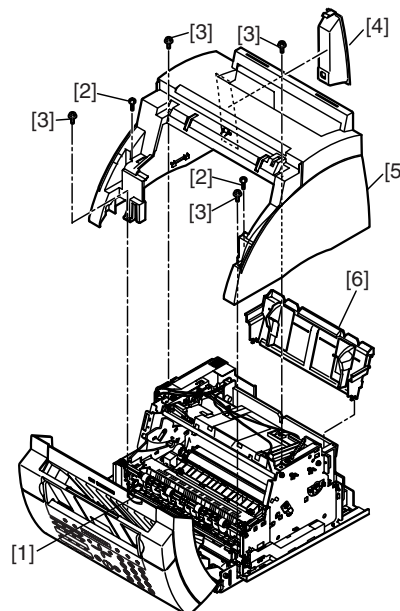


F-3-66

3.6.2 Contact Sensor

3.6.2.1 Removing the External cover 0003-3681

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



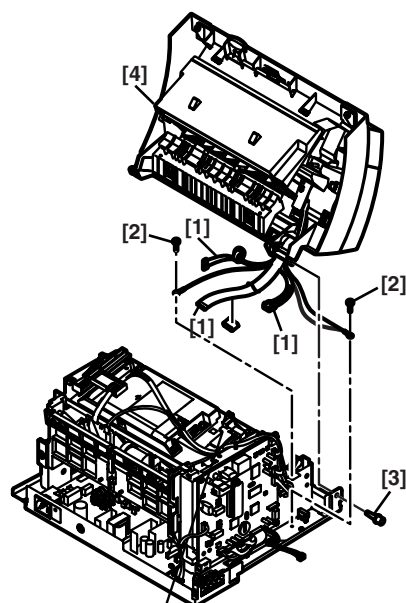
F-3-67

3.6.2.2 Removing the Reading

ass'y

0003-3682

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

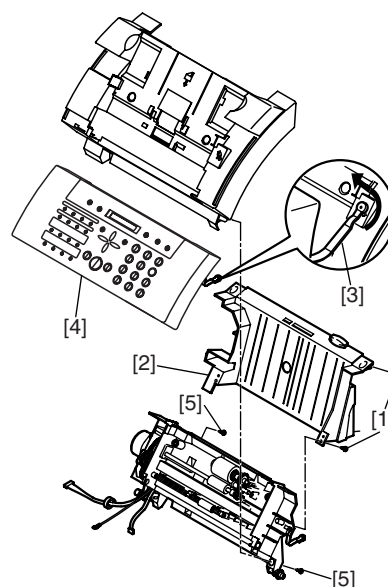


F-3-68

3.6.2.3 Removing the Operation panel ass'y

0003-3683

- 1) Remove the 4 screws [1] and then the duct cover [2].
- 2) Open the Operation panel ass'y and detach the stopper [3] and then remove the Operation panel ass'y [4].
- 3) Remove the 4 screws [5] and take out the lower ADF ass'y.
- 4) Remove the Operation panel ass'y [4].

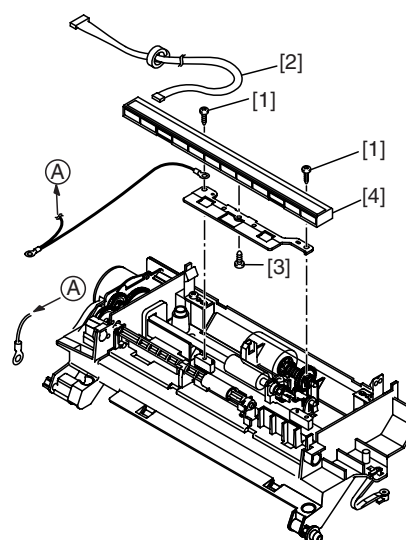


F-3-69

3.6.2.4 Removing the Contact sensor

0003-3709

- 1) Remove the 2 screws [1], then remove the cable [2].
- 2) Remove the screw [3] and then remove the Contact sensor [4].



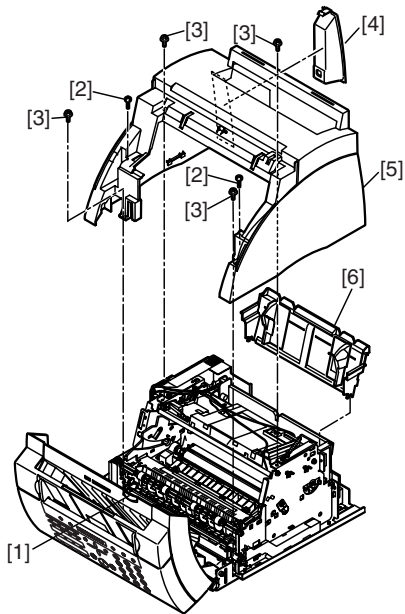
F-3-70

3.6.3 Separation Roller

3.6.3.1 Removing the External cover

0003-3710

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].

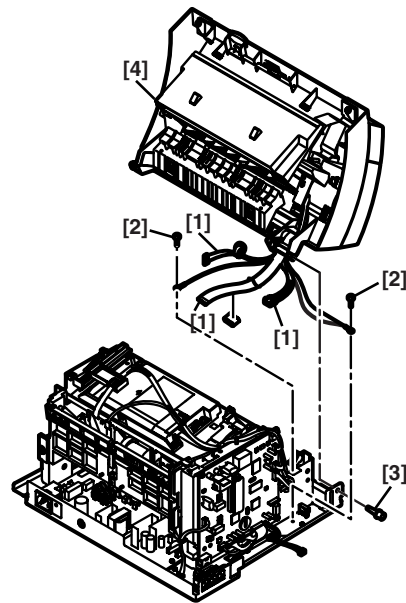


F-3-71

3.6.3.2 Removing the Reading ass'y

0003-3711

- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].

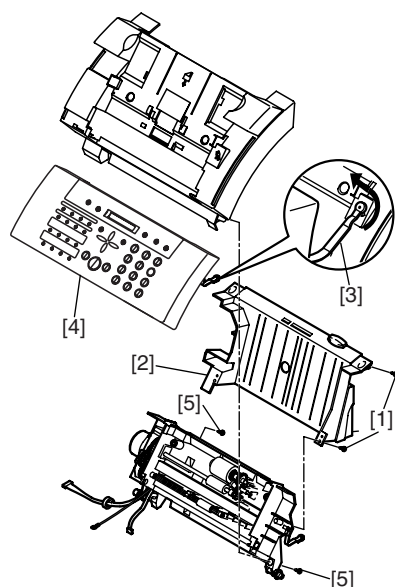


F-3-72

3.6.3.3 Removing the Operation panel ass'y

0003-3712

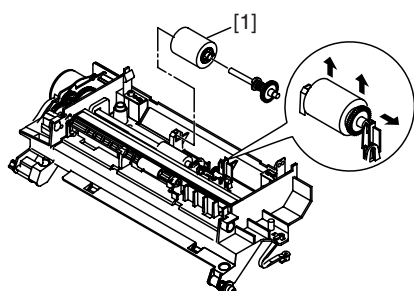
- 1) Remove the 4 screws [1] and then the duct cover [2].
- 2) Open the Operation panel ass'y and detach the stopper [3] and then remove the Operation panel ass'y [4].
- 3) Remove the 4 screws [5] and take out the lower ADF ass'y.
- 4) Remove the Operation panel ass'y [4].



F-3-73

3.6.3.4 Removing the Document separation roller 0003-3713

- 1) Pinch the bearing ass'y with your fingers and remove the whole Document separation roller [1] and spindle together.
- 2) Remove the Document separation roller [1] from the spindle.



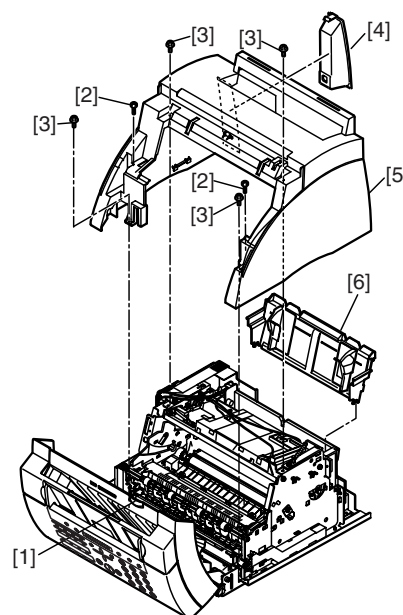
F-3-74

3.6.4 Document Feed Motor

3.6.4.1 Removing the External cover 0003-3714

- 1) Open the front cover using the release tab [1] and then remove 2 screws [2] and 4 screws [3].
- 2) Remove the connector cover [4].

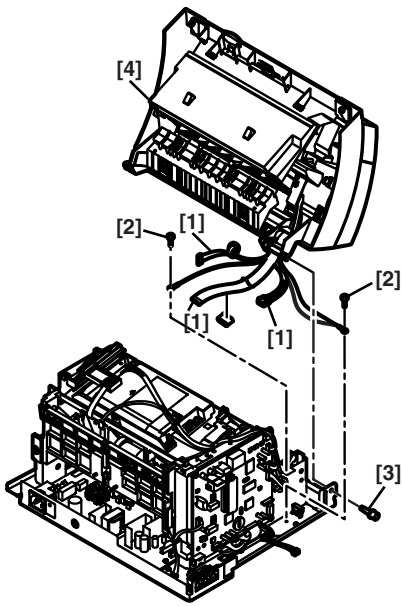
- 3) Remove the external cover [5].
- 4) Remove the multi-purpose tray unit [6].



F-3-75

3.6.4.2 Removing the Reading ass'y 0003-3715

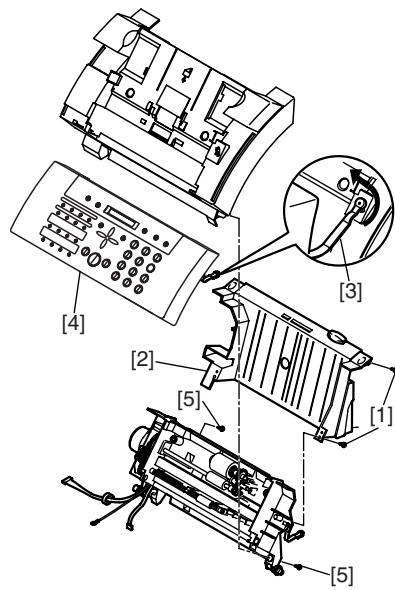
- 1) Remove the connector [1] connected to the SCNT board.
- 2) Remove the screw [2] and the earth wire.
- 3) Remove the pin [3].
- 4) Remove the Reading ass'y [4].



F-3-76

3.6.4.3 Removing the Operation panel ass'y 0003-3716

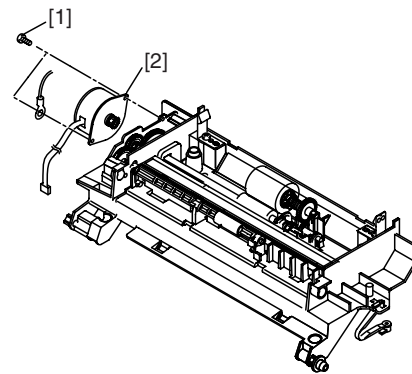
- 1) Remove the 4 screws [1] and then the duct cover [2].
- 2) Open the Operation panel ass'y and detach the stopper [3] and then remove the Operation panel ass'y [4].
- 3) Remove the 4 screws [5] and take out the lower ADF ass'y.
- 4) Remove the Operation panel ass'y [4].



F-3-77

3.6.4.4 Removing the Document feed motor 0003-3717

- 1) Remove the 2 screws [1] and detach the Document feed motor.



F-3-78

Chapter 4 MAINTENAN CE AND INSPECTION

Contents

4.1 Periodically Replaced Parts.....	4-1
4.1.1 Parts Requiring Periodical Replacement.....	4-1
4.2 Consumables	4-2
4.2.1 Consumable	4-2
4.3 Periodical Service.....	4-3
4.3.1 Items Requiring Scheduled Servicing	4-3
4.4 Cleaning.....	4-4
4.4.1 Items Requiring Cleaning.....	4-4
4.4.2 Cleaning Method (external covers).....	4-5
4.4.3 Cleaning Method (Reading unit).....	4-5
4.4.4 Cleaning Method (Printer unit)	4-6
4.5 Lubrications.....	4-8
4.5.1 Areas Requiring Application of Grease	4-8

4.1 Periodically Replaced Parts

4.1.1 Parts Requiring Periodical Replacement

0003-1664

The machine does not have parts that require periodical replacement.

4.2 Consumables

4.2.1 Consumable

0003-1665

T-4-1

Work by	Item	Interval (guide)
User	Toner cartridge	When toner runs out
Service technician	None	

4.3 Periodical Service

4.3.1 Items Requiring Scheduled Servicing

0003-1666

The machine does not have items that require scheduled servicing.

4.4 Cleaning

4.4.1 Items Requiring Cleaning

0003-1667

T-4-2

Work by	Item	Intervals
User	External covers	When dirty
	Document separation roller	When document separation/feed performance fails
	Separation guide	When document separation performance fails
	White sheet	When copied and transmitted images are faint
	Scanning glass (Contact sensor)	When black vertical stripes appear in copied or transmitted images
	Paper feed guide	When marks appears on back of paper in opied or received images
	Document feed roller	When document feed performance fails
	Document eject roller	When document feed performance fails
Service	Paper pickup roller	When recording paper feed performance fails
	Transfer charging roller	When marks on back of paper or blank spots at intervals of 50 mm appear in copied or received images
	Static charge eliminator	When polka appear dots in copied or received images
	High-voltage terminal	When copied or received images are light, dark, or completely blank
	Fixing entrance guide	When marks, marks on back of paper, irregular/smudged black vertical line, paper jam, wrinkles in copied or received images

Work by	Item	Intervals
	Fixing film unit	When marks appear at intervals of 75 mm or poor fixing of copied or received images occurs
	Fixing pressure roller	When marks appear on back of paper at intervals of 63 mm, or poor fixing, paper jam, or wrinkles occur during copying or receiving
	Face-up delivery roller	When paper jams occur during copying or receiving
	Flapper	When paper jams occur frequently during copying or receiving
	Separation pad	When recording paper separation performance fails



Before starting cleaning work, be sure to turn off the power and disconnect the power plug to avoid fires and electric shocks.

