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SERVICE MANUAL

PLAIN PAPER FACSIMILE

e-STUDIO170F

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R04102171400-TTEC
Ver04_2008-03

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1. Introduction

1.1 Features

This machine has following features.

High capacity ADF with high-speed scanning:
The e-STUDIO170F scans one Letter (A4) size document page in 3 seconds (line density 8 dots/mm x 3.85 lines/mm) and stores it into memory. A maximum of up to 40 letter (A4) sheets may be placed into the ADF at one time.

High-speed transmission:
The e-STUDIO170F uses a V.34 modem designed for 33,600 bps communications.

Multi-access:
Using the multi-access facility, multiple processes can be performed in parallel. Functions, such as transmission reservation during reception, copying during memory transmission/reception, etc. Maximizing the e-STUDIO170F high-speed scanning and multi-access capabilities provides maximum office productivity and efficiency. Patterns of the multi-access are as follows:

1) Scan to Memory during Memory Transmission
2) Scan to Memory during Reception
3) Scan to Memory during Substitute Reception
4) Copying during Memory Transmission
5) Copying during Memory Reception
6) Reception during Copying
7) Reception during Memory printing
8) Reception during List printing
9) Scan to Memory during Memory printing
10) Scan to Memory during List printing

Laser recording on plain paper:
Recording is performed on fixed sizes of paper - Letter, Legal, A4 - using a laser beam printer.

Halftone system:
Photographic images are clearly recorded by the 128 gradations using the error diffusion method.

High resolution mode:
The e-STUDIO170F can transmit in ultra-fine mode (16 dots/mm x 15.4 line/mm).

Recording paper tray(s):
A 250-sheet tray, A4 or adjustable to Letter or Legal, is installed as a standard feature. An optional paper tray can be added to enable automatic paper feeding. All recording paper trays use a convenient front loading design. Maximum recording paper capacity is 750 sheets.

Image (PIX) memory communication function:
Picture data can be stored in the image (PIX) memory. For a delayed transmission, the picture data created by scanning documents is stored in the image memory and to be transmitted at the designated time. Other memory functions include multi-address transmission, substitute reception, ECM communication, etc.
The memory size is 7MB.

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38 One touch keys:
The remote party's address data can be registered to a one touch key. Communication options can be registered for each address. For further details, see 📖 P.1-8 "1.2.3 Operation panel".

150 Abbreviated dial numbers:
150 abbreviated dial numbers can be assigned in the range from No. 001 to 999.

Alternate number dialing:
It is possible to assign two facsimile telephone numbers to one abbreviated dial number or one touch dial key (one as the primary telephone number and the other as an alternate telephone number). The facsimile first dials the primary telephone number, then redials if the line is busy until the redialing limit count is reached. It will then begin to dial the alternate number. (Except for Relay/Mailbox/Confidential/ Polling)

Multi-address transmission function:
Transmissions of the same document to multiple addresses (up to188 addresses) are possible using one operation sequence, in which preset abbreviated dial numbers (150), and one touch dial keys (38) can be used. When the multi-key is specified, key pad dialing of up to 1000 digits, or 100 locations, is also possible.

Multi-polling reception:
Polling receptions from multiple remote parties (up to188 parties) are possible using one operation sequence, in which preset abbreviated dial numbers (150), and one touch dial keys (38) can be used. When the multi-key is specified, key pad dialing of up to 1000 digits, or 100 locations, is also possible.

Relay transmission request function:
The e-STUDIO170F can originate a relay transmission in relay transmission transactions.

Secure RX:
Secure RX allows reception to memory to secure documents during unattended periods. The user can select a specific time period and all day (24-hour) operation on selected days. The feature can be activated and deactivated by using a 4-digit security code.

Memory transmission:
Allows you to dial the remote party while scanning the document in memory. The document page data is cleared as the sending of each page is completed. Therefore, the memory is utilized effectively for transmissions. A maximum of 100 jobs of memory transmission are possible.

Public fax box:
A document can be reserved in image memory to be polled by remote stations multiple times.
One of its merits is that any remote station (even one with a non-TOSHIBA facsimile) can poll such documents without a password.

Program continuous polling:
By designating the starting interval, time, and day-of-week, an endless polling can be set.
Once set, polling receptions are repeated at the same time on the designated day-of-week.

Sub-address communication:
The e-STUDIO170F supports communication applications using sub-address (SUB/SEP/PWD) commands conforming to ITU-T. Sub-address communication is possible by keypad dialing, one touch key dialing, and abbreviated dialing using the sub-address settings in communication. Options.

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Security communication:
For transmissions, the facsimile checks if the telephone number of the remote party's facsimile CSI matches the number dialed on the unit itself. If it matches, the transmission will start. For receptions, the facsimile checks if the telephone number of the remote party's TSI matches any number assigned to an abbreviated dial number or one touch key. If it matches, the reception will start. Thus transmissions or receptions with any authorized party will be prevented at the earliest stage.

Substitute reception into memory:
When there is no paper remaining in the recording paper tray(s) of the facsimile, when a recording paper jam occurs, the toner is empty, or printing is already in progress, the received data is stored into memory instead of being output to recording paper. When the trouble is corrected, or the active printing job is completed, the received data in memory will then be printed.

Communication options:
If necessary, the function may be changed and options can be selected for page number, line monitoring, turnaround polling, ECM communication and security transmission, etc.

On-hook dialing function:
Manual transmitting procedure is possible with the optional handset on-hook (i.e., without lifting up the handset), using keypad dialing, abbreviated dialing, or one touch key dialing.

Automatic dialing functions:
1) Dialing with a time designated
   Transmitting a document to a designated party at a designated time.
2) Redialing
   When an automatic dialing has been performed and the destination party is busy, redialing will be repeated as many times as programmed with a certain time interval also programmed.
   By pressing the [REDIAL] key and selecting the desired item in the menu, redialing of that item will be performed immediately.

Cover sheet function:
This facsimile has a fax cover sheet preparation feature built in, allowing the operator to enter the destination name, sender name at the time of the document transmission. This cover sheet also allows image data, such as a company logo, to be included.

Account code:
By entering a different account code for each destination at the time of transmission, account codes will identify when, for whom, and to whom a particular fax message was sent.

Department code:
Permits assigning 50 department codes to control access and track activity. These codes are setup beforehand, and must be used to access machine functions.

List output:
This allows the operator to print data stored in the RAM (reservation list, preset dial number lists, function list, communication journal, transmission report, etc.).

Copying function:
This facsimile allows the local printing of documents. This feature effectively provides a convenience copying function.

LCD (Liquid Crystal Display):
It can display the operation menu, telephone numbers, station names, and error messages using alphanumeric characters.

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Super power saver mode:
This feature turns off virtually all power to minimize power consumption. Only the Sub-CPU remains operation sensing for ringing signals, document insertion, or activation of the Power Save key.

Printer power saver mode:
Reduces power consumption by cutting off power for the heater during periods when printing is not expected. The fast warm up time ensures the printer section will be ready before a full page of image data can be received.

Reverse order print:
Reverse order print is available permitting multi-page receptions to stack to the correct order with page one on top. This feature is automatically deactivated when residual memory becomes low.

Recovery transmission:
Documents that have gone through the redial count limit will not be cleared, but stored for a programmed period of time. Such documents can be recovered to be transmitted again.

F-code mailbox communication:
Bulletin board F-code mailbox transmissions using ITU-T standard protocol is possible. Permitting confidential communications with any other similarity equipped facsimile made by TOSHIBA or some other company.

High-speed high-resolution printer engine:
Utilizes a high-speed, high-resolution laser printer engine with a print speed of 17 ppm and an interpolated a resolution of 600 dpi. By installing the optional paper tray, up to 500 sheets of recording paper can be supplied.

User-friendly operation:
Using the large LCD display and the cross-shaped cursor keys (Menu Keys), menu item selection is quick and easy. Frequently used functions are assigned to direct function access keys, to make common communication operations and programming operations much faster and easier.

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1.2 Overview

1.2.1 Front View

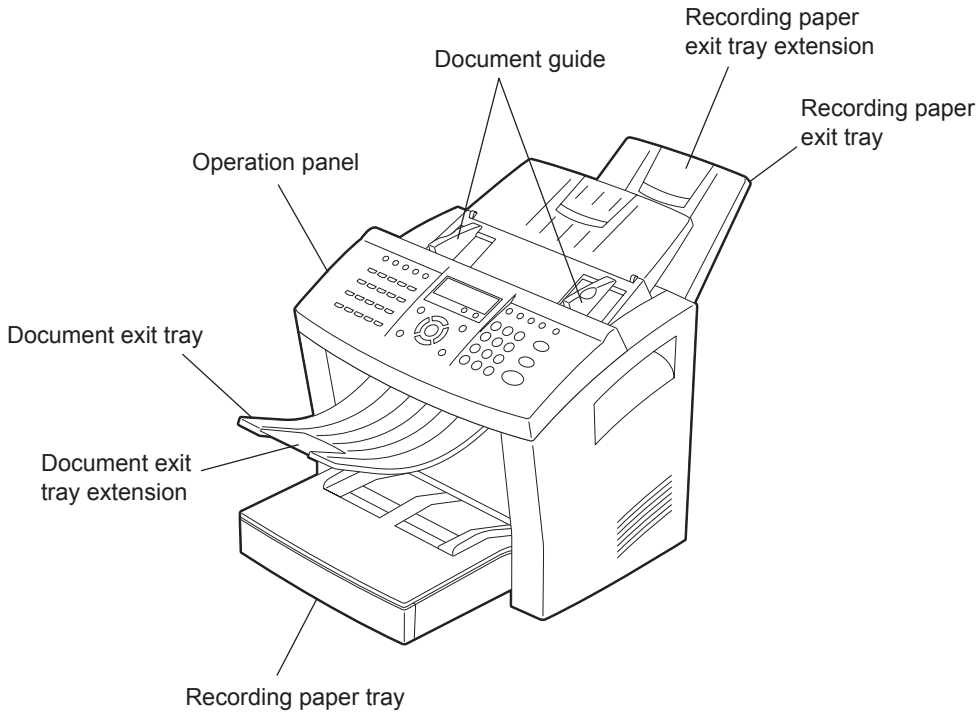

Fig. 1-1

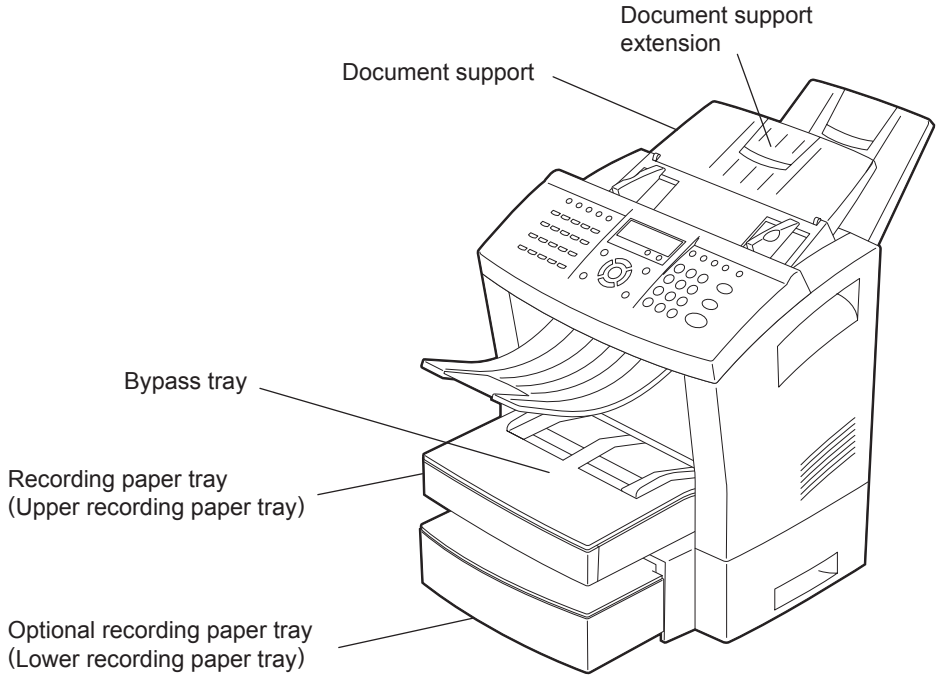

Fig. 1-2

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Operation panel
Use to perform programming and operation of the facsimile machine.

Document exit tray
Stacks the original documents after scanning.

Document exit tray extension
Supports long original documents after scanning.

Recording paper tray
It can be loaded with 250 sheets of letter, legal or A4 size paper.

Bypass tray
Load a sheet of recording paper.

Document support
Place documents face down on this tray to transmit or copy.

Document support extension
Supports long original documents to transmit or copy.

Recording paper exit tray
Stacks recording paper for receiving or copying.

Recording paper exit tray extension
Supports the long recording paper for receiving or copying.

Document guide
Adjust the guides to the edges of the document to help insure smooth feeding.

Optional recording paper tray
It can be loaded with 500 sheets of letter or A4 size paper.

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1.2.2 Rear View

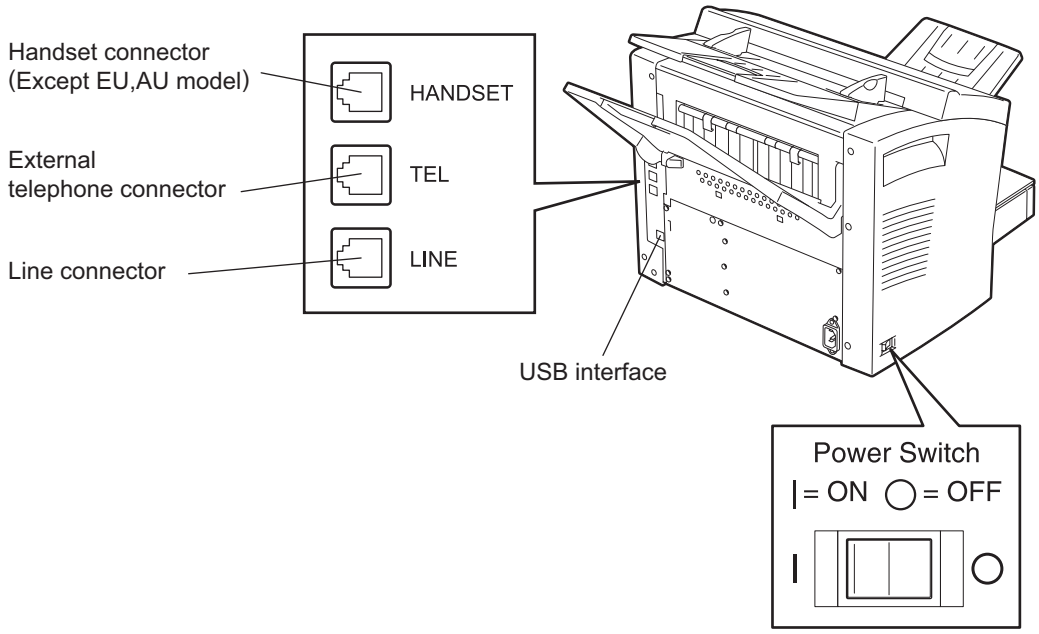

Fig. 1-3

Handset connector (Except EU, AU model)
Connects the optional telephone handset unit.

External telephone connector
Connects an external telephone set (if desired).

Line connector
Connects the telephone service line.

USB interface
This interface is used for connection to personal computers for scanning, printing and programming various settings from PC.

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1.2.3 Operation panel

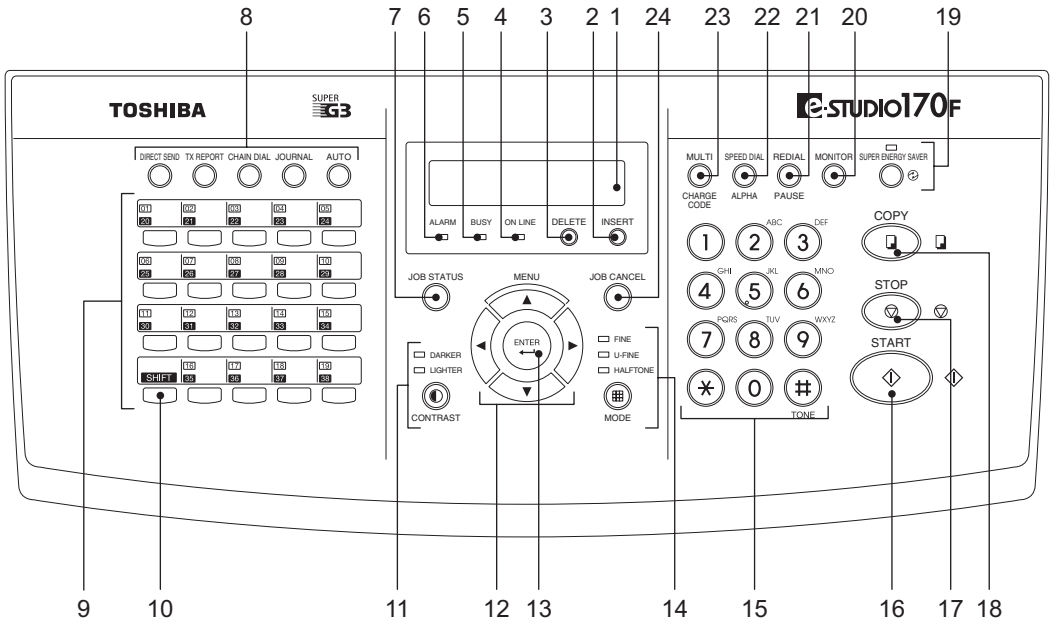

Fig. 1-4

1) LCD display
   Shows current machine conditions. Displays menu items when setting the operating conditions.

2) INSERT key
   This key is also used to insert characters in CHARACTER ENTRY mode.

3) DELETE key
   This key is also used to delete characters in CHARACTER ENTRY mode.

4) ONLINE lamp
   Blinks when the PC interface communication is underway between the facsimile and a PC.

5) BUSY lamp
   Illuminated when communication is underway through the phone line.

6) ALARM lamp
   Illuminated when any error occurs.

7) JOB STATUS key
   Used to display the communication status of a job running in the background.

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8) Direct Function Access Keys
Frequently used functions are preassigned. Operations using these special one touch keys are called “Direct Function Access Operations.”

- DIRECT SEND key
  Used to send a document in direct document transmission mode (i.e. real time transmission directly from the ADF).

- TX REPORT key
  Press this key to designate whether or not to issue a transmission report for a particular transmission.

- CHAIN DIAL key
  Used to dial a remote party using the chain dialing method.

- JOURNAL key
  Used to print a communication journal.

- AUTO key
  Select the facsimile reception mode such as Auto Receive, Fax/Tad, Tel/Fax and Manual Receive.

9) One touch keys
These keys allow you to send documents to the desired remote party with just one keystroke.

10) SHIFT key
Press this key prior to selecting the one touch keys (No. 20 to No. 38).

11) CONTRAST key, DARKER lamp and LIGHTER lamp
Select the contrast level of scanning documents. The lamp(s) for the selected contrast lights. When normal mode is selected, all these lamps are off.

12) Menu keys (

keys)
These keys are used to designate the required item by moving the desired screen or cursor through the LCD display.

13) ENTER key
Press this key to enter a selected menu item or select a menu entry.

14) MODE key, FINE lamp, U-FINE lamp and HALFTONE lamp
Selects the resolution for transmission. The lamp(s) for the selected resolution lights.
When standard mode is selected, all these lamps are off.

15) Dial keypad
Use these 12 keys just like the keypad on a standard telephone to dial telephone/facsimile numbers. These keys are also used to enter alphanumeric characters for the remote party’s names, etc.
The key 

is also used to access various services using touch-tone dialing when you use a dial pulse (DP) line.

16) START key
Press this key when ready to send or receive a document during manual communication operations. This key is also used to complete programming.

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17)STOP key
Used to stop an operation or cancel programming. This key is also used to clear an error condition.

18)COPY key
Press this key with a document in the document support to copy a document.

19)SAVER key and SUPER ENERGY SAVER lamp
Press this key to select the super energy saver mode. Illuminates when the facsimile is in the super energy saver mode.

20)MONITOR key
Used to enable the Speaker monitor, for dialing numbers without picking up the handset in direct document transmission mode.

21)REDIAL/PAUSE key
Press this key to redial a facsimile/telephone number if the line was busy on the first try. Press this key to enter a pause between digits of a facsimile number during a number entering operation.

22)SPEED DIAL/ALPHA key
Used for transmissions using abbreviated dialing numbers, alphabet dialing, or group dialing.

23)MULTI/CHARGE CODE key
Press this key to perform a multi-address transmission (broadcast) or a multi-polling reception. This key also used to input the charge code.

24)JOB CANCEL key
Used to cancel a job reserved or being executed.

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2. Specifications

2.1 Scanning System

Scanning method:	Flat scanning by CIS (Fed step by step using a pulse motor)
Light source:	Pure green LED (Wave length: 525 nm)
Effective scanning width:	A4-size document: 214 mm (8.34 inches) ±1%
Details of effective scanning width:	Scanning position detected by a photo-interrupter. Document leading edge: 2.5±2 mm (0.1±0.08 inches) Document trailing edge: 0±2.5 mm

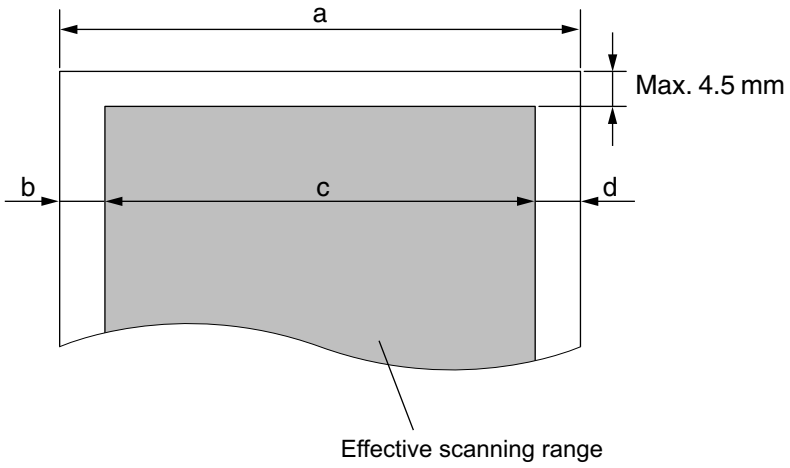

Fig. 2-1

Unit: mm

Paper size	a	b	c	d	Mode
Letter	216	1	214	1	Transmission/Copy
Legal	216	1	214	1	Transmission
A4	210	0	214	0	Transmission/Copy

a: 1-line width b: White mask (L) c: Effective scanning width d: White mask (R)

Remarks:

- The effective scanning width has a mechanical error range of 1.5.
- For calculating into a pels value, multiply each value by 8 (i.e. 8 pels/mm).

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Scanning density:	Standard: 8 pels/mm x 3.85 lines/mm (203 x 98 dpi) Fine: 8 pels/mm x 7.7 lines/mm (203 x 196 dpi) Ultra-Fine: 8/16 pels/mm x 15.4 lines/mm (203/406 x 392 dpi)
Contrast adjustment:	Standard, darker, lighter (Selectable by pressing the [CONTRAST] key.)
Scanning speed:	2.5 msec./line (A4 size, 8 pels/mm x 3.85 lines/mm)
Speed of reading into memory: (A4-size document)	Standard: 3 seconds Fine: 6 seconds Ultra-Fine: 12 seconds
Maximum document size:	When assisted by an operator: 216 mm (width) x 1,000 mm (length) 8.5" (width) x 39.37" (length) When not assisted by an operator: (With the document exit tray extension stretched out) 216 mm (width) x 356 mm (length) 8.5" (width) x 14.02" (length)
Minimum document size:	148 mm (width) x 100 mm (length) 5.83" (width) x 3.94" (length) (For documents of width less than 148 mm, use a carrier sheet.)
Document thickness:	Single-sheet document: 0.06 to 0.15 mm (52.6 to 120 g/m^2, 14 to 32 lbs.) (For documents of thickness less than 0.06 mm, use a carrier sheet. When using a carrier sheet, the total thickness shall be 0.15 mm including the thickness of the carrier sheet.) Multi-sheet document: 0.065 to 0.1 mm (60 to 105 g/m^2, 16 to 28 lbs.)

Number of auto document feeder capacity:

Size	Weight	Number of sheet
A4, Letter	14 lbs. (52.6 g/m^2)	1
	16 lbs. (60 g/m^2)	15
	20 lbs. (80 g/m^2)	40
	24 lbs. (91 g/m^2)	25
	32 lbs. (128 g/m^2)	1
Legal	14 lbs. (52.6 g/m^2)	1
	16 lbs. (60 g/m^2)	10
	20 lbs. (80 g/m^2)	15
	24 lbs. (91 g/m^2)	10
	32 lbs. (128 g/m^2)	1

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2.2 Recording System

Recording method:	Plain paper recording by laser beam printer
Recording width:	216 mm (8.5")
Resolution:	Horizontal scanning: 16 dots/mm or 600 dpi Vertical scanning: 15.4 lines/mm or 600 dpi
Warm-up time:	About 20 sec. (23°C, 73.4°F)
Recording paper size:	Letter: 216 mm (width) x 279.4 mm (length) 8.5" (width) x 11.0" (length) Legal: 216 mm (width) x 355.6 mm (length) 8.5" (width) x 14.0" (length) A4: 210 mm (width) x 297 mm (length)
Recording paper thickness:	60 to 90 g/m^2 (16 to 24 lbs. xerographic bond)
Recording paper tray capacity:	250 sheets (20 lbs, 80 g/m^2 paper)
Bypass tray capacity:	1 sheet (20 lbs, 80 g/m^2 paper)
Optional recording paper tray capacity:	500 sheets (20 lbs, 80 g/m^2 paper)
Auto reduction:	Copy reduction/Recording reduction Reduction rate: 95, 90, 86, 83, 80, 73% Refer to the Operator's Manual for details.
Recommended paper:	Letter/Legal: Hammer Mill TIDAL DP, 20 lbs. A4: TOSHIBA Copier Paper (European paper)
Recording paper stack:	Exit: Back side Capacity: Letter/A4/Legal: 150 sheets (20 lbs, 80 g/m^2 paper)

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Effective recording range: Unit: mm

Paper size	Size (Horizontal x Vertical)	Effective recording range
Letter	216 x 279	208 x 271
Legal	216 x 356	208 x 348
A4	210 x 297	202 x 289

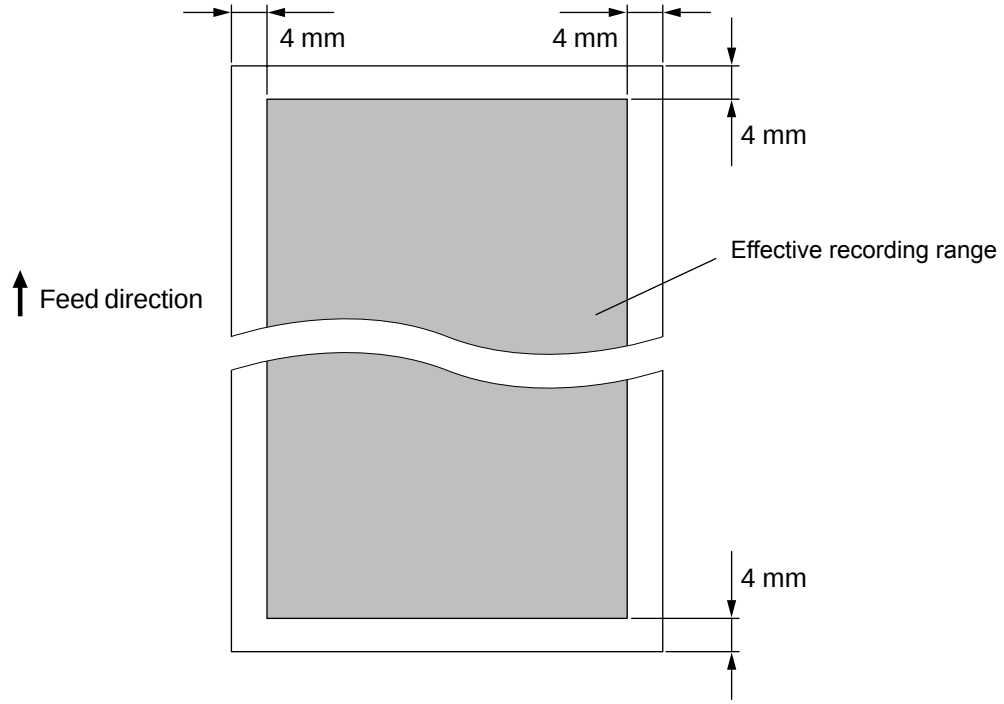

Fig. 2-2

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2.3 Transceiver

Line used: Telephone line

Communication mode: G3 mode
ECM

Communication mode specifications:

	G3 mode	ECM
Horizontal scanning density	8 dots/mm, 16 dots/mm	8 dots/mm, 16 dots/mm
Vertical scanning density	3.85 lines/mm 7.7 lines/mm 15.4 lines/mm	3.85 lines/mm 7.7 lines/mm 15.4 lines/mm
Data compression system	MH/MR	MH/MR/MMR/JBIG
Transmission speed (image signal) Modulation system (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
Control signals FSK (V.21)	300 bps FSK	1200 bps or 2400 bps
Transmission control sequence	Conforming to T4, T30	Conforming to T4, T6, T30, T82, T85

Transmission time (Phase C): (sec.)

Speed and coding method	TOSHIBA TEC original test chart		
	Std.	Fine	U-Fine
33,600 bps (V.34), JBIG	2.4	3.1	7.0
33,600 bps (V.34), not JBIG	MMR 2.9	MMR 4.0	MMR 8.5

Reception level: -43 dBm to -9 dBm

Transmission level: -15 dBm to 0 dBm
(1 dB incremental settings are available)

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2.4 Telephone Functions

Dial-line function:	Pulse method - 10 pps DTMF method On/Off-hook dial function Chain dial
Re-dial:	Automatic/Manual
One-touch dial:	38 keys
Abbreviated dial numbers:	Max. 150 stations
Alphabet dial:	Abbreviated dial, one touch dial, group dial name search
Multi-addressing:	Individual dialing: Abbreviated dialing, one touch dialing, alphabet dialing, direct dialing or group dialing Group dialing: 50 groups (abbreviated dialing, one touch dialing, alphabet dialing and direct dialing)
Alternate number dial function:	Available
Maximum number of dialing digits:	Max. 128 digits

2.5 Liquid Crystal Display (LCD)

Number of characters displayed:	Dot matrix LCD 20 characters x 2 rows
Displayed characters:	Alphabets, numerics
Character size:	Half-width size: 8 dots x 5 dots (height x width) About 5.55 mm x 3.2 mm/character
Contrast adjustment:	Fixed

2.6 Pix Memory

Memory capacity:	7 MB
Memory type:	Synchronous Dynamic RAM

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2.7 Printer Interface

Interface: Hardware specification: USB interface (12 Mbps)
Machine side connector: Series “B” plugs
PC side connector: Series “A” plugs

Environment: CPU: Pentium 120 MHz or higher
OS: MS Windows 2000/XP/Vista/Server 2003
RAM: 32 MB or more (64 MB recommended)

Software: Application: Toshiba Viewer
Media: CD-ROM

Cable: Length: Within 2 m, shield type
Machine side connector: Series “B” plugs
PC side connector: Series “A” plugs

Pin description:

	Symbol	Name	Type
1	VBUS	+5 V	-
2	D-	Serial data	I/O
3	D+	Serial data	I/O
4	GND	Ground	-

2.8 Special Communication

- Multi-addressing
- Polling
- Public fax box polling
- Security communication
- Timer reservation
- Substitute reception by memory
- Recovery transmission
- Priority transmission
- Reverse order printing
- Relay (Origination)
- Security reception
- Cover sheet
- F-code (mailbox and sub-address)

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2.9 Others

- Copy (Single/Multi/Collated)
- Test mode
- Function setting
- Journal transmission / Reception report
- Sort copy
- User test mode
- Jam and error history
- Print reduction
- Paper size change
- Automatic supply order

2.10 Operating Environmental Condition

Operating:	Temperature: 10 to 33°C (50 to 91°F) Humidity: 20 to 80%RH (with no condensation) Altitude: 0 to +2,500 m
Storing/Transporting:	
Facsimile Unit (Including Drum unit/Toner cartridge)	Temperature: 0 to 35°C (32 to 95°F) Humidity: 30 to 85%RH Atmospheric pressure: 61.3 to 101.3 kPa
Drum Unit/Toner cartridge	Temperature: 0 to 35°C (32 to 95°F) Humidity: 30 to 85%RH Atmospheric pressure: 61.3 to 101.3 kPa

2.11 Maintenance

Name	Timing to replace
Drum unit	20,000 sheets (Continuous printing)
Toner cartridge	Initial cartridge: 2,000 sheets (Continuous printing) Supply cartridge: 8,000 sheets (Continuous printing)
Fuser unit	50,000 sheets
ADF pad	1 year or 12,000 sheets
Transfer roller	50,000 sheets

Note:

All specifications are for letter/A4 size document pages with 3.2% image density. This density is used on the ITU-T#1 Test Chart (Slerexe Letter). Yields will vary with other image densities.

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2.12 Power Source/Size/Weight/Noise Level

Input voltage:	US/CA: 110-127 V AC 50/60 Hz EU, AU, SG, HK: 220-240 VAC 50/60 Hz
Power consumption:	Super energy saver mode: 2W Printer power save mode: 15W or less Standby: 15W or less Memory transmitting: 30W or less Memory receiving: 30W or less Copying (max): 1,000W or less
Machine type:	Desk top transceiver
External dimensions:	408 mm (W) x 685 mm (D) x 403 mm (H) 16.06" (W) x 26.97" (D) x 15.87" (H) (excluding protrusions and optional parts) When the optional recording paper tray is installed: 518 mm (H) 20.39" (H)
Weight:	Unit: 11.5 kg (Include the toner cartridge and drum unit)
Noise level:	54 dB (A) or less

2.13 Applicable Standard

Post Telephone Telegram (PTT):	FCC Part 68 (US/CA model) CS-03 (US/CA model) CTR21 (EU model) DTS (EU model) AS-ACIF S002-2001 (AU model) PTC 100/200 (AU model) SG PTT (SG model) MY PTT (SG model)
Safety standards:	UL/C-UL (US/CA model) CDRH (US/CA model) CE mark (EU model) TÜV (EU model) AS/NZS (AU model) IRAM (EU model) SASO (US/CA model, SG model)
Radiation RFI level (EMC):	FCC Part 15 Class A (US/CA model) IC (US/CA model) CE mark (EU model) C-TICK (AU model)

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2.14 Software Performance Table

Item	Sub. Item	Limitation	Note
Maximum address numbers of dial	Keypad dial	128 digits (Maximum)	
	Abbreviated dial	150 stations (Maximum)	001-999
	Alphabet dial	238 stations	OT+Abb.+Group
	One touch dial	38 stations (Maximum)	
	Multi-address group	50 groups (Max. 188 stations per 1 group)	
	Multi-address using [MULTI] key	50 group, 188 station (Maximum)	OT+Abb
	Last number redial	128 digits (Maximum)	Using keypad dial only
	Chain dial	128 digits (Maximum)	Using Abb. /OT / keypad
	Maximum number dialing digits	1600 digits	
Memory capability	TX pix memory	7190.5 Kbyte	Approx. 698 pages *1 (*1: ITU-T No.1/JBIG/STD)
	Memory reception	7190.5 Kbyte	Approx. 698 pages *1 (*1: ITU-T No.1/JBIG/STD)
	TX reservation jobs	100 jobs (Maximum)	Memory TX, Group TX, Polling RX, Relay TX, Sending to Mail Box
	Printer page memory	7932 Kbyte	
Maximum numbers of files / jobs	Numbers of page in 1 memory TX	999 pages (Maximum)	

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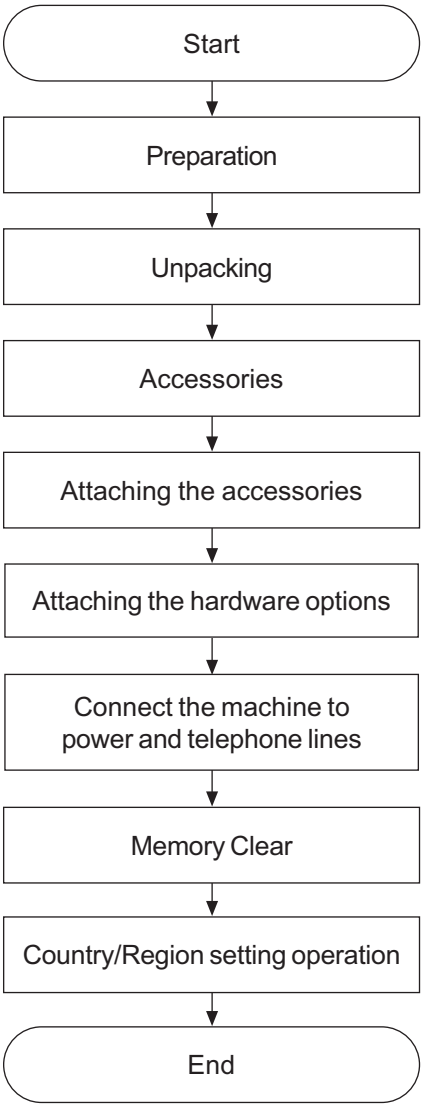
3. Installation

3.1 Installation Procedure

Follow the procedure below for installing the machine:



📖 P.3-2 "3.2 Preparation"

📖 P.3-5 "3.3 Unpacking"

📖 P.3-8 "3.4 Accessories"

📖 P.3-8 "3.4 Accessories"

📖 P.3-19 "3.5 Hardware Options"

📖 P.3-30 "3.6 Connecting to the Power and Telephone Lines"

📖 P.3-31 "3.7 Memory Clear"

📖 P.3-32 "3.8 Country/Region Setting Operation"

Fig. 3-1

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3.2 Preparation

3.2.1 Preparing Tools

Installation and maintenance of this machine require the following tools:

- Phillips screwdriver (diameter 7 mm, length 120 mm)
- Scissors or knife (used to cut the packing bands)

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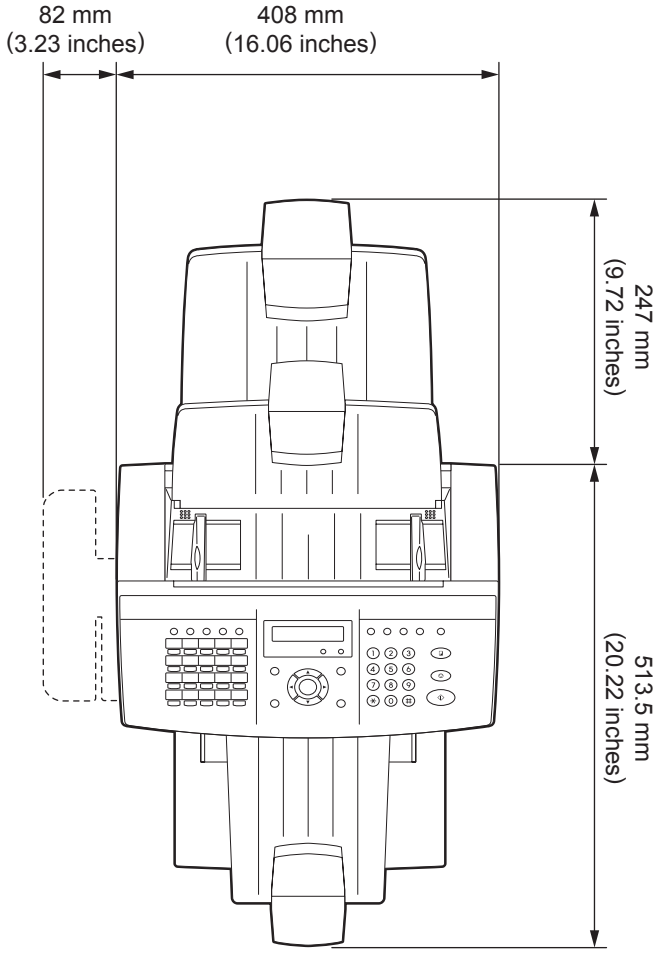
3.2.2 Installation Location

When selecting the installation location, avoid the following factors:

- Direct sunlight.
- Extremely high temperature.
- Extremely low temperature.
- Extremely high humidity.
- Environment with bad heat radiation.
- Areas where sudden temperature changes may occur, such as near a refrigerator, etc.
- Water splashes or chemical contamination.
- Areas where dust, iron powder, poison gases, etc. may arise.
- Areas subject to heavy vibration.
- Areas where products with strong magnetic parts are around.
  (Near radios, TV sets, other electric appliances, etc.)

Provide space as shown in following figure for placing the facsimile unit, considering the operation, daily maintenance, replacement of consumables, etc. Also be certain to keep the back side of the machine at least 100 mm (4") away from the wall.



Height: 433.5 mm (17.07 inches)

Fig. 3-2

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3.2.3 Selecting the Location for Recording Paper Storage

Store the recording paper in a proper location.

- Keep the recording paper in the wrapper for storage, keep it clean and out of direct sunlight.
- Once a pack is opened, use up the paper as soon as possible.
- When the machine is not to be used for a long period of time, remove the recording paper from the paper tray and store it in the packing paper.
- Do not store paper stacks standing on end or leaning against something. Keep it flat.

The following factors may result in poor performance of the paper, or may result in poor image quality.

- Using paper other than that recommended.
- Pieces of recording paper sticking together.
- Printing on the back side of a sheet that has already been used, or two-sided printing.
- Paper which has absorbed water or moisture.
- Paper sheets that are stuck together due to perforated lines, burrs on cut edges, etc.
- Paper sheets which are dirty, wavy, folded, wrinkled, cut, stapled, etc.
- Paper of sizes or weights other than those specified.
- Paper added to the tray before the paper in the tray is completely used up.

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3.3 Unpacking

Note:

When taking the machine out of the carton or carrying it, be certain to hold the parts indicated with arrows in the figure below. Holding it at other parts may damage the machine or affect it's performance.

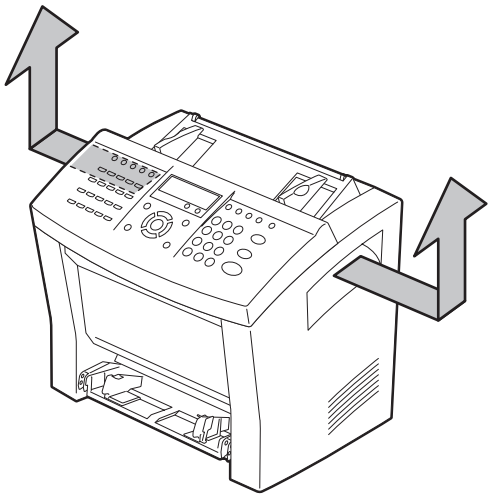

Fig. 3-3

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3.3.1 Procedure

1) Put the carton on a bench, table, etc. that is stable and strong.
2) Cut the bands around the outer carton and lift the outer carton off of the machine.

   Note:

   When taking the machine out of the carton, lift the unit in the courteous manner. Retain the carton, plastic bags, cushions, etc., because they will be needed later for moving or transporting the machine.

3) Carefully remove the packing materials from the unit and accessories.
4) Check the contents of the carton to see if anything is damaged or missing in reference to the packing list attached. (Refer to 📖 P.3-7 "3.3.2 Packing List")

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3.3.2 Packing List

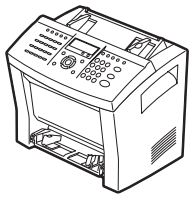
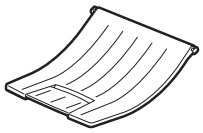
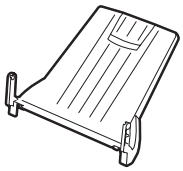
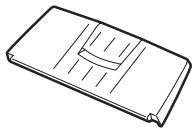
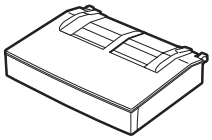
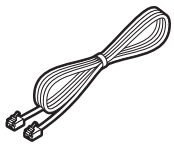
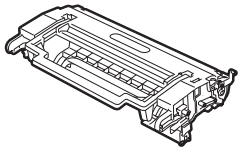
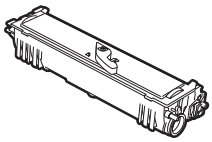
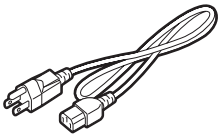
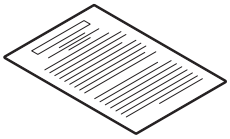
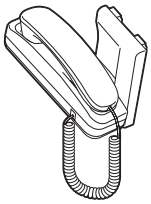
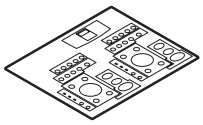
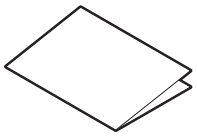
Facsimile unit: 1 	Document exit tray: 1 	Recording paper exit tray: 1 	Document support: 1 
Paper tray: 1 	Phone line cord: 1 	Drum unit: 1 	Toner cartridge: 1 
Power cord: 1 	Read this First 	Warranty card: 1 	CD-ROM: 1 
Telephone handset / Cradle: 1 	Overlay: 1 or 2 	Quick reference guide 	

Fig. 3-4

Note:

Warranty card:	US/CA model only
Telephone handset / cradle:	SG model and HK model
Overlay:	US/CA model: 1 sheet, EU model: 2 sheets
Read this First:	Except for EU model
Quick reference guide:	Except for EU model

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3.4 Accessories

3.4.1 Installing the Accessories

[1] Process unit (Drum unit and Toner cartridge)

Note:

To prevent damage or poor print quality, do not touch the green drum, or expose it to room light for more than the 3 minutes. Never expose the drum to direct sunlight.

(1) Open the front cover.

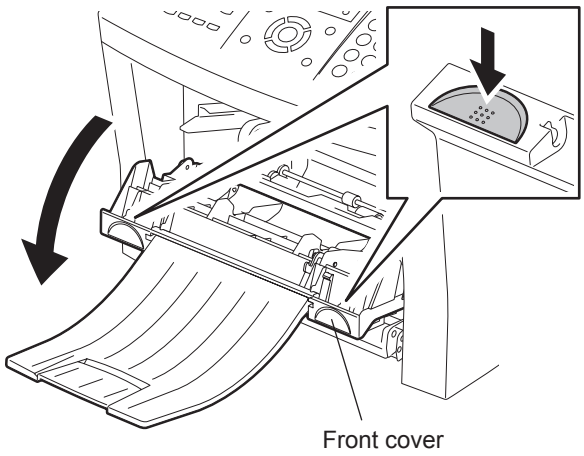

Fig. 3-5

(2) Remove the toner cartridge from the box.
(3) Holding it firmly with both hands, rock it left and right, forward and back in the directions indicated by the arrows in the figure.

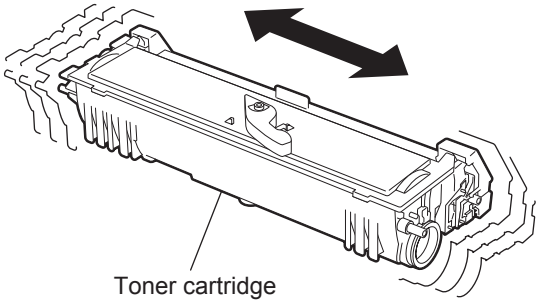

Fig. 3-6

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(4) Remove the cover from the toner cartridge.

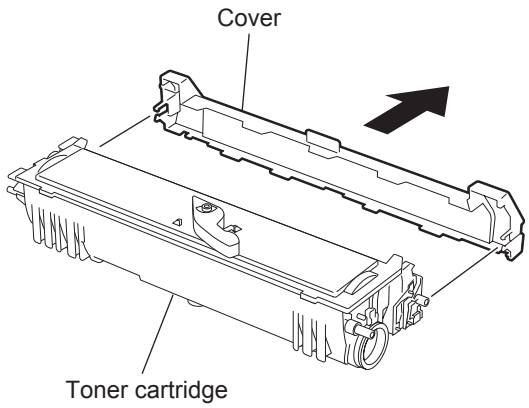

Fig. 3-7

(5) Install the toner cartridge to the drum unit.

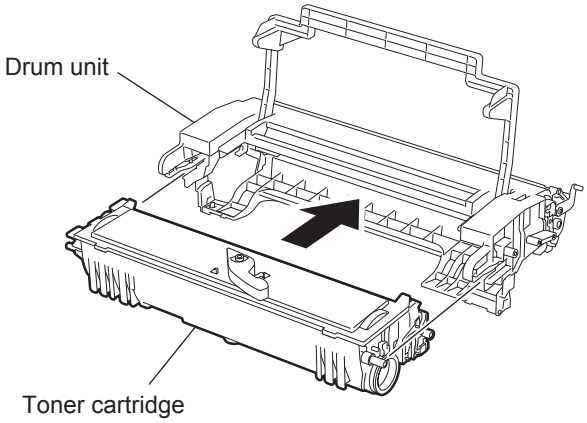

Fig. 3-8

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(6) Install the process unit (assembly of drum unit and toner cartridge) into the facsimile unit, aligning the guides of the unit with the grooves inside the facsimile unit.

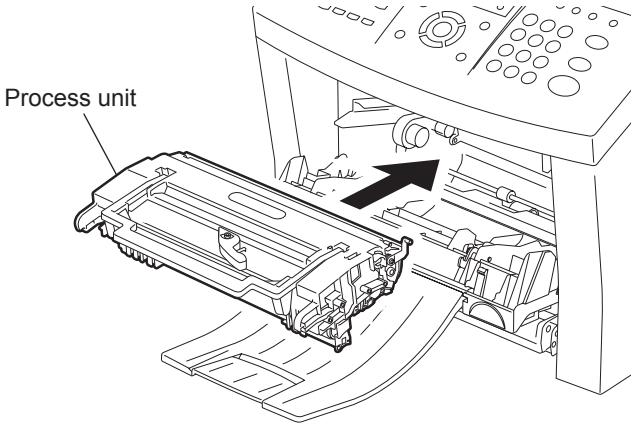

Fig. 3-9

(7) Close the front cover until a “click” is heard to ensure the latches engage.

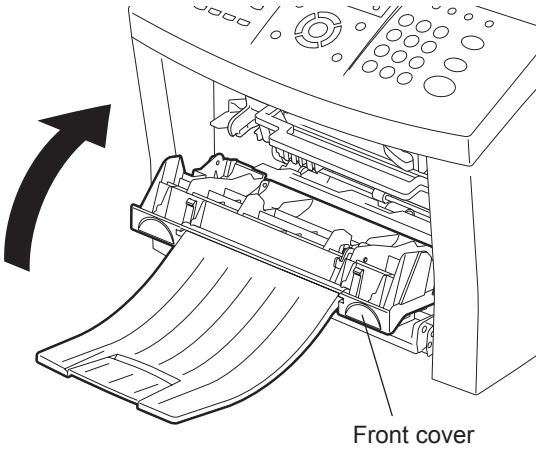

Fig. 3-10

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[2] Power Cord and Phone Line Cord

(1) Make sure that the power switch in turned OFF.
(2) Plug in the power cord into the facsimile unit.

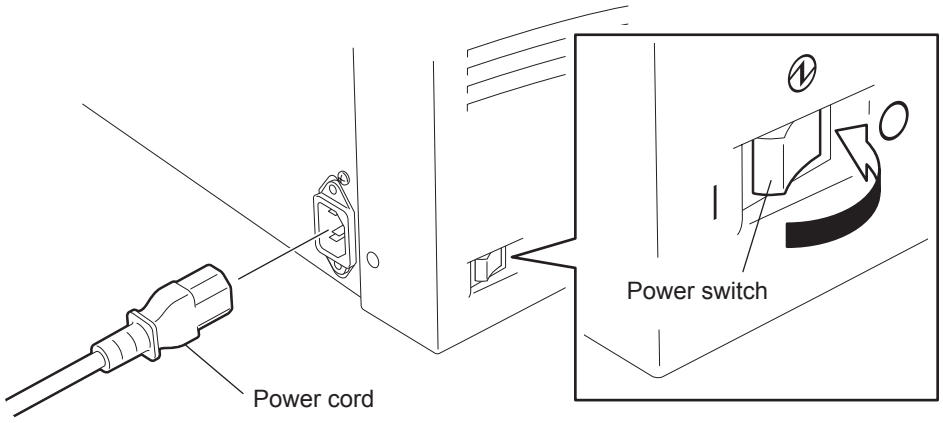

Fig. 3-11

(3) Connect the phone line code to the LINE connector on the facsimile unit and wall jack.

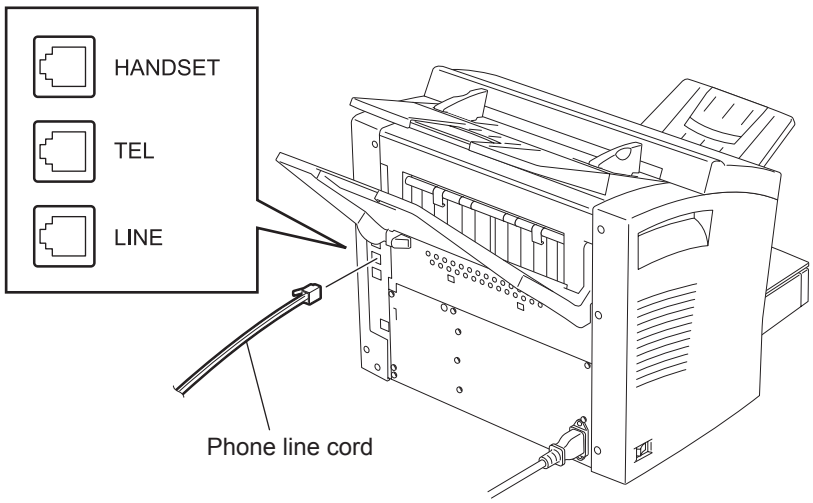

Fig. 3-12

(4) Plug the power cord into the AC wall outlet.

Note:
Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.

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[3] Recording Paper Exit Tray, Document Support and Document Tray

(1) Fit the tabs of the recording paper exit tray into the slots on the back side of the facsimile unit.

Note:
Do not place heavy objects on the recording paper exit tray or apply strong force.

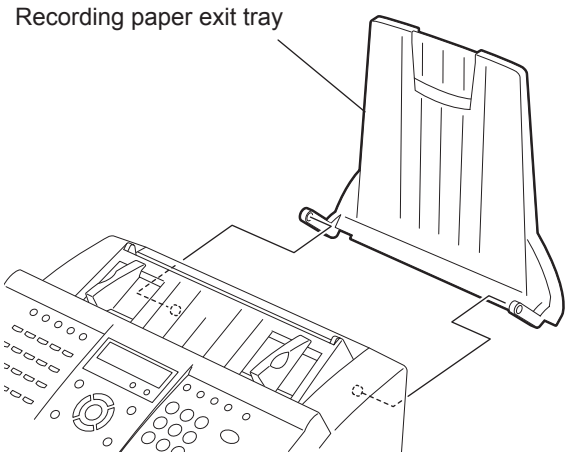

Fig. 3-13

(2) Fit the tabs of the document support into the slots on the top side of the facsimile unit.

Note:
Do not place heavy objects on the document support or apply strong force.

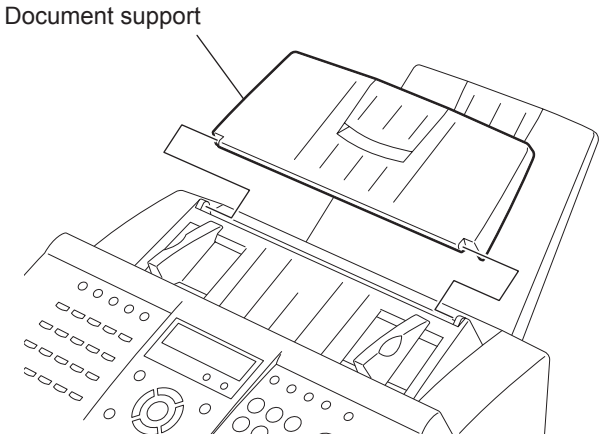

Fig. 3-14

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(3) Open the front cover.

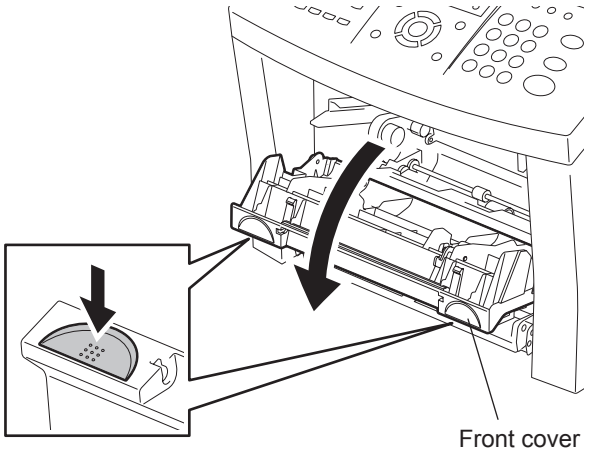

Fig. 3-15

(4) Fit the tabs of the document exit tray into the slots on the front side of the facsimile unit.

Note:
Do not place heavy objects on the document exit tray or apply strong force.

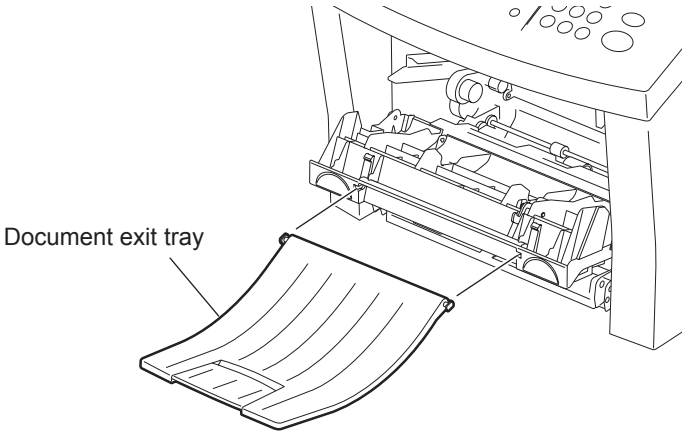

Fig. 3-16

(5) Close the front cover.

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[4] Recording Paper Tray, Bypass Tray and Recording Paper

(1) Place the hooks of the recording paper tray to the guides on the front side of the unit.

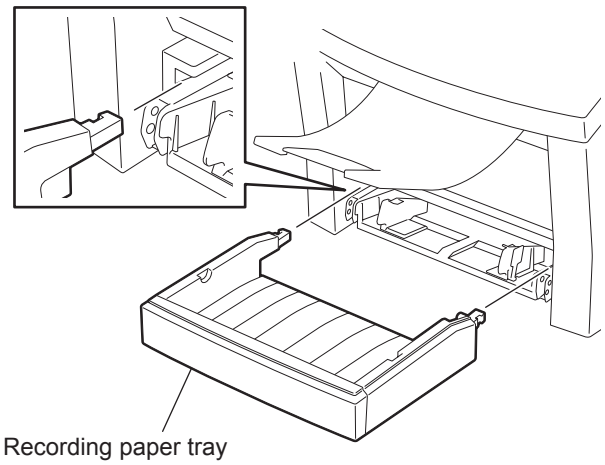

Fig. 3-17

(2) Open the paper guides.

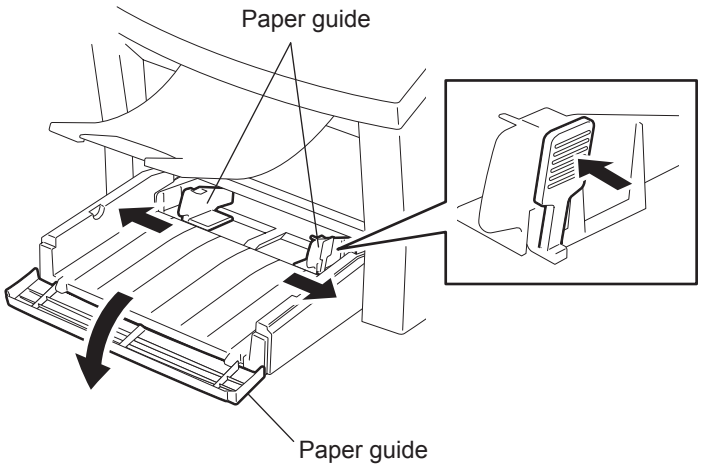

Fig. 3-18

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(3) Prepare new recording paper sheets by holding both ends and flexing several times. This will separate the sheets and provide optimum feeding. Align the stack so that all four corners are neatly aligned. Be sure to load the recording paper in accordance with any paper manufacturer's printing side instruction. Some papers have a preferred image side. This image side should be placed face up in the recording paper tray.

Note:
Do not fan the paper. Make sure that the corners of the paper are neatly aligned.

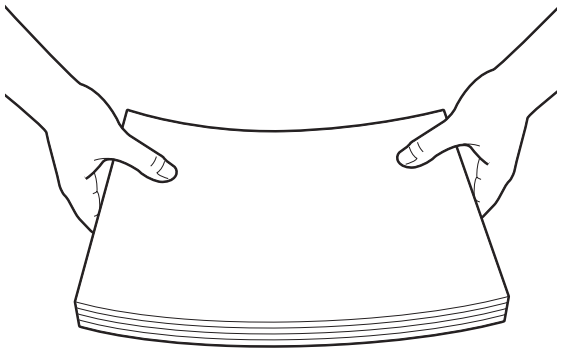

Fig. 3-19

(4) Insert up to 250 sheets into the recording paper tray.

Notes:
- Do not exceed the upper stack limit line as this may cause paper mis-feeds.
- Do not add paper on top of the paper already in the facsimile unit.

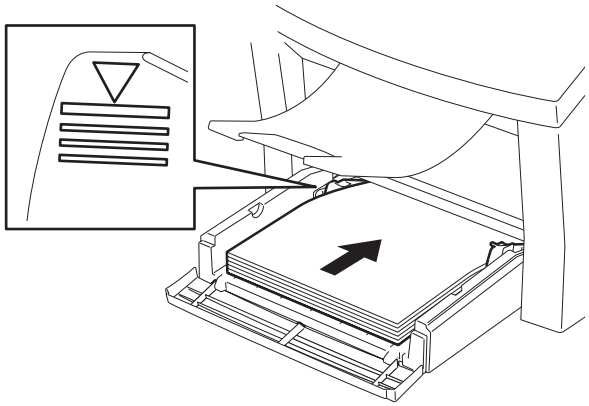

Fig. 3-20

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(5) Secure the stack by adjusting the paper guides.

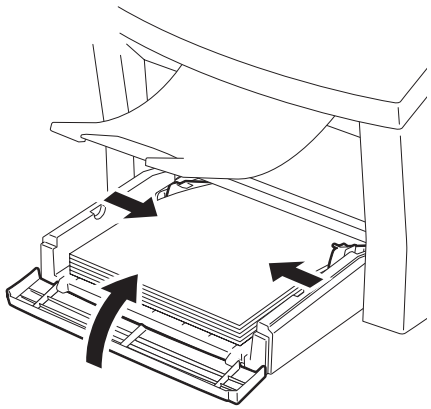

Fig. 3-21

(6) Replace the bypass tray on the recording paper tray.

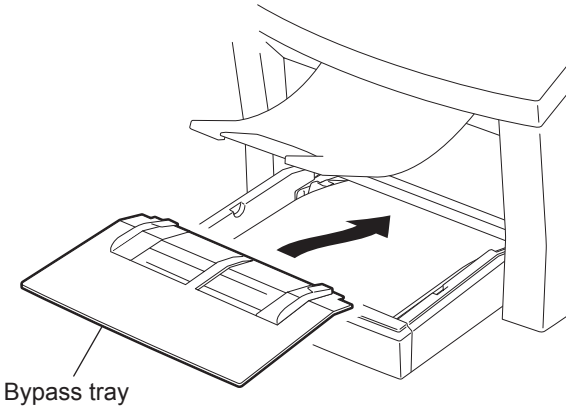

Fig. 3-22

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(7) Press the [MENU], [5], [2], [0], [3] keys.
(8) Use the [↑] or [↓] keys to select the desired size of paper (LT, A4, LG), then press the [ENTER] key.
(9) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.
(10) Open the paper guides.

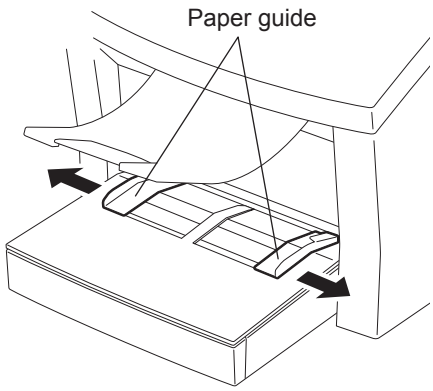

Fig. 3-23

(11) Insert a one sheet of paper on the bypass tray.

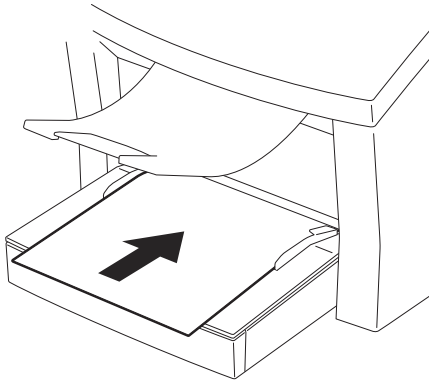

Fig. 3-24

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(12) Adjust the paper guides so that both sides of the paper are secure.

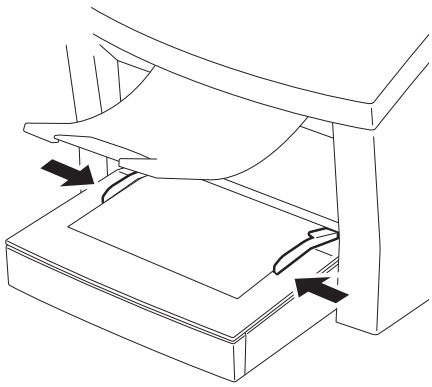

Fig. 3-25

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3.5 Hardware Options

3.5.1 Remarks before Starting Work

Before starting work, read and understand the following. Otherwise, accidents may occur that can result in injury to you or damage to the machine. The contents of this chapter should be noted along with the notes or remarks described in the operator's manual.

Remarks:

- This machine has a high-voltage power supply unit. Turn the power switch OFF and unplug the power cord before starting any kind of work.
- Do not work with wet hands or wet clothes. Do not wear loose clothing that can become entangled in the gears, rollers, etc.
- Be certain to plug and unplug cables and wires while holding the connector. Plugging or unplugging by holding the harness can damage the wires in the cable or cause electrical shock.
- Do not touch the PC boards directly. Static electricity discharge may damage the components. Be sure you are properly grounded before working.
- Do not touch the thermal fuser after turning the main power OFF.
  Wait several minutes until the thermal fuser unit cools down.

Notes:

- Always work on a suitable table or bench. The working area must be well ventilated.
- Always be sure to use the correct screws and fasteners. If an incorrect screw or fastener is used it may result in binding, or cause some other obstruction, with a nearby part. Also be careful not to lose screws.
- Take care that cables and connectors are properly fitted together.
  Also be sure that connectors of a similar size and shape are not connected to the wrong place. The machine may operate with unexpected result, or not at all.
- When replacing batteries, or boards with memory installed, the memory contents will be cleared. Be sure to print a communication journal, function list, and the telephone lists before starting.
  Turn the power switch OFF after confirming that the residual memory in the LCD window shows 100% or the image (PIX) memory will be cleared and it cannot be recovered.
- Be careful when handling the drum unit. Do not touch the drum surface. Keep it horizontal. Do not leave it exposed to light for a long time, etc.
- When using a magnetic tool, do not let it touch the boards having memory chips, controllers, etc. It will cause malfunctions or memory defects.
- Be very careful when handling the LSU. (Do not drop or handle it roughly, do not disassemble, etc.)
- Be sure to remove attachments and accessories (as required) such as the recording paper exit tray, document exit tray, etc.

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3.5.2 Attaching Hardware Options

The following are hardware options for this machine. The functions, installing procedure, and operation check method vary for each hardware option. Install the desired options in consideration of purposes and environments.

[1] Optional Recording Paper Tray

It automatically feeds recording paper (A4 or Letter). Optional recording tray can be installed below the tray installed as a standard feature. With the standard tray and one optional recording tray installed, the total capacity is 750 sheets.

Composing Parts:

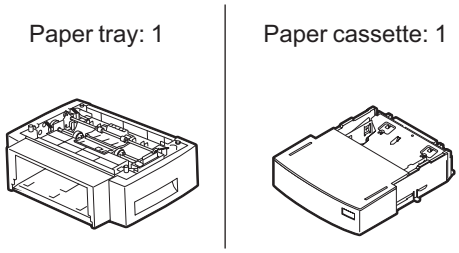

Fig. 3-26

Installing Procedure:

Before beginning, power the unit off and read through “📖 P.3-19 "3.5.1 Remarks before Starting Work"

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(1) Lift the facsimile unit and install it on the alignment pins of the optional recording paper tray.

Note:

The optional recording paper tray is not screwed to the facsimile unit. Be careful when moving or carrying the machine with the optional recording paper tray installed.

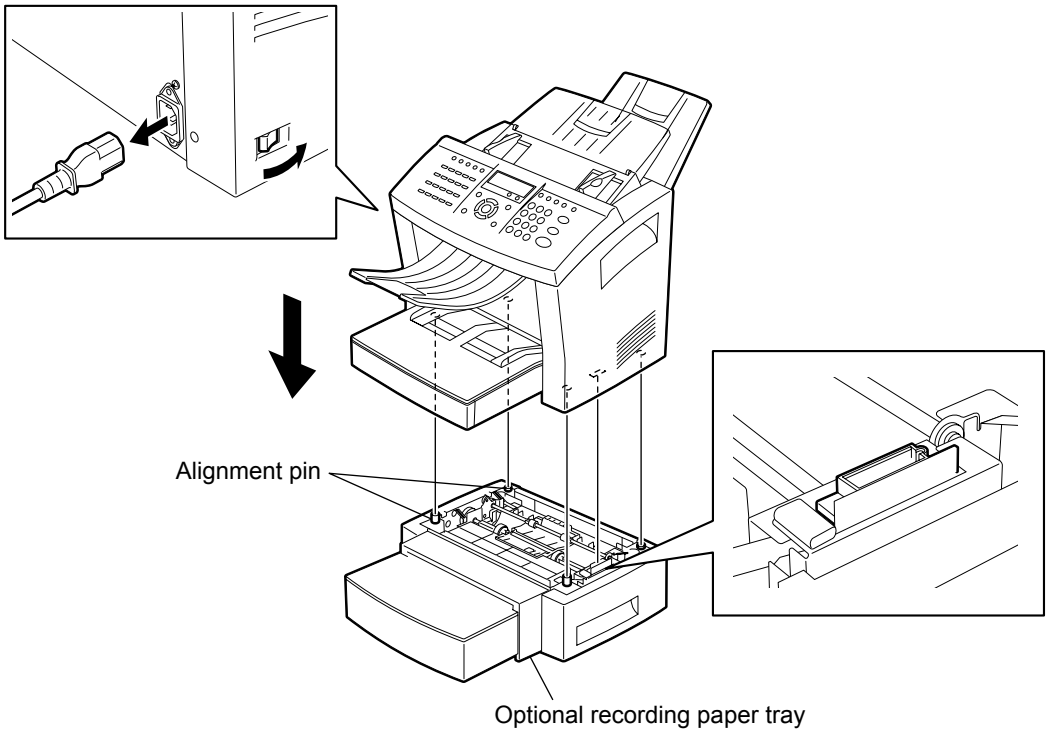

Fig. 3-27

(2) Remove the optional recording paper tray.

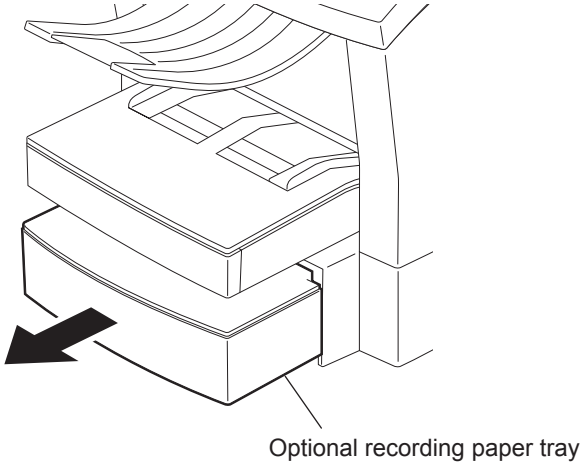

Fig. 3-28

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(3) Remove the optional tray cover.

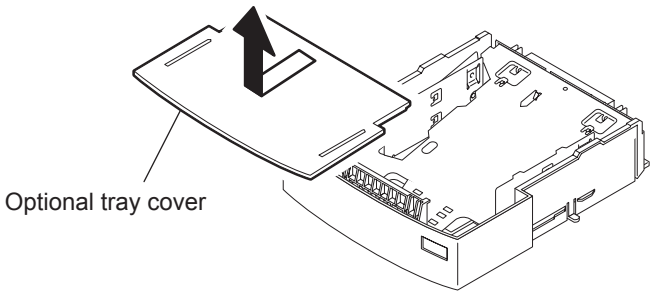

Fig. 3-29

(4) Press the paper pressure plate down until clicks.

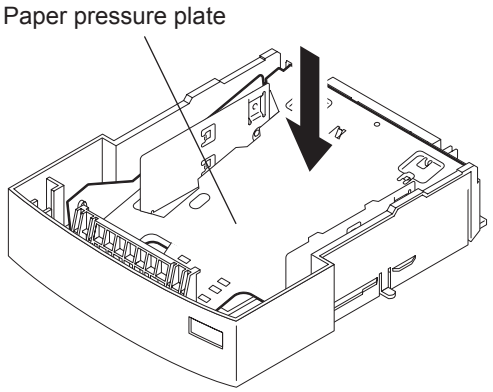

Fig. 3-30

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(5) Prepare new recording paper sheets by holding both ends and flexing several times. This will separate the sheets and provide optimum feeding. Align the stack so that all four corners are neatly aligned. Be sure to load the recording paper in accordance with any paper manufacturer's printing side instruction. Some papers have a preferred image side. This image side should be placed face up in the recording paper tray.

Notes:

- There are two types of the optional recording paper tray, one for A4-size paper and another for letter-size paper. Use the tray meeting your paper size.
- Do not fan the paper. Make sure that the corners of the paper are neatly aligned.

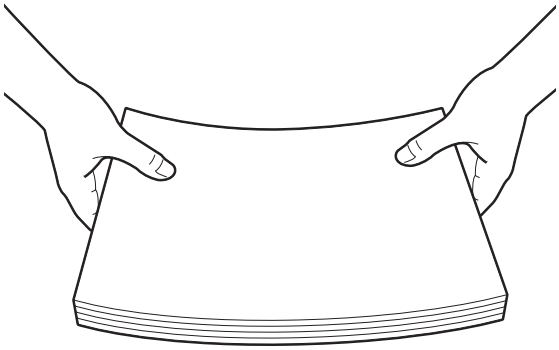

Fig. 3-31

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(6) Place the recording paper stack into the tray.

Notes:

- Do not exceed the upper stack limit line as this may cause paper mis-feeds.
- Make sure that the paper is seated under the two separation claws on the back side of tray.
- Be careful not to damage the claws of the recording paper tray.
- Do not add paper on top of the paper already in the tray.

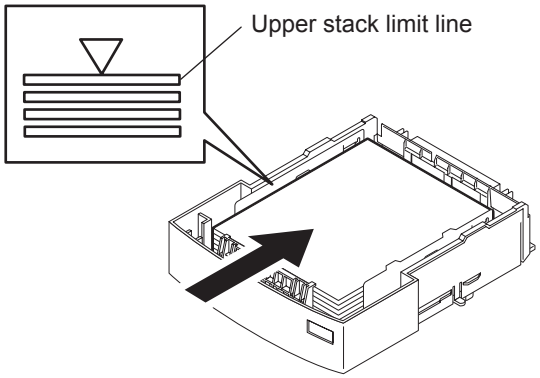

Fig. 3-32

(7) Replace the optional tray cover.

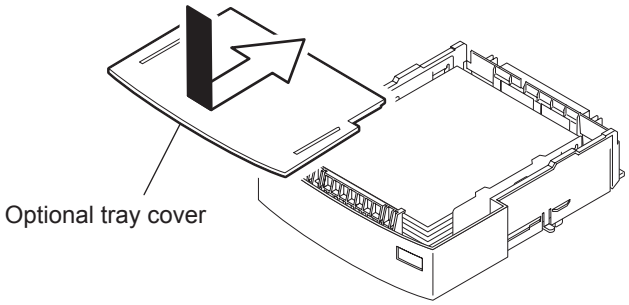

Fig. 3-33

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(8) Insert the optional recording paper tray all the way into the machine.

Note:
As the tray is inserted, listen for the sound of the paper pressure plate moving up into position.

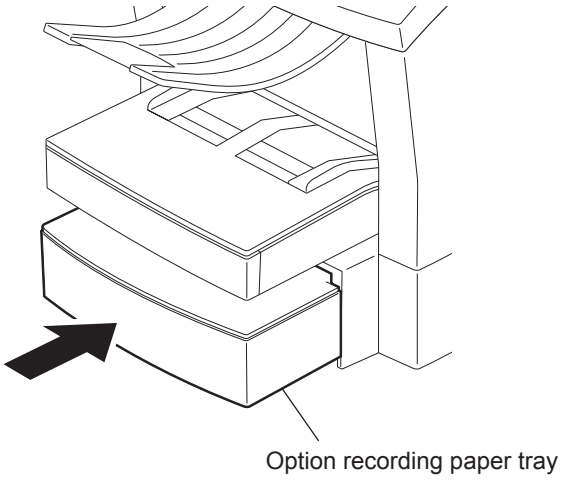

Fig. 3-34

(9) Press the [MENU], [5], [2], [0], [3] keys.
(10) Use the [↑] or [↓] keys to select the desired size of paper (LT, A4, LG), then press the [ENTER] key.
(11) Use the [↑] or [↓] keys to select the desired size of paper (LT, A4), then press the [ENTER] key.
(12) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.
(13) After assembling, set the paper tray, turn the power switch ON, and check the following:
- “Sensor test” in “Function test” of test mode.
  (📖 P.11-10 "[6] SENSOR TEST [MENU], [9], [2], [06]")
- Load the document and press the [COPY] key. Check if copying and feeding normally take place from both paper trays.

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[2] Telephone Handset/Cradle

Handset for the facsimile unit and used as a telephone. This telephone handset / cradle (option) is for US/CA model only, and it is co-packed with facsimile unit for SG model and HK model. (The telephone handset / cradle can not be installed to EU model.)

Composing Parts:

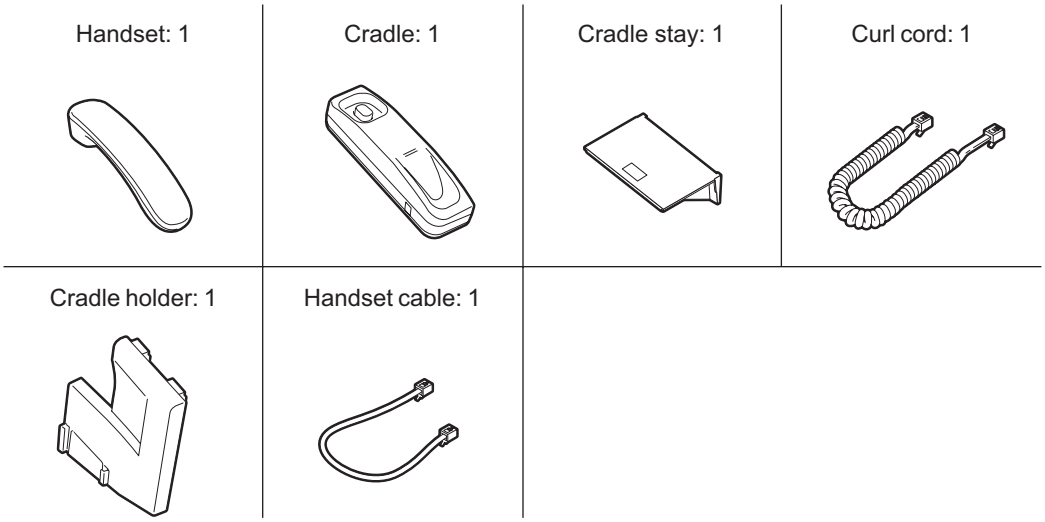

Fig. 3-35

Installing Procedure:

Before beginning, power the unit off and read through📖 P.3-19 "3.5.1 Remarks before Starting Work"

1) Open the operation panel.

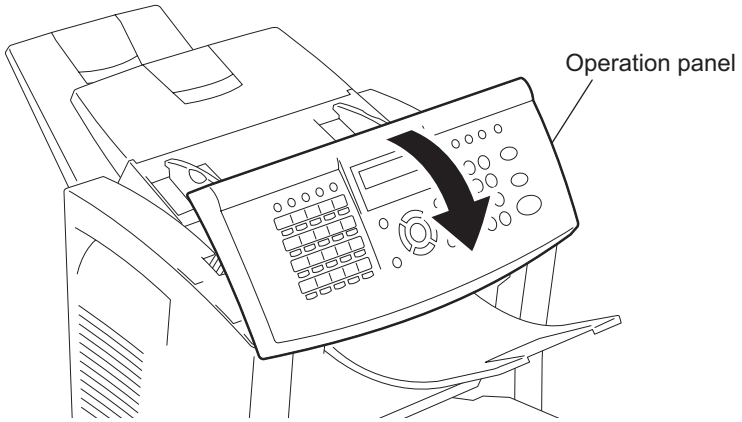

Fig. 3-36

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2) Slide the cradle holder into the machine until it clicks.