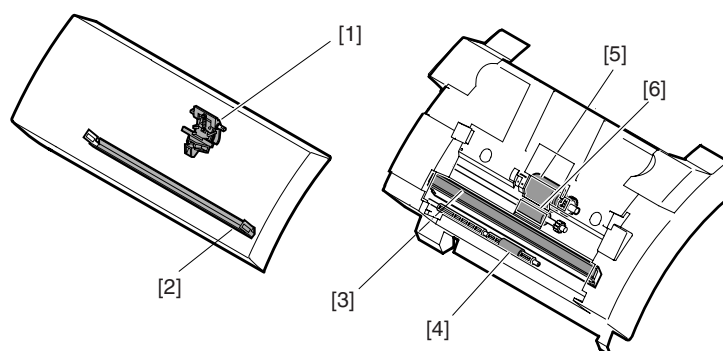
4.4.2 Cleaning Method (external covers)

0003-1676

Moisten a soft cloth with water or solution of mild detergent, making sure it is well wrung; then, wipe the soiling. If you have used detergent, be sure to remove its residue using a soft, moist cloth. After removing all soiling, dry wipe the area with a soft, dry cloth.

4.4.3 Cleaning Method (Reading unit)

0003-1678



F-4-1

[1] Separation guide

Wipe with a soft, dry clean cloth.

If it is appreciably soiled, wipe it with a cloth moistened with isopropyl alcohol. Do not use tissue; otherwise, the area can start to collect dust or static charges.

[2] White sheet

Wipe with a soft, dry clean soft cloth.

[3] Scanning glass (Contact sensor)

Wipe with a soft, dry clean soft cloth.

[4] Document eject roller

Wipe with a soft, dry clean soft cloth.

[5] Document separation roller

Wipe with a soft, dry clean cloth.

If it is appreciably soiled, wipe it with a cloth moistened with isopropyl alcohol. Do not use tissue; otherwise, the area can start to collect dust or static charges.

[6] Document feed roller

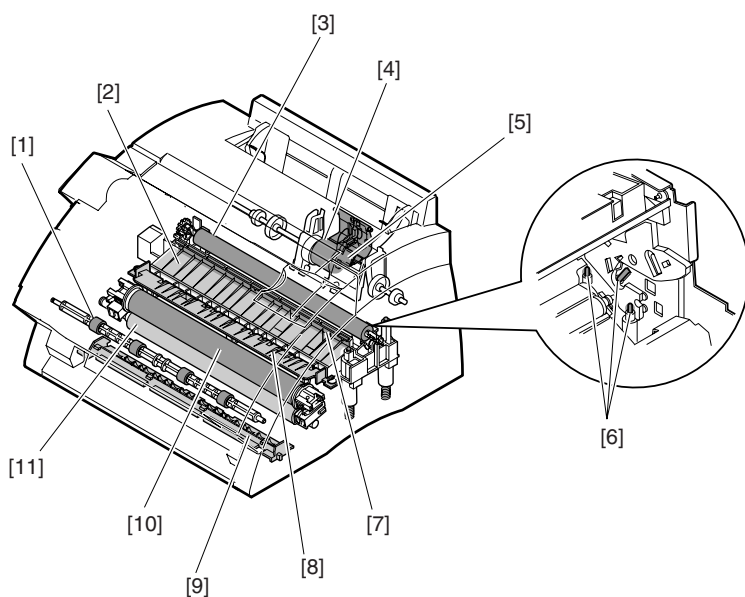
Wipe with a soft, dry clean soft cloth.

**Precautions when using isopropyl alcohol (IPA)**

When cleaning with IPA, take care to prevent the IPA from splashing high-temperature parts. If IPA splashes high-temperature parts, leave for at least three minutes to allow the IPA to evaporate.

4.4.4 Cleaning Method (Printer unit)

0003-1680



F-4-2

[1] Face-up delivery roller

Using lint-free paper dipped in isopropyl alcohol, wipe off the Face-up delivery roller.

[2] Paper feed guide

Wipe with a clean, soft, dry, lint-free cloth to remove any toner or paper debris.

[3] Transfer charging roller

Wipe with a clean, soft, dry, lint-free cloth to remove any toner or paper debris.



- Do not touch the sponge area of the transfer charging roller to avoid soiling the back of paper or white spots in the images.
 - Never use solvent.
 - If the soiling cannot be removed using lint-free paper or the roller is deformed, replace the roller.
-

[4] Paper pickup roller

If it is appreciably soiled, wipe it with a cloth moistened with isopropyl alcohol. Do not use tissue; otherwise, the area can start to collect dust or static charges.

[5] Separation pad

Using lint-free paper dipped in isopropyl alcohol, wipe off the Separation pad.

[6] High-voltage terminal

Wipe with a clean, soft, dry, lint-free cloth to remove any toner or paper debris.

[7] Static charge eliminator

Wipe with a lint-free paper and remove any foreign matter, such as paper fragments.

[8] Fixing entrance guide

Wipe with a lint-free paper and remove any toner or paper debris.

[9] Flapper

Wipe with a lint-free paper and remove any toner or paper debris.

[10] Fixing film unit

Wipe with a lint-free paper and remove any toner or paper debris.

[11] Fixing pressure roller

Using lint-free paper dipped in isopropyl alcohol, wipe off the Fixing pressure roller.

**Precautions when using isopropyl alcohol (IPA)**

When cleaning with IPA, take care to prevent the IPA from splashing high-temperature parts. If IPA splashes high-temperature parts, leave for at least three minutes to allow the IPA to evaporate.

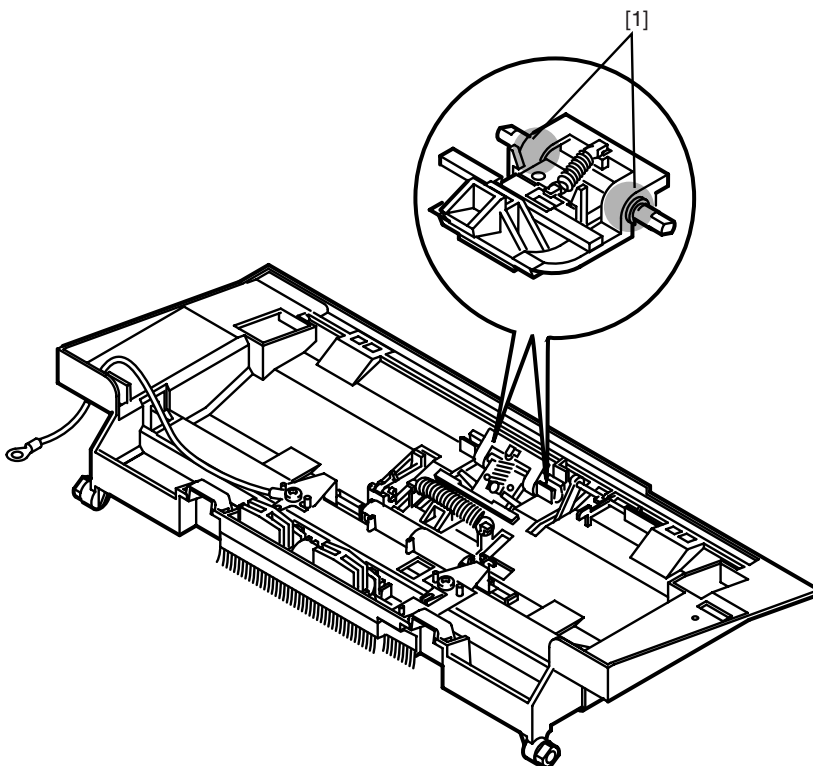
4.5 Lubrications

4.5.1 Areas Requiring Application of Grease

0003-1683

The machine has areas that require grease to permit smooth movement of parts or ensure good electrical conductivity. If you have replaced a part in these areas or if you have removed the grease, be sure to apply grease.

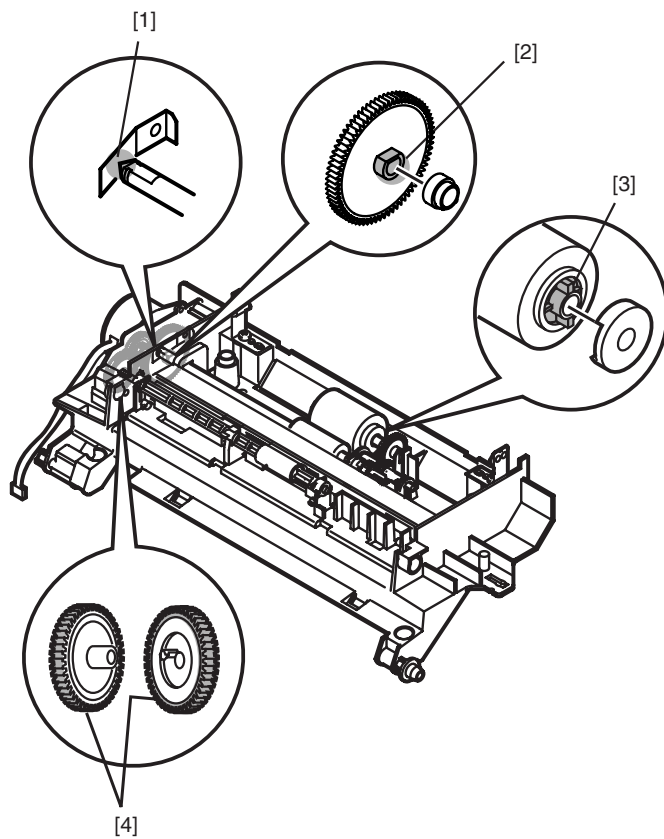
Upper ADF



F-4-3

[1] MOLYKOTE EM-50L Approx.5 to 25 mg

Lower ADF



F-4-4

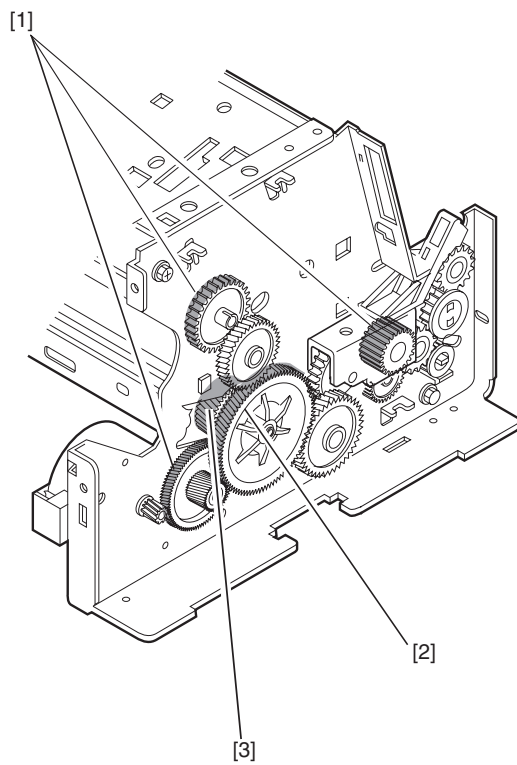
[1] IF-20 Approx.20 to 40 mg

[2] MOLYKOTE EM-50L Approx.5 to 25 mg

[3] Apply a suitable amount of UNIWAY 68

[4] MOLYKOTE EM-50L Approx.20 to 40 mg

Drive gears



F-4-5

[1] MOLYKOTE EM-50L Approx.20 to 40 mg

[2] MOLYKOTE EM-50L Approx.40 to 60 mg

[3] MOLYKOTE EM-50L Approx.10 to 25 mg

Chapter 5 TROUBLESHOOTING

Contents

5.1 Phenomenon Table	5-1
5.1.1 Symptoms	5-1
5.2 Countermeasure	5-3
5.2.1 Image Faults	5-3
5.2.1.1 Blank Image	5-3
5.2.1.1.1 Completely blank	5-3
5.2.1.2 Solid Image	5-4
5.2.1.2.1 Completely black image	5-4
5.2.1.3 Light Image / Weak Density	5-5
5.2.1.3.1 Light image	5-5
5.2.1.4 Foggy Image	5-6
5.2.1.4.1 Dark image	5-6
5.2.1.5 Out of Focus	5-6
5.2.1.5.1 Faulty registration	5-6
5.2.1.5.2 Image distortion	5-7
5.2.1.6 Partially Blank/Streaked	5-7
5.2.1.6.1 Blank spots	5-7
5.2.1.6.2 White vertical lines	5-8
5.2.1.6.3 White horizontal lines	5-9
5.2.1.7 Smudged/Streaked	5-9
5.2.1.7.1 Cyclical soiling	5-9
5.2.1.7.2 Cyclical back soiling	5-9
5.2.1.7.3 Dots	5-10
5.2.1.7.4 Black vertical lines	5-11
5.2.1.7.5 Black horizontal lines	5-11
5.2.1.8 Poor Finxing	5-12
5.2.1.8.1 Poor fixing	5-12
5.2.2 Faulty Feeding	5-12
5.2.2.1 Skew Feed	5-12
5.2.2.1.1 Skewed paper	5-12
5.2.3 Malfunction	5-13
5.2.3.1 No Power	5-13
5.2.3.1.1 The unit does not power on	5-13
5.2.3.2 Control Panel-Related	5-13
5.2.3.2.1 The display looks abnormal	5-13
5.2.3.2.2 Part of the LCD is blank	5-13
5.2.3.2.3 The keys do not work	5-13
5.2.3.3 Other Defect	5-14
5.2.3.3.1 The main motor does not run	5-14
5.2.3.3.2 The paper is not picked up from the multi-purpose tray	5-14
5.2.3.3.3 The document feed motor does not run	5-14
5.2.3.3.4 The document slips against the rollers	5-14
5.2.3.3.5 The document does not separate	5-15
5.2.3.3.6 The scanner unit's sensor are defective	5-15