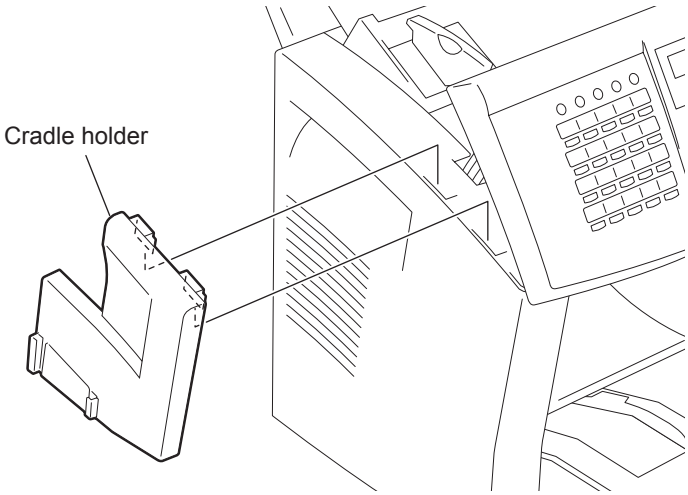

Fig. 3-37

3) Slide the cradle stay into the cradle until it clicks.

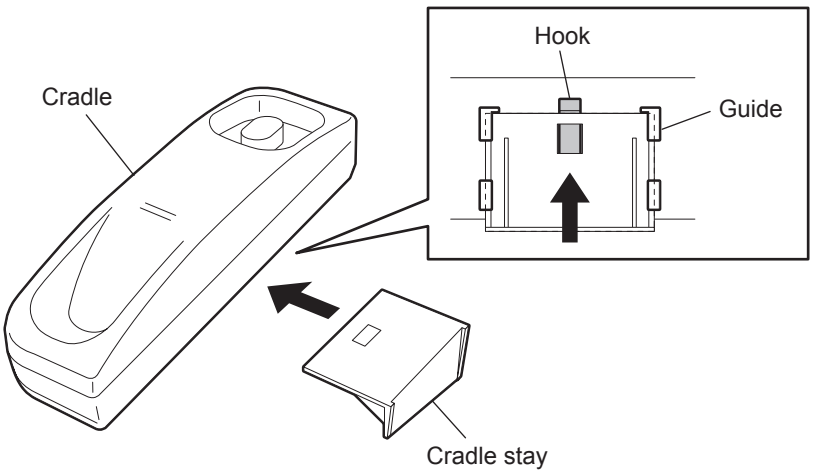

Fig. 3-38

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4) Put the cradle to the guides on the cradle holder.

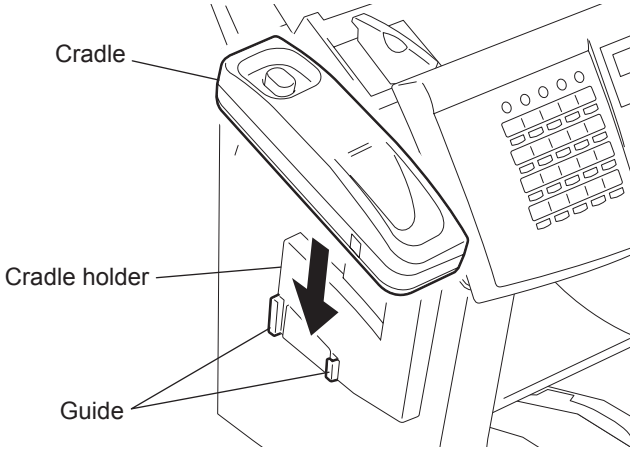

Fig. 3-39

5) Connect the curl cord to handset jack and cradle jack.

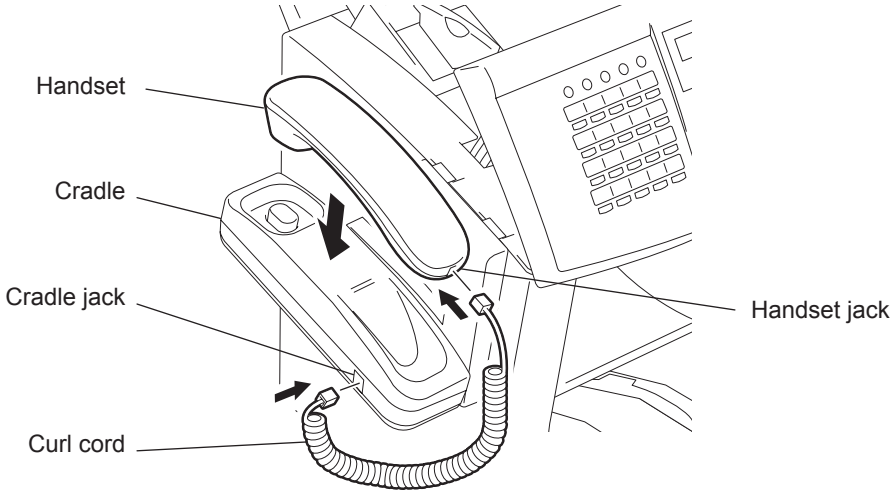

Fig. 3-40

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6) Connect the handset cable to the HANDSET jack.

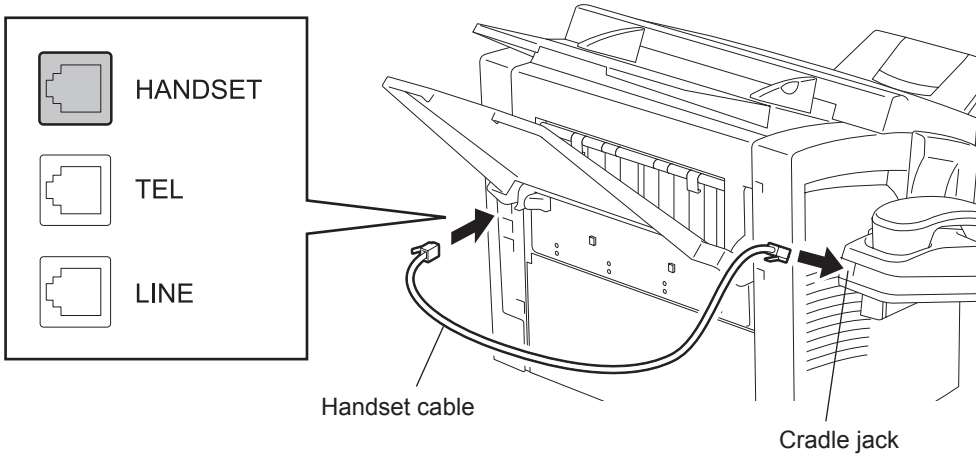

Fig. 3-41

7) After installing, turn the power switch ON, and check the following:
   - "Dial type" in "User function setting" of function settings.
     (📖 P.4-5 "[4] Dial Type [MENU], [4], [4]")

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3.6 Connecting to the Power and Telephone Lines

Remarks:

- Do not use any other than AC rated voltage (115 VAC/60 Hz, 220 VAC/50 Hz/60 Hz).
- Do not share an outlet with other electric appliances.
- Do not share a wall outlet with any machine that causes a large, instantaneous load (air-conditioner, copier, etc.).
- Do not place the power cord where it will be walked on, or crushed.
- When plugging or unplugging the unit, hold the plug but not the cord.
- Be certain to connect the machine to a properly grounded wall outlet.
- The equipment shall be installed near the socket outlet and shall be accessible.
- Unplug the power cord and clean the area around the prongs of the plug and socket wall outlet once a year or more. A fire may occur when dust lies on this area.
- Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.

Procedure:

1) Ensure that the power switch is OFF.
2) Plug the power cord into the wall outlet. Be sure the outlet is rated for 115 VAC/60 Hz or 220 VAC/50 Hz/60 Hz, and that it is properly grounded, before plugging the machine in.
3) Connect the phone line cord to the LINE jack on the unit.
4) Connect the other end of the phone line cord to the modular jack on the wall.
5) Connect the phone line cord of the external telephone set (if present) to the TEL jack on the unit.

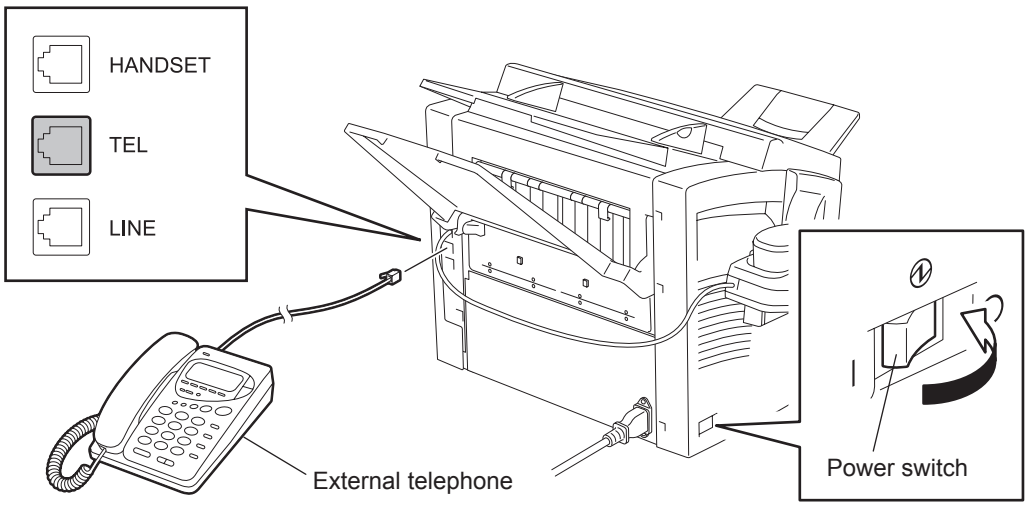

Fig. 3-42

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3.7 Memory Clear

At the time of installing the machine, be sure to perform a memory clear to initialize the machine before entering the function setup procedures. After the memory clear, go on to whatever procedures are necessary.

Procedure:

1) Turn the power switch OFF.
2) Hold down the [*], [1] and [3] keys on the operation panel and turn the power switch ON.
3) Hold the three keys down simultaneously for a count of 3 then release the keys.

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3.8 Country/Region Setting Operation

The destination is programmed of this setting.
Once the destination has been programmed, it remains unchanged even if the country/region setting operation is changed.
To change the destination, therefore, the memory clear operation is required.

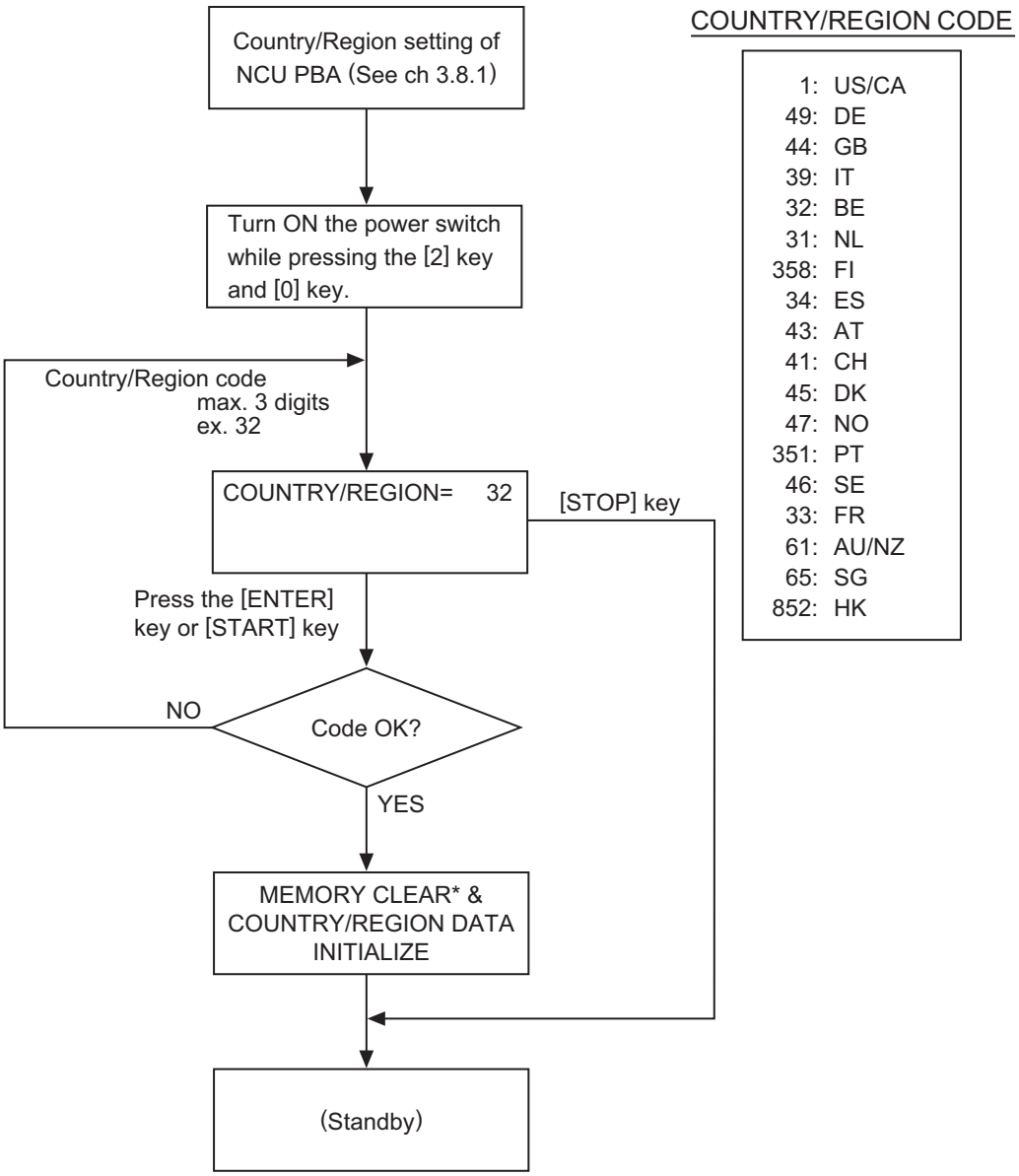

Fig. 3-43

* This operation will clear all the setting information, except the below.
- Drum counter
- Print edge margin

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3.8.1 Country/Region setting of NCU PBA by FG harness

DE	GB	NL	IT	AT	BE	CH	SE	DK	NO	FI	PT	FR	ES	AU	NZ
W2	W2	W2	W1	W2	W2	W2	W2	W1	W2	W1	W2	W2	W2	W2	W2

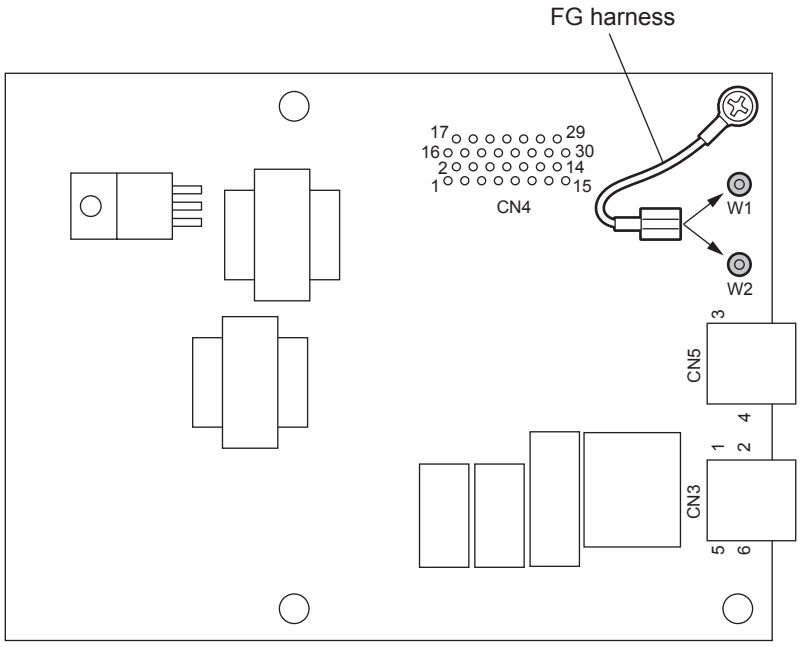

Fig. 3-44

Note:
The above settings are for EU and AU model, Make sure to identify terminal W1 and W2. US/CA, SG and HK model equip the terminal W1 only (no W2 is equipped).

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3.9 Remarks on Moving the Machine

Procedure:

1) Turn the power switch OFF, unplug the power cord.

2) Remove the phone line cord and the external telephone set.

3) Remove the process unit (toner cartridge and drum unit) from the facsimile unit.
   (Refer to 📖 P.3-8 "[1] Process unit (Drum unit and Toner cartridge)")
   Pack the toner cartridge and drum unit with the packaging materials for the kit.

4) Remove the accessories or attachments from the machine.
   (Refer to 📖 P.3-7 "3.3.2 Packing List")

5) Secure the front cover, RX cover and the operation panel with drafting tapes so that they may not be opened, and pack them in a carton.

Note:

The drum unit should be kept with this machine, or it should be discarded. Do NOT use this drum unit in another machine or poor image quality may result. Do NOT put another drum unit into this machine (unless it is new) or poor image quality may result.The setting of FUNC 38 Bit 7 is reflected after the value is entered and the power is turned OFF and back ON.

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4. Function Settings

Function settings are mainly divided into two groups, function settings that can be performed by the users, and function settings that can be performed by service technicians only. The contents and operations are different between the two, so select the appropriate mode for each required setting.

4.1 User Function Settings

The User Function Settings are used to set various requirements for the user at the time of installing the machine and after the machine installation. The function setting is done by either a menu-selection method or by setting the numeric value. It is possible to select any function by pressing the [MENU] key, then the [↑] and [↓] keys, then [ENTER], or the numeric key for that function. For the initial value list, refer to 📖 P.12-1 "12. Appendix".

Remarks:

- To select a menu item, you may use the [↑] and [↓] keys to highlight the required item followed by pressing the [ENTER] key, as described above, or you may directly enter the item number through the numeric key.

- The keystrokes needed to access the various function settings will be shown with uppercase letters and brackets. For example, [MENU] or [ENTER] means to press the Menu Key or the Enter Key.

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4.1.1 Initial Setup

[1] Language [MENU], [4], [1]

This setting is performed to select a language for the LCD messages.

1) Select the desired option using the [↑] or [↓] keys, then press the [ENTER] key.

LANGUAGE
01 . ENGLISH

02 . FRANÇAIS
03 . DEUTSCH
04 . ITALIANO
05 . NEDERLANDS
06 . SVENSKA
07 . SUOMI
08 . NORSK
09 . DANSK
10 . ESPAÑOL
11 . PORTUGUÊS

ENGLISH
This selection will display messages in English.

FRANÇAIS
This selection will display messages in French.

DEUTSCH
This selection will display messages in German.

ITALIANO
This selection will display messages in Italian.

NEDERLANDS
This selection will display messages in Dutch.

SVENSKA
This selection will display messages in Swedish.

SUOMI
This selection will display messages in Finnish.

NORSK
This selection will display messages in Norwegian.

DANSK
This selection will display messages in Danish.

ESPAÑOL
This selection will display messages in Spanish.

PORTUGUÊS
This selection will display messages in Portuguese.

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2) When the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[2] Date & Time [MENU], [4], [2]

This setting is used to designate the date and time to execute a delayed transmission, record the date and time of each transmission or reception, etc., to be printed on a journal. If the current date and time displayed (in the Standby Mode screen, etc.) are wrong, set the correct date and time data here.

1) Move the cursor using the [→] key and set the date.

DATE
[01-31-2005]

2) Press the [ENTER] key.

3) Use the [↑] or [↓] keys to move the displayed to select the desired format to show the Date and Time data on the LCD display, then press the [ENTER] key.

DATE FORMAT
1 . MM-DD-YYYY

2 . DD-MM-YYYY
3 . YYYY-MM-DD

MM-DD-YYYY: Displays the date in the Month-Day-Year (4-digit) format.
DD-MM-YYYY: Displays the date in the Day-Month-Year (4-digit) format.
YYYY-MM-DD: Displays the date in the Year-Month-Day (4-digit) format.

4) Use the [↑] or [↓] keys to move the displayed to the desired option (NUMERIC or NAME), then press the [ENTER] key. This selection will effect the display of the Month data on the LCD display.

MONTH FORMAT
2 . NAME

1 . NUMERIC

NUMERIC
Allows you to enter 2 digits, 01 to 12. If any other value is entered, it must be set again.

NAME (3-digit)
JAN / FEB / MAR.....OCT/ NOV/DEC

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5) Select the desired option using the [↑] or [↓] keys, then press the [ENTER] key.

TIME FORMAT
2 . 12 HOURS

1 . 24 HOURS

24 HOURS
Selected to display the time in the 24-hour system. For setting the time, you can enter in the following range:
Hour Value: 00 through 23
Minute Value: 00 through 59

12 HOURS
Selected to display the time in the 12-hour system. For setting the time, you can enter in the following range:
Hour Value: 00 through 12
Minute Value: 00 through 59

6) Move the cursor using the [→] key and set the time.

For 24-hour format

TIME
[09:43]

or

For 12-hour format

TIME
[09:43 AM]

HH:MM
Set the values within the range specified by the Hour Value (HH) and Minute Value (MM) above. If the value is outside the range, it must be set again. If the 12 Hour format is selected, then you will be directed to choose AM or PM after the Minute data is set.

7) Press the [ENTER] key.

8) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[3] Terminal ID [MENU], [4], [3]

This setting is performed to enter your own telephone (fax) number, terminal ID name and add the international code which will be printed as TTI at the top of the received document on the remote party side.

1) Entry the terminal ID name using the numeric keypad, then press the [ENTER] key.

NAME (40MAX)
[_]

NAME
A maximum of 40 digits can be entered including blank spaces. Refer to the section of Character Entries in the Operator’s Manual.

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2) Select the desired option using the [↑] or [↓] keys (to select YES or NO), then press the [ENTER] key.

```
INT. CODE ?
1 . YES
2 . NO
```

YES
Selected to attach an International Code (Country/Region Code). When selected, the symbol "+" is attached before the telephone number of your facsimile unit. Select this side if your facsimile unit is used for international fax communications.

NO
Selected to not attach an International Code. Select this if your facsimile unit is used solely for fax communications inside your country/region.

When either is selected, the screen below is displayed.

```
FAX NUMBER          (20MAX)
[_                        ]
```

3) Enter the telephone number of your facsimile unit, then press [ENTER] key.

FAX NUMBER = (MAX20)
Enter a maximum of 20 digits including blank spaces and the International Code.

4) When the "COMPLETED" message is displayed, press the [STOP] key to return to the Standby Mode screen.

[4] Dial Type [MENU], [4], [4]

This setting is used to determine the dial type of the telephone line to which the facsimile unit is connected.

For US, CA, AU, NZ, SG and HK

1) Use the [↑] or [↓] keys to move the cursor to the desired option (TONE or PULSE) in the DIAL TYPE screen, then press the [ENTER] key.

```
DIAL TYPE
1 . TONE
2 . PULSE
```

TONE (Multi-frequency)
Connects the telephone line of the facsimile unit, and uses it as a MF Line.

PULSE (Dial pulse)
Connects the telephone line of the facsimile unit, and uses it as a DP Line.

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2) During Chain Dialing operations, the digits entered into the DELETE ACCESS DIGIT will be ignored on dialing when they are encountered in an Abbreviated number or a One Touch key. If it is not necessary to set the ACCESS DIGIT, just press the [ENTER] key.

```
DELETE ACCESS DIGIT
[_                          ]
```

DELETE ACCESS DIGIT
Set a number (typically 9-1) if it is necessary to access an outside telephone line. When a number (max. 10 digits) is entered, press the [ENTER] key. During a Chain Dial operation, it is not necessary to dial 9-1 on numbers associated with a One Touch or Abbreviated Number keys, therefore the DELETE ACCESS DIGIT will be ignored when they are programmed into a One-touch or Abbreviated Number key.

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

For DE, GB, IT, NL, CH, BE, AT, PT, SE, NO, DK, FI, ES and FR

1) Use the [↑] or [↓] keys to move the cursor to the desired option (PSTN or PABX) in the SET EXCHANGE TYPE screen, then press the [ENTER] key.

```
SET EXCHANGE TYPE
1 . PSTN
2 . PABX
```

PSTN (Public Switched Telephone Network)
When the facsimile unit is connected to PSTN (Public Switched Telephone Network), set the type to “PSTN”.
Go to step 3.

PABX (Private Automatic Branch Exchange)
When the facsimile unit is connected to PABX (Private Automatic Branch Exchange), set the type to “PABX”.
Go to next step.

2) Enter the value for connecting the public line (ACCESS DIGIT) and press the [ENTER] key. (max. 3 digits)

```
ACCESS DIGIT = (1-3)
                    [  1]
```

Remark:
Set “✳” in front of the outside telephone number when programming the number into One-touch or Abbreviated number key. The value entered into the “ACCESS DIGIT” will be automatically added in front of the telephone number when the number is dialed.

3) After the "COMPLETED" message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.1.2 Machine Settings

[1] Bell Ringer Volume Adjustment [MENU], [5], [1], [01], [01]

Use this setting to adjust volume of the telephone bell ringer.

1) Use the [↑] or [↓] keys to move the cursor to the desired position and press the [ENTER] key.

```
RINGER VOLUME
5 . >>>
```

```
6 . >>
7 . >
8 . OFF
1 . >>>>>>>
2 . >>>>>>
3 . >>>>>
4 . >>>>
```

VOLUME
Set a value in the range from 0 (minimum) to 7 (maximum).

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[2] Alarm Tone Volume Adjustment [MENU], [5], [1], [01], [02]

Use this setting to adjust volume of the alarm tone.

1) Use the [↑] or [↓] keys to move the cursor to the desired position and press the [ENTER] key.

```
ALARM VOLUME
5 . >>>
```

```
6 . >>
7 . >
8 . OFF
1 . >>>>>>>
2 . >>>>>>
3 . >>>>>
4 . >>>>
```

VOLUME
Set a value in the range from 0 (minimum) to 7 (maximum).

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[3] Key Touch Volume Adjustment [MENU], [5], [1], [01], [03]

Use this setting to adjust volume of the key touch tone.

1) Use the [↑] or [↓] keys to move the cursor to the desired position and press the [ENTER] key.

```
KEY TOUCH VOLUME
5 . >>>
```

```
6 . >>
7 . >
8 . OFF
1 . >>>>>>>
2 . >>>>>>
3 . >>>>>
4 . >>>>
```

VOLUME
Set a value in the range from 0 (minimum) to 7 (maximum).

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[4] Monitor Volume Adjustment [MENU], [5], [1], [01], [04]

Use this setting to adjust volume of the line monitor.

1) Use the [↑] or [↓] keys to move the cursor to the desired position and press the [ENTER] key.

```
MONITOR VOLUME
5 . >>>
```

```
6 . >>
7 . >
8 . OFF
1 . >>>>>>>
2 . >>>>>>
3 . >>>>>
4 . >>>>
```

VOLUME
Set a value in the range from 0 (minimum) to 7 (maximum).

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[5] Power Save [MENU], [5], [1], [02]

This setting allows you to minimize power consumption by turning power off to portions of the machine (as selected). If the Power Saver function is ON, a warm up period is needed before printing occurs.
This facsimile has two Power Saver modes: Super Energy Saver and Printer Power Saver.
Super Energy Saver turns virtually all power off to minimize power consumption. Select one of three modes, Automatic, Manual or OFF.
Printer Power Saver turns only the fuser section off during the time period selected.

1) Use the [↑] or [↓] keys to select the desired option (SUPER E.S. or PRINTER P.S.), then press the [ENTER] key.

POWER SAVER
01 . SUPER E.S.

02 . PRINTER P.S.

SUPER E.S.
To select the SUPER ENERGY SAVER mode.

PRINTER P.S.
To select the PRINTER POWER SAVER mode.

When SUPER E.S. is selected:
The screen below is displayed.

- Use the [↑] or [↓] keys to select one of the three options (AUTO, MANUAL or OFF), then press the [ENTER].

SUPER E.S.
2 . MANUAL

3 . OFF
1 . AUTO

AUTO
To select the Automatic Super Energy Saver mode.

MANUAL
To select the Manual Super Energy Saver mode. When this mode is selected, the operator selects/deselects Super Power Saver by way of a key on the operator Operation Panel.

OFF
To deactivate the Super Energy Saver mode.
When Automatic is selected, the screen below is displayed. Enter the desired TIME period (in minutes) and press the [ENTER] key.

ENTER TIME	
(1-60)	[3]

Set the time period from 1 (minute) to 60 (minutes) for standby operation prior to entering the Super Energy Saver mode.

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When PRINTER P.S. is selected:
The screen below is displayed.

- Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press [ENTER].

```
PRINTER P.S.
1 . ON
```

2 . OFF

ON
To select the Printer Power Saver mode.

OFF
To deactivate the Printer Power Saver mode.

When ON is selected, the screen below is displayed. Enter the desired TIME period and press the [ENTER] key.

```
START/STOP TIME
[00:00-00:00]
```

Enter the time period. The time on the left is the Printer Power Saver start time (or time that the printer unit will power down). The time on the right is the Printer Power Saver end time.

The time period shown above is the factory default setting and signifies continuous Printer Power Saver operation.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode Screen.

[6] Department Code [MENU], [5], [1], [03]

This is a security and accounting function that restricts use of the unit to valid department codes.

1) Use the [↑] or [↓] keys to select the desired option (YES or NO), then press the [ENTER] key.

```
SET DEPT. CODE
2 . NO
```

1 . YES

YES
To select the Department Code function. In this case, Department Number, Department Name, and Department Codes are to be set next. The first time this feature is selected, the Master Code will be set. The Master Code is required to set subsequent department codes, or to turn the Department Code feature OFF.

NO
Not to select the Department Code function, or to set the Department Code feature OFF if it was previously set to ON.

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2) Enter a Master Code Department Name, then press the [ENTER] key.

```
NAME
[_                          ]
```

NAME
Enter a maximum of 20 characters for the Department Name. When more than 20 characters are entered, the exceeded characters will be ineffective.

3) Enter the Master Code, then press the [ENTER] key.

```
MASTER CODE
[_                          ]
```

MASTER CODE
Enter a 5-digit number (00000 to 99999). Entering any number outside the designated range will result in an error, and you must enter a correct number again.

4) The following screen appears. Enter a Department Number, the press the [ENTER] key.

```
DEPT. NUMBER
(1-50)                  [  _]
```

DEPT. NUMBER
Enter a number in the range from 02 to 50.

5) The following screen appears. Enter the department name, then press the [ENTER] key.

```
NAME
[_                          ]
```

NAME
Enter a maximum of 20 characters. Any character entries exceeding 20 will be ineffective.

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6) If the Department Number entered in Step (5) is already used for another Department, use the [↑] or [↓] keys to select the desired option (DELETE, MODIFY, or RETAIN), then press the [ENTER] key.

```
DEPT. NUMBER                2
3 . RETAIN
```

1 . DELETE
2 . MODIFY

DELETE
To cancel the Department Number.

MODIFY
To modify the Department Name of the Department Number.

RETAIN
To retain the preset data of the Department Number.

7) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

Remark:
When the Department Code feature is turned ON, the first code activated is the Master Code. The Master Code must be used to make any changes to the subsequent department codes that are entered. The Master Code should be adequately safeguarded to prevent unauthorized use.

[7] Account Code [MENU], [5], [1], [04]

This function is used to analyze who or to whom transmissions have been executed on the facsimile unit. By entering an Account Code for transmitting a document, data under the Account Code will be output on Journals.

1) Use the [↑] or [↓] key to select the desired option (ON or OFF), then press the [ENTER] key.

```
ACCOUNT CODE
2 . OFF
```

1 . ON

ON
To select the Account Code function.

OFF
Not to select the Account Code function.

Remark:
The Account Code feature can not be used to restrict access. The operator is prompted for an account code, but it is possible to simply press the [START] key to initiate machine operations. If restricted access is desired, then the Department Code feature should be set to ON.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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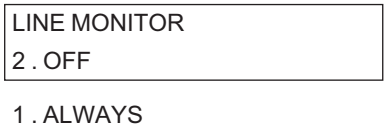
[8] Line Monitor [MENU], [5], [1], [05]

This function is used to set the speaker ON in order to monitor the dialing and connection portion of every transmission.
This function is mainly used to confirm dialing and phone line status.
When two phone lines are simultaneously used for sending, the job initiated last will be monitored.

1) Use the [↑] or [↓] keys to select the desired option (ALWAYS or OFF), then press the [ENTER] key.



ALWAYS
Always to set the Line Monitor function.

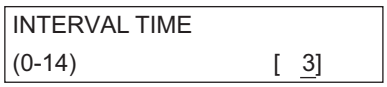
OFF
Not to set the Line Monitor function.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[9] Receive Interval [MENU], [5], [1], [06]

This function insures there will be a period of time set aside to receive incoming facsimiles during periods of heavy outgoing transmission activity. After every fourth consecutive transmission, this machine will wait 0 to 14 minutes to allow incoming facsimiles to be received (default is 3 minutes).

1) Enter the INTERVAL TIME value and press the [ENTER] key.



INTERVAL TIME
Set the value in the range from 0 to 14.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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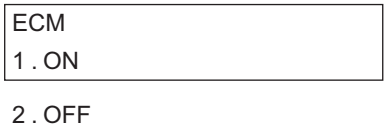
[10] ECM (Error Correction Mode) [MENU], [5], [1], [07]

This is to set whether the Error Correction Mode (ECM) which automatically corrects image data affected by line noise or distortion is to be activated or not.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.



ON
To activate the ECM function.

OFF
To deactivate the ECM function. In this case, part of the ECM buffer is available to be used as image (PIX) memory.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode.

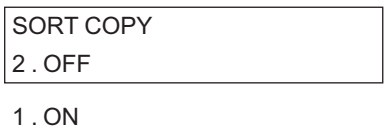
[11] Sort Copy [MENU], [5], [1], [08]

When copying documents, the SORT function may be selected. This function will sort multiple page copies into sets of correct-order pages.
This setting establishes the default for the Sort Copy function. Sort Copy may, also, be set manually at the time the copy operation is performed.

Notes:

- The pages are automatically sorted.
- Requires enough memory for the entire multi-page document. If there is not enough memory (memory overflow), the copying procedure will be canceled.
- Collation is slower than non-collation because the entire document must be scanned into memory first, then printing can occur.
- Sorting is the responsibility of the operator.
- Memory requirements are limited to one page at a time.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.



ON
The pages are automatically sorted.

OFF
Not sorted the paper.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[12] Redial Mode [MENU], [5], [1], [09]

This setting is performed to select the automatic redial interval and specify the number redial attempts to be made when communication is not completed properly because the line is busy or a communication error occurs.

1) Enter the INTERVAL value and press the [ENTER] key.

INTERVAL (MINUTES)
(1-15) [3]

INTERVAL
Set the value in the range from 1 to 15.

2) Enter the REDIAL COUNT value and press the [ENTER] key.

REDIAL COUNT
(1-14) [4]

REDIAL COUNT
Sets the value in the range 1 to 14.

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[13] Reception Mode [MENU], [5], [1], [10]

This machine have four reception modes and the receiving function differs according to the selection mode.

1) Use the [↑] or [↓] keys to select the desired mode (FAX, FAX/TAD, TEL/FAX or MANUAL), and press the [ENTER] key.

RECEPTION MODE
1 . FAX

2 . FAX/TAD
3 . TEL/FAX
4 . MANUAL

FAX Mode

This mode is selected to use this machine only as a facsimile unit. When it is selected, the Ring Delay count is to be set in the range from 01 to 10, followed by the [ENTER] key.

RINGS TO ANSWER	
(1-10)	[2]

FAX/TAD

This mode is used together with a TAD (telephone answering device/machine). When it is selected, the Fax Monitor Time is to be set in the range from 0 to 99, followed by the [ENTER] key.

FAX/TAD TIMER	
(0-99)	[45]

TEL/FAX

The mode is used when the line is used for both facsimile and telephone when it is select, the Pseudo Ring number is to be set in the range from 1 to 15, followed by the [ENTER] key.

TEL/FAX RINGS	
(1-15)	[6]

Manual Mode

This mode is selected to connect the machine to a line which is used as a voice telephone.
In this case, the machine is used for both voice communication and fax sending/receiving, the [START] key must be pressed after lifting up the handset (option).

2) When the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[14] Copy Reduction [MENU], [5], [1], [11]

This function allows automatic reduction of the recording image when making copies. The default setting is OFF.

Notes:

- If this function is enabled, documents longer than the effective printable area will be reduced by 95, 90, 86, 83, 80 or 73% depending on the document length.
- If this function is disabled, documents more than 10 mm longer than the effective printable area will be split onto two pages. No image will be discarded. The excess portion of a document that is less than 10 mm longer than the effective printable area will be discarded.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

COPY REDUCTION
2 . OFF

1 . AUTO

AUTO
Recording will occur with reduction.

OFF
No reduction will be applied.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.1.3 Scanner & Printer

[1] Document Mode [MENU], [5], [2], [01]

This is to set the resolution level and contrast for scanning documents.

1) Use the [↑] or [↓] keys to select the desired level of resolution (STANDARD, FINE, or U-FINE), then press the [ENTER] key.

DOCUMENT MODE
1 . STANDARD

2 . FINE
3 . U-FINE

STANDARD (8 pels/mm x 3.85 lines/mm)
For sending normal text and graphics.

FINE (8 pels/mm x 7.7 lines/mm)
For sending text of small characters and fine graphics.

U-FINE (16 pels/mm x 15.4 lines/mm)
With importance on resolution rather than the communication and process time, it is effective to send documents with fine small characters and graphics with fine lines.

2) Then the screen below appears. Use the [↑] or [↓] keys to select the desired contrast level (NORMAL, DARKER, or LIGHTER), then press the [ENTER] key.

CONTRAST
1 . NORMAL

2 . DARKER
3 . LIGHTER

NORMAL
For normal documents.

DARKER
For recording in a darker level (i.e., for documents with light or faint print, pencil).

LIGHTER
For recording in a lighter level (i.e., for documents with dark print).

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[2] Document Length [MENU], [5], [2], [02]

This setting selects whether or not a DOCUMENT JAM error will result when the received document is longer than the specified length.

1) Use the [↑] or [↓] keys to select the desired option (1m (39 INCHES) or ANY LENGTH), then press the [ENTER] key.

```
DOCUMENT LENGTH
1 . 1M(39 INCHES)
2 . ANY LENGTH
```

1m (39 INCHES)
Allows the received document size of up 1 meter long (39.4 inches); a longer document will cause a DOCUMENT JAM error.

ANY LENGTH
Any length of document is acceptable.

Note:
If you select "ANY LENGTH", the machine will be unable to detect a document jam.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[3] Paper Size [MENU], [5], [2], [03]

This is to set the paper size in the paper tray.

1) Use the [↑] or [↓] keys to select the desired size of paper (LT, A4, LG), then press the [ENTER] key.

```
PAPER SIZE (TRAY 1)
1 . LT
2 . A4
3 . LG
```

LT
Select the Letter size paper.

A4
Select the A4 size paper.

LG
Select the Legal size paper.

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2) When the Optional paper tray is installed, the screen below is displayed. Use the [↑] or [↓] keys to select the desired size of paper (LT, A4), then press the [ENTER] key.

PAPER SIZE (TRAY 2)
1 . LT

2 . A4

LT
Select the Letter size paper.

A4
Select the A4 size paper.

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[4] Reset Drum Count [MENU], [5], [2], [04]

This is to reset the Drum unit counter after you replace the Drum unit.

Note:
You must to reset the drum counter when you replace the Drum Unit. Never perform this operation on any other occasion.

1) Use the [↑] or [↓] keys to select the desired option (YES, NO), then press the [ENTER] key.

RESET DRUM COUNT
2 . NO

1 . YES

YES
Reset the Drum unit counter.

NO
Does not reset the Drum unit counter.

2) When "1.YES" selected. The screen is displayed, then press [ENTER] key.

RESET DRUM COUNT
ARE YOU SURE ?