5.2.4 Jam (Main Unit).....	5-15
5.2.4.1 When paper jams, the unit judges it as a jam.....	5-15
5.3 Measurement and Adjustment	5-16
5.3.1 Basic Adjustments	5-16
5.3.1.1 Items of Adjustment.....	5-16
5.3.2 Nip Width	5-16
5.3.2.1 Checking the nip width.....	5-16
5.4 Service Tools	5-17
5.4.1 Special tools.....	5-17
5.5 Error Code	5-18
5.5.1 Outline	5-18
5.5.1.1 Error Code Outline.....	5-18
5.5.2 User Error Code.....	5-18
5.5.2.1 User error code unique to this machine	5-18
5.5.2.2 #001 [Tx] Document has jammed	5-19
5.5.2.3 #003 [Tx/Rx] Document is too long, or page time-over.....	5-19
5.5.2.4 #005 [Tx/Rx] Initial identification (T0/T1) time-over	5-20
5.5.2.5 #009 [Rx] Recording paper has jammed or the recording paper has run out	5-22
5.5.3 Service Error Code	5-22
5.5.3.1 Service error code unique to this machine.....	5-22
5.5.3.2 ##322 [Rx] Fixing heater temperature abnormality	5-22
5.5.3.3 ##324 [Rx] Printer section scanner motor rotation rate abnormal.....	5-23
5.6 Service Mode	5-24
5.6.1 Outline	5-24
5.6.1.1 Hardware Switches	5-24
5.6.1.2 Service Data Setting.....	5-24
5.6.1.3 Service Data Overview	5-24
5.6.1.4 Service Data Entry Method.....	5-25
5.6.1.5 Service data menu.....	5-26
5.6.2 Default Settings	5-31
5.6.2.1 SSSW default settings.....	5-31
5.6.3 Service Soft Switch Settings (SSSW).....	5-46
5.6.3.1 Outline	5-46
5.6.3.1.1 Explanation of service data.....	5-46
5.6.3.2 SSSW-SW15.....	5-47
5.6.3.2.1 Functional Construction.....	5-47
5.6.3.2.2 Detailed Discussions of Bit 6.....	5-47
5.6.3.3 SSSW-SW18.....	5-47
5.6.3.3.1 Functional Construction.....	5-47
5.6.3.3.2 Detailed Discussions of Bit 0.....	5-48
5.6.3.3.3 Detailed Discussions of Bit 1.....	5-48
5.6.4 Numeric Parameter Settings (NUMERIC Param.).....	5-48
5.6.4.1 Numeric parameter	5-48
5.6.5 Test Mode (TEST).....	5-49
5.6.5.1 Overview.....	5-49
5.6.5.1.1 Test mode overview.....	5-49
5.6.5.1.2 Test mode flowchart	5-49
5.6.5.2 DRAM Test.....	5-50
5.6.5.2.1 D-RAM test.....	5-50

5.6.5.3 Print Test	5-51
5.6.5.3.1 PRINT test.....	5-51
5.6.5.4 Modem Test.....	5-52
5.6.5.4.1 MODEM, NCU test.....	5-52
5.6.5.4.2 Frequency test.....	5-53
5.6.5.4.3 G3 signal transmission test.....	5-53
5.6.5.4.4 Tonal and DTMF signal reception test.....	5-54
5.6.5.4.5 V.34 G3 signal transmission test.....	5-55
5.6.5.5 Faculty Test	5-56
5.6.5.5.1 FACULTY test	5-56
5.6.5.5.2 Sensor test.....	5-56
5.6.5.5.3 Operation panel test.....	5-61
5.6.5.5.4 Line signal reception test.....	5-62

5.1 Phenomenon Table

5.1.1 Symptoms

0003-3354

T-5-1

Item	Description
Image fault	Completely blank
	Completely black image
	Light image
	Dark image
	Faulty registration
	Image distortion
	Blank spots
	White vertical lines
	White horizontal lines
	Cyclical soiling
	Cyclical back soiling
	Dots
	Black vertical lines
	Black horizontal lines
	Poor fixing
Paper movement fault	Skewed paper
Malfunction	The unit does not power on
	The display looks abnormal
	Part of the LCD is blank
	The keys do not work
	The main motor does not run
	The paper is not picked up from the multi-purpose tray
	The document feed motor does not run
	The document slips against the rollers
	The document does not separate
	The scanner unit's sensor are defective

Item	Description
Jam (main unit)	When paper jams, the unit judges it as a jam

For details, see the instructions given as remedial action.

5.2 Countermeasure

5.2.1 Image Faults

5.2.1.1 Blank Image

5.2.1.1.1 Completely blank

0003-5214

Cause

Contact sensor glass dirty.

Field Remedy

Clean contact sensor.

Cause

Contact sensor connection faulty.

Field Remedy

Check the contact sensor and SCNT board (J2) connections.

Cause

Contact sensor failure.

Field Remedy

Replace the contact sensor.

Cause

Damaged laser shutter open/close projection of the toner cartridge.

Field Remedy

Replace the toner cartridge.

Cause

Laser shutter lever or laser shutter operation failure or parts broken.

Field Remedy

Check operation. If operation is not smooth or parts are broken, replace the defective parts.

Cause

Contact failure between development bias contact and toner cartridge contact.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

Cause

Laser scanner unit failure.

Field Remedy

Replace the laser scanner unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

Cause

Power supply unit failure.

Field Remedy

Replace the power supply unit.

5.2.1.2 Solid Image

5.2.1.2.1 Completely black image

0003-5215

Cause

Contact failure between primary charging contact and toner cartridge contact.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Primary charging roller failure.

Field Remedy

Replace the toner cartridge.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

Cause

Laser scanner unit failure.

Field Remedy

Replace the laser scanner unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

Cause

Power supply unit failure.

Field Remedy

Replace the power supply unit.

5.2.1.3 Light Image / Weak Density

5.2.1.3.1 Light image

0003-5216

Cause

The image density is not adjusted correctly.

Field Remedy

- 1) Remove the toner cartridge and shake it lightly five or six times.
- 2) Verify that user data [PRINTER SETTING] [ECONOMY PRT] is not [ON].
- 3) Replace the toner cartridge.

Cause

Contact failure between development bias contact and toner cartridge contact.

Field Remedy

- 1) Open the front cover during printing and remove the toner cartridge. Open the cartridge drum shutter by hand and check that the toner image on the photosensitive drum has been transferred to the paper.
- 2) Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Contact failure between transfer bias contact and toner cartridge contact.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

Cause

Laser scanner unit failure.

Field Remedy

Replace the Laser scanner unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

Cause

Power supply unit failure.

Field Remedy

Replace the power supply unit.

5.2.1.4 Foggy Image

5.2.1.4.1 Dark image

0003-5217

Cause

The image density is not adjusted correctly.

Field Remedy

Verify that user data [PRINTER SETTING] [ECONOMY PRT] is not [OFF].

Cause

Contact failure between drum grounding contact and toner cartridge contact.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Contact failure between primary transfer contact and toner cartridge contact.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Laser scanner unit failure.

Field Remedy

Replace the Laser scanner unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

5.2.1.5 Out of Focus

5.2.1.5.1 Faulty registration

0003-5218

Cause

Pickup roller worn, or soiled.

Field Remedy

Clean the pickup roller. If it cannot be removed, or the roller is worn down, replace the roller.

Cause

Paper feed roller worn, or soiled.

Field Remedy

Clean the paper feed roller. If it cannot be removed, or the roller is worn down, replace the roller.

Cause

Paper edge sensor actuator does not operate smoothly, or is broken.

Field Remedy

Replace the paper edge sensor if it is broken. If this does not fix the problem, replace the sensor.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

5.2.1.5.2 Image distortion

0003-5219**Cause**

Poor contact in the connector on the Laser scanner unit.

Field Remedy

Check the connector connection between the Laser scanner unit and the SCNT board (J5).

Cause

Laser scanner unit failure.

Field Remedy

Replace the laser scanner unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

5.2.1.6 Partially Blank/Streaked

5.2.1.6.1 Blank spots

0003-5220**Cause**

Toner cartridge does not have enough toner.

Field Remedy

- 1) Remove the toner cartridge and shake it lightly five or six times.
- 2) Replace the toner cartridge.

Cause

Transfer charging roller is soiled, deformed.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Photosensitive drum or developing cylinder failure.

Field Remedy

Replace the toner cartridge.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

Cause

Power supply unit failure.

Field Remedy

Replace the power supply unit.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

5.2.1.6.2 White vertical lines

0003-5221

Cause

Toner cartridge does not have enough toner.

Field Remedy

- 1) Remove the toner cartridge and shake it lightly five or six times.
- 2) Replace the toner cartridge.

Cause

Circumferential scars on the photosensitive drum.

Field Remedy

Replace the toner cartridge.

Cause

Developing cylinder failure.

Field Remedy

Replace the toner cartridge.

Cause

Foreign materials are deposited on the laser outlet of the printer or the laser inlet of the cartridge.

Field Remedy

Remove the foreign materials.

Cause

The face-down delivery roller, or the face-up delivery roller, is soiled.

Field Remedy

Clean the contacts, if dirty. If dirt cannot be removed, replace the dirty roller.

Cause

Dirt or foreign materials on the fixing entrance guide.

Field Remedy

Clean the fixing entrance guide.

Cause

Scars or foreign materials on the fixing film unit surface.

Field Remedy

Replace the fixing film unit.

Cause

Dirty mirror in the laser scanner unit.

Field Remedy

Replace the laser scanner unit.

5.2.1.6.3 White horizontal lines0003-5222**Cause**

Horizontal scar(s) on the photosensitive drum.

Field Remedy

Replace the toner cartridge.

Cause

Fixing film unit failure.

Field Remedy

Replace the fixing film unit.

5.2.1.7 Smudged/Streaked**5.2.1.7.1 Cyclical soiling**0003-5223**Cause**

Cyclical soiling.

Field Remedy

Soiling cycle:

Approx.50mm: Transfer charging roller

Approx.75mm: Fixing film unit

Approx.75mm/38mm: Toner cartridge

Identify the soiled area, and clean. If the dirt will not come off, replace the part.

Cause

Fixing pressure roller soiled.

Field Remedy

Clean the soiled part. If the dirt does not come off, clean the part.

Cause

The face-down delivery roller, or the face-up delivery roller, is soiled.

Field Remedy

Clean the contacts, if dirty. If dirt cannot be removed, replace the dirty roller.

5.2.1.7.2 Cyclical back soiling0003-5224**Cause**

Paper soiled.

Field Remedy

Replace the paper with new paper. Advise the customer on how to store paper.

Cause

Separation pad soiled.

Field Remedy

Clean the soiled part. If the dirt does not come off, clean the part.

Cause

Cyclical soiling.

Field Remedy

Soiling cycle:

Approx.50mm: Transfer charging roller

Approx.63mm: Fixing pressure roller

Identify the soiled area, and clean. If the dirt will not come off, replace the part.

Cause

Paper feed guide, fixing entrance guide is soiled.

Field Remedy

Clean the soiled part.

Cause

The face-down delivery roller, or the face-up delivery roller, is soiled.

Field Remedy

Clean the contacts, if dirty. If dirt cannot be removed, replace the dirty roller.

5.2.1.7.3 Dots

0003-5225

Cause

Static eliminator soiled.

Field Remedy

Clean the static eliminator.

Cause

Poor contact between static eliminator and the contact point.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

Deformation or deterioration of the transfer charging roller.

Field Remedy

Replace the transfer charging roller.

Cause

Poor contact between transfer charging bias contact and transfer charging roller spindle.

Field Remedy

Clean the contacts, if dirty. If the problem remains after cleaning, or parts are deformed or damaged, replace them.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

5.2.1.7.4 Black vertical lines

0003-5227**Cause**

Contact sensor glass dirty.

Field Remedy

Clean the contact sensor.

Cause

Contact sensor connection faulty.

Field Remedy

Check connection between contact sensor and SCNT board (J2).

Cause

Contact sensor faulty.

Field Remedy

Replace the contact sensor.

Cause

Circumferential scars on the photosensitive drum.

Field Remedy

Replace the toner cartridge.

Cause

Fixing entrance guide is soiled.

Field Remedy

Clean the fixing entrance guide.

Cause

Fixing film unit scratched.

Field Remedy

Remove the cause of the scratch and replace the fixing film unit.

5.2.1.7.5 Black horizontal lines

0003-5228**Cause**

Horizontal scar(s) on the photosensitive drum.

Field Remedy

Replace the toner cartridge.

Cause

Dirty, deformed or worn fixing film unit.

Field Remedy

Replace the fixing film unit.

5.2.1.8 Poor Finxing

5.2.1.8.1 Poor fixing

0003-5229

Cause

The nip width of the fixing unit is not within the specification.

Field Remedy

Measure the nip width of the fixing unit according to [Checking the nip width]. If it is not within the specification, replace the fixing unit.

Cause

Fixing pressure roller soiled.

Field Remedy

Clean the fixing pressure roller. If dirt cannot be removed, replace it.

Cause

Scratches and dents on the fixing pressure roller surface.

Field Remedy

Replace the fixing pressure roller.

Cause

Scratches and dents on the fixing film unit surface.

Field Remedy

Replace the fixing film unit.

Cause

The thermistor is deteriorated.

Field Remedy

Replace the fixing film unit.

Cause

PCNT board failure.

Field Remedy

Replace the PCNT board.

Cause

SCNT board failure.

Field Remedy

Replace the SCNT board.

5.2.2 Faulty Feeding

5.2.2.1 Skew Feed

5.2.2.1.1 Skewed paper

0003-5230

Field Remedy

- 1) Check whether more than 100 sheets of paper have been loaded in the multi-purpose tray. Also, check that the paper is not curled.
- 2) Check whether the paper has been loaded into the multi-purpose tray correctly.
- 3) Check whether dust or paper debris have built up inside the multi-purpose tray.
- 4) Check whether the paper pickup roller, or any other rollers, are damaged or scratched.
- 5) Clean the pickup roller.
- 6) Replace the pickup roller.

5.2.3 Malfunction

5.2.3.1 No Power

5.2.3.1.1 The unit does not power on

0003-5231

Field Remedy

- 1) Check the power cord connection.
- 2) Check the connection between the PCNT board (J1) and the power supply unit (J202).
- 3) Check the connection between the SCNT board (J8) and the power supply unit (J201).
- 4) Check the connection between the SCNT board (J4) and the PCNT board (J2).
- 5) Check the power supply unit's fuse.
- 6) Replace the power supply unit.

5.2.3.2 Control Panel-Related

5.2.3.2.1 The display looks abnormal

0003-5233

Field Remedy

- 1) Check the connection between the OPCNT board (J1) and the SCNT board (J1).
- 2) Replace the OPCNT board.
- 3) Replace the SCNT board.

5.2.3.2.2 Part of the LCD is blank

0003-5234

Field Remedy

- 1) Check for LCD problems with the test mode.
- 2) Check the connection between the OPCNT board (J1) and the SCNT board (J1).
- 3) Replace the OPCNT board.
- 4) Replace the SCNT board.

5.2.3.2.3 The keys do not work

0003-5235

Field Remedy

- 1) If the test mode can be used, check for faulty keys.

- 2) Check the connection between the OPCNT board (J1) and the SCNT board (J1).
- 3) Replace the OPCNT board.
- 4) Replace the SCNT board.

5.2.3.3 Other Defect

5.2.3.3.1 The main motor does not run

0003-5236

Field Remedy

- 1) Check the connection between the main motor and the PCNT board (J401).
- 2) Check the main motor's resistance. 8.1 to 12.54 ohms/1 phase is normal.
- 3) Replace the main motor.
- 4) Replace the PCNT board.
- 5) Replace the SCNT board.

5.2.3.3.2 The paper is not picked up from the multi-purpose tray

0003-5237

Field Remedy

- 1) Check whether more than 100 sheets of paper have been loaded in the multi-purpose tray. Also, check that the paper is not curled.
- 2) Check whether the paper has been loaded into the multi-purpose tray correctly.
- 3) Check the connection between the paper pickup solenoid and the SCNT board (J9).
- 4) Replace the paper pickup solenoid.
- 5) Clean the separation pad.
- 6) Replace the separation pad.
- 7) Replace the separation pad spring and the lifting spring.
- 8) Replace the SCNT board.

5.2.3.3.3 The document feed motor does not run

0003-5238

Field Remedy

- 1) Check the connection between the document feed motor and the PCNT board (J402).
- 2) Check the document feed motor's resistance. 13.95 to 25.68 ohms/1 phase is normal.
- 3) Replace the document feed motor.
- 4) Replace the PCNT board.
- 5) Replace the SCNT board.

5.2.3.3.4 The document slips against the rollers

0003-5240

Field Remedy

- 1) Clean the separation guide and rollers.
- 2) Replace the scanner unit's rollers.

5.2.3.3.5 The document does not separate**0003-5241****Field Remedy**

- 1) Check whether the document feed motor is driving all the rollers. (Check for any damaged gears or foreign matter stuck inside.)
- 2) Clean the separation roller and the separation guide.
- 3) Replace the separation roller and the separation guide.

5.2.3.3.6 The scanner unit's sensor are defective**0003-5242****Field Remedy**

- 1) Check for any faulty sensors while executing the copying operation and test mode.
- 2) In test mode, check for any sensor detects.
- 3) Check the connections between the document sensor (DS), document edge sensor (DES) and the OPCNT board (J3).
- 4) Check the connection between the OPCNT board (J1) and the SCNT board (J1).
- 5) Replace the document sensor (DS) and document edge sensor (DES).
- 6) Replace the OPCNT board.
- 7) Replace the SCNT board.

5.2.4 Jam (Main Unit)**5.2.4.1 When paper jams, the unit judges it as a jam****0003-5243****Field Remedy**

- 1) Check the connection between the paper edge sensor and the SCNT board (J14).
- 2) Check that the paper edge sensor and actuator and the paper eject sensor and actuator are in the correct positions.
- 3) In the test mode, check that the paper edge sensor and the paper eject sensor are operating correctly.
- 4) Replace the paper edge sensor and the paper eject sensor.
- 5) Replace the SCNT board.

5.3 Measurement and Adjustment

5.3.1 Basic Adjustments

5.3.1.1 Items of Adjustment

0003-1684

The machine does not have items that are cited for adjustment.

5.3.2 Nip Width

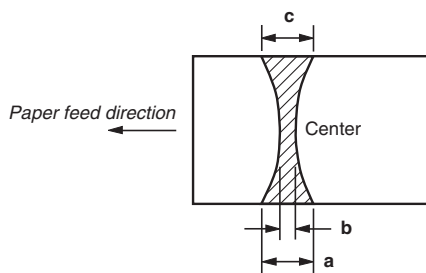
5.3.2.1 Checking the nip width

0003-2883

Improperly set fixing nip may cause a fixing ass'y problem. The fixing ass'y is not designed to allow adjustment of the nip.

Check the fixing ass'y nip by using the following procedure.

- 1) Either take along one or two all-black copies of A4 or letter size made with a copier, or make one using a copier at the customer site.
- 2) Set the black copy in the multi-purpose tray with the black side facing up.
- 3) Change the paper delivery selector to the face-up delivery slot.
- 4) Enter the test mode and run [3] PRINT, [6] ENDURANCE.
- 5) Turn the power off when the beginning of the paper appears in the face-up delivery slot. Turn the power off, wait for 10 seconds, and remove the paper from the face-up delivery slot slowly.
- 6) Measure the widths of the areas on the paper where toner luster is visible and check whether they fall within the range shown in below table.



	Dimension
b	3.0 to 5.0 mm (0.12" to 0.20")
a - c	0.5 mm (0.02") or less
a - b	1.0 mm (0.04") or less
b - c	1.0 mm (0.04") or less

F-5-1

5.4 Service Tools

5.4.1 Special tools

0003-1689

T-5-2

Tool	Use	Part No.
Grease (MOLYKOTE EM-50L)	Apply to specified parts	HY9-0007
Grease (IF-20)	Apply to specified parts	CK-8006
Grease (MOLYKOTE EM-D110)	Apply to specified parts	HY9-0023
Grease (UNIWAY 68)	Apply to specified parts	CK-0451

5.5 Error Code

5.5.1 Outline

5.5.1.1 Error Code Outline

0003-1720

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

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

User Error Codes

A fault indicated as a user error code is one that can easily be corrected by the user, as by operating the machine. It takes the form of [#+number].

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 [##+number].

Memo

A service error code expressed in the form of [##+number] will not appear on the LCD, Error Tx Report, or Activity Report while the machine remains in factory default state. To check a service error code, shift bit 0 of service soft switch #1 SSSW SW01 to '1'.

Memo

As for causes and countermeasures, only the error codes which are newly incorporated in the unit as well as which require remedies unique to the product are included in the item d). For the causes and countermeasures of other error codes, refer to the separate G3 Facsimile Error Code Service Hand Book (Rev. 1).

5.5.2 User Error Code

5.5.2.1 User error code unique to this machine

0003-5244

T-5-3

No.	Tx/Rx	Definition
#001	[Tx]	Document has jammed
#003	[Tx/Rx]	Document is too long, or page time-over
#005	[Tx/Rx]	Initial identification (T0/T1) time-over

No.	Tx/Rx	Definition
#009	[Rx]	Recording paper has jammed or the recording paper has run out

5.5.2.2 #001 [Tx] Document has jammed

0003-5245

Cause

The document is trapped in the feeder.

Remedy

Remove the document, and try again.

Cause

The document is not of a standard size or thickness.

Remedy

Using a copying machine, make an A4/LTR copy of the document to transmit.

Cause

An internal mechanism is faulty.

Remedy

- 1) Check if the document sensor (DS) and document edge sensor (DES) are operating correctly using Sensor tests based on the methods given in Faculty test of Test mode.
- 2) Check the actuators of the document sensor (DS) and the document edge sensor (DES) for disconnection.
- 3) Check the connection between the document sensor (DS), document edge sensor (DES) and the OPCNT board (J3).
- 4) Check the connection between the SCNT board (J1) and the OPCNT board (J1).
- 5) Make a copy, and make sure that the document feed motor is operating correctly.
- 6) Check the connection between the document feed motor and the PCNT board (J402).
- 7) Check the connection between the SCNT board (J4) and the PCNT board (J2).
- 8) Replace the document sensor (DS).
- 9) Replace the document edge sensor (DES).
- 10) Replace the OPCNT board.
- 11) Replace the document feed motor.
- 12) Replace the SCNT board.
- 13) Replace the PCNT board.

5.5.2.3 #003 [Tx/Rx] Document is too long, or page time-over

0003-5246

Cause

The length of a single page is too long.

Remedy

- 1) Using a copying machine, make copies of the document, and transmit the copies separately.
- 2) Use a copying machine.

Cause

The data of a single page is too large, exceeding the time allowed for transmission.

Remedy

- 1) Decrease the reading resolution when transmitting.
- 2) If the document is too long and the data is too large, make copies using a copying machine, and transmit the copies separately.
- 3) If halftone transmission is used, the document is of a default size, and the data is too large, use the service data #1 SSSW SW12 bit0 and bit1 to increase the page timer value.

Cause

The data of a single page is too large, exceeding the time allowed for reception.

Remedy

- 1) Ask the operator of the other party to decrease the reading resolution and transmit.
- 2) Ask the operator of the other party to divide the document and transmit.
- 3) Use the service data #1 SSSW SW12 bit0 and bit1 to increase the page timer value.
- 4) Ask the operator of the other party to find out the cause.

Cause

An internal mechanism is faulty.

Remedy

- 1) Check if the document sensor (DS) and document edge sensor (DES) are operating correctly using Sensor tests based on the methods given in Faculty test of Test mode.
- 2) Check the actuators of the document sensor (DS) and the document edge sensor (DES) for disconnection.
- 3) Check the connection between the document sensor (DS), document edge sensor (DES) and the OPCNT board (J3).
- 4) Check the connection between the SCNT board (J1) and the OPCNT board (J1).
- 5) Make a copy, and make sure that the document feed motor is operating correctly.
- 6) Check the connection between the document feed motor and the PCNT board (J402).
- 7) Check the connection between the SCNT board (J4) and the PCNT board (J2).
- 8) Replace the document sensor (DS).
- 9) Replace the document edge sensor (DES).
- 10) Replace the OPCNT board.
- 11) Replace the document feed motor.
- 12) Replace the SCNT board.
- 13) Replace the PCNT board.

5.5.2.4 #005 [Tx/Rx] Initial identification (T0/T1) time-over

0003-5247

Cause

The tone/pulse setting is wrong.

Remedy

Make the correct tone/pulse setting.

Cause

The time it takes to connect to the other party's line is too long.

Remedy

- 1) When registering an auto-dial number, put a relatively long pause after the telephone number to delay the T0 timer start mechanism.
- 2) To prevent a time-over condition, lengthen the service data #3 Numeric Param. No.10 T0 timer.
- 3) To prevent a time-over condition, lengthen the service data #3 Numeric Param. No.11 T1 timer.

Cause

The other party does not respond.

Remedy

Contact the operator of the other party, and find out the cause.

Cause

The other party's communication mode (G2, G3, etc.) does not match.

Remedy

The communication mode depends on each specific model, and no remedy can be offered.

Cause

During transmission, the other party malfunctioned because of an echo.

Remedy

- 1) Provide echo remedy 1.
- 2) Using a manual call, press the Start key after hearing the 1st DIS from the other party.
- 3) To prevent response to the 1st DIS from the other party, put a relatively long pause to the telephone number when registering an auto-dial number.
- 4) Ask the operator of the other party to provide echo remedy 2.
- 5) Ask the operator of the other party to decrease the transmission level.

Cause

During reception, the machine malfunctioned because of an echo.

Remedy

Provide echo remedy 2.

Memo**Echo Remedy 1** (by the transmitting machine; for long distance):

Changing SW03 bit 6, bit 5, and bit 4 of service soft switch #1 SSSW will affect all settings, i.e., all transmissions will be long distance transmissions:

long distance 1: bit 6, bit 5, bit 4 = 0, 0, 1

long distance 2: bit 6, bit 5, bit 4 = 0, 1, 0

long distance 3: bit 6, bit 5, bit 4 = 1, 1, 0

Echo Remedy 2 (by the receiving machine; adds a 1080-Hz total signal before transmission of CED):

Set SW03 bit 7 of service soft switch #1 SSSW to '1' so that a 1080-Hz total signal is transmitted before transmission of CED.

5.5.2.5 #009 [Rx] Recording paper has jammed or the recording paper has run out 0003-5248**Cause**

The recording paper is trapped.

Remedy

Remove the trapped recording paper.

Cause

The recording paper has run out.

Remedy

Set new recording paper.

Cause

An internal mechanism is faulty.

Remedy

- 1) Check the actuators of the recording paper edge sensor and the recording paper eject sensor for damage and deformation.
- 2) Check the connection between the main motor and the PCNT board (J401).
- 3) Check the connection between the paper edge sensor and the SCNT board (J14).
- 4) Check the connection between the SCNT board (J4) and the PCNT board (J2); check the connection between the power supply unit (J202) and the PCNT board (J1); check the connection between the power supply unit (J201) and the SCNT board (J8).
- 5) Replace the paper edge sensor.
- 6) Replace the main motor.
- 7) Replace the PCNT board.
- 8) Replace the SCNT board.
- 9) Replace the power supply unit.

5.5.3 Service Error Code**5.5.3.1 Service error code unique to this machine**0003-5249

T-5-4

No.	Tx/Rx	Definition
##322	[Rx]	Fixing heater temperature abnormality
##324	[Rx]	Printer section scanner motor rotation rate abnormal

5.5.3.2 ##322 [Rx] Fixing heater temperature abnormality0003-5250**Cause**

An internal mechanism is faulty.

Remedy

- 1) Check the connections between the fixing ass'y and the PCNT board (J102) and between the fixing ass'y and the SCNT board (J14).
- 2) Check the connection between the PCNT board (J1) and power supply unit (J202).
- 3) Check the resistance between connector pins of the fixing ass'y.
 - J206-12 and J206-13: 436 to 301 kOhms (at 25 deg C)
 - J102-1 and J102-2: 25.1 to 28.8 Ohms (at 25 deg C)
 - If either resistance is incorrect, replace the fixing ass'y.
- 4) Replace the PCNT board.
- 5) Replace the power supply unit.
- 6) Replace the SCNT board.