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.1.4 TX Settings

[1] Memory TX [MENU], [5], [3], [01]

This is to set whether the scanned document data is stored in memory.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
MEMORY TX
1 . ON
2 . OFF
```

ON

All documents are stored in memory before being transmitted. The transmission may occur immediately, or it can be a delayed transmission. Transmission of a document will not occur until the remote machine has been contacted. With this feature set to ON, the greatest productivity of the unit can be realized.

OFF

No documents are scanned to memory. All documents are held until the remote unit picks up the line. For a Delayed transmission, it will be held until the desired transmit time, then the remote machine will be contacted, then the transmission will take place.

Remark:

In the case of a Multi address transmission, it will be scanned to memory regardless of this setting.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[2] Security TX [MENU], [5], [3], [02]

This is to set a security function for document transmissions, to prevent your documents from being transmitted to wrong parties due to wrong dialing. The function works to match the dialed number with the TTI data of the remote party. Transmission will only be allowed when there is a match.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

SECURITY TX
2 . OFF

1 . ON

ON
To prevent dialing a wrong number for transmissions.

OFF
Will not prevent dialing a wrong number.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

Remarks:

- If the remote party has failed to set their TTI to match the phone number that the machine is operating on, then a SECURITY TX will be blocked. This machine will display “COMMUNICATION ERROR” on the LCD display.
- SECURITY TX will not block numbers that are dialed after picking up the handset of the optional telephone set, or after pressing the [MONITOR] key.

[3] Cover Sheet [MENU], [5], [3], [03]

This is a function to enable attaching a cover sheet on top of the document to be transmitted.
On the cover sheet, you can preset an image scanned by this facsimile unit (company logo, etc.) as well as the receiver’s name and the sender’s name.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

COVER SHEET
2 . OFF

1 . ON

ON
To select the Cover Sheet function.

OFF
Not to select the Cover Sheet function

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2) Then the following screen appears. Use the [↑] or [↓] keys to select the desired option (YES or NO), then press the [ENTER] key.

```
LOAD DOCUMENT
1 . YES
2 . NO
```

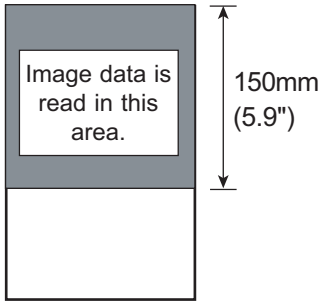
YES
To scan an image document. The screen below appears.

```
LOAD DOCUMENT
```

Remark:
In this case, RESIDUAL MEMORY for Standby Mode Screen does not reach 100%.

NO
Not to scan an image document

COVER SHEET reading area (In case of LT size)
Load the desired image document in the Document Support. The screen below appears.



Press the [START] key to scan the document.

When “ON” is selected in Step 2 and the COVER SHEET has been set already with an image scanned, the following screen is displayed. Use the [↑] or [↓] keys to select the desired option (CANCEL or RETAIN) then press the [ENTER] key.

```
ALREADY ASSIGNED
1 . DELETE
2 . RETAIN
```

DELETE
To delete the cover sheet image already scanned.

RETAIN
To retain the cover sheet image already scanned and cancel a new cover sheet setting.

3) After the “COMPLETED” message is displayed, press the [STOP] key to return the display to the Standby Mode screen.

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[4] Recovery Transmission [MENU], [5], [3], [04]

This sets the Recovery Transmission ON or OFF. When set to ON, a transmission that has failed, and the specified redial attempts have been made, will be stored in memory. The stored transmit job can be resent before the time period set below has expired. When set to OFF, such transmissions will automatically be cleared from memory. When the ON status selected, the time period to store such documents in memory is also set.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

RECOVERY TX
1 . ON

2 . OFF

ON
When set to ON, documents are stored after a failed redial attempt for the time period designated below. After that time has expired, the stored documents are cleared from memory.

OFF
When set to OFF, documents are cleared from memory immediately upon completion of the last redial attempt.

2) The screen below is displayed. Enter the desired time length for storing the document data (01 to 24, in units of hours), then press the [ENTER] key.

STORED TIME	
(1-24)	[8]

STORE TIME
A value 1 to 24 (hours) can be entered.

3) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[5] TTI (Transmit Terminal ID) [MENU], [5], [3], [05]

This is to set whether or not the TTI (Transmit Terminal ID) is to be attached as a header on the sending documents.
The following data is included in the TTI.

Date and Start Time
The date and start time the document transmission started.

Transmitting station ID Name
The ID name preset in your facsimile unit (if not preset, the telephone number of your facsimile unit). Maximum of 40 characters.

Transmission Serial Number
A 3-digit serial number assigned to and counted up on every transmission.

Page Number/Total Number of Pages
Each page of the document is printed with a page number followed by the total number of pages in the document (e.g. 001/003 means the first page of three total pages).

File Number
A 3-digit file number (job number) assigned to each job.

1) Use the [↑] or [↓] keys to select the desired option (INSIDE, OUTSIDE, or OFF), then press the [ENTER] key.

2 . OUTSIDE
3 . OFF

INSIDE
To record TTI inside the document data.

OUTSIDE
To record TTI outside the document data.

OFF
TTI is not recorded.

Remarks:
- When the recording image is divided into multiple pages on the receiving station, the TTI is not recorded on second pages of the divided image.
- The following shows the definitions of the Inside-document TTI and Outside-document TTI.
- FCC regulations require that all facsimiles identify themselves (by name and phone number) and provide the date and time of the transmission. It is recommended that the dealer program this information for the end-user during set-up or installation. The position selection should also be confirmed as either INSIDE or OUTSIDE.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[6] Send After Scan [MENU], [5], [3], [06]

This feature enables you to determine whether the dialing starts while the machine is scanning the documents or after the machine has scanned all documents in the Memory Send mode.
Also, if dialing after scanning is selected, you can select to delete or send the scanned pages when the memory become full during scanning.

1) Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
SEND AFTER SCAN
2 . OFF
```

1 . ON

ON
To enable Send After Scan function.
OFF
To disable Send After Scan function.

When “ON” selected, the screen below is displayed.
Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
WHEN MEMORY FULL
1 . CANCEL SENDING
```

2 . SEND SCANNED PAGES

CANCEL SENDING
When the memory full occurred, to delete the pages being scanned.

SEND SCANNED PAGES
When the memory full occurred, to send the pages scanned to memory.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.1.5 Automatic Supply Order

[1] Destination Setup [MENU], [5], [3], [07], [1]

1) Enter the destination fax number using One touch dialing, Abbreviate dialing or keypad dialing, then press the [ENTER] key.

DESTINATION SETUP
ENTER FAX NUMBER

If the destination fax number has already been registered the following screen is displayed.

ALREADY PROGRAMMED
1 . RE-PROGRAM

2 . RETAIN

You may select one of the following two options.

RE-PROGRAM
Allows you to change the destination fax number.

RETAIN
Retains the destination fax number.

2) After the “SUPPLY ORDER” menu is displayed, press the [STOP] key to return to the Standby Mode screen.

[2] Supplies [MENU], [5], [3], [07], [2]

1) The Screen below is displayed to select the desired option (TONER ORDER SETUP, DRUM ORDER SETUP), then press the [ENTER] key.

SELECT SUPPLIES
1 . TONER ORDER SETUP

2 . DRUM ORDER SETUP

TONER ORDER SETUP
Order the Toner cartridge.

DRUM ORDER SETUP
Order the Drum unit.

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2) The Screen below is displayed to select options for Supplies. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

TONER ORDER SETUP
1 . AUTO ORDERING
2 . ENTER PART NUMBER
3 . ENTER QUANTITY
4 . DONE

DRUM ORDER SETUP
1 . AUTO ORDERING
2 . ENTER PART NUMBER
3 . ENTER QUANTITY
4 . DONE

3) When the “1. AUTO ORDERING” is selected, the screen below is displayed.
Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

AUTO ORDERING
2 . NO
1 . YES

YES
Select to enable auto ordering.

NO
Select to disable auto ordering.

4) When the “2. ENTER PART NUMBER” is selected, the screen below is displayed.
Enter the Part number using the numeric keypad, then press the [ENTER] key.

ENTER PART NUMBER
[_]

ENTER PART NUMBER
Up to 20 digits.

5) When the “3. ENTER QUANTITY” is selected, the screen below is displayed.
Enter the quantity of Supplies using the numeric keypad, then press the [ENTER] key.

ENTER QUANTITY
(1-99) [1]

ENTER QUANTITY
Set a value in the range from 1 to 99.

6) When the "4. DONE" is selected, the returns to “SUPPLY ORDER” menu screen.

7) Press the [STOP] key to return to the Standby Mode screen.

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[3] Other Information [MENU], [5], [3], [07], [3]

1) The Screen below is displayed to select options for Supplies. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
OTHER INFORMATION
1 . ENTER CUSTOMER NBR
```

```
2 . ENTER CONTACT NAME
3 . CONTACT TEL NUMBER
4 . ENTER SHIP TO NAME
5 . ENTER SHIP ADDRESS
6 . DONE
```

2) When the “1.ENTER CUSTOMER NBR” is selected, the screen below is displayed.
Enter the customer fax number using the numeric keypad, then press the [ENTER] key.

```
ENTER CUSTOMER NBR
[_                    ]
```

ENTER CUSTOMER NBR
Up to 20 digits.

3) When the “2.ENTER CONTACT NAME” is selected, the screen below is displayed.
Enter the contact name using the numeric keypad, then press the [ENTER] key.

```
ENTER CONTACT NAME
[_                    ]
```

ENTER CONTACT NAME
Up to 40 characters.

4) When the “3.CONTACT CUSTOMER TEL NUMBER” is selected, the screen below is displayed.
Enter the contact tel number using the numeric keypad, then press the [ENTER] key.

```
CONTACT TEL NUMBER
[_                    ]
```

CONTACT TEL NUMBER
Up to 32 digits.

5) When the “4.ENTER SHIP TO NAME” is selected, the screen below is displayed.
Enter the sipping name using the numeric keypad, then press the [ENTER] key.

```
ENTER SHIP TO NAME
[_                    ]
```

ENTER SHIP TO NAME
Up to 40 characters.

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6) When the “5.ENTER SHIP TO ADDRESS” is selected, the screen below is displayed. Enter the shipping address using the numeric keypad, then press the [ENTER] key.

ENTER SHIP ADDRESS
Up to 64 characters.

7) When the "6.DONE" is selected, the returns to “SUPPLY ORDER” menu screen.

8) Press the [STOP] key to return to the Standby Mode screen.

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4.1.6 RX Settings

[1] Secure Reception [MENU], [5], [4], [01]

There are occasions when you may wish to secure access to incoming documents. Secure RX allows you to receive documents to memory until a security code is entered. This ensures that only users with the correct security code may retrieve documents. In addition, Secure RX can be setup to automatically activate during a specified time period.
To setup Secure RX, a 4-digit security code must be programmed first. After programming the security code, you can specify the time period during which Secure RX will be active. 24-hour coverage for specific days of the week is selectable. This section describes the procedure for programming a security code or changing an existing security code.

1) Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

SECURE RX
01 . SECURITY CODE

02 . SECURE RX

SECURITY CODE
To select a security code for the first time or to change an existing security code.
Go to next step.

SECURE RX
To set the activity period for Secure RX function.
Go to step 4.

If the security code already exists and you wish to change the current code, go to Step 4.
When you enter a security code for the first time, go to Step 5.

2) Enter your 4-digit security code. The screen shown below is displayed to confirm your entry. Then press [ENTER] key.

If a new code needs to be entered:

NEW SECURITY CODE
[_]

If the code already exists:

ENTER SECURITY CODE
[_]

3) Enter the current security code.

SECURITY CODE
[_]

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4) The screen below displayed. Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
SECURE RX
1 . ON
```

2 . OFF

ON
To activate automatic Secure RX during a specified time period.

OFF
To de-activate automatic Secure RX during a specified time period.

When "1.ON" selected, the screen below displayed. Use the [↑] or [↓] keys to select the desired option (ALL DAY or FIXED TIME), then press [ENTER] key.

```
MONDAY
1 . ALL DAY
```

2 . FIXED TIME

ALL DAY
To set Secure RX for the entire 24-hour-period for the day displayed.

FIXED TIME
To not set.
Repeat this step until you select ALL DAY or FIXED TIME for each day of the week (up to Sunday).

Note:
The day of the week is shown of the LCD. Selecting ALL DAY for Monday means Secure RX will be active for the entire 24 hours of Monday.

If you select "2.FIXED TIME" for any day of the week, you will go to next Step after selecting the options for seven days of the week.

5) Enter the time period (start time and end time) subject to automatic activation. Use the [↑] or [↓] keys to move the cursor to the desired digits, enter a desired value or alternate AM/PM position, when the desired time period is displayed, press [ENTER] key.

```
START/STOP TIME
[10:00PM-09:00AM]
```

6) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[2] Memory Reception [MENU], [5], [4], [02]

This is to set whether the Memory Reception function (to store received document data into memory in case recording paper is not possible due to trouble, etc.) is active or not.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
MEMORY RX
1 . ON
2 . OFF
```

ON
To activate Memory Reception function.

OFF
To deactivate Memory Reception function.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode Screen.

[3] RX Reduction [MENU], [5], [4], [03]

When the received document is longer than the effective recording area length, this function reduces the received document image up to 75% of its original size.
Even with the RX reduction function ON, reduction will not take place in the following cases.

- When the received document is longer than the recording paper size and the entire image will not fit after reduction to 75%, the recording image will be divided into multiple pages.
- When the RX reduction function is OFF and the received document is longer than the recording paper size, the recording image will be divided into multiple pages.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
RX REDUCTION
1 . ON
2 . OFF
```

ON
Recording will occur with reduction to 75% of the original size.

OFF
No reduction will be applied.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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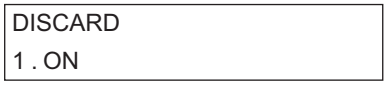
[4] Discard [MENU], [5], [4], [04]

When the received document is longer than the effective recording area length, this function discards the excess area of the recording. Even when this Discard function is set ON, the function will not be effective in the following cases.

- When the exceeds area is longer than the specified value, no discarding will occur but the recording image will be divided into multiple pages.
- When the Discard function is set OFF, the image portion in the exceeding area will be recorded in a separate page.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.



2 . OFF

ON
Discards the data in the area exceeding length of the recording paper.

OFF
Does not discard such data.

2) When the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

[5] Reverse Order Print [MENU], [5], [4], [05]

This function receives the entire facsimile document into memory and then prints the document in reverse order. In this way, the pages of the document will be in correct order.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

1 . ON

ON
To set the Reverse Order Print function.

OFF
Not to set the Reverse Order Print function.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[6] Privileged Reception [MENU], [5], [4], [06]

This is to set a security function for document receptions, to prevent documents from being received from wrong parties due to wrong dialing. The function works to match the dialed number with the TTI data of the remote party, and the Abbreviated Number and One-touch Number list programmed into the unit. Receptions will only be allowed when a match is found.

1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

PRIVILEGED RX
2 . OFF

1 . ON

ON
To set the Privileged Reception function.

OFF
Not to set the Privileged Reception function.

Remark:
If the remote party's TTI does not match a phone number that is programmed into this machine's Abbreviated Number or One-touch key list, then the reception will be blocked. This machine will display "COMMUNICATION ERROR" on the LCD display.

2) After the "COMPLETED" message is displayed, press the [STOP] key to return to the Standby Mode screen.

[7] RTI [MENU], [5], [4], [07]

This is to set whether or not the RTI (Remote Terminal ID) is printed as a footer when a document is received. The following data will be printed as RTI.

Footer Message
The title of the footer.

Date and Time of Receiving
The date and time the document is received.

Transmitting Station Dial Number
The telephone number of the transmitting remote station.

Receiving Station Dial Number
The telephone number of the receiving (your own) station.

Page Number
The page number of 3 digits.

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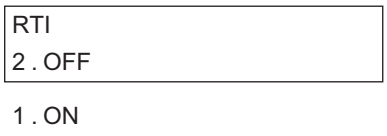
1) Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.



ON
To record RTI

OFF
Not to record RTI

Remarks:
- The RTI is added at the bottom in the effective recording range of the received document image.
- The RTI is added even when a communication error or image error occurs.
- When the recording image is divided into multiple pages, the RTI is added only on the final page.
- The time data in the RTI is the same between multiple pages for one transmission, which is the time when the first page is transmitted.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.1.7 Report and List Options

[1] Journal [MENU], [5], [5], [01]

Allows the user to choose the manner that reports are printed.
This sets the types of journals to be output, and sets the output method.

1) Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.
   This menu option allows you to select the manner in which journal reports are to be printed.

JOURNAL
1 . SET KEY DEFAULT

   2 . AUTO PRINT

   When SET KEY DEFAULT is selected:
   The screen below displays the options for the type of journal to be printed manually.
   - Use the [↑] or [↓] keys to select the desired option (SEND & RECEIVE, SEND, RECEIVE), then press the [ENTER] key.

SET KEY DEFAULT
1 . SEND & RECEIVE

     2 . SEND
     3 . RECEIVE

     SEND & RECEIVE
     Prints both Transmission and Reception Journals.

     SEND
     Prints only Transmission Journals.

     RECEIVE
     Prints only Reception Journals.

     Go to Step (2).

   When AUTO is selected:
   This menu selection allows (or disallows) the automatic printing of journals after 40 (RX and TX) activities.
   - Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

AUTO PRINT
1 . ON

     2 . OFF

     ON
     Prints journals automatically after 40 (TX and RX) activities.

     OFF
     Does not print journals automatically.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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[2] Comm. Report Options [MENU], [5], [5], [02]

This sets the output method of Communication Reports and also sets whether the document content is printed to the reports for Memory Transmissions.
The following are reports and lists that can be output as communication reports.

- Single Transmission
- Single Memory Transmission
- Multi-address Transmission
- Multi-polling
- Relay Transmission (Originator)

1) The screen below is displayed to select options for Single Transmission. Use the [↑] or [↓] keys to select the desired option (ALWAYS, ON ERROR, or OFF), then press the [ENTER] key.

TX REPORT
1 . ALWAYS

2 . ON ERROR
3 . OFF

ALWAYS
Prints after every transmission.

ON ERROR
Prints only when an error has occurred in transmission.

OFF
Disables “print.”

2) The screen below is displayed to select options for Memory Transmission. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

MEMORY-TX
1 . ALWAYS

2 . ON ERROR
3 . OFF

ALWAYS
Prints after every transmission.

ON ERROR
Prints only when an error has occurred in transmission.

OFF
Disables “print.”

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3) The screen below is displayed to select a document-added option. Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
SHOW FIRST PAGE
1 . ON
2 . OFF
```

ON
Adds add the document data in the Memory Transmission Report.

OFF
Does not add document data in the Memory Transmission Report.

4) The screen below is displayed to select options for Multi-address Transmission Report. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
MULTI-ADD REPORT
1 . ALWAYS
2 . ON ERROR
3 . OFF
```

ALWAYS
Prints after every transmission.

ON ERROR
Prints only when an error has occurred in transmission.

OFF
Disables “print.”

5) The screen below is displayed to select a document-added option. Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
SHOW FIRST PAGE
1 . ON
2 . OFF
```

ON
Adds the document data in the Report.

OFF
Does not add the document data in the Report.

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6) The screen below is displayed to select options for Multi-polling Report. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
MULTIPOLL REPORT
1 . ALWAYS
2 . ON ERROR
3 . OFF
```

ALWAYS
Prints after every Multi-polling.

ON ERROR
Prints only when an error has occurred in the Multi-polling.

OFF
Disables “print.”

7) The screen below is displayed to select options for Relay Transmission Originator Report. Use the [↑] or [↓] keys to select the desired option, then press the [ENTER] key.

```
RELAY ORIGINATOR
1 . ALWAYS
2 . ON ERROR
3 . OFF
```

Remark:
This menu option will only appear if the unit was setup with the Memory Clear: ALL (RELAY ON) in the Test Mode.

ALWAYS
Prints after every Relay Transmission.

ON ERROR
Prints only when an error has occurred in transmission.

OFF
Disables “print.”

8) The screen below is displayed to select a document-added option. Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

```
SHOW FIRST PAGE
1 . ON
2 . OFF
```

ON
Adds the document data in the Report.

OFF
Does not add the document data in the Report.

9) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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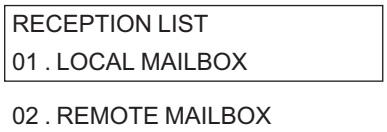
[3] Reception List Options [MENU], [5], [5], [03]

The menu options allows selection of a reception list. Printing will automatically start upon receiving a request to perform a relay operation. The following are the Reception Lists to output.

- Local Mailbox Reception List
- Remote Mailbox Reception List

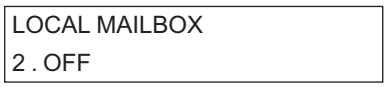
1) Use the [↑] or [↓] keys to select a desired option (RELAY RECEPTION, LOCAL MAILBOX, REMOTE MAILBOX), then press the [ENTER] key.



When LOCAL MAILBOX is selected:

The screen below is displayed.

- Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.



ON

Prints the Local Mailbox Reception List.

OFF

Does not print the Local Mailbox Reception List.

When REMOTE MAILBOX is selected:

The screen below is displayed.

- Use the [↑] or [↓] keys to select the desired option (ON or OFF), then press the [ENTER] key.

ON

Prints the Remote Mailbox Reception List.

OFF

Does not print the Remote Mailbox Reception List.

2) After the “COMPLETED” message is displayed, press the [STOP] key to return to the Standby Mode screen.

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4.2 Service Settings in Test Mode

The Service Settings in Test Mode are to be operated by service technicians only. The unique requirements of each user can be set. (When a PC Board is replaced, these settings must be performed on the new PC board so that the same operations can be used. Therefore, output a Function List, Dial Number List, etc. before starting Service Settings in Test Mode.)

- **When the facsimile is in the standby mode:**

1) Press the following keys in order:
[MENU] [*] [#] [*] [*]

MENU
1 . FAX FEATURES

2 . LISTS
3 . TEL LIST ENTRY
4 . INITIAL SETUP
5 . DEFAULT SETTINGS
6 . MENU LIST
9 . TEST MODE

2) Use the [↑] or [↓] keys to select the “9.TEST MODE” item, then press the [ENTER] key, or press [9]. The screen below is displayed.

TEST MODE
1 . AUTO TEST

2 . INDIVIDUAL TEST
3 . TEST RESULT LIST
4 . FUNCTION TEST
5 . MAINTENANCE
6 . TRACE LIST

3) Use the [↑] or [↓] keys to select the “5.MAINTENANCE” item, then press the [ENTER] key, or press [5]. The screen below is displayed.

MAINTENANCE
01 . MEMORY CLEAR

02 . SET FUNCTION
03 . MEMORY WRITE
04 . SET CONT. LEVEL
05 . ERR COUNTER SHIFT
06 . EDGE REGISTRATION
07 . DOC. TRANSMISSION

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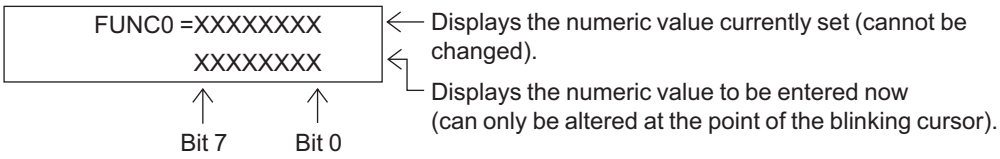
4) Use the [↑] or [↓] keys select “02.SET FUNCTION” item, then press the [ENTER] key, or press [02], then press the [ENTER] key.



Bit 7 is shown on the LCD display as the left most digit. By entering 1 or 0 in the bit with the desired function, the function is to be set. Press the [ENTER] key to store the new setting and advance to the next function.

Note:

Use the [ENTER] key to advance to the next function. Use the [>] key to move to the next bit. Use the [<] key to move to the previous bit, if already at bit 7 (the left digit), the [<] key will move to the previous function.

Remark:

To end the service mode, press the [STOP] key to return to the standby mode.

- **When the facsimile is turned OFF:**

1) Turn the power switch ON while holding the dial keys [1] and [3] down.

Note:

The service mode continues until the service mode end operation is performed or the power is turned off. Therefore, be sure to end the mode when the tests are finished in a general way.

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4.2.1 FUNC 0-39

The settings here cover all the functions of this facsimile unit that can be adjusted by a service technician. The functions consist of 40 tables in with each table having 8 bits (0 ~ 7).

- FUNC 0

Bit	Contents	Link with User Function Setting
7	Terminal ID entry for user mode: 0: Disable 1: Enable	-
6	Undefined	-
5	Undefined	-
4	Exchange Type Setting for User Mode: 0: Disable 1: Enable	-
3	Dial Type Setting for User Mode: 0: Disable 1: Enable	-
2	Undefined	-
1	Undefined	-
0	Dial Type Menu display: 0: Disable 1: Enable	-

FUNC 0 Bit 7:
This bit determines whether or not the Terminal ID programming operation is available to users.

FUNC 0 Bit 4:
This bit determines whether or not selection between PSTN and PABX is made available to users.

Note:
When “Disable” is selected, the PSTN/PABX selection screen is not displayed in the dial type setup menu.

FUNC 0 Bit 3:
This bit determine whether or not selection between DP and MF is made available to users.

Note:
When "Disable" is selected, the DP/MF selection screen is not displayed in the dial type setup menu.

FUNC 0 Bit 0:
This bit determine whether or not display the Dial Type setup menu.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
3	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 1

Bit	Contents	Link with User Function Setting
7 6 5 4	Undefined	-
3	Download execute condition: 0: No job in memory 1: Anytime	-
2	Remote access user setting: 0: Disable 1: Enable	-
1 0	EOL (End of Line) Timer Value: 00: 5 sec. 01: 6 sec. 10: Undefined 11: 13 sec.	-

Remark:

FUNC 1 Bit 3:
Upgrading (changing) the firmware normally clears all the Pending Jobs remained in the memory.

FUNC 1 Bit 2:
Set whether or not the remote access user setting.

FUNC 1 Bit 1 and 0:
These bits indicate the setting of the EOL (End of Line) check timer in high-speed image data.

Note:

EOL is the code that is put between lines. If the next EOL is not detected within the time specified in this setting, the line is disconnect due to communication error.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 2

Bit	Contents	Link with User Function Setting
7 6	Undefined	-
5 4	Frequency Detection Range to recognize as CI: 00: 12 Hz to 80 Hz 01: 16 Hz to 55 Hz 10: 20 Hz to 55 Hz 11: 22 Hz to 55 Hz	-
3	Undefined	-
2	Undefined	-
1 0	Undefined	-

Remark:

FUNC 2 Bit 5 and 4:

These bits program the detection range for frequency to be recognized as CI.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 3

Bit	Contents	Link with User Function Setting
7	Handing of Negative Answer (RTN/PIN): 0: Regards it to be abnormal. 1: Regards it to be normal.	-
6	Undefined	-
5	Undefined	-
4	Undefined	-
3	Undefined	-
2	Undefined	-
1	Undefined	-
0	Undefined	-

Remark:

FUNC 3 Bit 7:

This bit programs whether or not a received RTN is handled as abnormal (NG).

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	0	0	0
0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 4

Bit	Contents	Link with User Function Setting
7 6 5 4	Transmit Attenuator Value for Line 1 (V.17 modem): 0000 to 1111 ... counts up on every -1dB 0000: 0 dB 0001: -1 dB 0010: -2 dB . . . 1111: -15 dB	-
3 2 1 0	Undefined	-

Remark:

FUNC 4 Bit 7 to 4:

This value is used to program the modem transmission dB level. The smaller the value, the higher the transmission level becomes. If errors occur frequently or training is not sent, the transmission level should be changed, as a rule.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
4	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 5

Bit	Contents	Link with User Function Setting
7 6	Cable Equalizer Value: 00: 0 dB 01: -4 dB 10: -8 dB 11: -12 dB	-
5	Echo Protect Tone to V29: 0: Not added 1: Added	-
4	Sending of 300 bps (FSK) Signal: 0: No delay 1: 500 ms delay	-
3	Sending of High-speed Signal: 0: No delay 1: 500 ms delay	-
2	Undefined	-
1	Sending of CNG Signal at Manual Transmission: 0: Do not send 1: Send	-
0	Sending of CED Signal at Manual Reception: 0: Do not send 1: Send	-

Remark:

FUNC 5 Bit 7 and 6:
These bits program the equalizer value which has frequency characteristics. For long-distance communication, a larger equalizer value is recommended as a rule.

FUNC 5 Bit 5:
This bit selects whether or not the echo protect tone is added before the training for V.29 (9600 bps) communication. By adding the echo protect tone, the echo cancel circuit of the satellite line is started up to improve the line status.

FUNC 5 Bit 4:
This bit selects whether or not a delay (500 ms) is inserted before sending the signal at reversing transmission/reception change and the timing is shifted to avoid line echo.
When the echo preventing circuit or echo cancel circuit causes missing of the beginning of the signal, for example, in overseas communications where a delay may be larger, this bit should be set to 1 (ON).

FUNC 5 Bit 3:
This bit selects whether or not a delay (500 ms) is inserted before the high-speed signal is sent to shift the timing. Explanation for bit 4 is applicable.

FUNC 5 Bit 1:
This bit selects whether or not the CNG signal is output in manual transmission (on hook dialing/ off-hook dialing). When the receiving terminal uses a switching device, CNG signal output is required (1=ON).

FUNC 5 Bit 0:
This bit selects whether or not the CED signal is transmitted in manual reception.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 6

Bit	Contents	Link with User Function Setting
7 6 5 4	Initial value of the communication speed designated by DIS/DCS signal: 0000: 2400 bps 0001: 14400 bps (V.17) 0010: Undefined 0011: Undefined 0100: 4800 bps 0101: 12000 bps (V.17) 0110: Undefined 0111: Undefined 1000: 9600 bps 1001: 9600 bps (V.17) 1011: Undefined 1100: 7200 bps 1101: 7200 bps (V.17) 1110: Undefined 1111: Undefined	-
3 2	Judging Standard of Image Quality Defect: 00: 5% 01: 10% 10: 15% 11: 25%	-
1	Monitor Type: 0: BT Monitor 1: Protocol Monitor	-
0	Undefined	-

Remark:

FUNC 6 Bit 7 to 4:
These bits set the modem speed. The speed should be programmed when the telephone line quality is poor.

FUNC 6 Bits 3 and 2:
These bits set a threshold value to judge image quality. To make the criteria stringent, 00 (5%) should be selected. When the threshold value is exceeded, RTN will be initiated.

FUNC 6 Bit 1:
This bit selects the monitor type when the line monitor function is turned on. When this bit is set to 0 (BEFORE TRANSMISSION MONITOR), monitoring stops on receiving DIS. When this bit is set to 1 (PROTOCOL MONITOR), monitoring is performed during communication, like forced line monitor.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0
2	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 7

Bit	Contents	Link with User Function Setting
7 6	CI-ON Determine Time: 00: 175 ms 01: 125 ms 10: 800 ms 11: 145 ms	-
5 4	CI-OFF Determine Time: 00: 500 ms 01: 350 ms 10: 175 ms 11: 90 ms	-
3	Undefined	-
2 1 0	Undefined	-

Remark:

FUNC 7 Bit 7 and 6:
These bits program call signal ON time. When CI cannot be received, the value should be changed.

FUNC 7 Bit 5 and 4:
These bits program call signal OFF time.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 8

Bit	Contents	Link with User Function Setting
7	Document Length Check: 0: Not check 1: Check (Document Jam on exceeding 1m)	Yes
6	Page Re-transmission at receiving Negative Answer: 0: Not re-transmit 1: Transmit	-
5	Page-mismatch Display Indication: 0: Not displayed 1: Displayed	-
4	Undefined	-
3	Undefined	-
2	Undefined	-
1	Undefined	-
0	Undefined	-

Remark:

FUNC 8 Bit 7:
This bit setting determines whether or not a paper jam is recognized when the document length exceeds 1 m. When this bit is set to 1 (ON), the facsimile machine displays the message “PAPER JAM” and stops reading the document. When this bit is set to 0 (OFF), the machine does not check the document length nor does it stop reading even if the document is really jammed. This condition increases the chance of the document becoming damaged.

FUNC 8 Bit 6:
This setting is performed to avoid double transmission due to memory retransmission.
When this bit is set to 0 (OFF), the machine does not perform retransmission and proceeds to next page transmission. During retries, the machine starts transmission of the next page.

FUNC 8 Bit 5:
This setting performs error indications if the number of pages do not match.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 9

Bit	Contents	Link with User Function Setting
7 6	Undefined	-
5 4 3	Speaker volume for pseudo ring tone (TEL/FAX mode): 000: Level 0 (minimum) 001: Level 1 010: Level 2 011: Level 3 100: Level 4 101: Level 5 110: Level 6 111: Level 7 (maximum)	Yes
2 1 0	Speaker volume for all error tone: 000: Level 0 (minimum) 001: Level 1 010: Level 2 011: Level 3 100: Level 4 101: Level 5 110: Level 6 111: Level 7 (maximum)	Yes

Remark:

FUNC 9 Bit 5 to 3:
Allows the user to adjust the pseudo ring volume (TEL/FAX mode).

FUNC 9 Bit 2 to 0:
Allows the user to adjust the volume level of the speaker when an error occurs.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 10

Bit	Contents	Link with User Function Setting
7 6	Transmission Report after a Direct Document Transmission: 00: Do not print 01: Print (re-sending of error pages is OK) 10: Always print 11: Print (when completed due to communication error)	Yes
5 4 3	Transmission Report Output after Memory Transmission: 000: Not print 001: Print (re-sending of error pages is OK) 010: Always output 011: Print (when completed due to communication error.) 100: Undefined 101: Print (re-sending of error pages is OK + with sent document) 110: Always print (with sent document) 111: Print (when completed due to communication error + with sent document)	Yes
2 1 0	Transmission Report Output after Multi-address Transmission: 000: Do not print 001: Do not print 010: Always print 011: Print (when completed due to communication error) 100: Undefined 101: Undefined 110: Always print (with sent document) 111: Print (when completed due to communication error + with sent document)	Yes

Remark:

FUNC 10 Bit 7 and 6:
Allows the use to choose how and when a transmission report is printed.

FUNC 10 Bit 5 to 3:
These bits program whether or not the memory transmission report is output. These bits also select output conditions. Allows the user to choose whether or not (and when) a transmission report is printed when transmission is through “memory.”

FUNC 10 Bit 2 to 0:
These bits program whether or not the broadcast transmission report is printed and the conditions for printing.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 11

Bit	Contents	Link with User Function Setting
7 6	Undefined	-
5	Noon Time Setting: 0: 00:00 1: 12:00	-
4 3	Print report after a Multi-polling: 00: Do not print 01: Do not print 10: Always print 11: Print (when completed due to communication error.)	Yes
2 1 0	Undefined	-

Remark:

FUNC 11 Bit 5:
Determines how noon time is displayed.

FUNC 11 Bit 4 and 3:
These bits program whether or not the multi polling transmission report is printed or not and the conditions for printing.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 12

Bit	Contents	Link with User Function Setting
7 6 5	Undefined	-
4 3 2	Undefined	-
1	Redial setting: 0: Disable 1: Enable	-
0	Report print at user cancel: 0: Do not print 1: Print	-

Remark:

FUNC 12 Bit 1:
The selections enables or disables Redial setting.

FUNC 12 Bit 0:
Determines if transmission result report is printed if the user cancels the job.
Default table

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 13

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Mailbox Reception List (Local Input): 0: Do not print 1: Print	Yes
5	Mailbox Reception List (Remote Input): 0: Do not print 1: Print	Yes
4	Automatic print of Journal: 0: No 1: Yes	Yes
3 2	Recording contents when Journal is output manually: 00: Transmissions only 01: Receptions only 10, 11: Transmissions/Receptions	Yes
1	NG Handling on Journal Status: 0: Do not print 1: Print	-
0	Undefined	-

Remark:

FUNC 13 Bit 6:
It determines whether or not the reception list is printed when a mail box option is chosen at own terminal.

FUNC 13 Bit 5:
It determines whether or not the acceptance list is print when a “mail box” information is received.

FUNC 13 Bit 4:
Selection determines whether or not the journal is printed automatically.

FUNC 13 Bit 3 and 2:
These selections determine whether or not the journal is printed manually, and select items to be recorded (transmission, reception or transmission/reception).

FUNC 13 Bit 1:
Selections determine whether or not OK or NG (failed) is added as a communication result on the journal.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 14

Bit	Contents	Link with User Function Setting
7 6 5 4	CI Signal Detect Count until Auto Receive: 0000 to 1111... counts up on every 1 time 0000: 1 time 0001: 1 time 0010: 2 times . . . 1111: 15 times	Yes
3 2 1	Speaker Volume of On-hook and Protocol Monitor: 000: Level 0 (minimum) 001: Level 1 010: Level 2 011: Level 3 100: Level 4 101: Level 5 110: Level 6 111: Level 7 (maximum)	Yes
0	Undefined	-

Remark:

FUNC 14 Bit 7 to 4:
Selections set the CI counter value until the machine enters automatic reception mode.

FUNC 14 Bit 3 to 1:
Selections set speaker volume for the on-hook status or protocol monitor.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 15

Bit	Contents	Link with User Function Setting
7 6	Discard length of document paper: 00: No discard (0 mm) 01: Discard 13 mm 10: Discard 17 mm 11: Discard 34 mm	-
5	Vertical reduction on recording paper: 0: Prohibited 1: Allowed	-
4	Undefined	-
3	Recording method on a fixed-size paper: 0: Auto reduction 1: No reduction	Yes
2	Discard setting of recording paper: 0: OFF 1: ON	Yes
1	Maximum reduction rate in vertical reduction: 0: 90% 1: 73%	-
0	Undefined	-

Remark:

FUNC 15 Bit 7 and 6:
Selections determine how much to discard (on the recording paper) when the received data is too long and exceeds the effective record length.

FUNC 15 Bit 5:
The selection determines whether or not data is reduced in vertical direction.

FUNC 15 Bit 3:
This bit programs the received data recording method. When bit 3 is set to 0 (OFF), the machine finds an appropriate size and reduces data automatically. When bit 3 is set to 1 (ON), the data is recorded without reducing.

FUNC 15 Bit 2:
Set whether or not the received documents are recording with the discarded portion (Specified by Bits 7 and 6).

FUNC 15 Bit 1:
This bit programs maximum reduction rate in the vertical direction. This bit should be set to 1 (ON) when legal size document is reduced and printed on the A4 paper.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 16

Bit	Contents	Link with User Function Setting
7	Adding RTI: 0: Not added 1: Add	Yes
6	Adding TTI: 0: Not added 1: Add	Yes
5	Print position of TTI: 0: Inside document 1: Outside document	Yes
4	Undefined	-
3 2 1 0	Undefined	-

Remark:

FUNC 16 Bit 7:
The setting determines whether or not receiving terminal data is printed on received document.

FUNC 16 Bit 6:
The setting determines whether or not transmitting terminal data is recorded on received document.

FUNC 16 Bit 5:
The setting determines the placement of the printed TTI data. This setting is effective only when bit 6 is set to 1 (ON).

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 17

Bit	Contents	Link with User Function Setting
7 6 5	Undefined	-
4 3 2	Undefined	-
1	Memory Reception (Substitution Reception) Function: 0: Not available 1: Available	Yes
0	ECM Function (Error Correction Mode): 0: Not available 1: Available	Yes

Remark:

FUNC 17 Bit 1:
The selections allows or disallows memory reception.

FUNC 17 Bit 0:
The selection makes ECM available or not available.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	0	0	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	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 18

Bit	Contents	Link with User Function Setting
7	Privileged Reception setting: 0: No 1: Yes	Yes
6	Undefined	-
5	File Recovery Transmission setting: 0: Not available 1: Available	Yes
4	Collated Print setting: 0: Not available 1: Available	Yes
3	Printer Power Saver Mode: 0: Not available 1: Available	Yes
2	Department Code setting: 0: No 1: Yes	Yes
1	Undefined	-
0	Undefined	-

Remark:

FUNC 18 Bit 7:
This bit setting determines whether or not privileged reception is activated.

FUNC 18 Bit 5:
This bit setting determines whether or not file recovery is available.

FUNC 18 Bit 4:
This bit setting determines whether or not collated printing is available.

FUNC 18 Bit 3:
This bit setting determines whether the printer power save mode is available.

FUNC 18 Bit 2:
This bit setting determines whether or not the department control function is available.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 19

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Cover Sheet Setting and Transmitting operations: 0: Prohibited 1: Allowed	Yes
5	Account Code Setting: 0: Prohibited 1: Allowed	Yes
4	Department code in transmit header: 0: Not added 1: Add	-
3	Undefined	-
2	Secure Reception function: 0: Prohibited 1: Allowed	Yes
1	Undefined	-
0	Quick Polling Communication: 0: Prohibited 1: Allowed	-

Remark:

FUNC 19 Bit 6:
This bit determines whether or not the cover sheet is transmitted together with the document.

FUNC 19 Bit 5:
This bit determines whether or not the account code is added.

FUNC 19 Bit 4:
This bit determines whether or not department code is recorded.

FUNC 19 Bit 2:
This bit determines whether or not security reception is performed.

FUNC 19 Bit 0:
This bits determines whether or not quick polling is carried out.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 20

Bit	Contents	Link with User Function Setting
7	Function apply smoothing: 0: Not used 1: Used	-
6 5	Undefined	-
4 3	Receive Mode Setting Value: 00: Manual Reception (TEL) 01: Automatic Reception (FAX) 10: TEL/FAX 11: FAX/TAD	Yes
2	TTI off setting operation for user: 0: Disable 1: Enable	-
1	Transmission report off setting operation for user: 0: Disable 1: Enable	-
0	Undefined	-

Remark:

FUNC 20 Bit 7:
This bit determines whether to apply print smoothing during recording.

FUNC 20 Bit 4 and 3:
The selections allow for auto, TEL/FAX, FAX/TAD or manual reception mode.

FUNC 20 Bit 2:
Enables or disables the Transmission Header print mode.

FUNC 20 Bit 1:
Enables or disables the Transmission Report print mode.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

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- FUNC 21

Bit	Contents	Link with User Function Setting
7 6 5 4	Minimum counter of CI detection: 0001 to 1111... counts up for each time. 0000: 1 time 0001: 1 time 0010: 2 time . . . 1111: 15 time	-
3 2 1	CI ring volume value: 000: Level 0 (minimum) 001: Level 1 010: Level 2 011: Level 3 100: Level 4 101: Level 5 110: Level 6 111: Level 7 (maximum)	Yes
0	Undefined	-

Remark:

FUNC 21 Bit 7 to 4:
Minimum number of CI (Call-in) until connection with the remote party is established.
The minimum number of rings until automatic reception is initialized depends on this setting.

FUNC 21 Bit 3 to 1:
These bits determine the CI ring volume.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 22

Bit	Contents	Link with User Function Setting
7 6 5 4	Maximum redial counter setting: 0001 to 1110... counts up for each time. 0000: No retry 0001: 1 time 0010: 2 times . . 1110: 14 times 1111: Undefined	-
3 2 1 0	Minimum redial counter setting: 0001 to 1110... counts up for each time. 0000: No retry 0001: 1 time 0010: 2 times . . 1110: 14 times 1111: Undefined	-

Remark:

FUNC 22 Bit 7 to 4:
Sets the maximum number of redial attempts.

FUNC 22 Bit 3 to 0:
Sets the minimum number of redial attempts.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	0	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	0	0	0
0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 23

Bit	Contents	Link with User Function Setting
7 6 5 4	Maximum redial interval counter setting: 0001 to 1111... counts up for each minute. 0000: 1 minute 0001: 1 minute 0010: 2 minutes . . 1111: 15 minute	-
3 2 1 0	Minimum redial interval counter setting: 0001 to 1111... counts up for each minute. 0000: 1 minute 0001: 1 minute 0010: 2 minutes . . 1111: 15 minutes	-

Remark:

FUNC 23 Bit 7 to 4:
Sets the maximum time intervals between redials.

FUNC 23 Bit 3 to 0:
Sets the minimum time intervals between redials repeating the statement over again.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 24

Bit	Contents	Link with User Function Setting
7 6	Priority of recording items in Journal: 00: Telephone Number > ID > Name 01: Name > Telephone Number > ID 10: ID > Telephone Number > Name 11: ID > Name > Telephone Number	-
5	SUB/SEP/PWD Communication: 0: Not available 1: Available	-
4	Scanned page when memory is overed: 0: Delete 1: Send	Yes
3	Undefined	-
2	Line monitor for user mode: 0: OFF 1: ON	Yes
1	Undefined	-
0	Always monitoring the communication line: 0: Not monitored 1: Monitored	-

Remark:

FUNC 24 Bit 7 and 6:
Sets the order of information to be printed in the journal information.

FUNC 24 Bit 5:
Sets the availability or non-availability of SUB/PWB/SEP communication.

FUNC 24 Bit 4:
Selects whether the data is discarded or sent, when the memory becomes full in send after scan function.

FUNC 24 Bit 2:
This bit programs whether or not the transmission communication section programmed with FUNC 6 Bit 1 is monitored.

FUNC 24 Bit 0:
Sets the unit to monitor or not monitor the communication line.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	1	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 25

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Undefined	-
5	Undefined	-
4	Undefined	-
3	Undefined	-
2	Undefined	-
1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 26

Bit	Contents	Link with User Function Setting
7 6	Undefined	-
5 4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	0	0	1	0	0	0	0	1	0	0	0	0	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 27

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Undefined	-
5 4	Transmission time on same speed: 00: 4 times 01: 3 times 10: 2 times 11: 1 time	-
3 2	Reception time on same speed (V.34 only): 00: 4 times 01: 3 times 10: 2 times 11: 1 time	-
1	Use of V.34 Modem: 0: Prohibited 1: Allowed	-
0	V.34 Modem Initial Speed: 0: 28,800 bps 1: 33,600 bps	-

Remark:

FUNC 27 Bit 5 and 4:
Sets the number of times the unit attempts transmission of a page at the same transmission speed in ECM mode.

FUNC 27 Bit 3 and 2:
Sets the number of times the unit attempts reception of a page at the same reception speed of the V.34.

FUNC 27 Bit 1:
Bit setting allows the user to use or not use the V.34 modem.

FUNC 27 Bit 0:
Bit setting allows the user to choose the speed at which the V.34 modem operates.
Default table

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 28

Bit	Contents	Link with User Function Setting
7 6 5 4	Transmission attenuating value for V.34 modem: Counted up in the range from 0000 to 1111, in units of -1 dB. 0000 to 1111... counts up for every -1 dB 0000: 0 dB 0001: -1 dB 0010: -2 dB . 1001: -9 dB . 1111: -15 dB	-
3 2 1 0	Undefined	-

Remark:

FUNC 28 Bit 7 to 4:

The bit settings allow the user to program the modem transmission attenuation level.

The smaller the set value, the higher the transmission level becomes. If errors occur frequently or training is not sent, the transmission level should be changed, as a rule.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
4	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 29

Bit	Contents	Link with User Function Setting
7	Undefined	-
6 5	Date format of clock: 00: MM-DD-YY 01: DD-MM-YY 10: YY-MM-DD 11: Undefined	Yes
4	Month format of clock: 0: Numeric 1: Alphabets	Yes
3	Time display of clock: 0: 24-hour system 1: 12-hour system	Yes
2	Undefined	-
1	Undefined	-
0	Undefined	-

Remark:

FUNC 29 Bit 6 and 5:
Bit settings allow the user to choose the format for displaying the date.

FUNC 29 Bit 4:
Bit setting allows the Date Format to be set for either Alphabet or numeric.

FUNC 29 Bit 3:
Bit setting allows the user to choose between the 24-hour or the 12-hour system.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 30

Bit	Contents	Link with User Function Setting
7 6	Super power saver mode setting: 00: Off 01: Manual 10: Automatic 11: Undefined	Yes
5 4 3 2 1 0	Specified time setting to super power saver in automatic: 000000 to 111100... counts up for each minute. 000000: Soon 000001: 1 minute 000010: 2 minutes . . . 111100: 60 minutes 1111XX: 60 minutes	Yes

Remark:

FUNC 30 Bit 7 and 6:

The condition to enter the super power saver mode is specified.

When “Manual” is selected, the facsimile enters or exists by pressing the power save key.

When “Automatic” is selected, the machine enters low power after on operations for a specific time.

When “Off” is selected, the super power saver mode is disabled.

FUNC 30 Bit 5 to 0:

This parameter is enabled only when the “10: Automatic” is chosen.

When the time specified in this parameter passes after a job is processed or an operation is completed, the facsimile will automatically enter the 2W lower-power consumption mode.

The time can be programmed for up to 60 minutes.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 31

Bit	Contents	Link with User Function Setting
7 6 5	Print report after a ITU-T relay transmission (Originator): 00X: Do not print 010: Always 011: ON error 110: Always (with send document) 111: On error (with send document)	Yes
4 3 2	Undefined	-
1	Undefined	-
0	Undefined	-

Remark:

FUNC 31 Bits 7 to 5:

These bits program whether or not the relay transmission report is printed and the conditions for printing.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 32

Bit	Contents	Link with User Function Setting
7 6 5	Undefined	-
4	Undefined	-
3	Undefined	-
2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 33

Bit	Contents	Link with User Function Setting
7 6 5	Speaker volume for Key touch tone: 000: Level 0 (minimum) 001: Level 1 010: Level 2 011: Level 3 100: Level 4 101: Level 5 110: Level 6 111: Level 7 (maximum)	Yes
4 3 2 1 0	Languages in LCD display and report: 00000: English 00001: Italian 00010: Germany 00011: Spanish 00100: Belgium 00101: Dutch 00110: Swedish 00111: Finnish 01000: Norwegian 01001: Portuguese 01010: Danish 01011: French 01100-11111: Undefined	Yes

Remark:

FUNC 33 Bit 7 to 5:
Allows the user to adjust the Key Touch Tone volume level.

FUNC 33 Bit 4 to 0:
These bits select the language for messages and list indication.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	1	1	1	1	0
2	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0
1	0	0	0	0	1	0	0	0	0	1	1	1	1	1	1	0	0	1	0
0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	1	1	0

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- FUNC 34

Bit	Contents	Link with User Function Setting
7 6 5	Paper size in recording paper tray: 000: A4 001: Letter 010: Legal 011-111: Undefined	Yes
4 3 2	Paper size in Optional recording paper tray: 000: A4 001: Letter 010-111: Undefined	Yes
1	Undefined	-
0	Undefined	-

Remark:

FUNC 34 Bit 7 to 5:
Sets the paper size in recording paper tray.

FUNC 34 Bit 4 to 2:
Sets the paper size in optional recording paper tray.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- FUNC 35

Bit	Contents	Link with User Function Setting
7 6 5 4	Receive Interval Setting: 0000 to 1111...counts up for each minute. 0000: 0 minute (=OFF) 0001: 1 minute 0010: 2 minutes . . . 1110: 14 minutes 1111: 15 minutes	Yes
3	Undefined	-
2 1 0	Undefined	-

Remark:

FUNC 35 Bit 7 to 4:

This function insures, there will be a period of time set aside receiving incoming facsimiles during periods of heavy outgoing transmission activity. After every fourth consecutive transmission, this machine will wait incoming facsimiles to be received.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 36

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 37

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 38

Bit	Contents	Link with User Function Setting
7	Operation with the incompatible toner cartridge 0: OFF 1: ON	-
6 5 4 3 2 1 0	Undefined	-

Remark:

FUNC 38 Bit 7:
This bit determines whether or not the machine operates when the incompatible toner cartridge is installed.

0 (OFF):
Enable the machine to operate only when the Toshiba genuine toner cartridge is installed

1 (ON):
Enable the machine to operate when the Toshiba genuine toner cartridge and the incompatible toner cartridge are installed

However, if the incompatible toner cartridge is used in 1 (ON), the toner empty detection and the print-related counter control are not performed.

Note:

The setting of FUNC 38 Bit 7 is reflected after the value is entered and the power is turned OFF and back ON.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- FUNC 39

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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4.2.2 TEL FUNC 0-8

- TEL FUNC 0

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Undefined	-
5 4	Undefined	-
3	Undefined	-
2	Undefined	-
1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	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	0	0
4	0	0	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	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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• TEL FUNC 1

Bit	Contents	Link with User Function Setting
7	Remote RX Function: 0: Disable 1: Enable	-
6	Undefined	-
5 4	Undefined	-
3 2 1 0	Undefined	-

Remark:

TEL FUNC 1 Bit 7:

Sets whether or not the remote RX function.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- TEL FUNC 2

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Undefined	-
5 4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- TEL FUNC 3

Bit	Contents	Link with User Function Setting
7	Undefined	-
6	Undefined	-
5 4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- TEL FUNC 4

Bit	Contents	Link with User Function Setting
7	Busy Tone detection on ringing in TEL/FAX: 0: Off 1: On	-
6	Ring back tone sending in TEL/FAX: 0: Off 1: On	-
5	Undefined	-
4	Ring back tone frequency: 0: 405/432 Hz 1: 405 Hz	-
3 2 1 0	Attenuator value at Ring back tone: Counted up in the range from 0000 to 1111, in units of -1dB. 0000 to 1111...counts up for every -1dB. 0000: 0 dB . . 1111: -15 dB (unit: 1dB)	-

Remark:

TEL FUNC 4 Bit 7:
Selects whether or not to detect the busy tone during the call in TEL/FAX.

TEL FUNC 4 Bit 6:
Selects whether or not to send the ring back tone to the line during the call in TEL/FAX.

TEL FUNC 4 Bit 4:
Sets the frequency for the ring back tone to be sent in TEL/FAX.

TEL FUNC 4 Bit 3 to 0:
Sets the signal level at sending the ring back tone in TEL/FAX.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- TEL FUNC 5

Bit	Contents	Link with User Function Setting
7 6 5 4	Ring Counter in TEL/FAX: 0000: 1 time 0001: 1 time . . 1111: 15 times	Yes
3 2	Undefined	-
1	CNG Detection Counter: 0: 1 time 1: 2 times	-
0	Undefined	-

Remark:

TEL FUNC 5 Bit 7 to 4:
Selections set the ring counter value until the machine enters automatic reception mode.

TEL FUNC 5 Bit 1:
This bit sets the CNG detecting counter necessary to determine CNG.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- TEL FUNC 6

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1	Direct TAD Recording Switching: 0000000: 0 sec. (no setting) . . . 1111111: 127 sec. (unit: 1 sec.)	-
0	No-Sound Detection: 0: Off 1: On	-

Remark:

TEL FUNC 6 Bits 7 to 1:
Sets the time period to monitor the external telephone in FAX/TAD.
After the set period is passed, the machine automatically becomes to FAX.

TEL FUNC 6 Bit 0:
Selects whether or not to detect no-sound in FAX/TAD.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- TEL FUNC 7

Bit	Contents	Link with User Function Setting
7 6	No-Sound Detection Time: 00: 7 sec. 01: 10 sec. 10: 13 sec. 11: 16 sec.	-
5 4	Voice Detection Time: 00: 50 ms 01: 100 ms 10: 200 ms 11: 400 ms	-
3 2 1 0	Undefined	-

Remark:

TEL FUNC 7 Bit 7 to 6:
Sets the time period to detect no-sound in TEL/FAX and FAX/TAD.

TEL FUNC 7 Bit 5 to 4:
Sets the time period to detect the voice.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- TEL FUNC 8

Bit	Contents	Link with User Function Setting
7	Undefined	-
6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

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4.2.3 UAD 0-19

The following settings are special functions relating to telephone specifications for each country/region. The functions are divided into 20 tables. Each table has functions of 8 Bits. By entering 1 or 0 in each Bit, its function are set.

- UAD 0

Bit	Contents	Link with User Function Setting
7 6 5	Range of dial tone frequency (PSTN): 000: 300 Hz to 600 Hz 001: 300 Hz to 650 Hz 010: 390 Hz to 550 Hz 011: 400 Hz to 450 Hz 100: 350 Hz to 480 Hz 101: 300 Hz to 500 Hz 110: Undefined 111: Undefined	-
4 3 2	Detection time to recognize as dial tone (PSTN): 000: 2 sec. 001: 800 msec. 010: 400 msec. 011: 1 sec. 100: 1.3 sec. 101: 1.8 sec. 110: 2.5 sec. 111: 500 msec.	-
1 0	Allowable gap during line current detection (PSTN): 00: Off 01: 50 msec. 10: 100 msec. 11: 200 msec.	-

Remark:

UAD 0 Bit 7 to 5:
Sets the range of the dial tone frequency that should be detected when calling directly to a PSTN.

UAD 0 Bit 4 to 2:
Sets the time when the dial tone is recognized when calling directly to a PSTN. When a dial tone is continuously detected for the time specified, the facsimile regards the line as being connected.

UAD 0 Bit 1 and 0:
Sets the allowable gap during line current detection when calling directly to a PSTN.
In line current detection, even if there are gaps within the time specified in this setting, the counter is not reset and continues to count the duration of line current detection after the current is re-detected.
When “BZT” is selected for “DTC/LCC for PSTN” in UAD 1, this setting is ignored.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 1

Bit	Contents	Link with User Function Setting
7 6	Allowable gap during dial tone detection (PSTN): 00: Off 01: 70 msec. 10: 160 msec. 11: 240 msec.	-
5 4 3	Method to detect dial tone and line current (PSTN): 000: BZT (DTC/LCC) 001: LCC 5 sec. 010: DTC only 011: Undefined 100: DTC (USA) 101: LCC 3 sec. 110: Undefined 111: No Check	-
2 1 0	Maximum waiting time for dial tone (PSTN): 000: 20 sec. 001: 10 sec. 010: 8 sec. 011: 15 sec. 100: 3.3 sec. 101: Undefined 110: Undefined 111: Undefined	-

Remark:

UAD 1 Bit 7 and 6:
Sets the allowable gap during dial tome detection when calling directly to a PSTN. In dial tone detection, even if there are gaps within the time specified in this setting, the counter is not reset and continues to count the duration of dial tone detection after the dial tone whose frequency is in the specified range is re-detected.

UAD 1 Bit 5 to 3:
Sets the method to detect the dial tone and line current when calling directly to a PSTN.

- BZT (DTC/LCC)
  Performs German BZT type of detection

- LCC 5 sec.
  Only 5 sec. Line current is detection

- DTC only
  Only dial tone is detected.

- DTC (USA)
  Only dial tone is detected. Duration of detected tone until it is regarded as the dial tone is fixed 3.3 sec. Even if no dial tone is detected, dialing will be started.

- LCC 3 sec.
  3 second line current detection is performed.

- No check
  Neither dial tone nor line current is detected.

UAD 1 Bit 2 to 0:
Sets the maximum waiting time for dial tone detection when calling directly to a PSTN.
If the dial tone is not detected and redial attempt or internal retry will be performed later.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 2

Bit	Contents	Link with User Function Setting
7 6 5	Range of dial tone frequency (PABX): 000: 300 Hz to 600 Hz 001: 300 Hz to 650 Hz 010: 390 Hz to 550 Hz 011: 400 Hz to 450 Hz 100: 350 Hz to 480 Hz 101: 300 Hz to 500 Hz 110: Undefined 111: Undefined	-
4 3 2	Detection time to recognize as dial tone (PABX): 000: 2 sec. 001: 800 msec. 010: 400 msec. 011: 1 sec. 100: 1.3 sec. 101: 1.8 sec. 110: 2.5 sec. 111: 150 msec.	-
1 0	Allowable gap during line current detection (PABX): 00: Off 01: 50 msec. 10: 100 msec. 11: 200 msec.	-

Remark:

UAD 2 Bit 7 to 5:
Sets the range of the dial tone frequency that should be detected when calling through a PABX.

UAD 2 Bit 4 to 2:
Sets the time when the dial tone is recognized when calling through a PABX. When a dial tone is continuously detected for the time specified in this setting, the facsimile regards the line as being connected.

UAD 2 Bit 1 and 0:
Set the allowable gap during line current detection when calling through a PABX. In line current detection, even if there are gaps within the time specified in this setting, the counter is not reset and continues to count the duration of line current detection after the current is re-detected.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 3

Bit	Contents	Link with User Function Setting
7 6	Allowable gap during dial tone detection (PABX): 00: Off 01: 70 msec. 10: 160 msec. 11: 240 msec.	-
5 4 3	Method to detect dial tone and line current (PABX): 000: BZT (DTC/LCC) 001: LCC 5 sec. 010: DTC only 011: Undefined 100: DTC (USA) 101: LCC 3 sec. 110: Undefined 111: No Check	-
2 1 0	Maximum waiting time for dial tone (PABX): 000: 20 sec. 001: 10 sec. 010: 8 sec. 011: 15 sec. 100: 3.3 sec. 101: Undefined 110: Undefined 111: Undefined	-

Remark:

UAD 3 Bit 7 and 6:
Sets the allowable gap during dial tome detection when calling through a PABX. In dial tone detection, even if there are gaps within the time specified in this setting, the counter is not reset and continues to count the duration of dial tone detection after the dial tone whose frequency is in the specified range is re-detected.

UAD 3 Bit 5 to 3:
Sets the method to detect the dial tone and line current when calling through a PABX.

- BZT (DTC/LCC)
  Performs German BZT type of detection

- LCC 5 sec.
  Only 5 sec. Line current is detection

- DTC only
  Only dial tone is detected.

- DTC (USA)
  Only dial tone is detected. Duration of detected tone until it is regarded as the dial tone is fixed 3.3 sec. Even if no dial tone is detected, dialing will be started.

- LCC 3 sec.
  3 second line current detection is performed.

- No check
  Neither dial tone nor line current is detected.

UAD 3 Bit 2 to 0:
Sets the maximum waiting time for dial tone detection when calling through a PABX.
If the dial tone is not detected and redial attempt or internal retry will be performed later.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	0
4	0	0	0	0	0	1	1	0	1	0	0	0	1	1	1	0	0	0	1
3	0	0	0	0	1	0	0	1	0	1	1	1	0	0	0	1	1	1	0
2	0	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	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 4

Bit	Contents	Link with User Function Setting
7 6 5	Busy tone frequency range: 000: 300 Hz to 600 Hz 001: 350 Hz to 550 Hz 010: 300 Hz to 500 Hz 011: 300 Hz to 700 Hz 100: Undefined 101: Undefined 110: Undefined 111: Undefined	-
4	Busy tone before dialing: 0: No check 1: Check	-
3	Busy tone after dialing: 0: No check 1: Check	-
2 1 0	Dial T1 timer: 000: 60 sec. 001: 35 sec. 010: 90 sec. 011: 55 sec. 100: 145 sec. 101: Undefined 110: Undefined 111: Undefined	-

Remark:

UAD 4 Bit 7 to 5:
Sets the range where a busy tone frequency is detected.

UAD 4 Bit 4:
Set whether a busy tone is detected before dialing as well as the dial tone and line current.

UAD 4 Bit 3:
Set whether a busy tone is detected after dialing as well as the dial tone and line current.

UAD 4 Bit 2 to 0:
Sets the value of the T1 timer in the calling terminal.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 5

Bit	Contents	Link with User Function Setting
7	Multiple no response: 0: Disable 1: Enable	-
6 5	Undefined	-
4	Undefined	-
3	Undefined	-
2	Undefined	-
1 0	Undefined	-

Remark:

UAD 5 Bit 7:

If T1 timer-out (no response from remote) occurs continuously 12 time in automatic dialing, all of the programmed calling jobs are cleared.

- The counter is reset when an effective signal is detected.
- The number of T1 time-out in automatic dialing is counted (manual dialing not included).

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 6

Bit	Contents	Link with User Function Setting
7 6	Type of dial pulse: 00: Normal 01: Shift 10: Reverse 11: Undefined	-
5	Undefined	-
4	Internal retry setting: 0: Disable 1: Enable	-
3 2 1 0	Dial Retry Counter: 0000 to 1110... counts up for each time. 0000: No redialing 0001: 1 time 0010: 2 times 0011: 3 times . . . 1110: 14 times 1111: Undefined	-

Remark:

UAD 6 Bit 7 and 6:
Sets the type of dial pulse sent when each dial number is dialed.

Dial Key	Normal	Shift (n+1)	Reverse (10-n)
1	1	2	9
2	2	3	8
3	3	4	7
4	4	5	6
5	5	6	5
6	6	7	4
7	7	8	3
8	8	9	2
9	9	10	1
0	10	1	10

UAD 6 Bit 4:
Sets whether internal retries are performed. “Internal Retry” is the dialing attempt performed when line connection cannot be established due to a line current or dial tone not being detected before dialing. Internal retries are not counted as redial attempts.

UAD 6 Bits 3 to 0:
These bits program the number of redial times.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	1	1	0	0	0	0	0	1	0	0	1	1	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2	1	1	1	1	0	1	0	0	1	0	0	0	1	1	1	0	0	1	0
1	0	0	0	0	1	0	1	1	0	1	1	0	0	0	0	0	1	0	1
0	1	1	1	0	1	0	1	1	1	1	1	1	0	1	0	1	1	1	0

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- UAD 7

Bit	Contents	Link with User Function Setting
7 6 5	Alternate time when a pause is set as part of a dial number: 000: None 001: 1 sec. 010: 2 sec. 011: 4 sec. 100: 3.3 sec. 101: 10 sec. 110: Undefined 111: Undefined	-
4	Undefined	-
3 2 1 0	Undefined	-

Remark:

UAD 7 Bit 7 to 5:

These bits programs the switch time when a pause is entered as a part of a dial number.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1
5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
4	0	0	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	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 8

Bit	Contents	Link with User Function Setting
7 6	Inter-digit pause setting: 00: 900 msec. 01: 550 msec. 10: 700 msec 11: 800 msec.	-
5	Single pause setting: 0: Disable 1: Enable	-
4	Undefined	-
3 2 1 0	Interval between redialing attempts: 0001 to 1111... counts up for each minute. 0000: default (3 minutes) 0001: 1 minute 0010: 2 minutes . . . 1111: 15 minutes	-

Remark:

UAD 8 Bit 7 and 6:
Sets the pause time that is put between dial digits in pause dialing.

UAD 8 Bit 5:
When “Enable” is selected, only the first pause is effective and others are ignored even if the pause key is pressed more than once in dialing to one destination.

UAD 8 Bit 3 to 0:
These bits program the redial intervals.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	0	1	0	1	1	1	1	0	0	1	1	1	1	1	1	0	1
6	1	1	0	1	0	1	1	0	0	0	1	1	1	0	0	0	0	0	1
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 9

Bit	Contents	Link with User Function Setting
7 6	Equalizer Value at MF Dialing: 00: 0 db 01: -4 db 10: -8 db 11: -12 db	-
5 4 3	DP Make/Brake: 000: 60/40 msec. (10 PPS) 60 = Break / 40 = Make 001: 67/33 msec. (10 PPS) 67 = Break / 33 = Make 010: 63/37 msec. (10 PPS) 63 = Break / 37 = Make 011: 50/50 msec. (10 PPS) 50 = Break / 50 = Make 100: Undefined 101: Undefined 110: Undefined 111: Undefined	-
2 1 0	MF Timing: 000: 80/80 msec. 001: 70/70 msec. 010: 70/150 msec. 011: 60/60 msec. 100: 80/100 msec. 101: 150/50 msec. 110: 150/240 msec. 111: Undefined	-

Remark:

UAD 9 Bits 7 and 6:
These bits program the equalizer value for the MF signal.

UAD 9 Bit 5 to 3:
Sets the make time and brake time during pulse dialing.

UAD 9 Bit 2 to 0:
Sets the tone on and tone off times for tone dialing (MF).

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
6	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0
5	0	0	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	0	0
3	0	0	1	1	0	1	0	1	0	0	1	0	0	0	1	0	1	1	1
2	1	1	1	0	1	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	1	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0

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- UAD 10

Bit	Contents	Link with User Function Setting
7 6 5	Dial tone reception attenuation (PSTN): 000: -24 dB 001: -27 dB 010: -30 dB 011: -33 dB 100: -36 dB 101: -39 dB 110: -42 dB 111: -45 dB	-
4	Undefined	-
3 2 1 0	Attenuator Value at MF Dialing: 0000 to 1111... counts up for each -1 db. 0000: 0 db 0001: -1 db 0010: -2 db 0110: -6 db . . . 1111: -15 db	-

Remark:

UAD 10 Bit 7 to 5:
Sets the dial tone's attenuation detection level during reception (PSTN).

UAD 10 Bit 3 to 0:
These bits program the attenuator value for the MF signal.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 11

Bit	Contents	Link with User Function Setting
7 6 5	Undefined	-
4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 12

Bit	Contents	Link with User Function Setting
7 6 5 4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 13

Bit	Contents	Link with User Function Setting
7 6 5 4	Undefined	-
3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 14

Bit	Contents	Link with User Function Setting
7 6 5 4	Undefined	-
3 2 1	Dial tone reception attenuation (PABX): 000: -24 dB 001: -27 dB 010: -30 dB 011: -33 dB 100: -36 dB 101: -39 dB 110: -42 dB 111: -45 dB	-
0	Undefined	-

Remark:

UAD 14 Bit 3 to 1:

Sets the dial tone's attenuation detection level during reception (PABX).

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- UAD 15

Bit	Contents	Link with User Function Setting
7 6 5	Undefined	-
4 3 2	Undefined	-
1	Undefined	-
0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 16

Bit	Contents	Link with User Function Setting
7 6 5	Busy Tone ON Determine Time: 000: 80 to 650 msec. 001: 450 to 550 msec. 010: 200 to 650 msec. 011: 400 to 600 msec. 100: 120 to 550 msec. 101: 420 to 610 msec. 110: Reserved 111: Reserved	-