5.5.3.3 ##324 [Rx] Printer section scanner motor rotation rate abnormal

0003-5251

Cause

An internal mechanism is faulty.

Remedy

- 1) Check the connection between the laser scanner unit (J802) and SCNT board (J6).
- 2) Replace the laser scanner unit.
- 3) Replace the SCNT board.

5.6 Service Mode

5.6.1 Outline

5.6.1.1 Hardware Switches

0003-2142

This machine has the hardware switch described below.

SCNT board

Jumper switch (J1)

The clock information is backed up with a lithium battery by short-circuiting with a jumper plug.

5.6.1.2 Service Data Setting

0003-2143

Service data can be checked and changed with items on display means. The default values of the SSSW/parameters available in this machine are shown in this Service data menu. The SSSW/parameters given in the previous product-specific manual are explained in the G3 Facsimile Service Data Handbook.

5.6.1.3 Service Data Overview

0003-2144

Service Mode has #1-11 Service Data items and the Test Mode.

#1 SSSW

These setting items are for basic fax service function such as error management, echo countermeasures, and communication trouble countermeasures.

#2 MENU

These setting items are for functions required during installation, such as NL equalizer and transmission levels.

#3 NUMERIC PARAMETER

These setting items are for inputting numeric parameters such as the various conditions for the FAX/TEL switching function.

#4 NCU

These setting items are for telephone network control functions such as the selection signal transmission conditions and the detection conditions, for the control signals sent from the exchange.

#5 TYPE

The type setting makes the service data conform to the communications standards of a specific country/region.

#6 SCANNER

These setting items are for scanned image processing such as edge enhancement and error diffusion processing.

#7 PRINTER

These setting items are for basic printer service functions such as the reception picture reduction conditions. Also there is an item for resetting the printer section without switching the power off-on.

#8 CLEAR (data initialization)

Initializes each data.

#9 ROM

ROM data such as the version number and checksum are displayed.

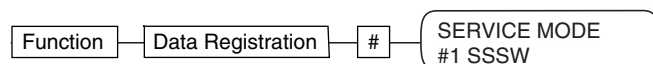
#11 Remote CRG

Use it for communication of printer information (e.g., replacement of a cartridge, number of prints).

5.6.1.4 Service Data Entry Method

0003-2146

You can enter the Service Mode with the following operation.

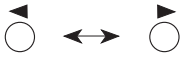


F-5-2

5.6.1.5 Service data menu




0003-2213

Service data



	Bit	7	6	5	4	3	2	1	0	
#1 SSSW (Service soft switch setting)	SW01	0	-	-	1	0	-	0	0	Error management
	SW02	-	-	-	-	-	-	-	0	Memory clear list output setting
	SW03	0	0	0	0	-	-	0	-	Echo solution setting
	SW04	1	0	0	0	0	0	0	0	Communication trouble solution settings
	SW05	-	-	-	0	0	-	-	-	Standard function (DIS signal) setting
	SW06	-	-	0	0	-	-	0	0	Scan condition settings
	SW07	-	-	-	-	-	-	-	-	Not used
	SW08	-	-	-	-	-	-	-	-	Not used
	SW09	-	-	-	-	-	-	0	0	Communications result display function settings
	SW10	-	-	-	-	-	-	-	-	Not used
	SW11	-	-	-	-	-	-	-	-	Not used
	SW12	0	-	0	0	0	0	1	0	Page timer settings
	SW13	-	-	-	-	-	-	-	-	Not used
	SW14	-	-	-	-	-	-	-	-	Not used
	SW15	-	0	-	-	-	-	-	-	Dial inn FAX/TEL switching function setting
	SW16	-	-	-	-	-	-	-	-	Not used
	SW17	-	-	-	-	-	-	-	-	Not used
	SW18	-	-	-	-	-	-	0	0	Communication trouble solutions settings
	SW19	-	-	-	-	-	-	-	-	Not used
	SW20	-	-	-	-	-	-	-	-	Not used
	SW21	-	-	-	-	-	-	-	-	Not used
	SW22	-	-	-	-	-	-	-	-	Not used
	SW23	-	-	-	-	-	-	-	-	Not used
	SW24	-	-	-	-	-	-	-	-	Not used
	SW25	-	-	-	-	-	0	0	0	Report display function settings
	SW26	0	0	-	-	0	-	-	0	Transmission function settings
	SW27	-	-	-	-	-	-	-	-	Not used
	SW28	-	-	0	0	1	1	0	0	V.8/V.34 protocol settings
	SW29	-	-	-	-	-	-	-	-	Not used
	SW30	-	-	-	-	-	-	-	-	Not used
	SW31									
	SW31 to 50									Not used
	SW50									

F-5-3

#2 MENU (Menu switch settings)		01:	Not used
		02:	Not used
		03:	Not used
		04:	Not used
		05:	ON OFF NL equalizer setting
  		06:	DIAL SERVICEMAN OFF Line monitor setting
		07:	10 (8 to 15) Transmission level setting
		08:	3429 baud V.34 Baud rate
			3200 baud
			3000 baud
			2800 baud
			2743 baud
			2400 baud
		09:	33.6 bps V.34 Transmission speed (2400 x n: 1 ≤ n ≤ 14)
		10:	50 Hz 25 Hz 17 Hz Frequency of pseudo ring signal
		11 :	Items 11 to 30: Not used
		30:	

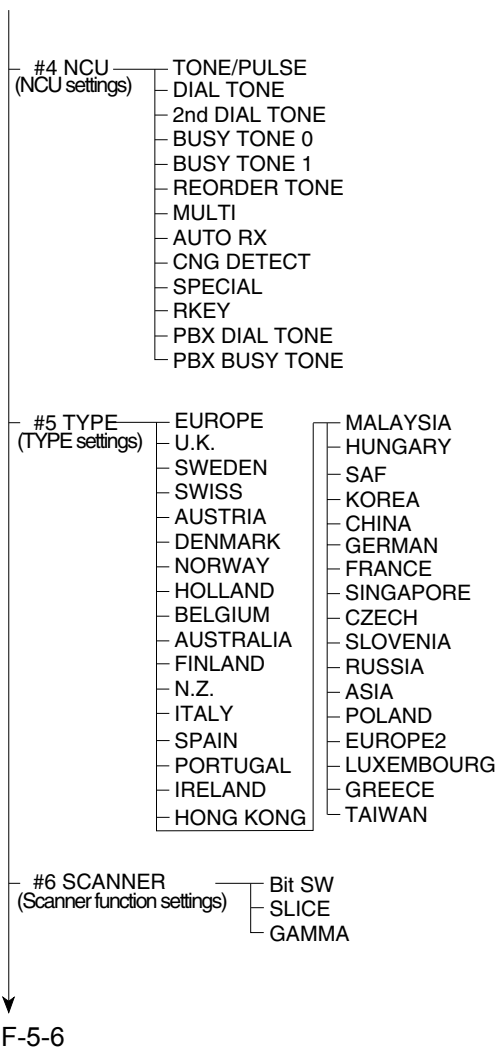
Figures in boldface indicate the default setting.

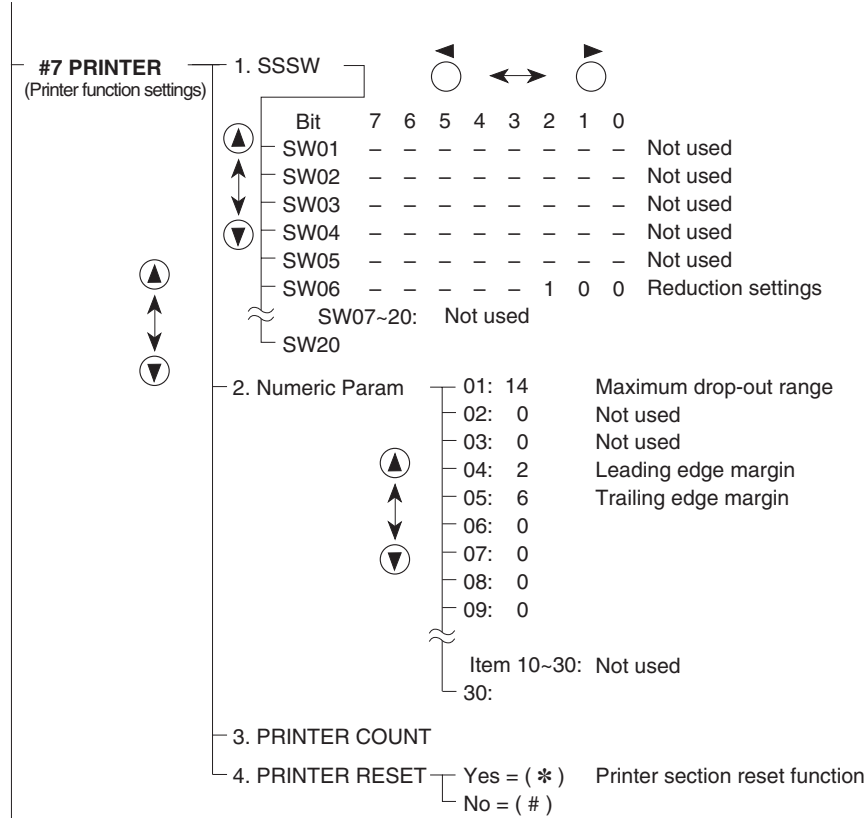
#3 NUMERIC Param.

(Numeric parameter settings)

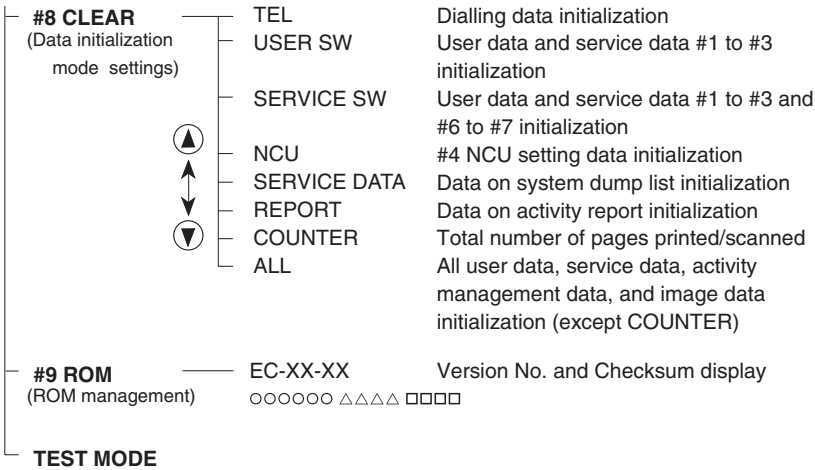
	Default	Range	
01:	0		Not used
02:	10 (10%)	(1~99)	RTN signal transmission condition (1)
03:	15 (15 lines)	(2~99)	RTN signal transmission condition (2)
04:	12 (12 times)	(1~99)	RTN signal transmission condition (3)
05:	4		Pause time for NCC (before the ID code)
06:	4		Pause time for NCC (after the ID code)
07:	350		Not used
08:	0		Not used
09:	6 (6 digits)	(1~20)	The number of digits in telephone number compared against TSI signal to be matched for restricted receiving function
10:	5500 (55 seconds)	(0~9999)	Line connection detection time (T0 timer)
11:	3500 (35 seconds)	(0~9999)	T1 timer (Rx)
12:	0		Not used
13:	1300 (13 seconds)	(0~9999)	Maximum time to receive online of image data
14:	0		Not used
15:	120 (1200 ms)	(0~999)	Hooking detection time
16:	2 (2 seconds)	(0~9)	Pseudo RBT transmission from CML on time until start
17:	100 (1000 ms)	(0~999)	Pseudo RBT signal pattern: On time
18:	0 (0 ms)	(0~999)	Pseudo RBT signal pattern: Off time (short)
19:	400 (4000 ms)	(0~999)	Pseudo RBT signal pattern: Off time (long)
20:	100 (1000 ms)	(0~999)	Pseudo ring pattern: On time setting
21:	0 (0ms)	(0~999)	Pseudo ring pattern: Off time (short)
22:	400 (4000 ms)	(0~999)	Pseudo ring pattern: Off time (long)
23:	44		Not used
24:	10		Not used
25:	60 (600 s)	(0~999)	Answering machine connection function signal detection time
26:	44		Not used
27:	0		Not used
28:	0		Not used
29:	0		Not used
30:	0		Not used

F-5-5





F-5-7



F-5-8

5.6.2 Default Settings

5.6.2.1 SSSW default settings

0003-2313

T-5-5

TYPE	EUROPE	U.K.	SWEDEN	SWISS	AUSTRIA	DENMAR K
#1 SSSW						
SW01	00010000	00010000	00010000	00010000	00010000	00010000
SW02	00000000	00000000	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000	00000000	00000000
SW04	10000000	10000000	10000010	10000010	10000010	10000000
SW05	00000000	00000000	00000000	00000000	00000000	00000000
SW06	10000000	10000000	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000	00000000	00000000
SW08	00000000	00000000	00000000	00000000	00000000	00000000
SW09	00000100	00000100	00000100	00000100	00000100	00000100
SW10	00000000	00000000	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000	00000000	00000000
SW15	00000000	01000000	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000	00000000	00000000
SW23	00000000	00000000	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000	00000000	00000000
SW25	00000000	00000000	00000000	00000000	00000001	00000000
SW26	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	EUROPE	U.K.	SWEDEN	SWISS	AUSTRIA	DENMARK
SW27	00000000	00000000	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000	00000000	00000000
SW38	00000000	00000000	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000	00000000	00000000
SW40	00000000	00000000	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000	00000000	00000000
SW42	00000000	00000000	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000	00000000	00000000
#2 MENU						
05:	OFF	OFF	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL	DIAL	DIAL
07:	10	10	10	10	10	10
08:	3429baud	3429baud	3429baud	3429baud	3429baud	3429baud
09:	33.6	33.6	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz

TYPE	EUROPE	U.K.	SWEDEN	SWISS	AUSTRIA	DENMARK
#3 NUMERIC Param.						
02:	10	10	10	10	10	10
03:	15	15	15	15	15	15
04:	12	12	12	12	12	12
09:	6	6	6	6	6	6
10:	5500	5500	5500	5500	5500	5500
11:	3500	3500	3500	3500	3500	3500
13:	1300	1300	1300	1300	1300	1300
15:	120	120	120	120	120	120
16:	2	2	2	2	2	2
17:	100	100	100	100	100	100
18:	0	0	0	0	0	0
19:	400	400	400	400	400	400
20:	100	100	100	100	100	100
21:	0	0	0	0	0	0
22:	400	400	400	400	400	400
25:	60	60	60	60	60	60

T-5-6

TYPE	NORWAY	HOLLAND	BELGIUM	AUSTRALIA	FINLAND	N.Z.
#1 SSSW						
SW01	00010000	00010000	00010000	00010000	00010001	00010000
SW02	00000000	00000000	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000	00000000	00000000
SW04	10000010	10000010	10000000	10000000	10000000	10000000
SW05	00000000	00000000	00000000	00000000	00000000	00000000
SW06	10000000	10000000	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000	00000000	00000000
SW08	00000000	00000000	00000000	00000000	00000000	00000000
SW09	00000100	00000100	00000100	00000100	00000100	00000100

TYPE	NORWAY	HOLLAND	BELGIUM	AUSTRIA	FINLAND	N.Z.
SW10	00000000	00000000	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000	00000000	00000000
SW15	00000000	00000000	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000	00000000	00000000
SW23	00000000	00000000	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000	00000000	00000000
SW25	00000000	00000000	00000000	00000000	00000000	00000000
SW26	00000000	00000000	00000000	00000000	00000000	00000000
SW27	00000000	00000000	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000	00000000	00000000
SW38	00000000	00000000	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000	00000000	00000000
SW40	00000000	00000000	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	NORWAY	HOLLAND	BELGIUM	AUSTRIA	FINLAND	N.Z.
SW42	00000000	00000000	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000	00000000	00000000

#2 MENU

05:	OFF	OFF	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL	DIAL	DIAL
07:	10	10	10	11	10	10
08:	3429baud	3429baud	3429baud	3429baud	3429baud	3429baud
09:	33.6	33.6	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz

#3 NUMERIC Param.

02:	10	10	10	10	10	10
03:	15	15	15	15	15	15
04:	12	12	12	12	12	12
09:	6	6	6	6	6	6
10:	5500	5500	5500	5500	5500	5500
11:	3500	3500	3500	3500	3500	3500
13:	1300	1300	1300	1300	1300	1300
15:	120	120	120	120	120	120
16:	2	2	2	2	2	2
17:	100	100	100	100	100	100
18:	0	0	0	0	0	0
19:	400	400	400	400	400	400
20:	100	100	100	100	100	100

TYPE	NORWAY	HOLLAND	BELGIUM	AUSTRIA	FINLAND	N.Z.
21:	0	0	0	0	0	0
22:	400	400	400	400	400	400
25:	60	60	60	60	60	60

T-5-7

TYPE	ITALY	SPAIN	PORTUGAL	IRELAND	HONG KONG	MALAYSIA
#1 SSSW						
SW01	00010000	00010000	00010000	00010000	00010000	00010000
SW02	00000000	00000000	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000	00000000	00000000
SW04	10000010	10000010	10000010	10000000	10000000	10000000
SW05	00000000	00000000	00000000	00000000	00000000	00000000
SW06	10000000	10000000	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000	00000000	00000000
SW08	00000000	00000000	00000000	00000000	00000000	00000000
SW09	00000100	00000100	00000100	00000100	00000100	00000100
SW10	00000000	00000000	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000	00000000	00000000
SW15	00000000	00000000	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000	00000000	00000000
SW23	00000000	00000000	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	ITALY	SPAIN	PORTUG AL	IRELAND	HONG KONG	MALAYSI A
SW25	00000000	00000001	00000000	00000000	00000000	00000000
SW26	10000000	00000000	00000000	00000000	00000000	00000000
SW27	00000000	00000000	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000	00000000	00000000
SW38	00000000	00000000	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000	00000000	00000000
SW40	00000000	00000000	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000	00000000	00000000
SW42	00000000	00000000	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000	00000000	00000000
#2 MENU						
05:	OFF	OFF	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL	DIAL	DIAL
07:	10	10	10	10	10	10
08:	3429baud	3429baud	3429baud	3429baud	3429baud	3429baud

TYPE	ITALY	SPAIN	PORTUG AL	IRELAND	HONG KONG	MALAYSI A
09:	33.6	33.6	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz
#3 NUMERIC Param.						
02:	10	10	10	10	10	10
03:	15	15	15	15	15	15
04:	12	12	12	12	12	12
09:	6	6	6	6	6	6
10:	5500	5500	5500	5500	5500	5500
11:	3500	3500	3500	3500	3500	3500
13:	1300	1300	1300	1300	1300	1300
15:	120	120	120	120	120	120
16:	2	2	2	2	2	2
17:	100	100	100	100	100	100
18:	0	0	0	0	0	0
19:	400	400	400	400	400	400
20:	100	100	100	100	100	100
21:	0	0	0	0	0	0
22:	400	400	400	400	400	400
25:	60	60	60	60	60	60

T-5-8

TYPE	HUNGAR Y	SAF	KOREA	CHINA	GERMAN	FRANCE
#1 SSSW						
SW01	00010000	00010000	00010000	00010000	00010000	00010000
SW02	00000000	00000000	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000	00000000	00000000
SW04	10000000	10000000	10000000	10000000	00000010	00000010
SW05	00000000	00000000	00000000	00000000	00000000	00000000
SW06	10000000	10000000	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	HUNGAR Y	SAF	KOREA	CHINA	GERMAN	FRANCE
SW08	00000000	00000000	00000000	00000000	00000000	00000000
SW09	00000100	01000100	01000100	01000100	00000100	00000100
SW10	00000000	00000000	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000	00000000	00000000
SW15	00000000	00000000	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000	00001000	00000000
SW23	00000000	00000000	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000	00000000	00000000
SW25	00000001	00000000	00000000	00000000	00000101	00000001
SW26	10000000	00000000	00000000	00000000	00010000	00000000
SW27	00000000	00000000	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000	00000000	00000000
SW38	00000000	00000000	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	HUNGAR Y	SAF	KOREA	CHINA	GERMAN	FRANCE
SW40	00000000	00000000	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000	00000000	00000000
SW42	00000000	00000000	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000	00000000	00000000

#2 MENU

05:	OFF	OFF	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL	DIAL	DIAL
07:	10	10	11	13	10	10
08:	3429baud	3429baud	3429baud	3429baud	3429baud	3429baud
09:	33.6	33.6	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz

#3 NUMERIC Param.

02:	10	10	10	10	8	8
03:	15	15	15	15	15	15
04:	12	12	12	12	6	12
09:	6	6	6	6	6	6
10:	5500	3500	5500	4300	9000	5500
11:	3500	3500	3500	3500	3500	3800
13:	1300	1300	1300	1200	1300	1300
15:	120	120	120	120	120	120
16:	2	2	2	2	2	2
17:	100	100	100	100	100	100
18:	0	0	0	0	0	0

TYPE	HUNGARY	SAF	KOREA	CHINA	GERMAN	FRANCE
19:	400	400	400	400	400	400
20:	100	100	100	100	100	100
21:	0	0	0	0	0	0
22:	400	400	400	400	400	400
25:	60	60	60	60	60	60

T-5-9

TYPE	SINGAPORE	CZECH	SLOVENIA	RUSSIA	ASIA	POLAND
#1 SSSW						
SW01	00010000	00010000	00010000	00010000	00010000	00010000
SW02	00000000	00000000	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000	00000000	00000000
SW04	10000000	10000000	10000000	10000000	10000000	10000000
SW05	00000000	00000000	00000000	00000000	00000000	00000000
SW06	10000000	10000000	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000	00000000	00000000
SW08	00000000	00000000	00000000	00000000	00000000	00000000
SW09	00000100	00000100	00000100	00000100	00000100	00000100
SW10	00000000	00000000	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000	00000000	00000000
SW15	00000000	00000000	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000	00000000	00000000

TYPE	SINGAPORE	CZECH	SLOVENIA	RUSSIA	ASIA	POLAND
SW23	00000000	00000000	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000	00000000	00000000
SW25	00000000	00000000	00000000	00000000	00000000	00000000
SW26	00000000	00000000	00000000	00000000	00000000	00000000
SW27	00000000	00000000	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000	00000000	00000000
SW38	00000000	00000000	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000	00000000	00000000
SW40	00000000	00000000	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000	00000000	00000000
SW42	00000000	00000000	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000	00000000	00000000
#2 MENU						
05:	OFF	OFF	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL	DIAL	DIAL

TYPE	SINGAPORE	CZECH	SLOVENIA	RUSSIA	ASIA	POLAND
07:	10	10	10	10	10	10
08:	3429baud	3429baud	3429baud	3429baud	3429baud	3429baud
09:	33.6	33.6	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz	25 Hz

#3 NUMERIC Param.

02:	10	10	10	10	10	10
03:	15	15	15	15	15	15
04:	12	12	12	12	12	12
09:	6	6	6	6	6	6
10:	5500	5500	5500	5500	5500	5500
11:	3500	3500	3500	3500	3500	3500
13:	1300	1300	1300	1300	1300	1300
15:	120	120	120	120	120	120
16:	2	2	2	2	2	2
17:	100	100	100	100	100	100
18:	0	0	0	0	0	0
19:	400	400	400	400	400	400
20:	100	100	100	100	100	100
21:	0	0	0	0	0	0
22:	400	400	400	400	400	400
25:	60	60	60	60	60	60

T-5-10

TYPE	EUROPE2	LUXEMBOURG	GREECE	TAIWAN
#1 SSSW				
SW01	00010000	00010000	00010000	00010000
SW02	00000000	00000000	00000000	00000000
SW03	00000000	00000000	00000000	00000000
SW04	10000000	10000000	10000000	10000000
SW05	00000000	00000000	00000000	00000000

TYPE	EUROPE2	LUXEMB OURG	GREECE	TAIWAN
SW06	10000000	10000000	10000000	10000000
SW07	00000000	00000000	00000000	00000000
SW08	00000000	00000000	00000000	00000000
SW09	00000100	00000100	00000100	00000100
SW10	00000000	00000000	00000000	00000000
SW11	00000000	00000000	00000000	00000000
SW12	00000010	00000010	00000010	00000010
SW13	00000000	00000000	00000000	00000000
SW14	00000000	00000000	00000000	00000000
SW15	00000000	00000000	00000000	00000000
SW16	00000011	00000011	00000011	00000011
SW17	00000000	00000000	00000000	00000000
SW18	00000000	00000000	00000000	00000000
SW19	00000000	00000000	00000000	00000000
SW20	00000000	00000000	00000000	00000000
SW21	00000000	00000000	00000000	00000000
SW22	00000000	00000000	00000000	00000000
SW23	00000000	00000000	00000000	00000000
SW24	00000000	00000000	00000000	00000000
SW25	00000000	00000000	00000000	00000000
SW26	00000000	00000000	00000000	00000000
SW27	00000000	00000000	00000000	00000000
SW28	00001100	00001100	00001100	00001100
SW29	00000000	00000000	00000000	00000000
SW30	00000000	00000000	00000000	00000000
SW31	00000000	00000000	00000000	00000000
SW32	00000000	00000000	00000000	00000000
SW33	00000000	00000000	00000000	00000000
SW34	00000000	00000000	00000000	00000000
SW35	00000000	00000000	00000000	00000000
SW36	00000000	00000000	00000000	00000000
SW37	00000000	00000000	00000000	00000000

TYPE	EUROPE2	LUXEMB OURG	GREECE	TAIWAN
SW38	00000000	00000000	00000000	00000000
SW39	00000000	00000000	00000000	00000000
SW40	00000000	00000000	00000000	00000000
SW41	00000000	00000000	00000000	00000000
SW42	00000000	00000000	00000000	00000000
SW43	00000000	00000000	00000000	00000000
SW44	00000000	00000000	00000000	00000000
SW45	00000000	00000000	00000000	00000000
SW46	00000000	00000000	00000000	00000000
SW47	00000000	00000000	00000000	00000000
SW48	00000000	00000000	00000000	00000000
SW49	00000000	00000000	00000000	00000000
SW50	00000000	00000000	00000000	00000000

#2 MENU

05:	OFF	OFF	OFF	OFF
06:	DIAL	DIAL	DIAL	DIAL
07:	10	10	10	10
08:	3429baud	3429baud	3429baud	3429baud
09:	33.6	33.6	33.6	33.6
10:	25 Hz	25 Hz	25 Hz	25 Hz

#3 NUMERIC Param.

02:	10	10	10	10
03:	15	15	15	15
04:	12	12	12	12
09:	6	6	6	6
10:	5500	5500	5500	5500
11:	3500	3500	3500	3500
13:	1300	1300	1300	1300
15:	120	120	120	120
16:	2	2	2	2

	TYPE	EUROPE2	LUXEMB OURG	GREECE	TAIWAN
17:		100	100	100	100
18:		0	0	0	0
19:		400	400	400	400
20:		100	100	100	100
21:		0	0	0	0
22:		400	400	400	400
25:		60	60	60	60

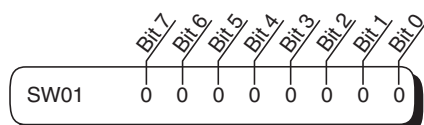
5.6.3 Service Soft Switch Settings (SSSW)

5.6.3.1 Outline

5.6.3.1.1 Explanation of service data

0003-2432

The items registered and set by each of these switches comprise 8-bit switches. The figure below shows which numbers are assigned to which bits. Each bit has a value of either 0 or 1.



F-5-9

See the chart in the service data shown in this Service data menu to see effective bits and their default values. With the exception of new switches added to this model the meanings (functions) of the bits are not described in this manual except the new switches added to this model. See the G3 Facsimile Service Data Handbook (supplied separately) for details of the switches.

Below are examples showing how to read bit switch tables.

Bit	Function	1	0
0	Service error code	Output	Not Output
1	Error dump list	Output	Not Output
2	Not used		
3	Copy function	No	Yes
4	##300 series service error code	Output	Not Output
5	Not used		
6	Not used		
7	User setting restriction	Setting possible	Setting restricted

Indicates that the setting is "1".