4 3 2	Busy Tone OFF Determine Time: 000: 80 to 650 msec. 001: 450 to 550 msec. 010: 200 to 650 msec. 011: 400 to 600 msec. 100: 160 to 600 msec. 101: 170 to 700 msec. 110: 380 to 630 msec. 111: 150 to 470 msec.	-
1 0	Undefined	-

Remark:

UAD 16 Bit 7 to 5:
These bits program busy tone signal ON time.

UAD 16 Bit 4 to 2:
These bits program busy tone signal OFF time.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	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	0	0
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 17

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 18

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- UAD 19

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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4.2.4 EX TYPE

The settings here are the Exchange functions. This table has functions of 8 Bits. By entering 0 or 1 in each Bit sets, its function. The following are details of each Table.

- EX TYPE 1

Bit	Contents	Link with User Function Setting
7	Exchange Type: 0: PSTN 1: PABX	-
6	Undefined	-
5	Undefined	-
4	Dial Type: 0: DP 1: MF	-
3 2	Undefined	-
1 0	Flash timing: 00: 80 ms 01: 100 ms 10: 270 ms 11: Undefined	-

Remark:

EX TYPE 1 Bit 7:
This bit sets the Exchange Type (PSTN/PABX).

EX TYPE 1 Bit 4:
This bit sets the dialing method (DP/MF).

EX TYPE 1 Bits 1 to 0:
Sets the value of the Flash timer.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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4.2.5 ACC DGT 1-2

The settings here are Access Digit functions, which are divided into 2 tables. Each table has functions of 8 Bits. By entering 0 or 1 in each Bit, its function can be set. The following are details of each table.

- ACC DGT 1

Bit	Contents	Link with User Function Setting
7 6 5 4	1st digit (Local use)	-
3 2 1 0	2nd digit (Distant use)	-

Remark:

ACC DGT1 Bit 7 to 4:
These bit represents the first column of Access Digit.

ACC DGT1 Bit 3 to 0:
These bit represents the second column of Access Digit.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- ACC DGT 2

Bit	Contents	Link with User Function Setting
7 6 5 4	3rd digit (Local & Distant use)	-
3 2 1 0	Undefined	-

Remark:

ACC DGT2 Bit 7 to 4:

These bits represents the third column of Access Digit.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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4.2.6 PC FUNC 0-7

The settings here are PC functions, which are divided into 8 tables. Each table has functions of 8 Bits. By entering 0 or 1 in each Bit, its function can be set. The following are details of each table.

- PC FUNC 0

Bit	Contents	Link with User Function Setting
7	Use of PC Interface: 0: Use prohibited 1: Use allowed	-
6 5	Send the Receive Documents to PC: PC transfer method at reception 00: No transfer 01: SUB-Address (Only when transferred from the sender) 10: All documents 11: Undefined	-
4	Undefined	-
3	Undefined	-
2	LDC Function: 0: Prohibited 1: Allowed	-
1	Printing Function: 0: Prohibited 1: Allowed	-
0	Scanner Function: 0: Prohibited 1: Allowed	-

Remark:

PC FUNC 0 Bit 7:
This switch allows or prohibits use of the PC interface.

PC FUNC 0 Bit 6 and 5:
If “00” is selected, the data is not sent to the PC. If “SUB Address” is selected, the data is sent to the PC only when the sub address is received from the transmitting party. If “All documents” is selected, all received data are sent to the PC.

PC FUNC 0 Bit 2:
This switch allows or prohibits any entry or dialing from the PC.
Used in conjunction with PC interface software.

PC FUNC 0 Bit 1:
This switch allows or prohibits any entry from the PC.

PC FUNC 0 Bit 0:
This switch allows or prohibits scanning directed from the PC.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	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	0	0
4	0	0	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	0	0
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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- PC FUNC 1

Bit	Contents	Link with User Function Setting
7	PC-FAX send type: 0: Direct 1: Indirect	-
6	Image data input to the mailbox from PC: 0: Off 1: On	-
5	Undefined	-
4	Print RX document after sending to PC: 0: Off 1: On	-
3	Permanent retry to send the RX data: 0: Off 1: On	-
2	Forced print out of RX data to PC: 0: Off 1: On	-
1	Undefined	-
0	Undefined	-

Remark:

PC FUNC 1 Bit 7:
Set the method of sending the scanned document image to the PC either directly or via the image (PIX) memory.

PC FUNC 1 Bit 6
Set the function that stores the files (image data) from the PC to the mailbox in the FAX to ON or OFF.

PC FUNC 1 Bit 4:
This function of this bit is to print RX documents, after the transmission of RX data to the PC.

PC FUNC 1 Bit 3:
This bit selects whether or not to continue to transfer the received file until the number of retries set as the transfer retry counter is reached, when the FAX failed to transfer the received file to a PC at PC FAX reception.

PC FUNC 1 Bit 2:
This bit selects where or not to forcibly print the received file, when the FAX failed to transfer the received file to a PC at PC FAX reception.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	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	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 2

Bit	Contents	Link with User Function Setting
7 6 5 4	Retry counter for CONF message to PC: 0000 to 1111... counts up for each time 0000: No retry 0001: 1 retry 0010: 2 retries . . 1111: 15 retries	-
3 2 1 0	Time between retry attempts for CONF message: 0001 to 1111... counts up for each minute 0000: Default (2 minutes) 0001: 1 minute 0010: 2 minutes . . 1111: 15 minutes	-

Remark:

PC FUNC 2 Bit 7 to 4:
Set the number of retries to notify the PC of the sending result information via the PC interface.

PC FUNC 2 Bit 3 to 0:
Set the intervals of retries to notify the PC of the sending result information via the PC interface.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 3

Bit	Contents	Link with User Function Setting
7 6 5 4	Retry Counter value at PC transfer: 0000 to 1111... counts up for each retry. 0000: No retry 0001: 1 retry 0010: 2 retries . . 0101: 5 retries . . 1111: 15 retries	-
3 2 1 0	Retry interval for PC transfer: 0001 to 1111... counts up for each minute. 0000: default (2 minutes) 0001: 1 minute 0010: 2 minutes . . 1111: 15 minutes	-

Remark:

PC FUNC 3 Bit 7 to 4:
This switch specifies the number of retries for data transmission to the PC.

PC FUNC 3 Bit 3 to 0:
This switch specifies the time intervals between retries in data transmission to the PC.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 4

Bit	Contents	Link with User Function Setting
7 6 5 4	Retry counter for STAT message to PC: 0000 to 1111... counts up for each retry 0000: No retry 0001: 1 retry 0010: 2 retries . . 0101: 5 retries . . 1111: 15 retries	-
3 2 1 0	Time between retry attempts for STAT message. 0001 to 1111... counts up for each minute. 0000: default (2 minutes) 0001: 1 minute 0010: 2 minutes . . 1111: 15 minutes	-

Remark:

PC FUNC 4 Bit 7 to 4:
Set the number of retries to notify the PC of fax status information via PC interface.

PC FUNC 4 Bit 3 to 0:
Set the intervals of retries to notify the PC of fax status information via PC interface.

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 5

Bit	Contents	Link with User Function Setting
7	RX cover open 0: Off 1: On	-
6	Printer error 0: Off 1: On	-
5	Print jam 0: Off 1: On	-
4	Undefined	-
3	Heater error 0: Off 1: On	-
2	Process unit near end 0: Off 1: On	-
1	Process unit end 0: Off 1: On	-
0	Toner near end 0: Off 1: On	-

Remark:

PC FUNC 5 Bit 7:
Set the function to notify the PC, via PC interface, that the RX cover is open.

PC FUNC 5 Bit 6:
Set the function to notify the PC, via PC interface, that a printer error has occurred.

PC FUNC 5 Bit 5:
Set the function to notify the PC, via PC interface, that a printer jam has occurred.

PC FUNC 5 Bit 3:
Set the function to notify the PC, via PC interface, that a heater error has occurred.

PC FUNC 5 Bit 2:
Set the function to notify the PC, via PC interface, that the replacement of the process unit is soon required.

PC FUNC 5 Bit 1:
Set the function to notify the PC, via PC interface, that the replacement of the process unit is required.

PC FUNC 5 Bit 0:
Set the function to notify the PC, via PC interface, that the replacement of the toner cartridge is soon required.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 6

Bit	Contents	Link with User Function Setting
7	Toner end 0: Off 1: On	-
6	Power on 0: Off 1: On	-
5	Memory over 0: Off 1: On	-
4	TX cover open 0: Off 1: On	-
3	Scan paper exit 0: Off 1: On	-
2	No cassette 0: Off 1: On	-
1	No paper 0: Off 1: On	-
0	Undefined	-

Remark:

PC FUNC 6 Bit 7:
Set the function to notify the PC, via PC interface, that the toner has run out, via PC interface.

PC FUNC 6 Bit 6:
Set the function to notify the PC, via PC interface, that the power is turned on, via PC interface.

PC FUNC 6 Bit 5:
Set the function to notify the PC, via PC interface, that a memory full state has occurred.

PC FUNC 6 Bit 4:
Set the function to notify the PC, via PC interface, that the TX cover is open.

PC FUNC 6 Bit 3:
Set the function to notify the PC, via PC interface, that the document sensor has detected the original.

PC FUNC 6 Bit 2:
Set the function to notify the PC, via PC interface, that no paper tray exists.

PC FUNC 6 Bit 1:
Set the function to notify the PC, via PC interface, that no paper is loaded.

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Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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- PC FUNC 7

Bit	Contents	Link with User Function Setting
7 6 5 4 3 2 1 0	Undefined	-

Default table

BIT	US	CA	SG	HK	DE	GB	IT	BE	NL	FI	ES	AT	CH	SE	DK	NO	PT	FR	AU
7	0	0	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	0	0
5	0	0	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	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	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	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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5. Mechanical Description

5.1 Basic Components

This facsimile machine consists of the transmission section, reception section, operation panel assembly and optional recording paper tray, as in the figure below.

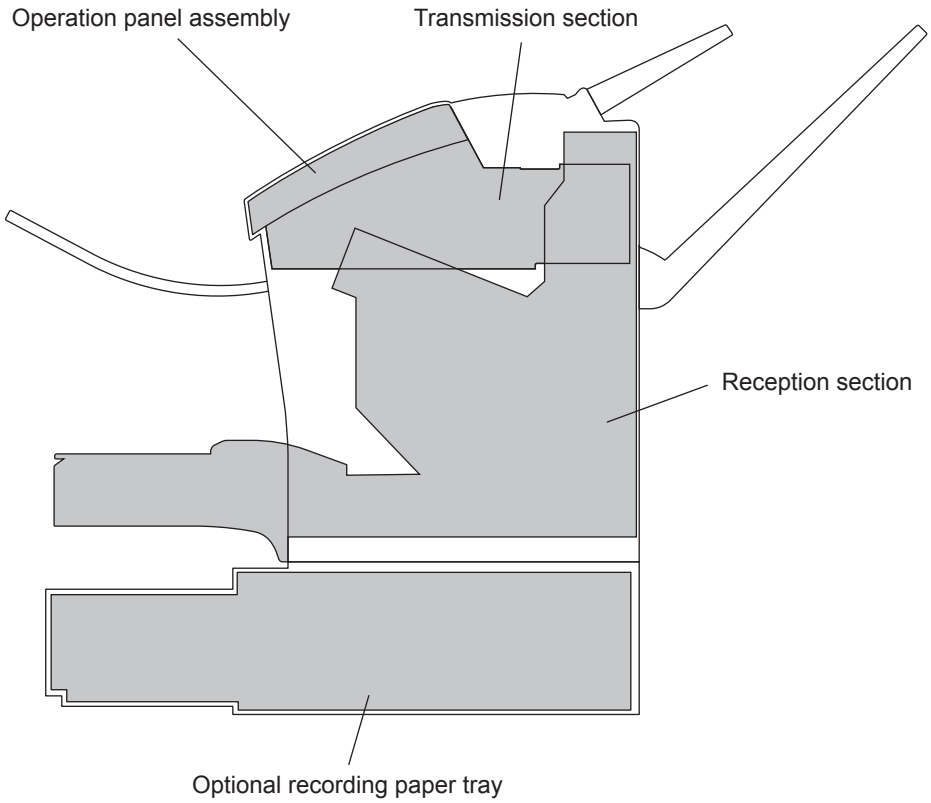

Fig. 5-1

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5.2 Transmission Section

5.2.1 Actions of Transmission Section

- Scanning single page documents:
  The Document guide is set according to the document size. When the document is set, the Document sensor detects the presence/absence of document to be scanned. When the Document sensor detects presence of document, the TX motor starts rotating. The TX motor drives the ADF (Automatic Document Feed) roller and TX drive rollers. The document is pulled in by the ADF roller and is fed by the TX drive rollers. When the Document position sensor detects the top edge of the document, the machine returns to the standby status and waits.
  By pressing the [COPY] key + (number of copies) + [START] key, the standby status is canceled and the LEDs for scanning are turned ON. At the same time, the TX motor starts rotating and feeds the document to the CIS unit. The document is read, line by line (in units of one scanning line width). When the Document position sensor detects the bottom edge of the document; the document is scanned for a certain value then the LEDs are turned OFF and scanning is completed. The document is fed out by the TX drive rollers.
  If the Document position sensor does not detect the top edge of the document within the specified time after the Document sensor detects the presence of document, a document jam is indicated.
- Scanning multiple page documents:
  Basically the same as feeding a single page document. The main difference is the function of the ADF pad to prevent multi-page feeding.
  The ADF pad touches the ADF roller. The friction caused when two document pages are pulled in along with the rotation of the ADF roller are classified into three categories-one is between the lower page and the ADF roller, another is between the upper page and ADF pad, and the third is between the document pages. The document page is fed at the position with the least coefficient of friction of these three.
  As the ADF roller surface and the ADF pad are made of rubber, the position with the least coefficient of friction is between the document pages. Therefore, the two pages glide on each other, only the lower page is fed along with the rotation of the ADF roller, and the upper document page stays at the set position.
  However, normal feeding is not performed when the friction between the pages is excessive.

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In this case, document jams may occur or multiple pages may be fed together.

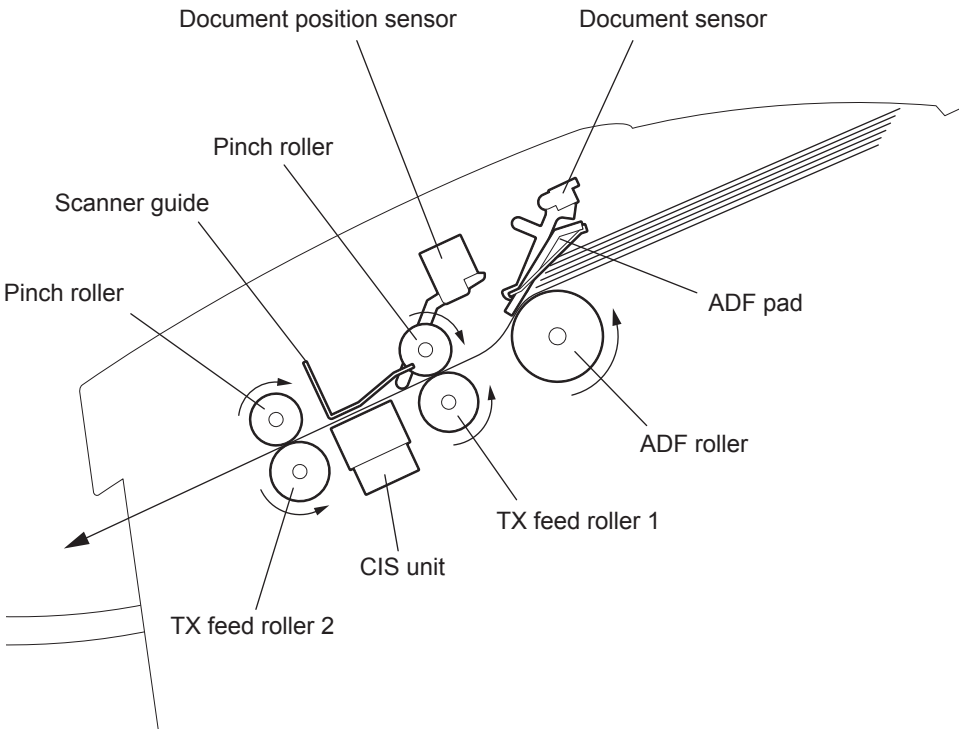

Fig. 5-2

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5.2.2 Components of Transmission Section

The transmission section consists of the document support area, ADF area, TX drive area, and scanning area. The following figure shows the layout of the respective areas.

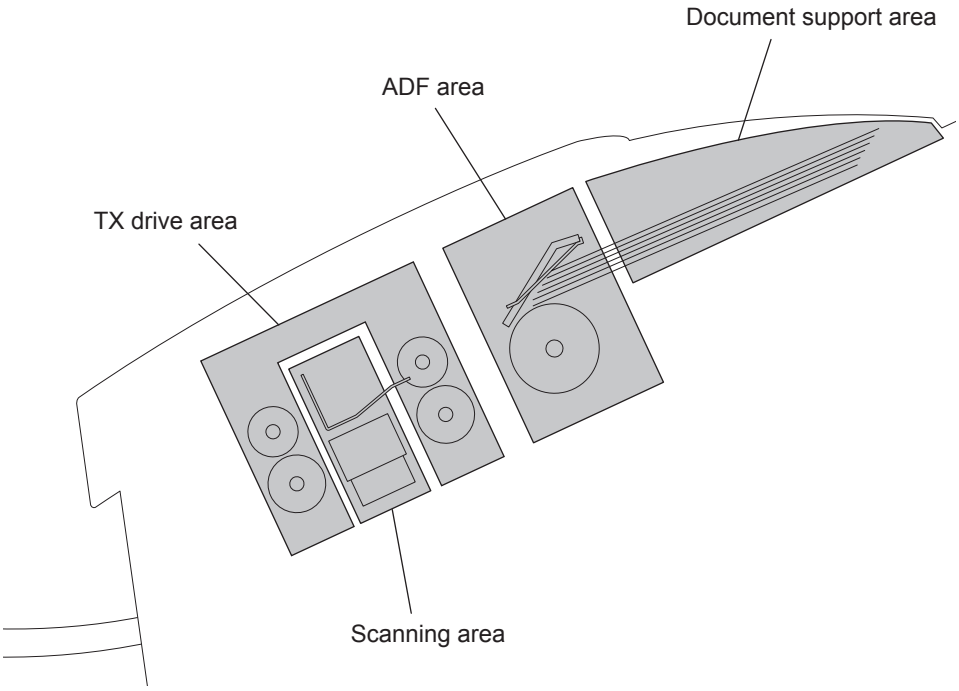

Fig. 5-3

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[1] Document Support Area

The document support area is the area for setting documents to be transmitted. The document sizes that can be transmitted are fixed paper sizes such as A4, Letter and Legal. (Refer to 📖 P.2-1 "2.1 Scanning System".)

[2] ADF Area

The ADF area consists of the ADF roller, ADF pad, Document sensor and Document position sensor. When the Document sensor detects the presence of document, the ADF roller automatically pull the document to the Document position sensor.

- ADF roller
  The ADF roller is driven by the TX motor and automatically feeds the document pages to the TX drive rollers. The feed speed of the ADF roller is slower than the TX drive rollers.
  Accordingly, a one-way clutch is attached to the ADF roller, to allow the ADF roller to turn freely in one direction.

- ADF pad
  The ADF pad prevents more than one document page from being fed when multiple pages of documents are loaded for transmission. It feeds pages one by one utilizing friction.

- Document sensor
  When a document is set in the document support area, the sensor turns ON and detects the presence/absence of the document. The document sensor is located on the rear side of the operation panel. (Refer to 📖 P.6-9 "6.4.1 Sensor Layout")

- Document position sensor
  This sensor detects the document top and bottom edges at the CIS unit. When the top edge is detected, the unit goes to the standby mode, during a multi-page transmission, it detects the beginning of a new page. When the bottom edge is detected, the unit determines the length of time since the last top edge to decide if a document jam is occurred.
  During a multi-page transmission, the bottom edge of the last page detects the end of the transmission. (Refer to 📖 P.6-9 "6.4.1 Sensor Layout")

[3] TX Drive Area

The TX drive area consists of the TX motor, TX motor gear assembly, TX drive rollers, and pinch rollers. The TX drive area feeds the document pages sent in from the ADF area.

- TX motor gear assembly
  The TX motor gear assembly is driven by the TX motor.
  The TX motor gear assembly drives TX drive rollers and ADF roller.

- TX motor
  The TX motor is the power source for the transmission section. When the document sensor detects the presence of document, the TX motor rotates to feed the document pages. When the document pages reach the document position sensor, the TX motor is turned OFF.
  Thereafter, it will rotate again by a signal from the operation panel.

- TX drive rollers 1 and 2
  The TX drive rollers feeds the document sent in from the ADF roller to the specified position. By the signals from the operation panel, the rollers feed the document to the scanning area by single scanning width value.
  Thereafter, the rollers feed out the document that has gone through scanning. The rollers are driven by the TX motor.

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- Pinch roller
  The pinch rollers are pressed against the TX drive rollers 1 and 2 to assist feeding. The pinch rollers are driven by the rotation of the TX drive rollers.

[4] Scanning Area

The scanning area consists of the scanner guide and CIS unit to scan documents.

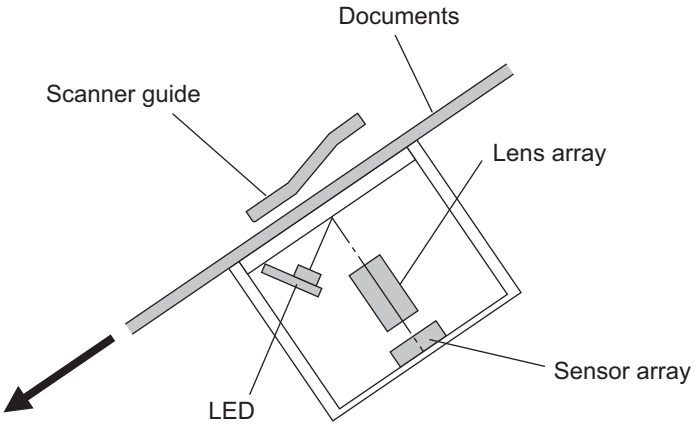

Fig. 5-4

- Scanner guide
  The light of the LED is shown upon the scanner guide to establish a reference between black and white on the document pages. Based on that data, the standard value of white is set. It also functions to press documents down against the CIS unit surface.

- CIS unit
  The CIS (Contact Image Scanner) unit consists of the LED, lens array, and sensor array.
  The CIS functions to obtain image pieces of respective scanning width of a document. (As for resolution, etc., Refer to 📖 P.2-1 "2.1 Scanning System".) The light emitted by LEDs strikes the surface of the document and reflects through the lens array and is read by the sensor array.

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5.3 Reception Section

5.3.1 Actions of Reception Section

As for the recording paper trays of this machine, the upper tray is standard, lower tray can be installed as an option.

The paper end sensor detects presence/absence of recording paper. Then the machine turns in standby status.

After receiving signals from the operation panel, or from the remote station, the recording paper is fed by the paper pickup roller. The recording paper is fed to the drum and the Image transfer, and toner is transferred onto the recording paper. The recording paper with the toner image thus transferred is fed to the fuser to fix the toner. The recording paper with toner thus fixed is fed out. After the paper exit sensor detects that the bottom edge of the recording paper has passed by, the machine returns to standby status.

When the paper position sensor and paper exit sensor are not turned ON/OFF within the specified time period after the recording paper is supplied by the paper pickup roller, a paper jam error is detected.

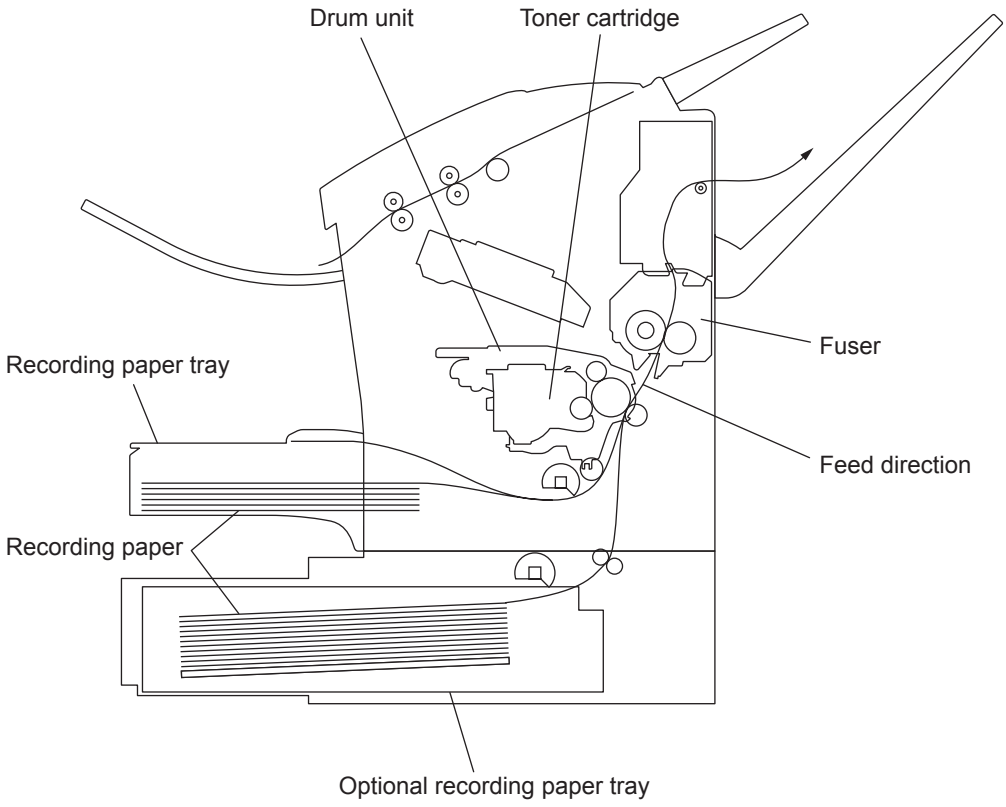

Fig. 5-5

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5.3.2 Components of Reception Section

The reception section consists of tray area, RX drive area, laser scanner area (LSU), print area and optional recording paper tray.

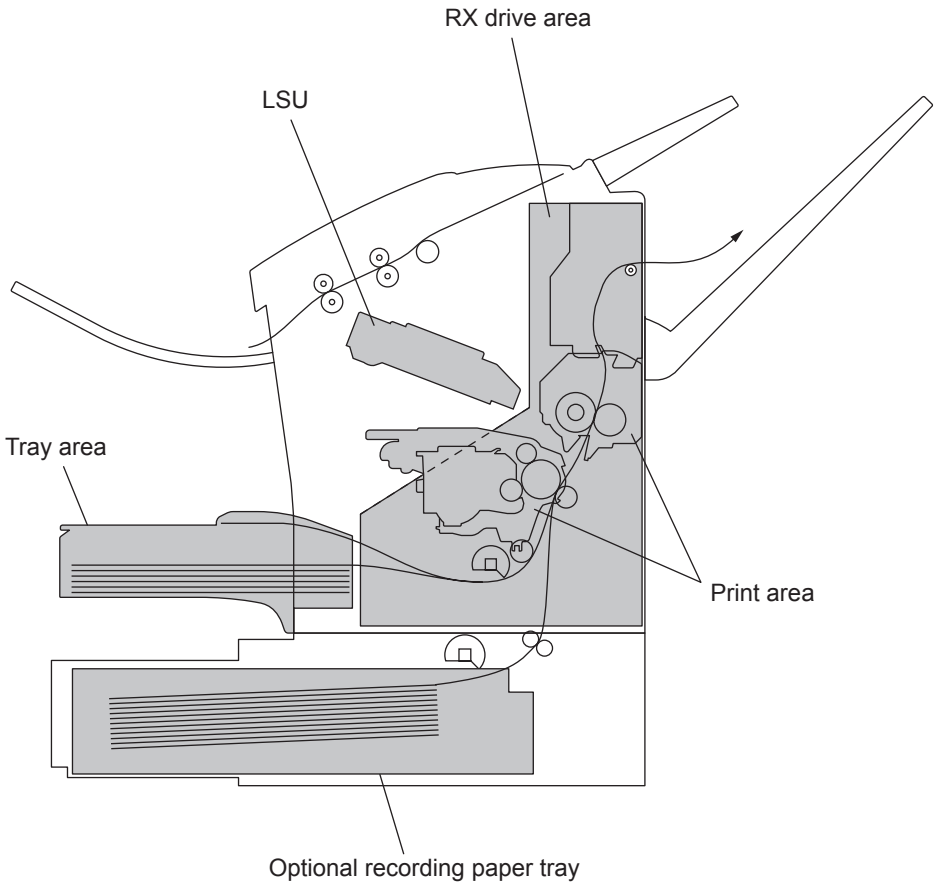

Fig. 5-6

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[1] Tray Area

The tray area consists of the recording paper tray and paper end sensor. The paper end sensor determines if the recording paper tray is empty.

- Recording paper tray
  Tray in which recording paper is loaded. The sizes of paper that can be set are A4, Letter and Legal (A4, LT & LG). (📖 P.2-3 "2.2 Recording System")

- Paper end sensor
  Detects the presence of recording paper in the recording paper tray. The sensor is located in the upper part of the tray base. (P.6-10 "Fig. 6-13")

[2] RX Drive Area

The RX drive area consists of the RX drive gear assembly, RX motor, paper pickup roller, paper pickup solenoid, paper position sensor and paper exit sensor. It conveys the power of the RX motor to each area of the reception section and functions to feed recording paper.

- RX drive gear assembly
  The RX drive gear assembly drives rollers, drum, fuser, etc., and is driven by the RX motor.

- RX motor
  The RX motor is the only drive source in the reception section. When reading of the receive data from the remote station or copy data of one document page is complete, the RX motor rotates.

- Paper pickup roller
  The paper pickup roller supplies the recording paper from the recording paper tray. The roller is driven by the RX motor, but the timing of its rotation is controlled by the paper pickup solenoid.

- Paper pickup solenoid
  The paper pickup solenoid controls a timing of the paper pickup roller rotation. The solenoid turns on so that the image on the recording paper matches with the image on the drum surface.

- Paper position sensor and paper exit sensor
  The paper position sensor and paper exit sensor detect the status of recording paper feeding. The paper position sensor is located before the paper feed roller while the paper exit sensor is located in the upper of the fuser.
  A timing of turning on the paper position sensor and paper exit sensor after the recording paper is supplied from the recording paper tray is monitored to detect a paper jam.

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5.3.3 Laser Exposure Section

Laser exposure is the process of creating an invisible static charge image on the drum by the laser beam emitted from the laser exposure section (LSU).

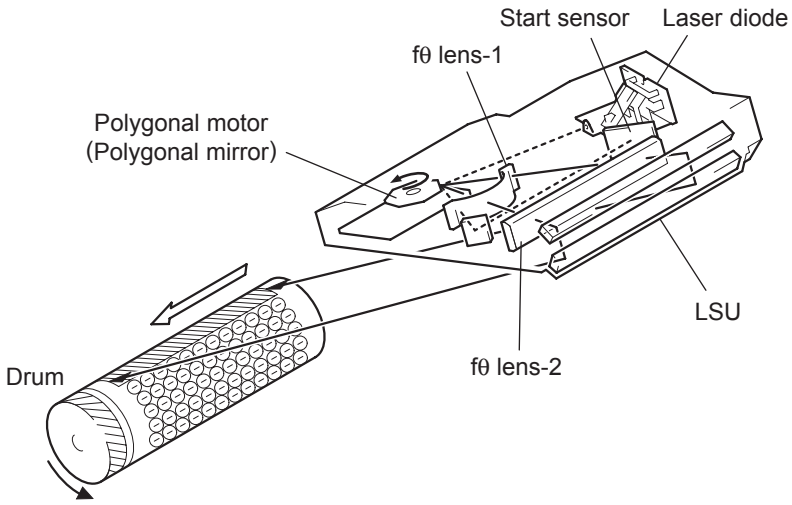

Fig. 5-7

The laser scanner area consists of the laser diode part, polygonal motor and mirror.
The laser diode part generates a laser beam according to the laser diode drive signal sent from the main PBA. The laser beam is made into parallel rays through the collimator lens and then passes through the cylinder lens. A laser beam of parallel rays is sent to the polygonal mirror face. The laser diode part checks the current value flowed to the laser diode by each line to keep the laser beam volume stable. The polygonal part consists of the polygonal motor and polygonal mirror. The polygonal motor turn the polygonal mirror at a uniform rate for laser beam scanning. The laser beam generated in the laser diode part is sent to the reflecting part of the polygonal mirror. The Fθ lens 1, 2 and reflecting mirror bend the optical path of the laser beam and then the beam is focused on the drum.
As the polygonal mirror turns at a uniform rate, the laser beam scans on the drum at a uniform rate. This operation forms the image on the drum surface like a television.
The laser beam is also sent to the start sensor by the polygonal motor and polygonal mirror. Each time the start sensor receives the laser beam, it sends a signal to the main PBA. The main PBA uses this signal to determine the print start position of each line.

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5.3.4 Process Unit

The process unit consists of the drum unit and toner cartridge. The toner in the toner cartridge is transported to the sleeve roller via toner transport roller. Then it is adhered on the latent image area exposed to the laser on the drum by the resin sleeve to create the toner image. The OPC (Organic Photo Conductor) type is used for the drum.

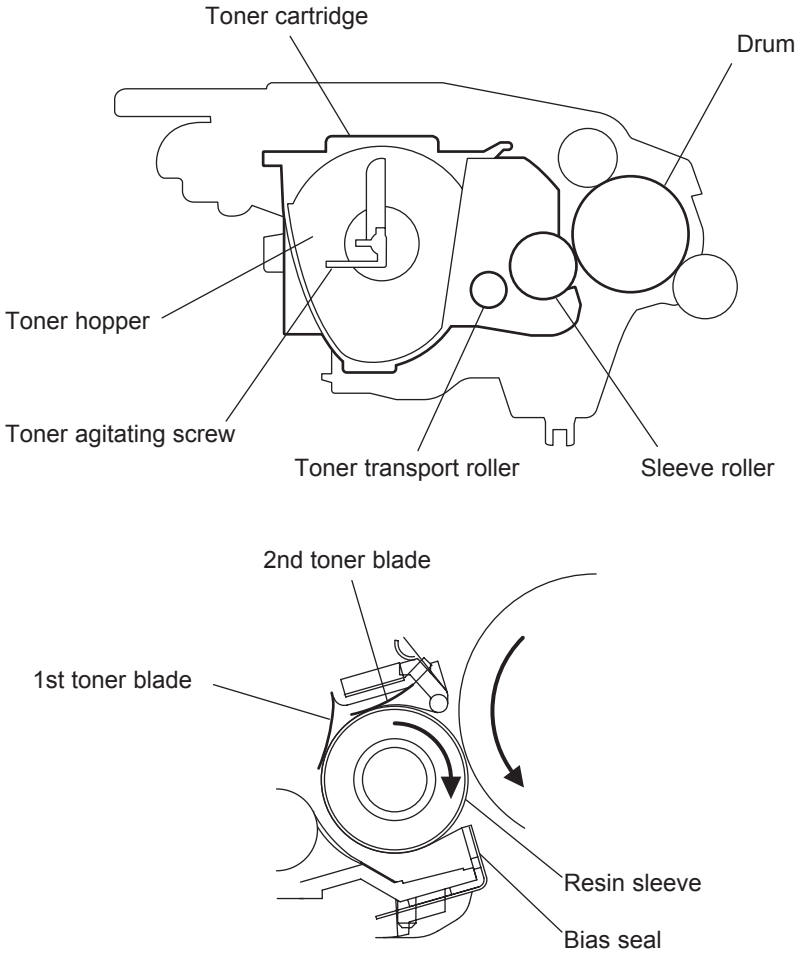

Fig. 5-8

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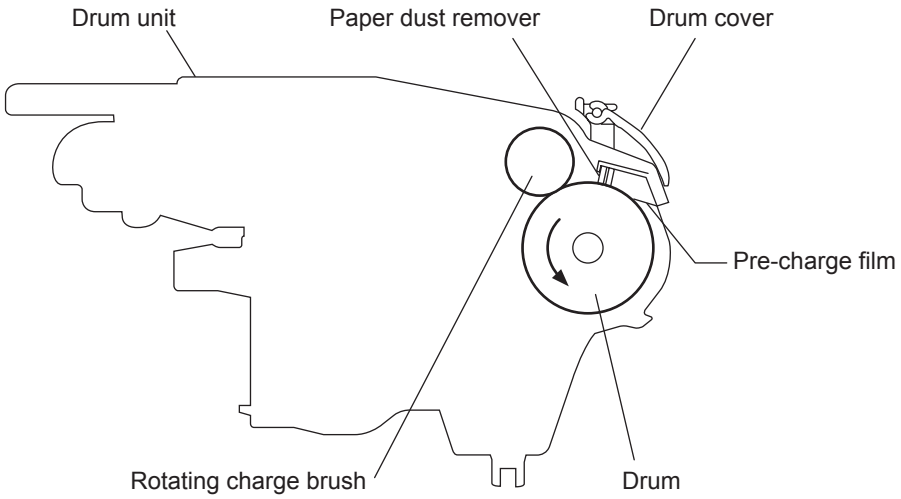
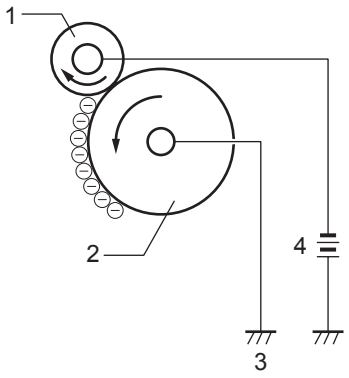
[1] Drum Charge Section

The drum is charged with static electricity before laser exposure.
The rotating charge brush and the pre-charge film are used for the charging method.
The rotating brush charging and pre-charge film charging generate little ozone in the machine. Because the charge is directly applied to the drum, the drum can be charged by low voltage. At the same time, the drum can be charged stably and evenly. The pre-charge film supplies the charge to the rotating charge brush to improve the charging efficiency. The rotating charge brush is turned by the drive of the RX motor via a gear.





1. Rotating charge brush
2. Drum
3. Ground
4. Charge bias

Fig. 5-9

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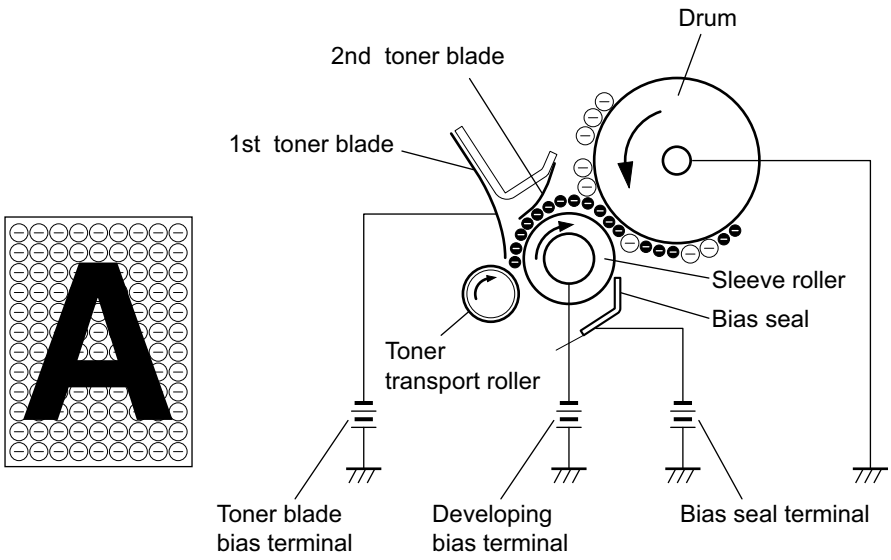
[2] Development Section

The toner in the toner cartridge is transported to the toner transport roller by the toner agitating screw. The toner transport roller transports the toner to the sleeve roller. The toner on the sleeve roller is created to the even thin-layer by the 1st toner blade.
Then the toner is negatively charged by applying the negative charge to the 2nd toner blade. Also, the negative charge is applied to the sleeve roller. The toner is adhered on the latent image area exposed to the laser on the drum.
The toner remaining on the sleeve roller without adhering on the drum is recovered in the toner hopper by the bias seal under the sleeve roller. The same bias as that of the sleeve roller is applied in the bias seal.



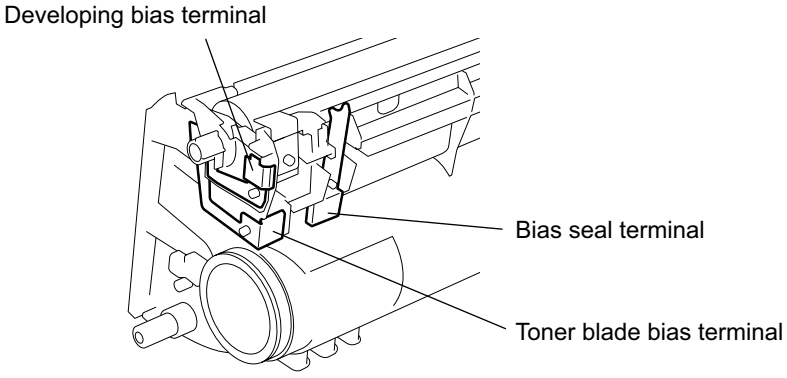


Fig. 5-10

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[3] Detection of Toner Cartridge

- Detection of Installation
  The installation of the process unit (toner cartridge) is electrically detected by IC chip (CSIC PBA) built in the toner cartridge when the power is turned OFF/ON and the front cover is open/closed.

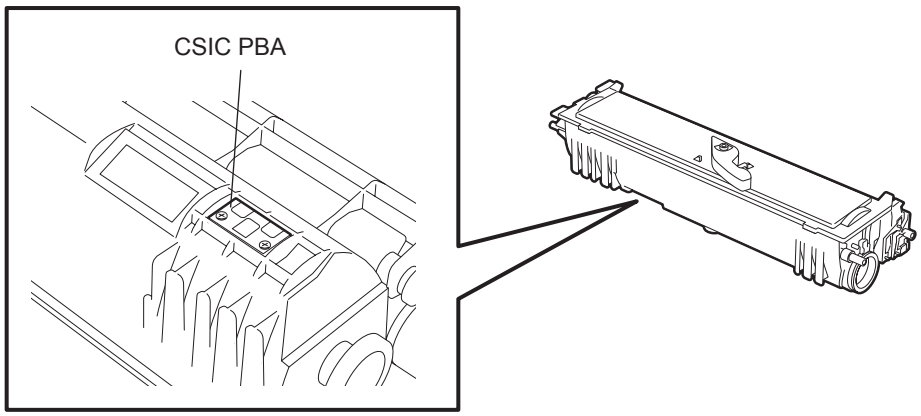