Indicates that the setting is "0".

Figures in boldface are default settings.

F-5-10

5.6.3.2 SSSW-SW15

5.6.3.2.1 Functional Construction

0003-2448

T-5-11

Bit	Function	1	0
0	not used	-	-
1	not used	-	-
2	not used	-	-
3	not used	-	-
4	not used	-	-
5	not used	-	-
6	Detect continuous signal at FAX/TEL switching	Yes	No
7	not used	-	-

5.6.3.2.2 Detailed Discussions of Bit 6

0003-2451

You may enable or disable detection of ROT continuous signal for FAX/TEL switching.

5.6.3.3 SSSW-SW18

5.6.3.3.1 Functional Construction

0003-2453

T-5-12

Bit	Function	1	0
0	Detection of carrier disconnection between the DCS signal and the TCF signal	Detect	Do not detect
1	Waiting time for carrier disconnection between the DCS signal and the TCF signal	600 ms	300 ms
2	not used	-	-
3	not used	-	-
4	not used	-	-
5	not used	-	-
6	not used	-	-

Bit	Function	1	0
7	not used	-	-

5.6.3.3.2 Detailed Discussions of Bit 0

0003-2454

It is possible to select whether or not to detect carrier disconnection between the DCS signal and the TCF signal during reception.

If the receiving machine returns an FTT signal while the other machine (PC-FAX) is transmitting a TCF signal and a reception error occurs, set this bit to 1.

5.6.3.3.3 Detailed Discussions of Bit 1

0003-2458

It is possible to select the detection time for carrier disconnection between the DCS signal and TCF signal during reception.

This bit is available for use when #1 SSSW SW 18 Bit 0 is set to 1.

5.6.4 Numeric Parameter Settings (NUMERIC Param.)

5.6.4.1 Numeric parameter

0003-2462

T-5-13

No.	Function	Selecting range	Default settings
010	T0 Timer	0 - 9999	5500
011	T1 Timer (Rx)	0 - 9999	3500
013	Maximum time to receive one line of image data	500 - 3000	1300

No.10

The wait time after transmission of a dialing signal ends until a significant signal is detected in transmission was formerly designated as T1 timer with parameter 10.

However, ITU-T recommends that it should be designated as T0 timer, so parameter 10 has been renamed to T0 timer and the default time-out time has been changed from 35 to 55 seconds.

Memo

The T1 timer for the transmitter (wait time after a significant CED or V21 flag significant signal is detected until the next significant signal is detected) is fixed at 35 seconds.

No.11

Set the T1 timer for the receiver (wait time after DIS transmission starts until a significant signal is received.)
If frequent errors occur during reception (2 instances) because of line connection conditions, raise the value of this parameter.

No.13

Set the maximum time to receive one line of image data when image data is received.
If the other party is a computer fax and the time to receive one line of image data is long, raise the value of this parameter to increase the maximum reception time.

5.6.5 Test Mode (TEST)

5.6.5.1 Overview

5.6.5.1.1 Test mode overview

0003-1930

Test mode can be executed by following the menu items from the display.

D-RAM test

Checking operations by writing data into the image storage field of the D-RAM.

Print test

Printing a test pattern in the printing area.

MODEM, NCU test

These tests comprise the frequency test ,the G3 signal transmission test, and the CNG and DTMF signals reception test.

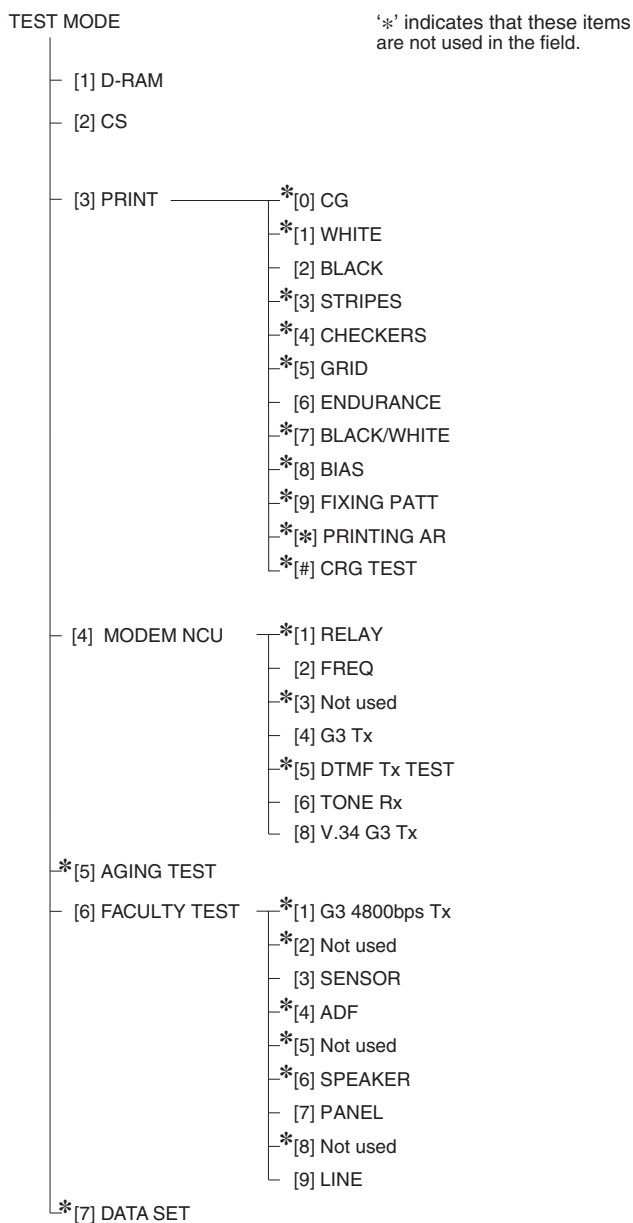
FACULTY test

These test check the operation of operation panel and sensor functions.

5.6.5.1.2 Test mode flowchart

0003-1935

To operate the test mode, press the Function key, Data Registration key, # key, and select SERVICE MODE; then, select TEST MODE with the cursor, and press the OK key.



F-5-11

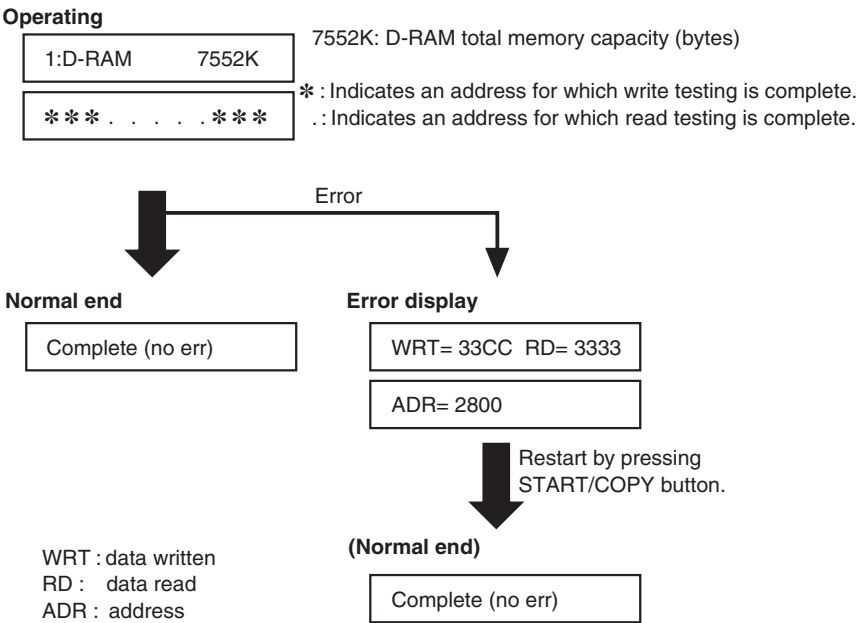
5.6.5.2 DRAM Test

5.6.5.2.1 D-RAM test

0003-1938

Pressing the 1 key from the test mode menu selects the D-RAM tests. D-RAM Test 1 writes data to the entire D-RAM region and reads it out to check that operations are correct.

D-RAM Test 2 just reads data at high speed.



F-5-12



Be sure to output all image data being stored in memory before the D-RAM test. All of the data in memory is deleted once the D-RAM test is executed.

5.6.5.3 Print Test

5.6.5.3.1 PRINT test 0003-1940

The Print Test menu is selected by pressing the 3 key from the test mode menu. In this test, various print patterns are output from the printer. As service print patterns, press numeric key 2 from the Print Test menu to select [3-2: Black] or press numeric button 6 to select [3-6: Endurance] Do not use the other patterns. They are for development and factory use.

Check to make sure that there is no white streaks/uneven image density on a delivered pattern.



F-5-13

Memo

Copy a document when the print test is completed and its result is proper. If any fault appears on a copy image after that, the source of the fault is the scanning unit.

5.6.5.4 Modem Test

5.6.5.4.1 MODEM, NCU test

0003-1941

These tests test modem and NCU transmission and reception. The modem tests check whether signals are sent correctly from the modem by comparing the sound of the signals from the speaker with the sounds from a normal modem. Also, on the display indicates whether or not the modem correctly detected received tone signals and DTMF signals.

End this test by pressing the STOP key.

T-5-14

Modem test type	Overview
Frequency test	The modem sends tone signals from the modular jack and the speaker.
G3 signal transmission test	The modem sends G3 signals from the modular jack and the speaker.
Tonal signal/DTMF signal reception test	The modem detects specific frequencies and DTMF signals received from the modular jack.

Modem test type	Overview
V.34 G3 signal transmission test	The modem sends V.34 G3 signals from the modular jack and the speaker.

5.6.5.4.2 Frequency test

0003-1942

The frequency test menu is selected by pressing the numeric key 2 from the MODEM, NCU test menu. Signals of the frequencies below are sent from the modem using the modular jack and the speaker. The frequency can be changed with the numeric key.

T-5-15

Numeric key	Frequency
1	462 Hz
2	1100 Hz
3	1300 Hz
4	1500 Hz
5	1650 Hz
6	1850 Hz
7	2100 Hz

Memo

The pseudo-ringback tone transmission pattern and frequency and the output levels for each frequency follow the service data transmission level settings.

5.6.5.4.3 G3 signal transmission test

0003-2039

The G3 signal transmission test menu is selected by pressing numeric key 4 from the MODEM, NCU test menu. The G3 signals below are sent from the modem using the modular jack and the speaker. The frequency can be changed with the numeric keys.

T-5-16

Numeric key	Speed
0	300 bps

Numeric key	Speed
1	2400 bps
2	4800 bps
3	7200 bps
4	9600 bps
5	TC7200 bps
6	TC9600 bps
7	12000 bps
8	14400 bps

Memo

The transmission level can be changed with the cursor key.

5.6.5.4.4 Tonal and DTMF signal reception test

0003-2040

The tonal and DTMF signal reception test is selected by pressing the numeric key 6 from the MODEM, NCU test menu. In these tests, you can check whether the tonal signals and DTMF signals received from the modular jack are detected by the modem.

The 462Hz test is included because the modem has a 462Hz detection function.

Tonal signal reception test

4 - 6 : TONE Rx	0 0 0
-----------------	-------

0 0 0

- When 462±14 Hz signal detected, 0→1
- When 1100±30 Hz signal detected, 0→1
- When 2100±25 Hz signal detected, 0→1

DTMF signal reception test

4 - 6 : TONE Rx	0 0 0
	1 2 3 4 5 6 7 8 9 0

The received DTMF signals are displayed in order from the right on the second line of the display.

F-5-14

5.6.5.4.5 V.34 G3 signal transmission test

0003-2041

The V.34 G3 signal transmission test menu is selected by pressing the numeric key 8 from the MODEM, NCU test menu. The V.34 G3 signals below are sent from the modem using the modular jack and the speaker by pressing the Start key. The Baud rate can be changed with the numeric key, and the Speed can be changed with the cursor key.

T-5-17

Numeric key	Baud rate
0	3429 baud
1	3200 baud
2	3000 baud
3	2800 baud
4	2743 baud
5	2400 baud

T-5-18

Cursor key	Speed
	2400 bps
	4800 bps
	7200 bps
	9600 bps
	12000 bps
	14400 bps
< >	16800 bps
	19200 bps
	21600 bps
	24000 bps
	26400 bps
	28800 bps
	31200 bps
	33600 bps

5.6.5.5 Faculty Test

5.6.5.5.1 FACULTY test

0003-2049

The faculty tests are selected by pressing the numeric key 6 from the test mode menu. These tests test the following faculties of this machine.

T-5-19

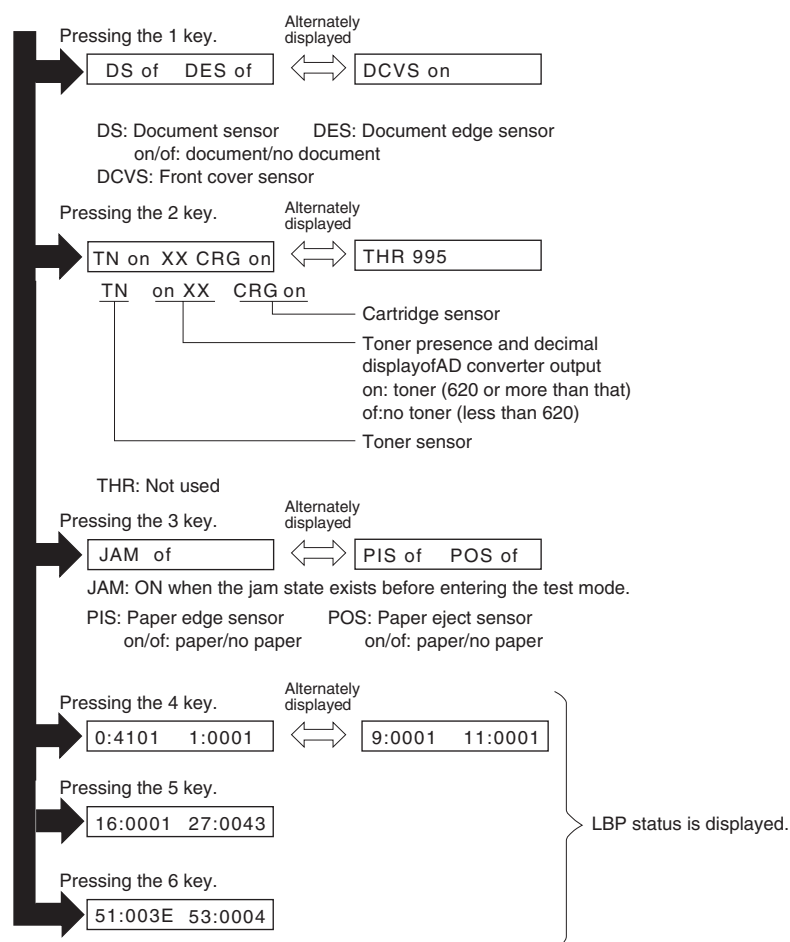
Test type	Overview
Sensor test	Test whether the sensors are operating correctly.
Operation panel test	Tests whether the key switches on the operation panel are operating correctly.
Line signal reception test	Tests whether the NCU board signal sensor and frequency counter are operating correctly.

5.6.5.5.2 Sensor test

0003-2084

The sensor test is selected when displaying 6-1: SENSOR from the FACULTY test menu, and pressing the OK key. This test is to check conditions of the machine's sensors on the display.

Conditions of the sensors using the sensor arm/micro switch can be checked by moving the arm/switch.



F-5-15

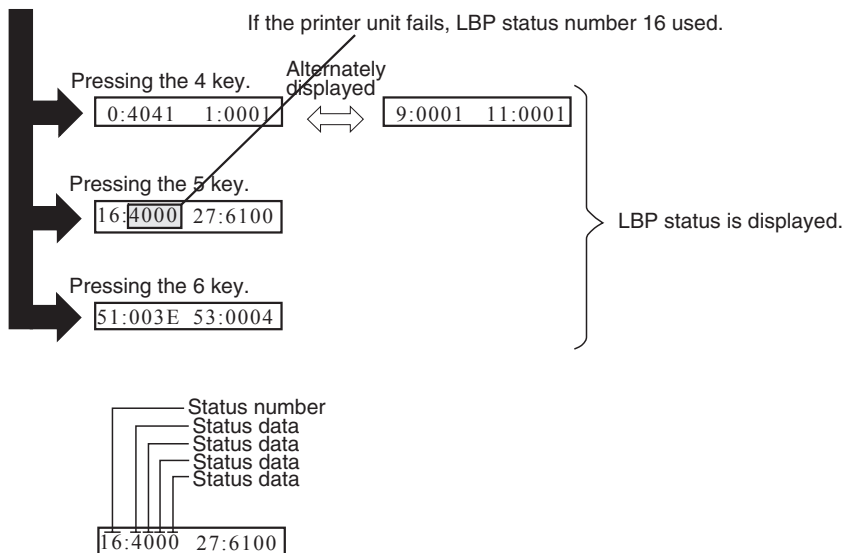
LBP Status

An LBP status is indicated by means of a 16-bit signal that represents the condition of the inside of the printer generated by the CPU mounted on the SCNT board.

Check the LBP status as follows to find out the cause of the fault:

6-3 : SENSOR
 [1] --- [6]

When the 4, 5, or 6 key is pressed, the status is displayed.



F-5-16

a) LBP Status Check

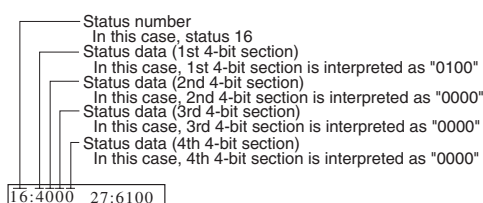
The LBP status is indicated in 4-digit hexadecimal notation (instead of 16-digit binary notation).

Bit 16 is a parity bit (odd).

Memo

Parity bit (odd)

The parity bit is one of the 16 bits transmitted from the PCNT board to the SCNT board and added by the transmitter so that the total number of bits of 1 becomes an odd number. The receiver checks the number of bits of 1 is an odd number to detect a transmission error.



If this information on status 16 is as indicated above, i.e., 1st 4-bit section is "4", 2nd 4-bit section is "0", 3rd 4-bit section is "0", and 4th 4-bit section is "0", we will learn that bit 6 is "1" from the following conversion table.

Bit 6 of status 16 indicates a fixing unit error, so the cause of the printer unit failure is the fixing unit.

	(1st 4bit section)				(2nd 4bit section)				(3rd 4bit section)				(4th 4bit section)				
Display	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15	Bit16	Display
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

F-5-17

b) LBP Status Explanation

LBP status is an 16-bit binary number as described in the previous page. An example of status data is given below.

Bit	Meaning	1	0
1	Unused		
2	Unused		
3	Unused		
4	Scanner motor failure	Failure	Normal
5	nBD signal error	Failure	Normal
6	Fixing unit failure	Failure	Normal
7	Unused		
8	Unused		
9	Unused		
10	Unused		
11	Unused		
12	Unused		
13	Unused		
14	Unused		
15	Unused		
16	Parity bit (odd)		

Indicates the status if each bit of the status is "1".

Indicates the status if each bit of the status is "0".

F-5-18

Status 16 (Service call status)

T-5-20

Bit	Meaning	1	0
1	Unused		
2	Unused		
3	Unused		
4	Scanner motor failure	Failure	Normal
5	nBD signal error	Failure	Normal
6	Fixing unit failure	Failure	Normal
7	Unused		
8	Unused		
9	Unused		
10	Unused		
11	Unused		
12	Unused		
13	Unused		
14	Unused		
15	Unused		
16	Parity bit (odd)		

[Bit 4]

'1' when the scanner motor does not reach the prescribed speed within 63.4 seconds after the motor starts in the laser scanner unit.

[Bit 5]

'1' when the output from the laser diode in the laser scanner unit is abnormal or the scanner unit fails, and the nBD signal is not output normally.

[Bit 6]

'1' when failure of the fixing heater in the fixing unit or temperature control thermistor is detected.

Memo

Status 16 is used to indicate the printer unit failure.

5.6.5.5.3 Operation panel test

0003-2127

The operation panel test is selected by pressing numeric key 7 from the faculty test menu. This test checks that the display, LED lamps, and keys on the operation panel are operating correctly.

Conditions of the sensors using the sensor arm/micro switch can be checked by moving the arm/switch.

Display test

Pressing the START/COPY key from the operation panel menu, [H] is displayed 16 characters by 1 line on the display. The next time the START/COPY key is pressed, all the LCD dots on the display are displayed. Check for any LCD dots in the display that are not displayed.

LED lamp test

Not used.

Operation key test

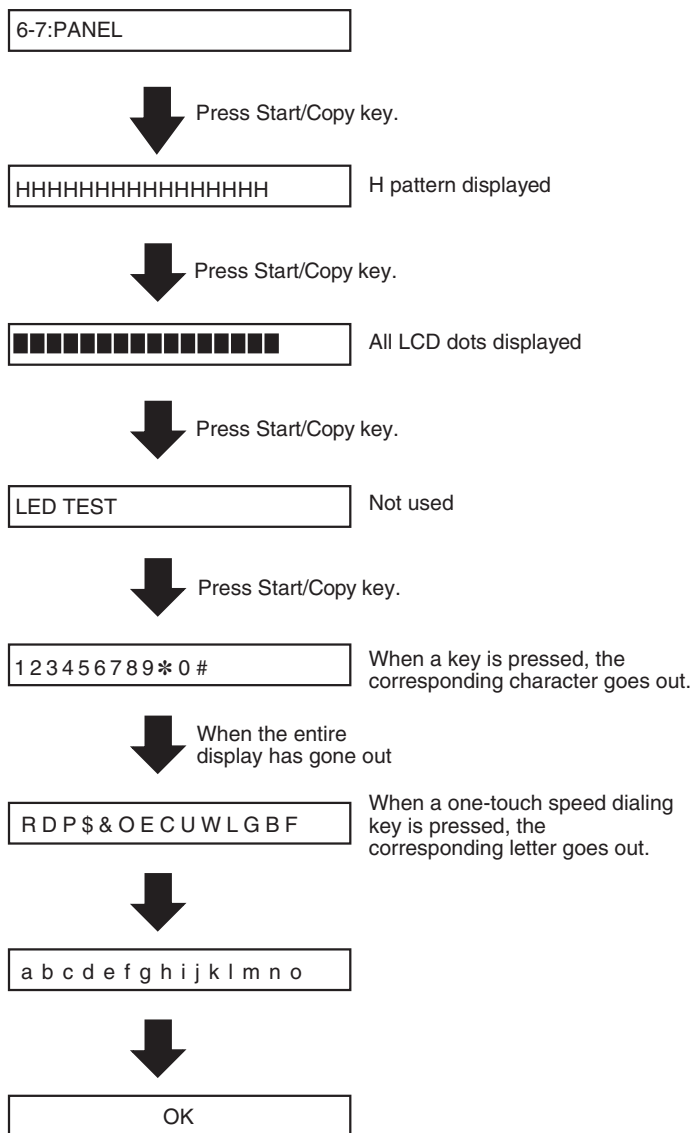
The Operation key test is selected by pressing the START/COPY key after the LED lamp test. In this test, you press the key corresponding to the displayed character to put it out. The table giving the correspondence between the characters and the buttons is below.

T-5-21

Character	Operation key	Character	Operation key
1-#	Numeric key	C	Clear key
R	Redial/Pause key	U	Cursor key (Upper)
D	Coded dial key	W	Cursor key (Lower)
P	R key	L	Cursor key (Left)
\$	Resolution key	G	Cursor key (Right)
O	Hook key	B	Directory key
E	OK key	F	Function key

When all the characters displayed have gone out, the system next starts the one-touch speed dialing key test. The letters a-o are displayed on the display, corresponding to one-touch speed dialing keys 01-15. Each letter displayed on the display goes out when its corresponding one-touch speed dialing key is pressed.

In this test, check for operation keys whose corresponding character or letter does not go out when the key is pressed.



Press the STOP key to end the test.

F-5-19

5.6.5.5.4 Line signal reception test

0003-2141

The line detect test menu is selected by pressing numeric key 9 from the faculty test menu. This test checks the operation of the NCU signal sensor and frequency counter. In Menu 1, the CI, status can be detected and in Menu 2 the frequency can be detected at changing detection levels. In this way, you can check if the NCU board is correctly detecting signals.

Test Menu 1

Test Menu 1 is selected by pressing numeric key 1 from the Line Detect menu.

When CI, is detected from the modular jack, the display changes from OFF to ON and the received frequency is displayed.

Test Menu 2

Test Menu 2 is selected by pressing numeric key 2 from the Line Detect menu.

When a tonal frequency is detected from the modular jack, the display changes from OFF to ON and the received frequency is displayed.

Test Menu 3

Test Menu 3 is selected by pressing numeric key 3 from the Line Detect menu.

When CNG is detected from the modular jack, the display changes from OFF to ON.

Chapter 6 APPENDIX

Contents

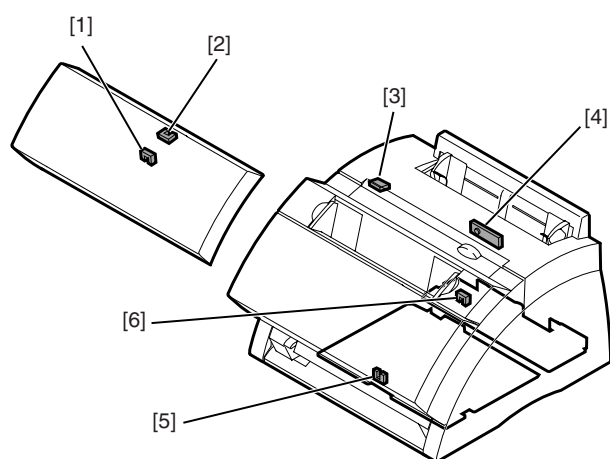
6.1 Outline of Electrical Components	6-1
6.1.1 Sensor	6-1
6.1.1.1 Arrangement of Sensors and Switches	6-1
6.1.2 PCBs	6-2
6.1.2.1 Arrangement of PCBs.....	6-2

6.1 Outline of Electrical Components

6.1.1 Sensor

6.1.1.1 Arrangement of Sensors and Switches

0003-1685



F-6-1

[1] Document edge sensor

It detects the document leading/trailing edges.

[2] Document sensor

Detects whether or not a document is set.

[3] Front cover sensor

It detects whether the front cover is open or closed.

[4] Toner sensor

It detects whether there is toner in the toner cartridge.

[5] Paper edge sensor

It detects the leading/trailing edge of paper being moved.

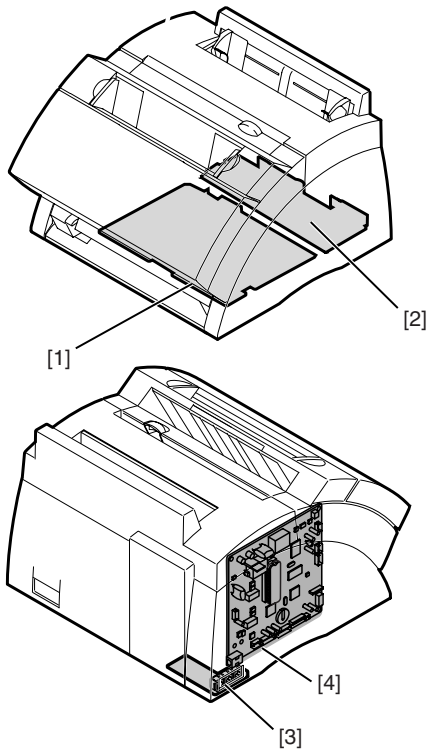
[6] Paper eject sensor

It detects recording paper eject conditions.

6.1.2 PCBs

6.1.2.1 Arrangement of PCBs

0003-1687



F-6-2

[1] PCNT board

Used to control the operation of the printer unit.

[2] Power supply unit

Used to control the supply of power to various components.

[3] Modular board

Interface board that connects the telephone line and the NCU board.

[4] SCNT board

Used to control the operation of the entire system.

Oct 7 2003

Canon