Fig. 5-11

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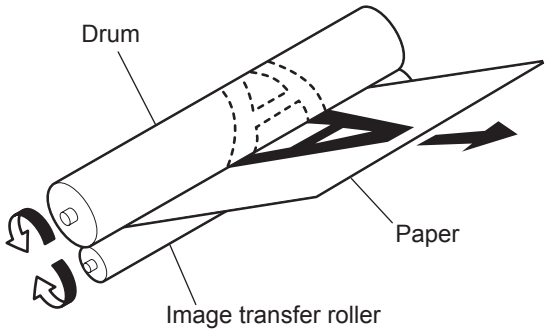
[4] Image Transfer Section

Image transfer is the process of transferring the toner image created on the drum in the developing process to paper.
Roller image transfer is used instead of corona image transfer as the image transfer method. In roller image transfer, there is little generation of ozone due to corona discharge. Also, there is no blur of toner because the paper is always pressed by the drum and the image transfer roller.
When cleaning the image transfer roller and before printing, the reverse bias is applied.
The image transfer roller is cleaned when the power is turned ON, the print is started, the print is finished and the equipment is rebooted after the jam release. The residual potential on the paper is discharged by the discharge needle.



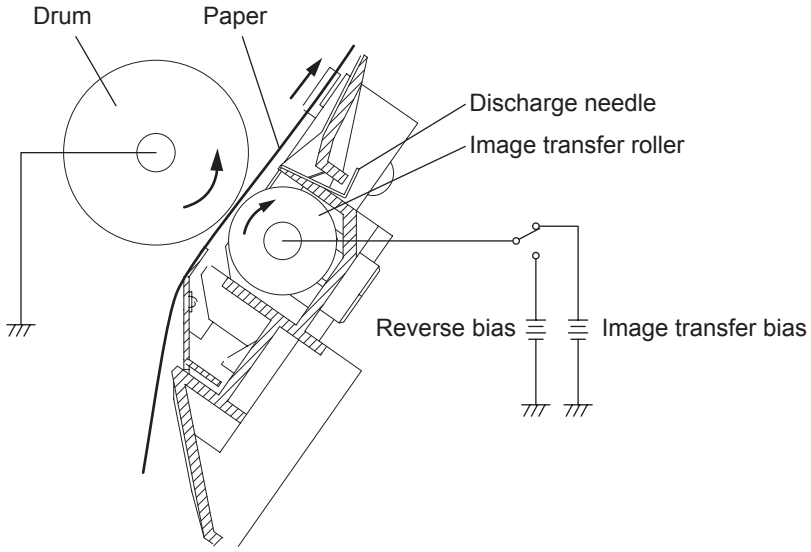


Fig. 5-12

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5.3.5 Fusing Section

The toner image transferred onto the paper is securely fixed to the paper. A heat roller system is used as the fusing system. The toner image is fused by the heat roller heated by the heater lamp, and securely fixed by the pressure between the heat roller and pressure roller.
The thermistor detects the heat roller temperature. The thermostat contacts open when the temperature becomes specified temperature value and shuts down the power to the heater lamp.

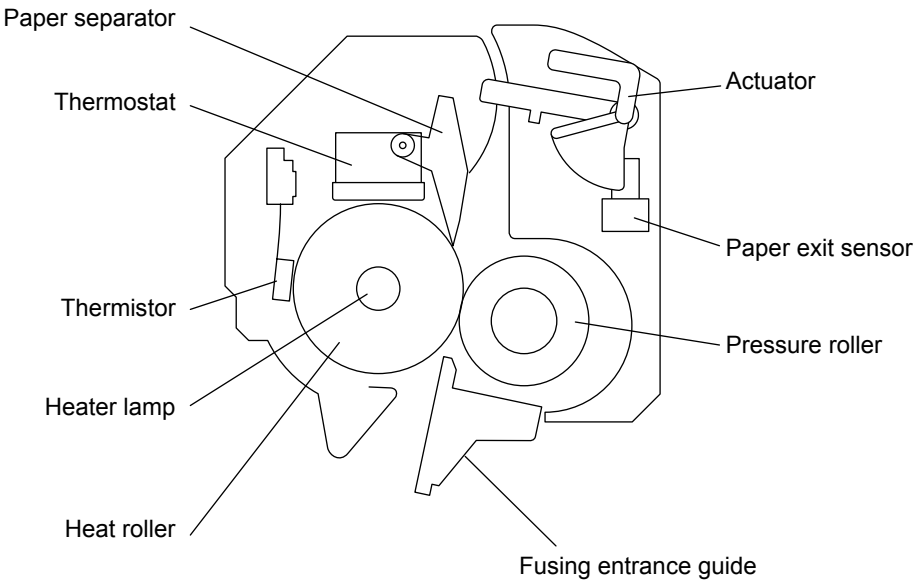

Fig. 5-13

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[1] Temperature Control

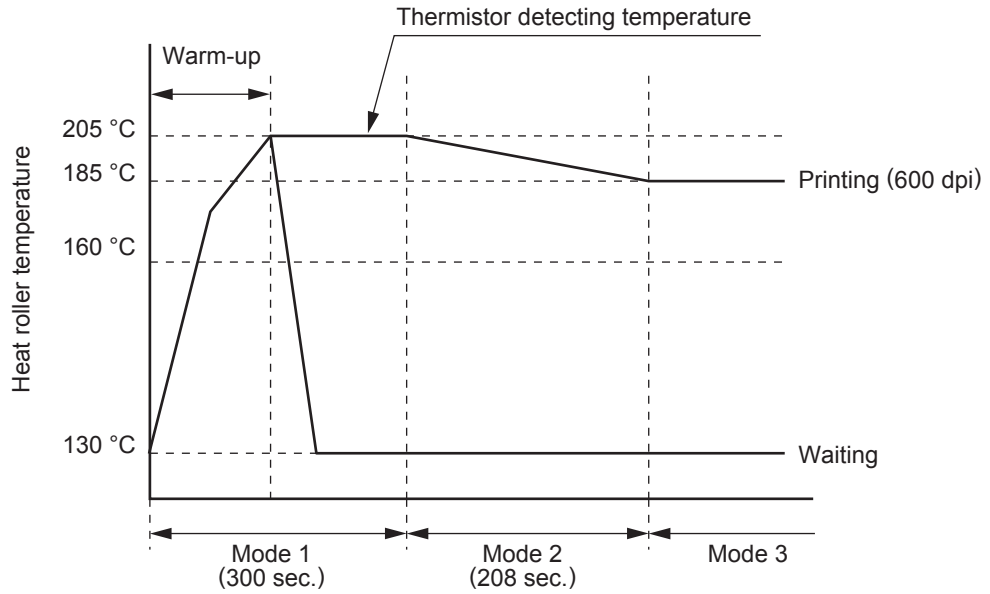

Fig. 5-14

[2] Temperature Control Adjustment Mode

The temperature of the heat roller is adjusted by the following modes according to the time frame from "During printing" and "Warm-up completed".

Mode 1:

For 300 seconds (even though mode 1 is stopped in the middle of adjusting, the count of timer before stopping is continued if the temperature of the heat roller is 50°C or more.) When mode 1 is finished, mode 2 is started.

Mode 2:

For 208 seconds. The temperature of the heat roller is gradually lowered. When it reaches the one in mode 3, mode 2 is finished and mode 3 is started.

Mode 3:

Adjusting the temperature is continued until it is restarted by turning the power ON again, opening/ closing the front cover and releasing the pause mode.

[3] Heat Roller Temperature In Each Temperature Adjustment Mode

	Mode 1	Mode 2	Mode 3
Plain paper	205ºC	205ºC → 185ºC	185ºC
Thick paper, Envelope, Post card	205ºC → 215ºC		
OHP film	195ºC	195ºC → 185ºC	185ºC

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[4] Temperature Adjustment

- Raises the temperature of the heat roller up to the specified degrees during the warm-up.
- Performs the warm-up when the power is turned ON, the front cover is open/closed and the power save mode is released.
- The temperature adjustment mode when the temperature adjustment is restarted by turning the power ON again, opening/closing the front cover and releasing the power save mode is decided according to the temperature of the mode before stopping and the heat roller.
- Makes the temperature of the heat roller 130°C during the standby to reduce electricity.
- Turns OFF the heater lamp in the power save mode.

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5.3.6 Paper Pickup Section

[1] Recording Paper Tray

- Mechanism

  When the paper pickup solenoid is energized, the drive of the RX motor is transmitted to the paper pickup roller via the paper pickup clutch (one-way clutch) to turn the paper pickup roller one revolution. At the same time, the depressing cam turns and lifts the paper tray to feed the top (first) sheet of paper.

  The fixed separation pad is used for the paper separation system. It prevents the second or later sheets of paper from being fed together with the top sheet.

  The machine has no paper size detecting mechanism. It recognizes the paper size by the paper length which is calculated by the paper position sensor activation timing. Therefore, paper having different widths are recognized as the same paper size if they have the same length.

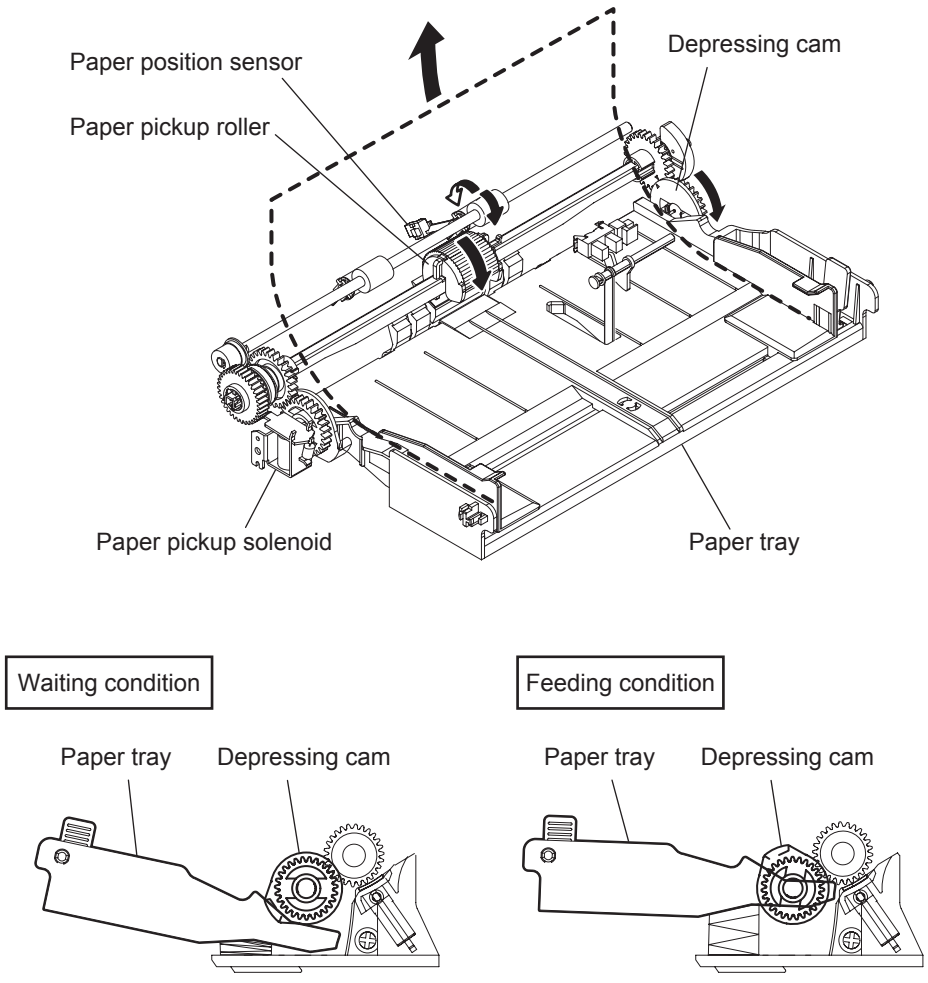

Fig. 5-15

- Paper empty detection

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When the recording paper tray runs out of paper, the actuator for the paper end sensor drops into the cutout in the tray lifting plate. This activates the paper end sensor and the printer detects that the recording paper tray has run out of paper.

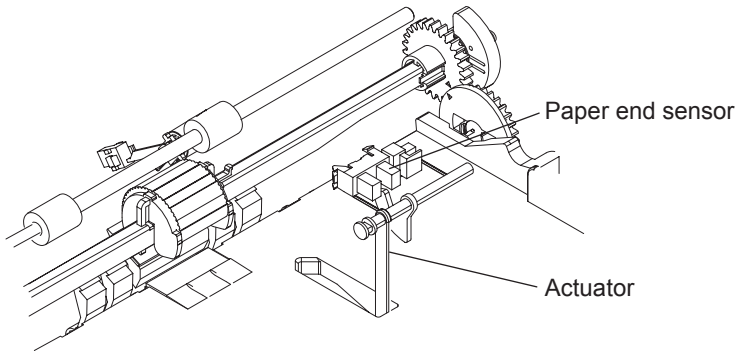

Fig. 5-16

[2] Optional Paper Tray

- Mechanism

Since a drive motor is not installed in this unit, the drive of RX motor is transmitted to the paper pickup and transport sections in the unit via the drive transmission gear. Although the feeding method is the same as the paper tray in the machine, the corner separation system is applied in this unit as the paper separating method. The paper pickup solenoid in the unit is controlled by the printer via optional tray PBA in the unit.

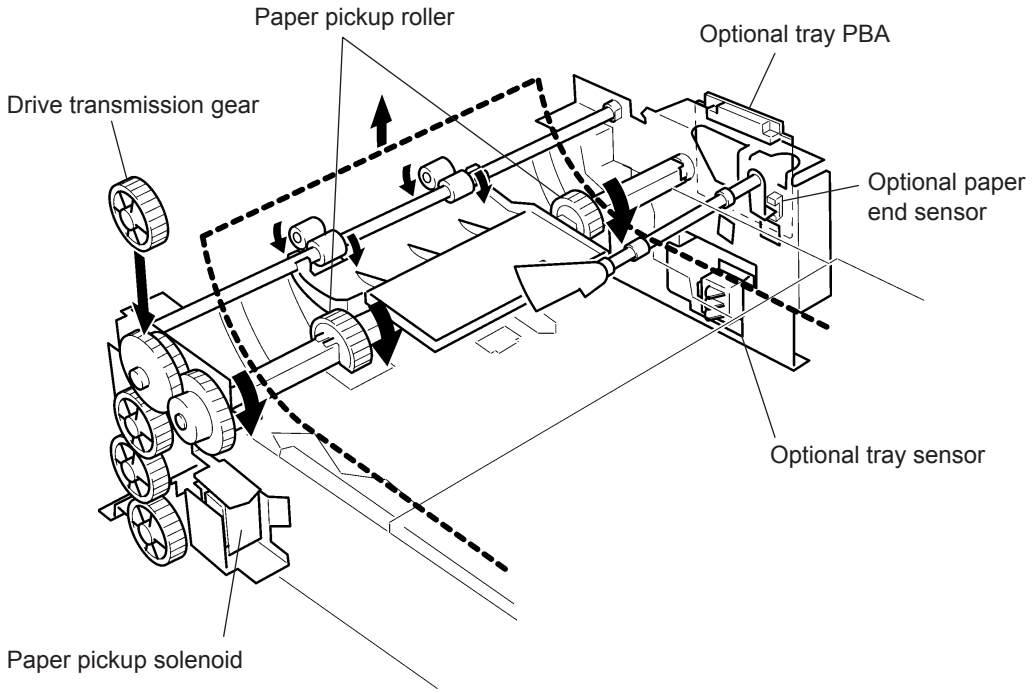

Fig. 5-17

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- Optional paper end sensor
  When the optional paper tray runs out of paper, the actuator for the optional paper end sensor drops into the cutout in the paper lifting plate. This activates the optional paper end sensor and the machine detects that the optional paper tray has run out of paper.

- Optional tray sensor
  The machine detects that the optional paper tray is installed when the projection on the right side of the optional paper tray pushes the optional tray sensor.

5.3.7 Exit Section

The exit section exits the paper sent from the fusing section by the RX feed roller. Paper exit sensor detects the discharging paper.

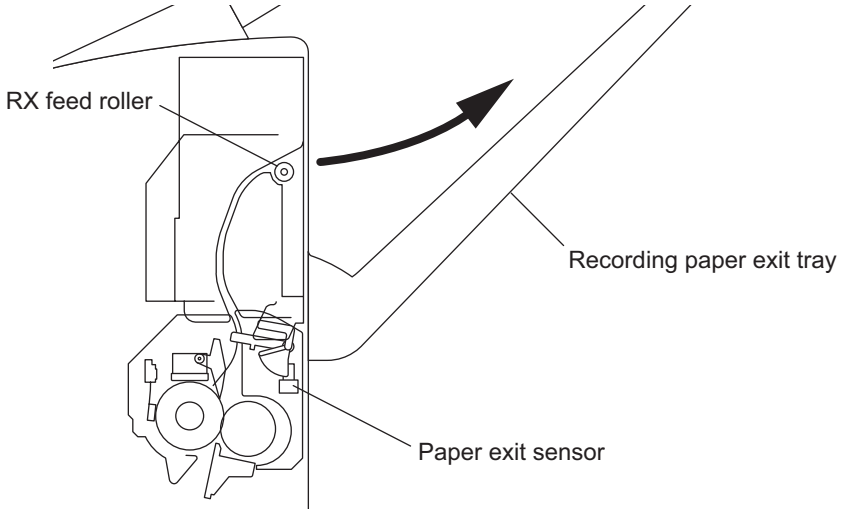

Fig. 5-18

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6. PBA Outline and Sensor Functions

6.1 Electrical Components

The electrical components of this machine consists of the scanning section, recording section, operating section (Operation panel PBA), controlling section (Main PBA, NCU PBA, TEL PBA, Optional tray PBA) and power supply section (LVPS, HVPS). Each section has following functions.

Scanning section:	Reads documents by the CIS.
Recording section:	Prints on paper by the LSU, Toner cartridge, Drum unit, and Fuser. LSU (Records a latent image data on the drum.) Toner cartridge and drum unit (Develop a latent image data on the drum by toner and transfer it to paper.) Fuser (Heats and fixes toner on paper.)
Operating section:	Operation panel PBA (Key input sensing, LED indication control, LCD control)
Controlling section:	Main PBA (Control of the entire system) NCU PBA (Telephone line control) TEL PBA (Signal relay with the handset) Optional tray PBA (Drive control for the Optional recording paper tray)
Power supply section:	LVPS (Generation of supply voltages for the logic system and drive system and power supply delivery to the Fuser) HVPS (High voltage power supply delivery for charging, development, and transfer)

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6.2 PC Board Layout

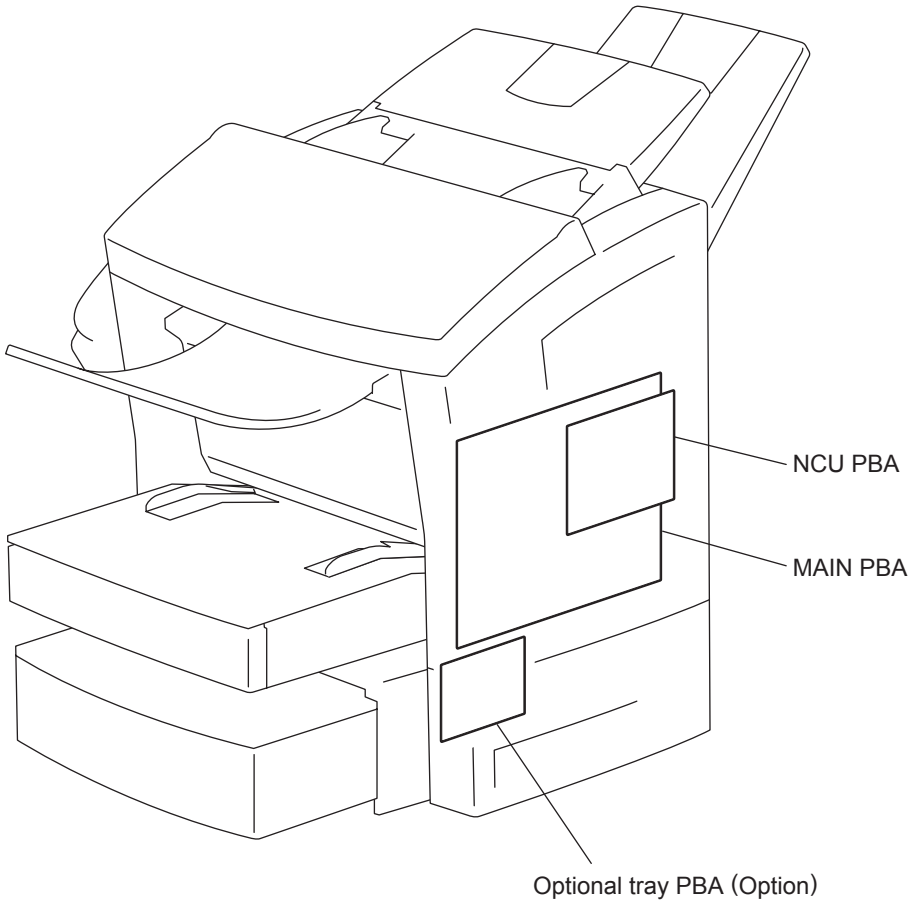

Fig. 6-1

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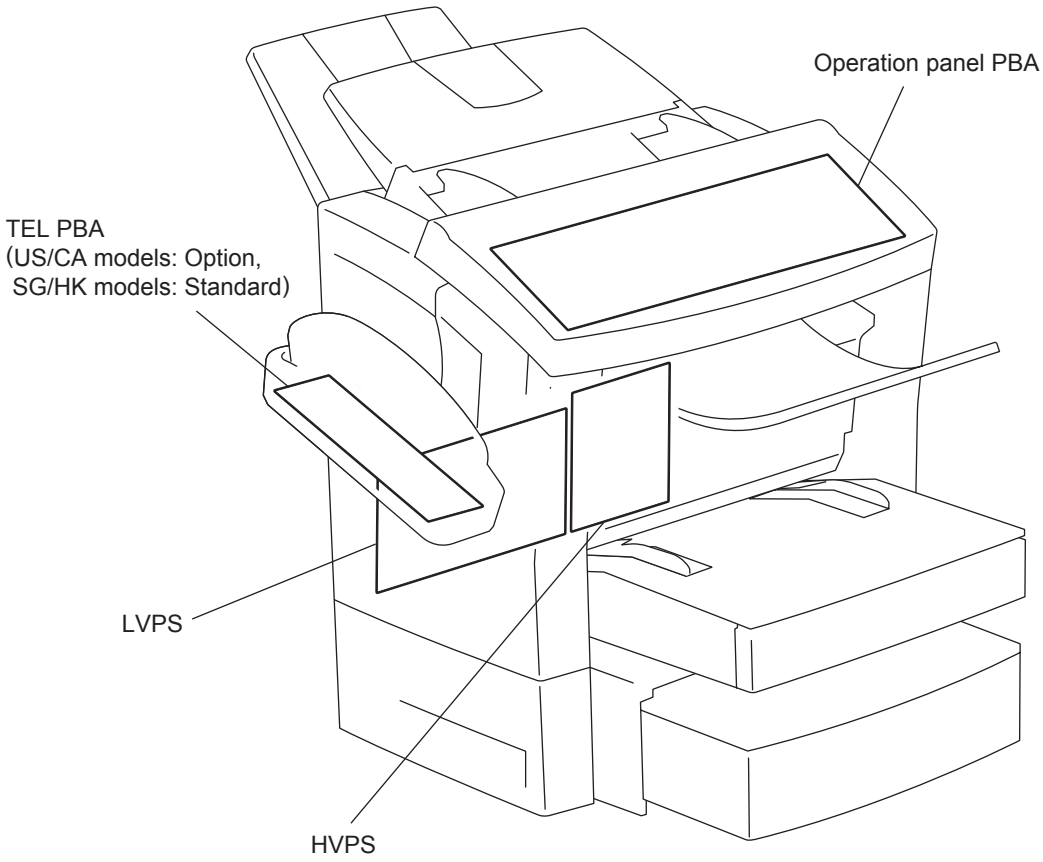

Fig. 6-2

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6.3 Connector Layout of PC Board

6.3.1 Main PBA

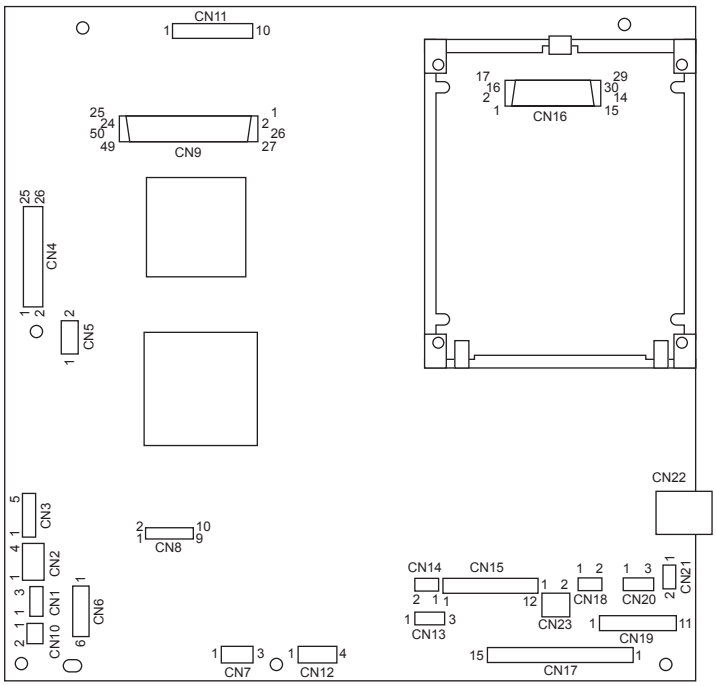

Fig. 6-3

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6.3.2 NCU PBA

- US/CA models

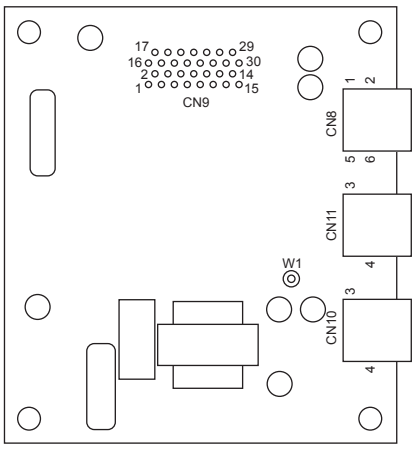

Fig. 6-4

- EU/AU models

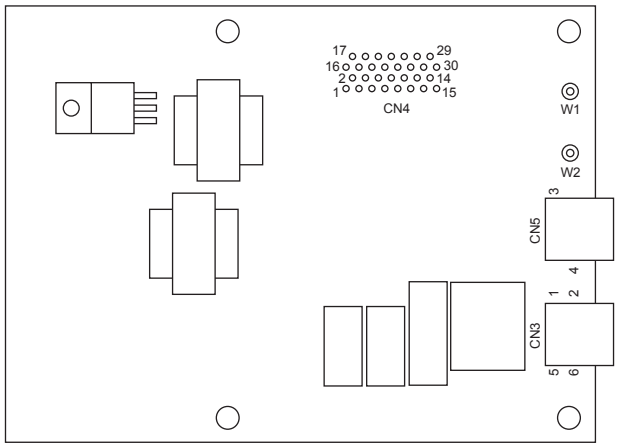

Fig. 6-5

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- SG/HK models

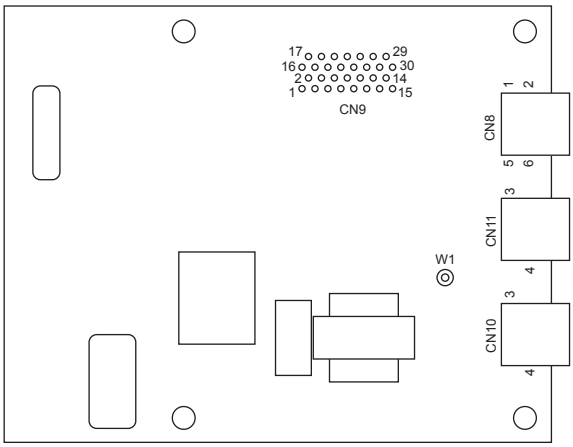

Fig. 6-6

6.3.3 LVPS

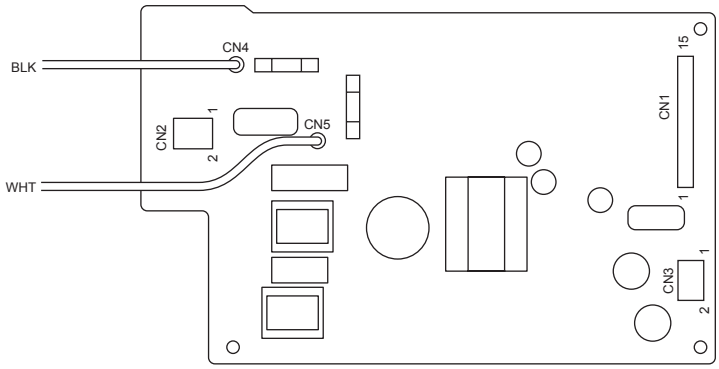

Fig. 6-7

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6.3.4 HVPS

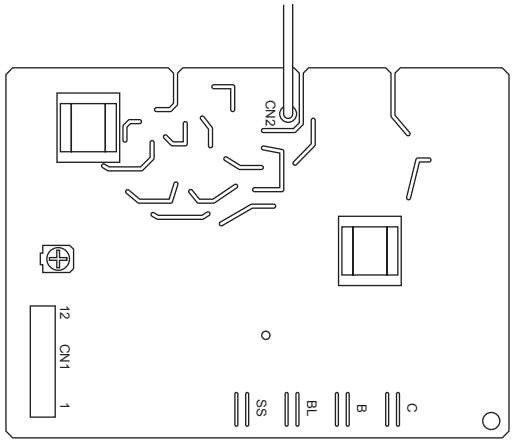

Fig. 6-8

6.3.5 TEL PBA (US/CA models: Option, SG/HK models: Standard)

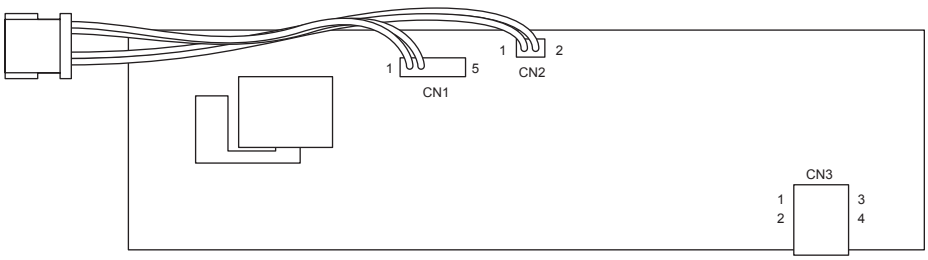

Fig. 6-9

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6.3.6 Optional tray PBA

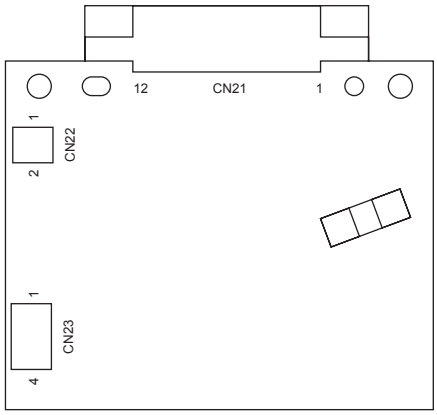

Fig. 6-10

6.3.7 Operation panel PBA

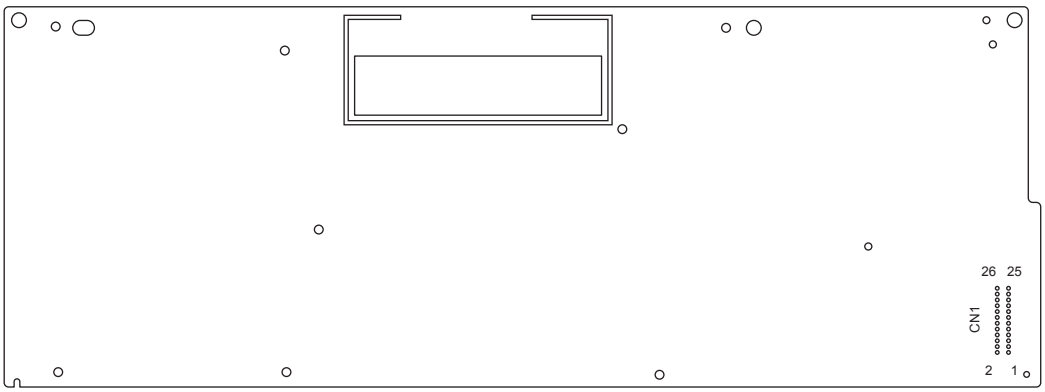

Fig. 6-11

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6.4 Sensors

This machine is equipped with the sensors listed below. Printing is performed and each electrical unit is controlled by sensing the status of each sensor.

6.4.1 Sensor Layout

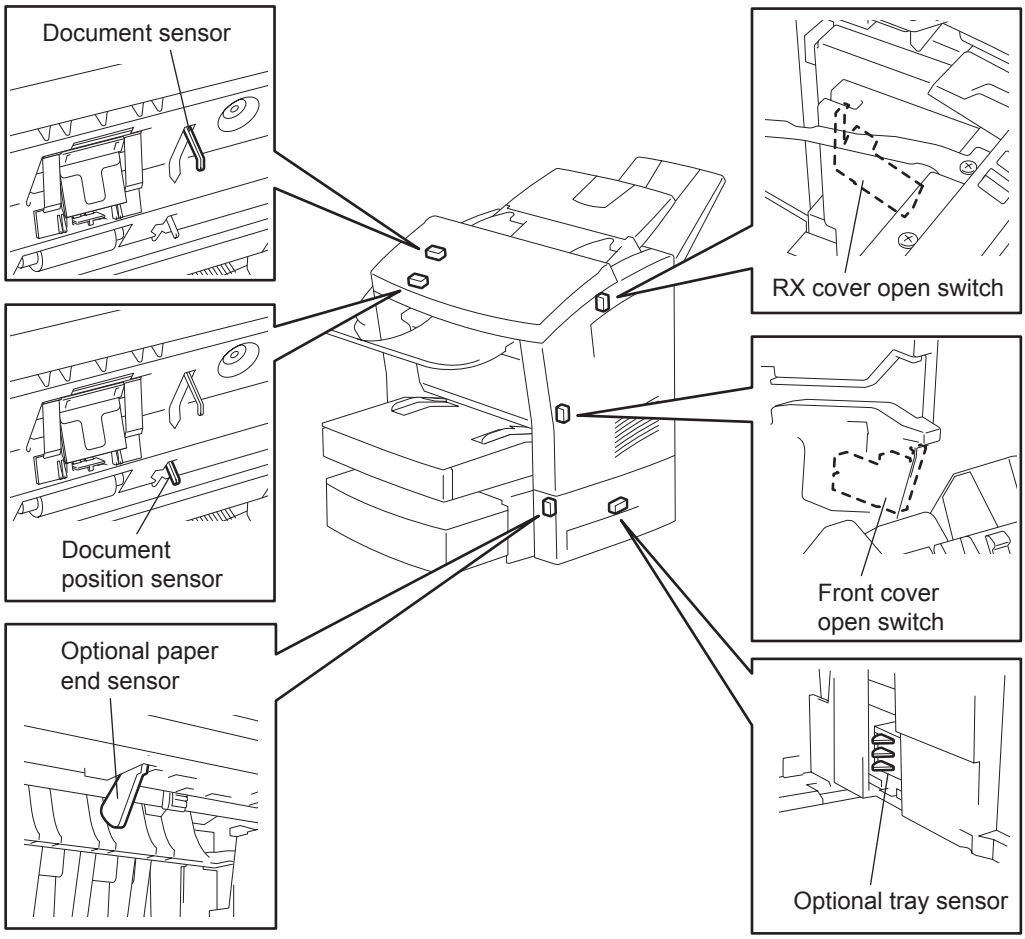

Fig. 6-12

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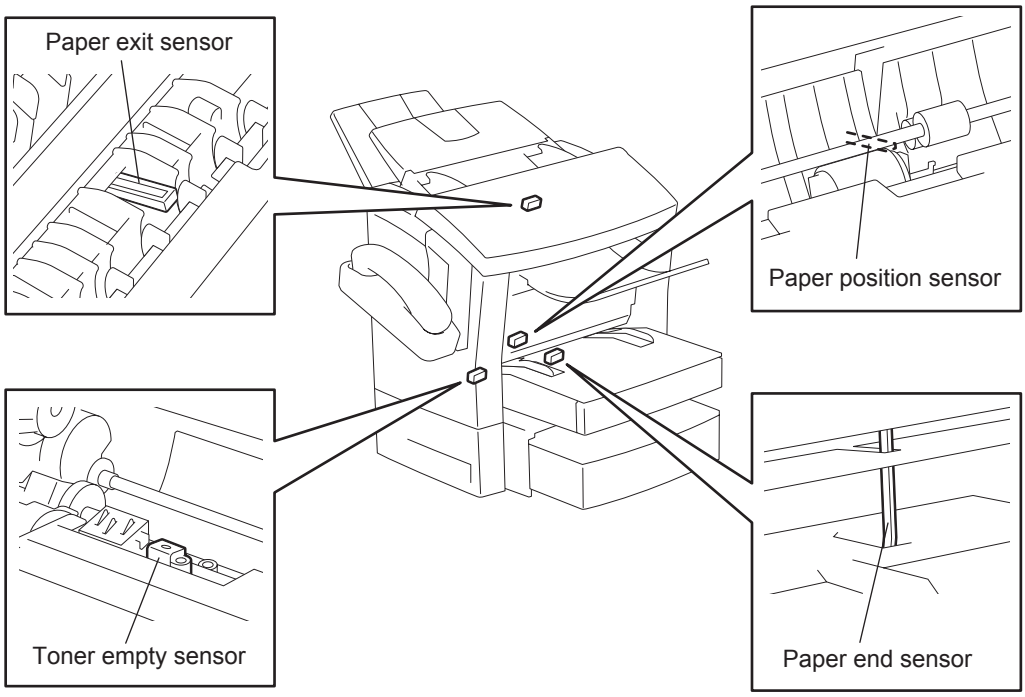

Fig. 6-13

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6.4.2 Table of Sensors

Name	Location Drawing	Signal	Type	Function	Default	Error Message
Document sensor	P.6-9 "Fig. 6-12"	DDET	Photo-interrupter with actuator	Detection of document Detection of document jam	OFF	DOCUMENT JAM
Document position sensor	P.6-9 "Fig. 6-12"	SCNP	Photo-interrupter with actuator	Detection of document scanning position Detection of document jam	OFF	DOCUMENT JAM
Paper end sensor	P.6-10 "Fig. 6-13"	MP_ PAPER_ EMPX	Photo-interrupter with actuator	Detection of recording paper in the recording paper tray and bypass tray	OFF	PAPER EMPTY or UPPER PAPER EMPTY
Paper position sensor	P.6-10 "Fig. 6-13"	PS1X	Photo-interrupter with actuator	Detection of recording paper printing position Detection of recording paper jam.	OFF	PAPER JAM 80
Paper exit sensor	P.6-10 "Fig. 6-13"	PS3	Photo-interrupter with actuator	Detection of recording paper exit Detection of recording paper jam	OFF	PAPER JAM 90
RX cover open switch	P.6-9 "Fig. 6-12"	-	Microswitch	Supply or cutoff of +24VILS by RX cover open/closed status (Detection of RX cover open/closed status)	ON	COVER OPEN
Front cover open switch	P.6-9 "Fig. 6-12"	-	Microswitch	Supply or cutoff of +24VILS by Front cover open/closed status (Detection of Front cover open/closed status)	ON	COVER OPEN
Toner empty sensor	P.6-10 "Fig. 6-13"	TONER_ LEVEL	Reflecting-type photosensor	Detection of an amount of toner in the toner cartridge	-	TONER LOW or TONER EMPTY
Optional paper end sensor	P.6-9 "Fig. 6-12"	2ND_ PAPER_ EMPX	Photo-interrupter with actuator	Detection of recording paper in the optional recording paper tray	OFF	PAPER EMPTY or LOWER PAPER EMPTY
Optional tray sensor	P.6-9 "Fig. 6-12"	SIZE20 to 22	Microswitch	Detection of the presence or absence of an optional recording paper tray	OFF	PAPER EMPTY or LOWER PAPER EMPTY

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6.4.3 Function of Each sensor

[1] Document Sensor

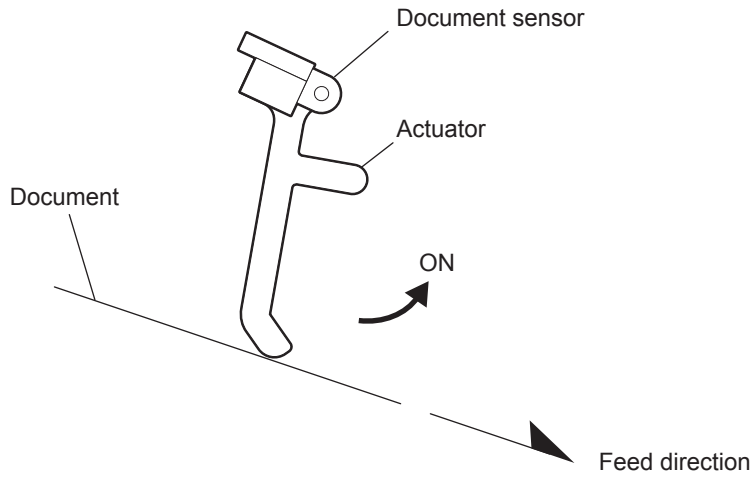

Fig. 6-14

The document sensor is installed on the Operation panel PBA in the Operation panel unit and detects whether any document is loaded. When the actuator of the sensor is pushed down by the document to turn on the sensor, the loading of a document will be detected.
In case the sensor stays on even a fixed time after the transport of the document has started, a document jam will be assumed.

[2] Document Position Sensor

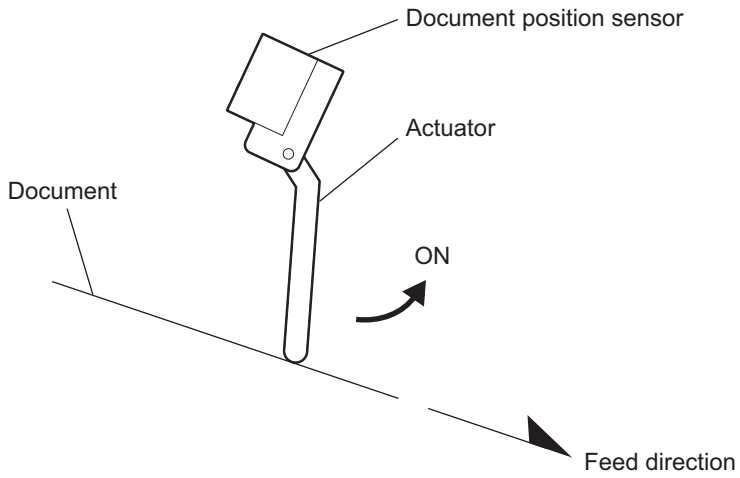

Fig. 6-15

The document position sensor is installed on the Operation panel PBA in the operation panel unit and detects whether the loaded document has been transported to before the scanning position of the CIS. When the actuator of the sensor is pushed down by the document to turn on (or off) the sensor, the start (or end) of scanning the document will be detected. In case the sensor stays on even a fixed time after the transport of the document has started, a document jam will be assumed.

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[3] Paper End Sensor

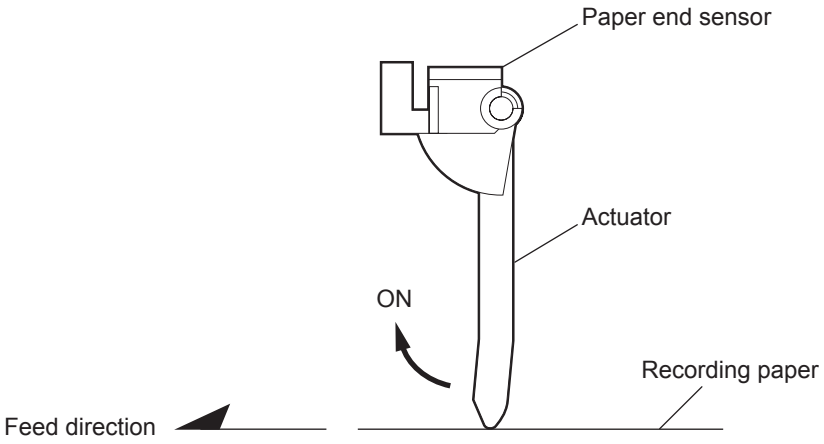

Fig. 6-16

The paper end sensor is installed on the LSU frame and detects the presence or absence of recording paper placed in the recording paper tray or bypass tray. When the actuator of the sensor is pushed down by the recording paper to turn on the sensor, the placement of recording paper will be detected.

[4] Paper Position Sensor

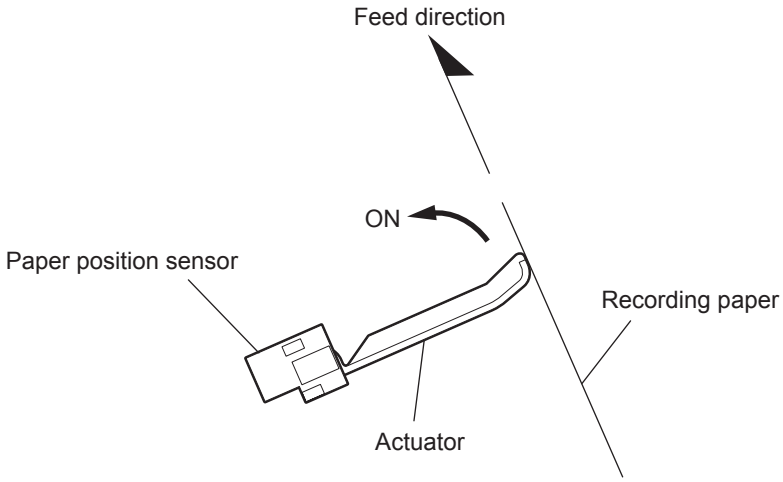

Fig. 6-17

The paper position sensor is installed on the transfer unit and detects the transport status of recording paper. When the actuator of the sensor is pushed down by the recording paper to turn on the sensor, the transport of the recording paper to the printing position will be detected. Then, the length of the recording paper is judged by sensing the time from the moment when the recording paper is further transferred to the moment when the sensor turns off. In case the sensor does not return to the off status even a fixed time after the sensor is turned on, a recording paper jam will be assumed.

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[5] Paper Exit Sensor

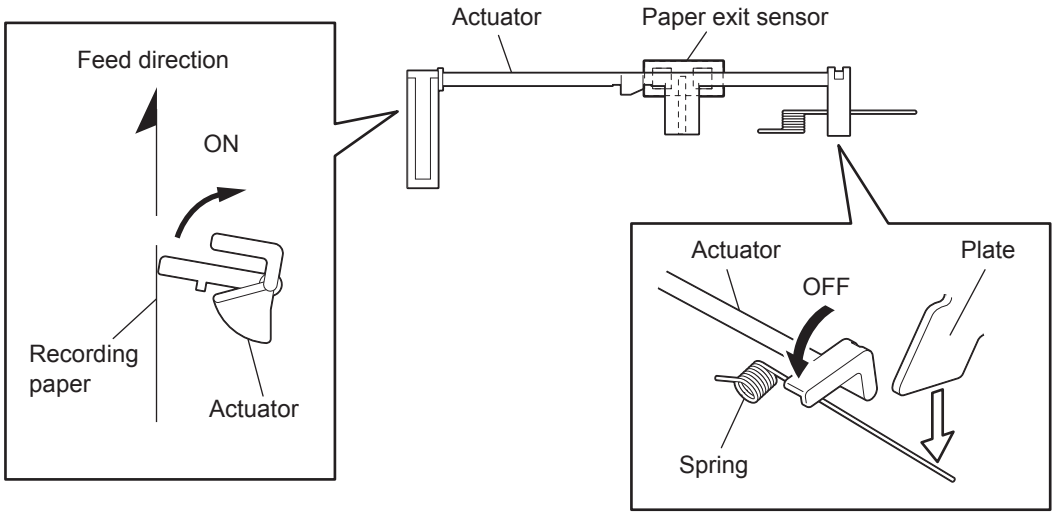

Fig. 6-18

The paper exit sensor is installed on the fuser and detects the exit status of the printed recording paper.

A load is given to the actuator of the sensor by the spring. When the RX cover is open, the actuator is pushed up to turn on the sensor forcibly. When it is closed, the spring is pushed down by the cover plate to move the actuator freely. This turns off the sensor and the recording paper can be detected.

When the actuator of the sensor is pushed down by the recording paper to turn on the sensor, the transport of the recording paper over the sensor is detected. Then, when the recording paper is further transported and the sensor returns to the OFF status, the exit of the recording paper is assumed. In case the sensor does not return to the OFF status even a fixed time after the sensor is turned on, a recording paper jam is assumed.

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[6] Front Cover Open Switch / RX Cover Open Switch

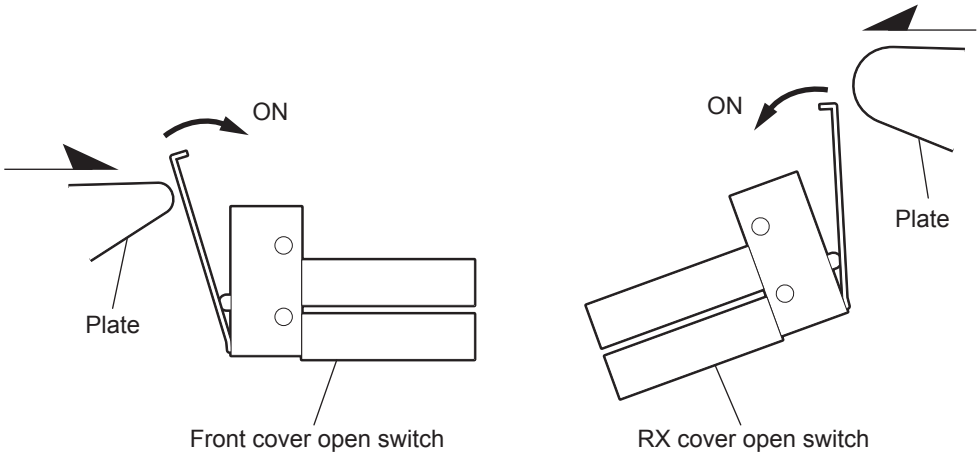

Fig. 6-19

The front cover open switch is installed on the right frame and the RX cover open switch is installed on the TX frame respectively to detect the open/closed status of the front cover and the RX cover.

Each switch is connected in series with the supply line of +24V power supply (+24VILS). When the switch is pushed down by the plate of each cover to turn it on, +24VILS is supplied to each PBA. Then AC power is supplied to the fuser due to the supply of +24VILS. Since +24VILS is supplied or cut off by each switch, the open/closed status of each cover can be detected by monitoring the supply status of +24VILS.

[7] Toner Empty Sensor

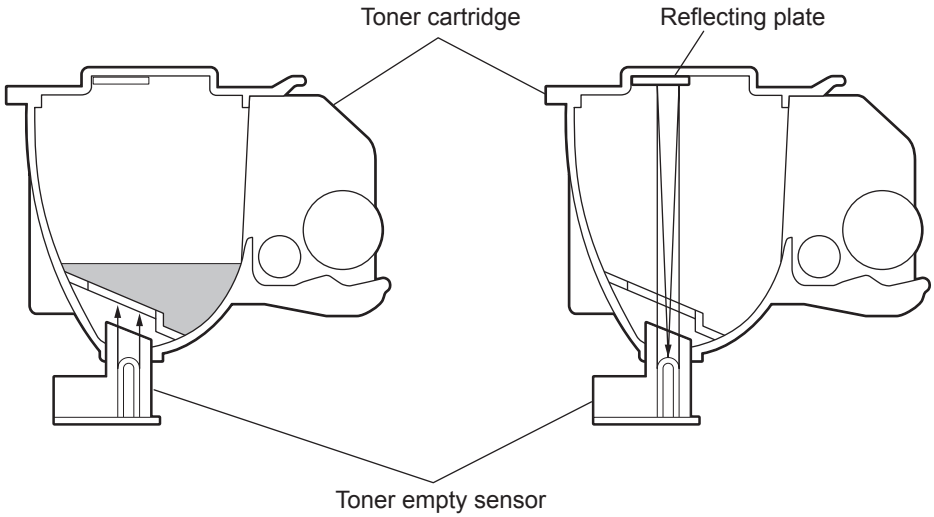

Fig. 6-20

The toner empty sensor is installed on the feed upper guide and detects the amount of toner in the Toner cartridge. Light is radiated into the Toner cartridge. Then, the amount of toner is judged by counting the number of reflected times of the light from the reflecting plate and the reflected time.
When there is toner in the cartridge, the light is not reflected because it is shaded by the toner.
The more the toner runs out, the more the light easily passes through the toner so that the light is easily reflected.

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[8] Optional Paper End Sensor

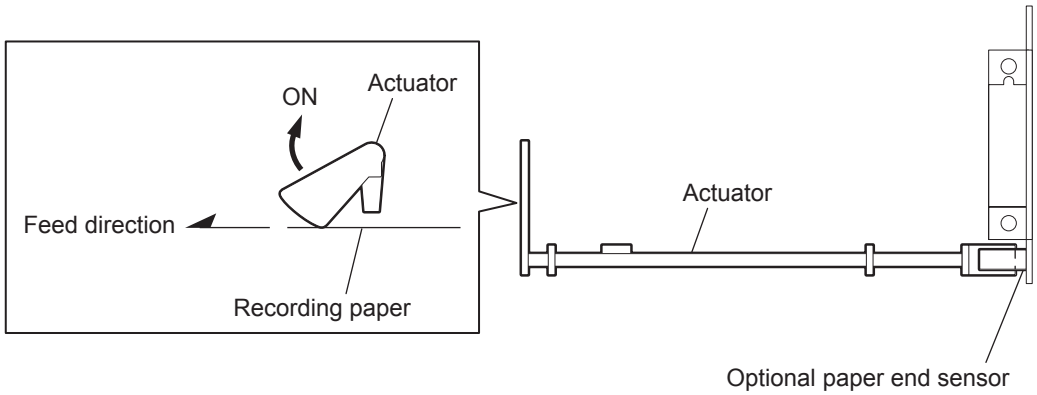

Fig. 6-21

The Optional paper end sensor is installed on the Optional tray PBA in the Optional recording paper tray. It detects the presence or absence of recording paper in the recording paper tray.
When the actuator of the sensor is pushed down by the recording paper to turn on the sensor, the placement of recording paper will be detected.

[9] Optional Tray Sensor

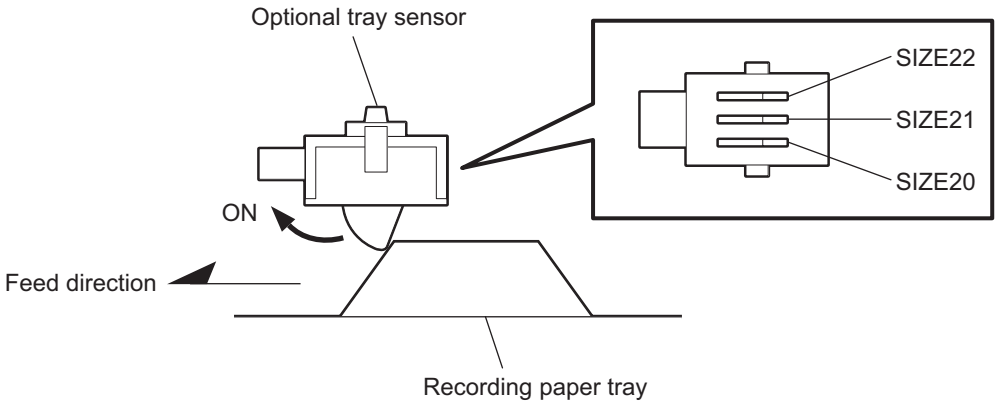

Fig. 6-22

The Optional tray sensor is installed on the optional recording paper tray frame. It detects the presence or absence of a recording paper tray. The sensor is pushed down by the projection on the side of the recording paper tray to turn on. This cause the detect signals (SIZE20-22) to be LOW and output from the sensor to detect the recording paper tray placed.

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7. Circuit Description

7.1 Outline

This section outlines the entire circuitry using the circuit connection diagrams, the block diagram, the major device diagram, and the table of power supplies of each PBA.

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7.1.1 Circuit Connection Diagram

Circuit Connection Diagram (1/2)

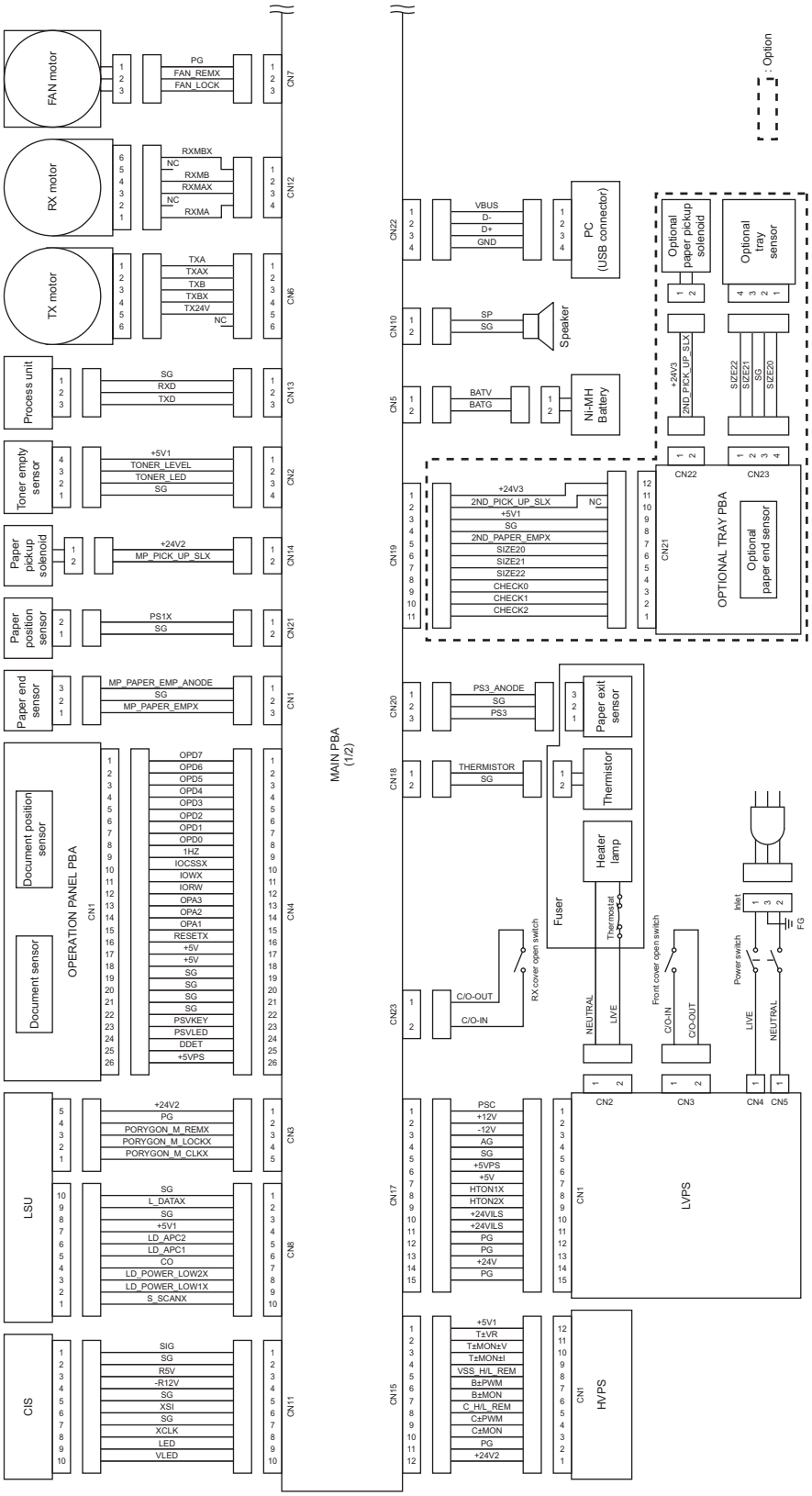

Fig. 7-1

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Circuit Connection Diagram (2/2)

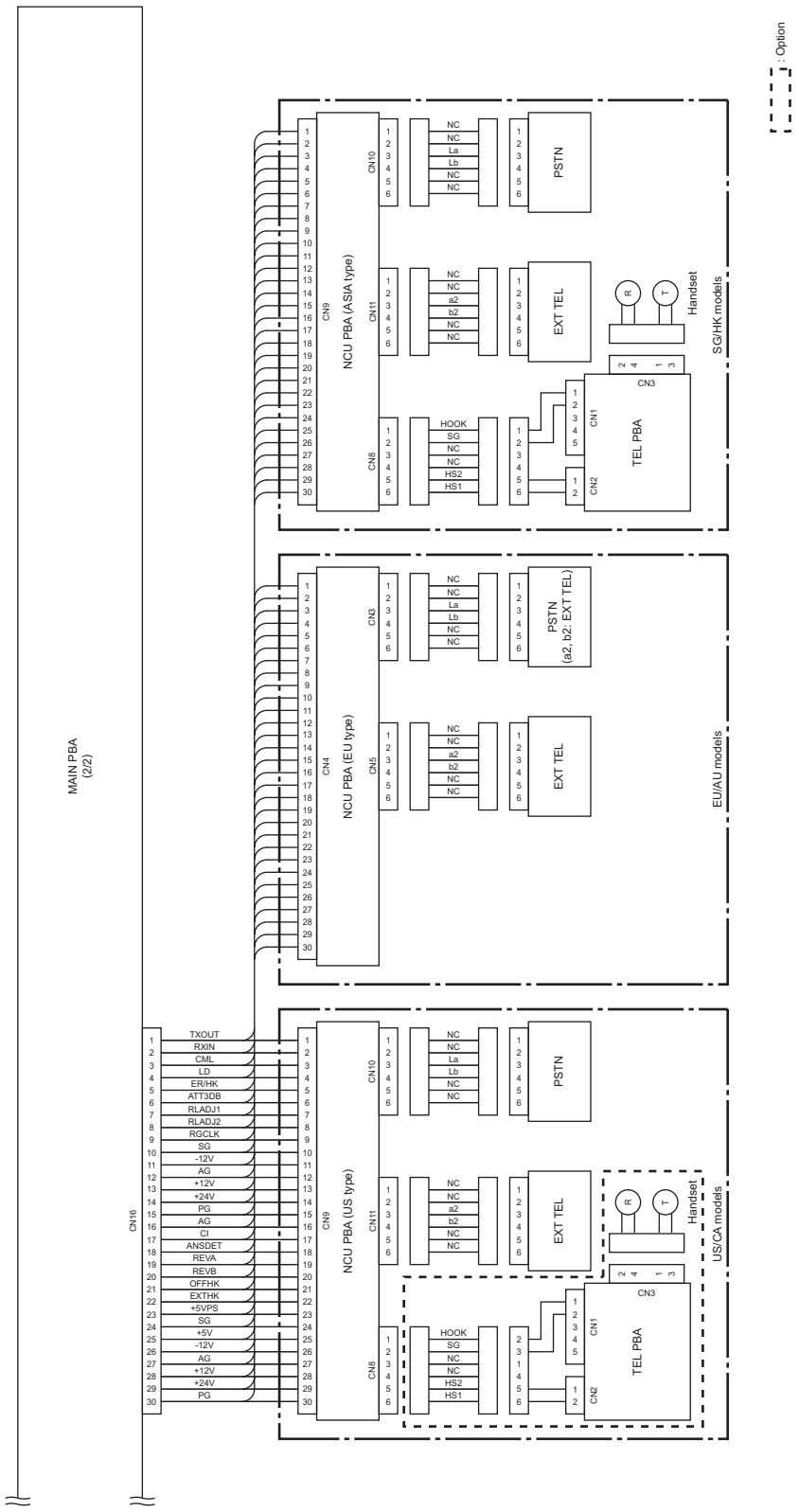

Fig. 7-2

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7.1.2 Block Diagram

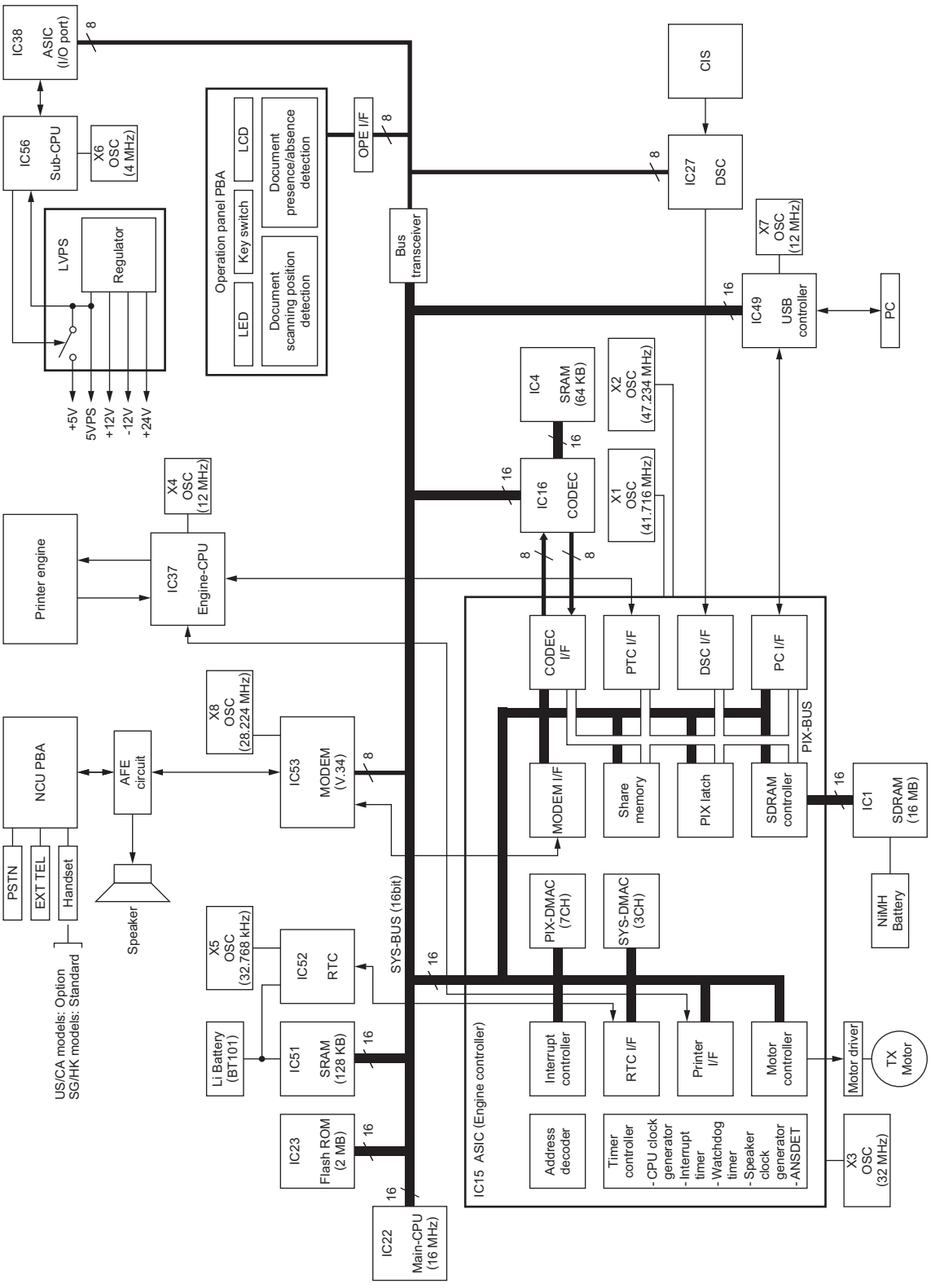

Fig. 7-3

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7.1.3 PBA Major Device Diagrams

PBA Major Device Diagrams (1/3)

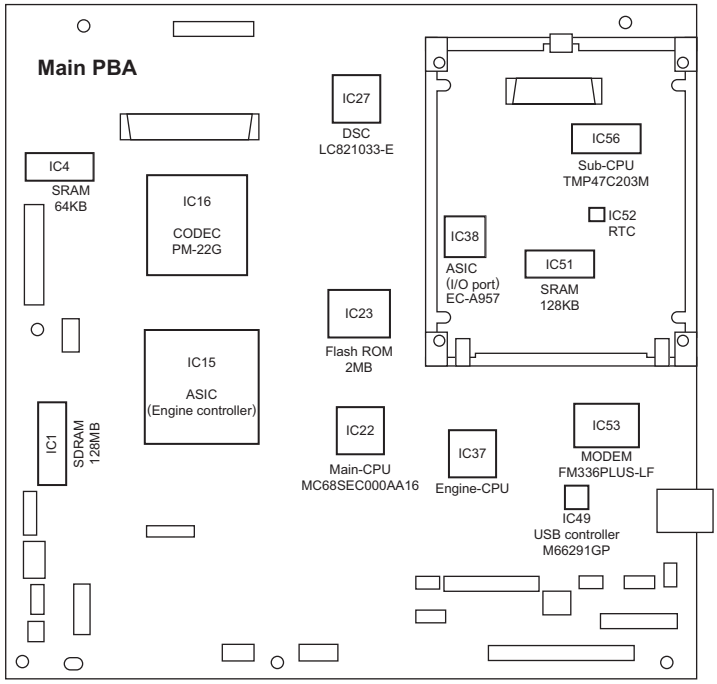

Fig. 7-4

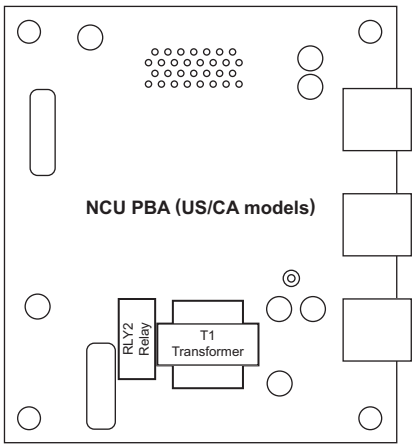

Fig. 7-5

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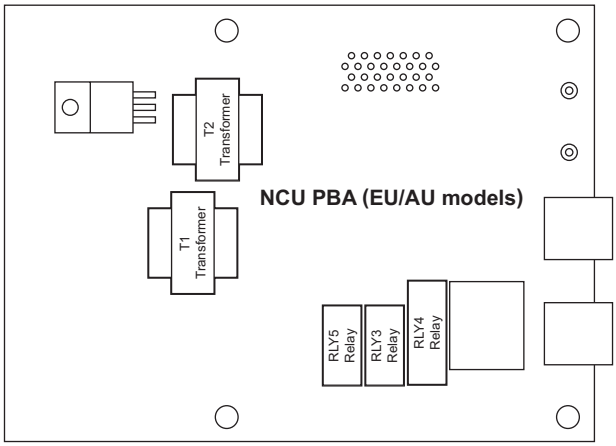

Fig. 7-6

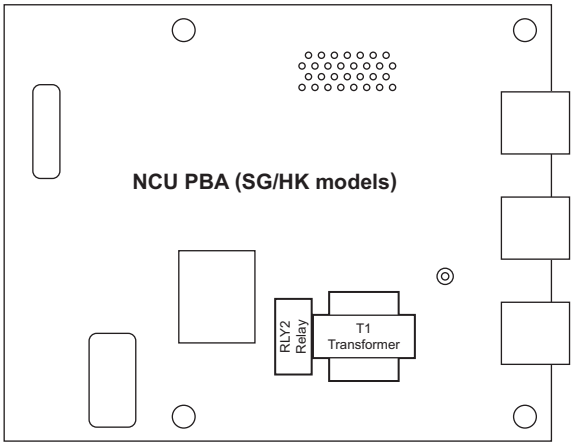

Fig. 7-7

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PBA Major Device Diagrams (3/3)

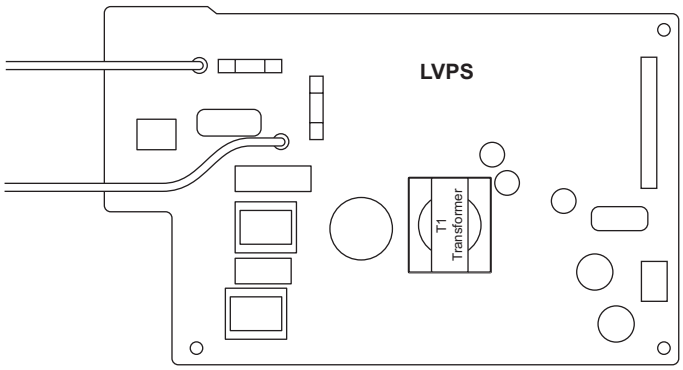

Fig. 7-8

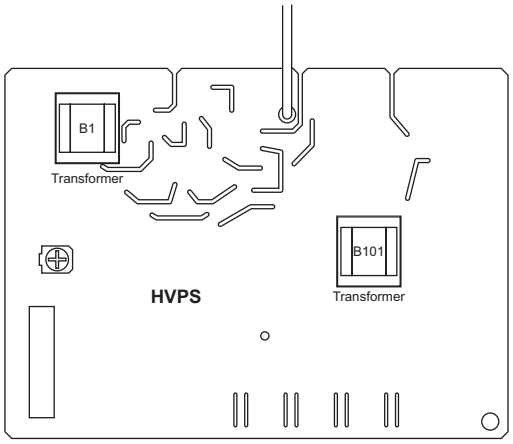

Fig. 7-9

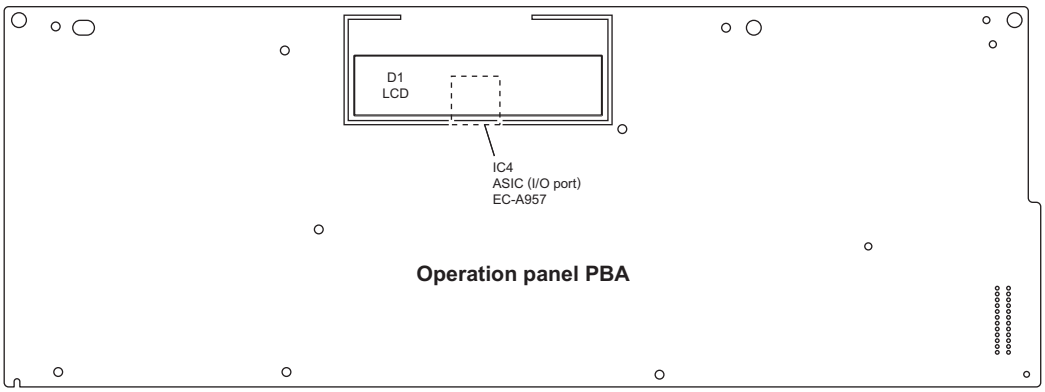

Fig. 7-10

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7.1.4 Power Supply Table

Symbol	Voltage (V)	Description	Super power save mode	Power OFF	RX or Front cover "Open"	Generate for power supply	Genera-tion of power
+24V	+24	24V power supply	OFF	OFF	ON	-	LVPS
+24VILS	+24	24V power supply via RX/front cover open switches	OFF	OFF	OFF	+24V	LVPS
+24V1	+24	24V power supply via fuse (F2)	OFF	OFF	OFF	+24VILS	Main PBA
+24V2	+24	24V power supply via fuse (F3)	OFF	OFF	OFF	+24VILS	Main PBA
+24V3	+24	24V power supply via fuse (F5)	OFF	OFF	OFF	+24VILS	Main PBA
+12V	+12	+12V power supply	OFF	OFF	ON	-	LVPS
R12V	+12	+12V power supply for scanning section	OFF	OFF	ON	+12V	Main PBA
-12V	-12	-12V power supply	OFF	OFF	ON	-	LVPS
-R12V	-12	-12V power supply for scanning section	OFF	OFF	ON	-12V	Main PBA
+5VPS	+5	5V power supply	ON	OFF	ON	-	LVPS
+5V	+5	+5V power supply for logic circuit	OFF	OFF	ON	-	LVPS
+5V1	+5	5V power supply via fuse (F4)	OFF	OFF	ON	+5V	Main PBA
R5V	+5	5V power supply for scanning section	OFF	OFF	ON	+5V	Main PBA
3.3VPS	+3.3	3.3V power supply	ON	OFF	ON	+5VPS	Main PBA
3.3V	+3.3	3.3V power supply for logic circuit	OFF	OFF	ON	+5V	Main PBA
3.3VB	+3.3	3.3V power supply for SDRAM backup	ON	ON	ON	+5VPS/+5V/ NiMH battery	Main PBA
3.3VB2	+3.3	3.3V power supply for SRAM backup	ON	ON	ON	3.3VPS/ Litium Battery (BAT101)	Main PBA
SG	0	Signal ground	-	-	-	-	LVPS
AG	0	Analog ground	-	-	-	-	LVPS
PG	0	Power ground	-	-	-	-	LVPS

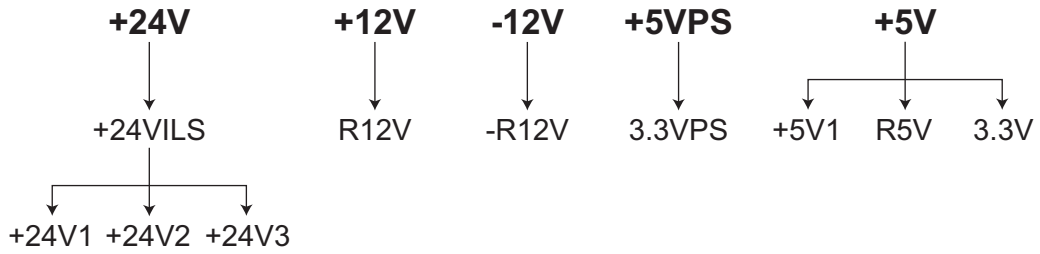

Fig. 7-11

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7.2 Flow of Image Signals

This section charts the image signal conditioning process for each of the following modes and outlines them: facsimile transmission, facsimile reception, copy, and PC interface.

7.2.1 Facsimile Transmission

There are the following two facsimile transmission modes: the direct transmission mode in which the documents placed are transmitted page by page while being read and the memory transmission mode in which all the documents are stored in memory before being transmitted.

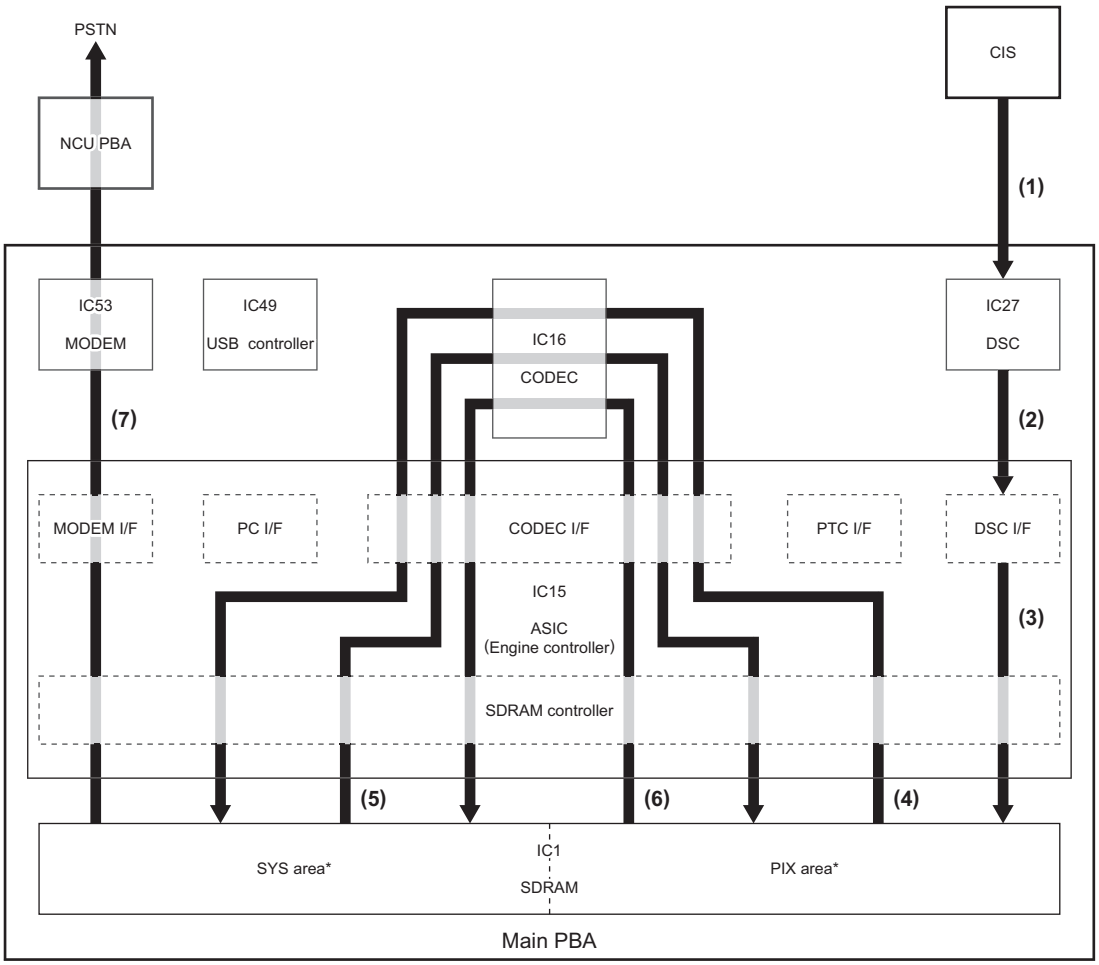

Fig. 7-12

* Details regarding each area of SDRAM used
(3): DSC I/F > SDRAM (PIX area: Scan buffer)
(4): SDRAM (PIX area: Scan buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: CODEC buffer)
(6): SDRAM (PIX area: CODEC buffer) > SDRAM (SYS area: Transmit data buffer)
(7): SDRAM (SYS area: Transmit data buffer) > MODEM I/F

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(1) The CIS detects the LED's light reflected by a document as an analog electric signal and sends it to the DSC (IC27).

(2) The DSC converts the electric signal to a digital signal and subjects it to data correction, then converts it to raster data. The raster data is serially transferred to the DSC interface of the ASIC (IC15).

(3) The raster data is converted from serial to parallel data by the DSC interface and transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC. During this period, the system communicates with the destination to identify the coding for the data to be transmitted.

For memory transmission, go to step (4).
For direct transmission, go to step (6).

(4) The raster data is transferred to the CODEC (IC16) through the CODEC interface of the ASIC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the SDRAM controller. This allows the coded data for the documents for transmission to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the CODEC where it is coded in accord with the coding format (MH, MR, MMR or JBIG) specified by the destination. Then the coded data is transferred to the SYS-SDRAM. This allows one page of coded data to be stored in the SYS-SDRAM.

(7) The coded data is transferred to the MODEM (IC53) through the MODEM interface of the ASIC where it is modulated to an analog signal for telephone lines. Then the modulated analog signal is sent to the telephone line through the NCU PBA.

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7.2.2 Facsimile Reception

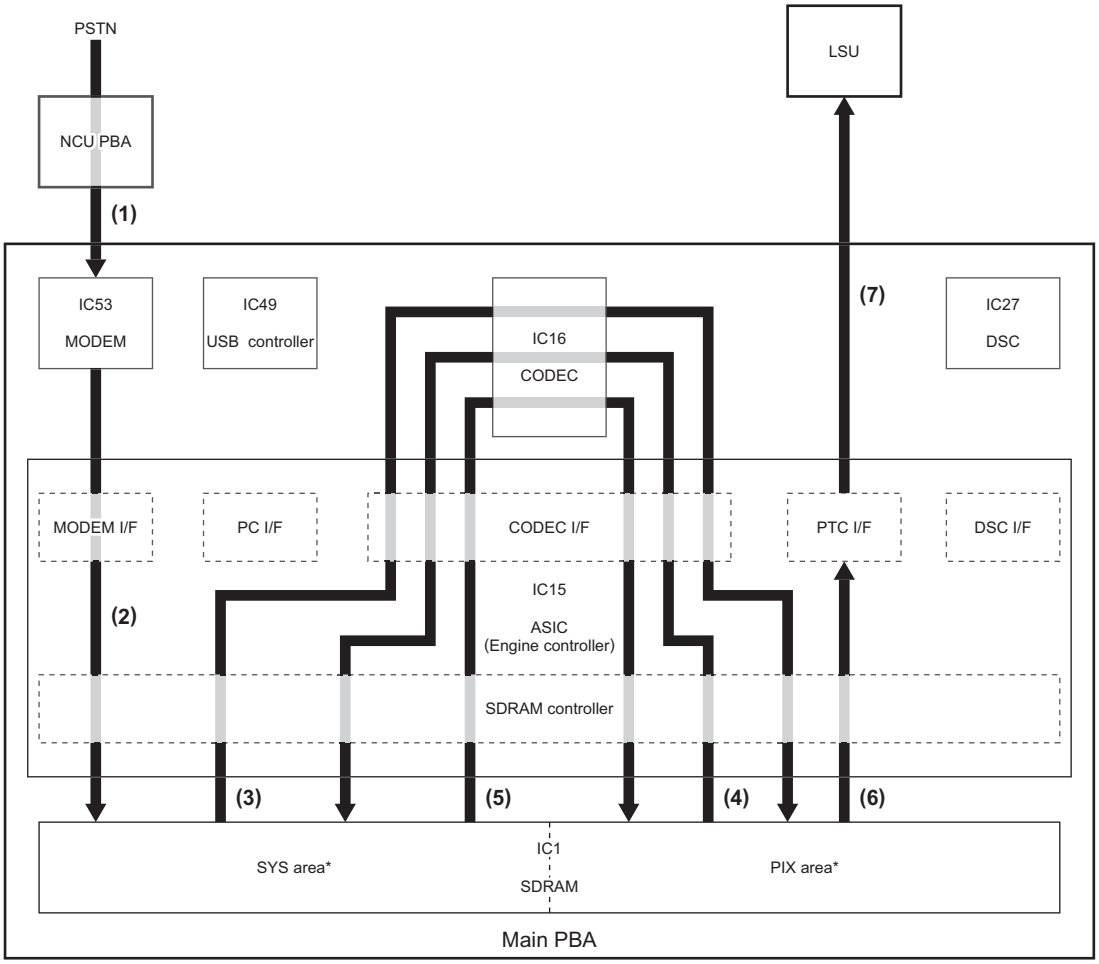

Fig. 7-13

* Details regarding each area of SDRAM used
(2): MODEM I/F > SDRAM (SYS area: Receive data buffer)
(3): SDRAM (SYS area: Receive data buffer) > SDRAM (PIX area: CODEC buffer)
(4): SDRAM (PIX area: CODEC buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: Page memory)
(6): SDRAM (PIX area: Page memory) > PTC I/F

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(1) The analog data received from the telephone line is input to the MODEM (IC53) through the NCU PBA.

(2) The analog data is demodulated to coded data by the MODEM. Then the coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the MODEM interface and the SDRAM controller of the ASIC (IC15).

(3) The coded data is transferred to the CODEC (IC16) through the CODEC interface of the ASIC where it is decoded to raster data. Then the raster data is transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC.

(4) The raster data is transferred to the CODEC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS-SDRAM. This allows all the coded data received to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the PTC interface of the ASIC.

(7) The raster data is transferred to the LSU. The LSU is driven according to the received data for printing on the recording paper.

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7.2.3 Copy

There are the following two copy modes: the normal copy mode in which the documents placed are printed one by one and the sort copy mode in which all the documents read are stored in memory before being printed.

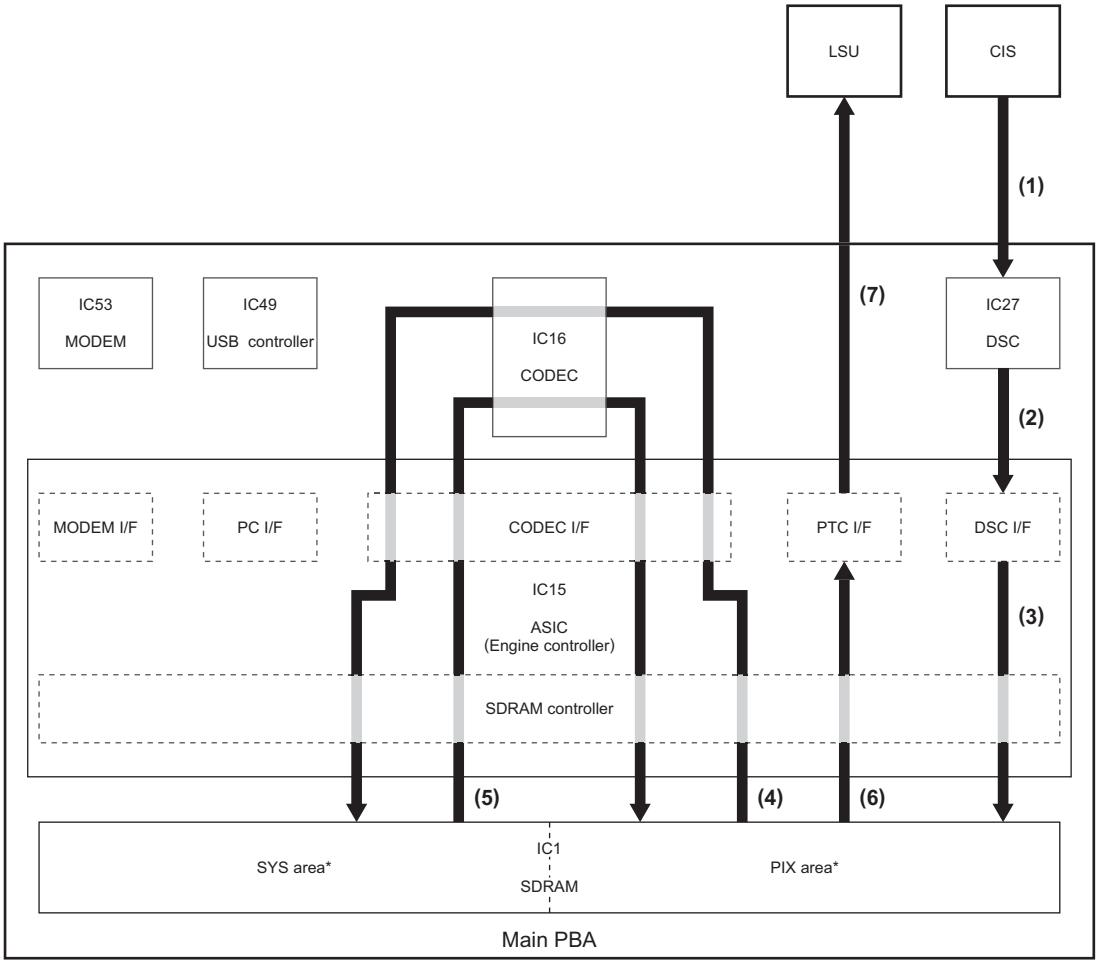

Fig. 7-14

* Details regarding each area of SDRAM used
(3): DSC I/F > SDRAM (PIX area: Scan buffer)
(4): SDRAM (PIX area: Scan buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: Page memory)
(6): SDRAM (PIX area: Page memory) > PTC I/F

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(1) The CIS detects the LED's light reflected by a document as an analog electric signal and sends it to the DSC (IC27).

(2) The DSC converts the electric signal to a digital signal and subjects it to data correction, then converts it to raster data. The raster data is serially transferred to the DSC interface of the ASIC (IC15).

(3) The raster data is converted from serial to parallel data by the DSC interface of the ASIC and transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC.

For sort copy, go to step (4).
For normal copy, go to step (6).

(4) The raster data is transferred to the CODEC (IC16) through the CODEC interface of the ASIC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the SDRAM controller of the ASIC. This allows the coded data for all the documents for copying to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the PTC interface of the ASIC.

(7) The raster data is transferred to the LSU. The LSU is driven according to the received data for printing on the recording paper.

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7.2.4 PC Interface

The PC interface provides the following modes: the PC scanner mode in which the document(s) placed on this machine is read into the PC as data, the PC facsimile transmission mode in which document data is directly sent from the PC, the PC facsimile reception mode in which the data received is read by the PC, and the printer mode in which the data sent from the PC is printed.

[1] PC Scanner

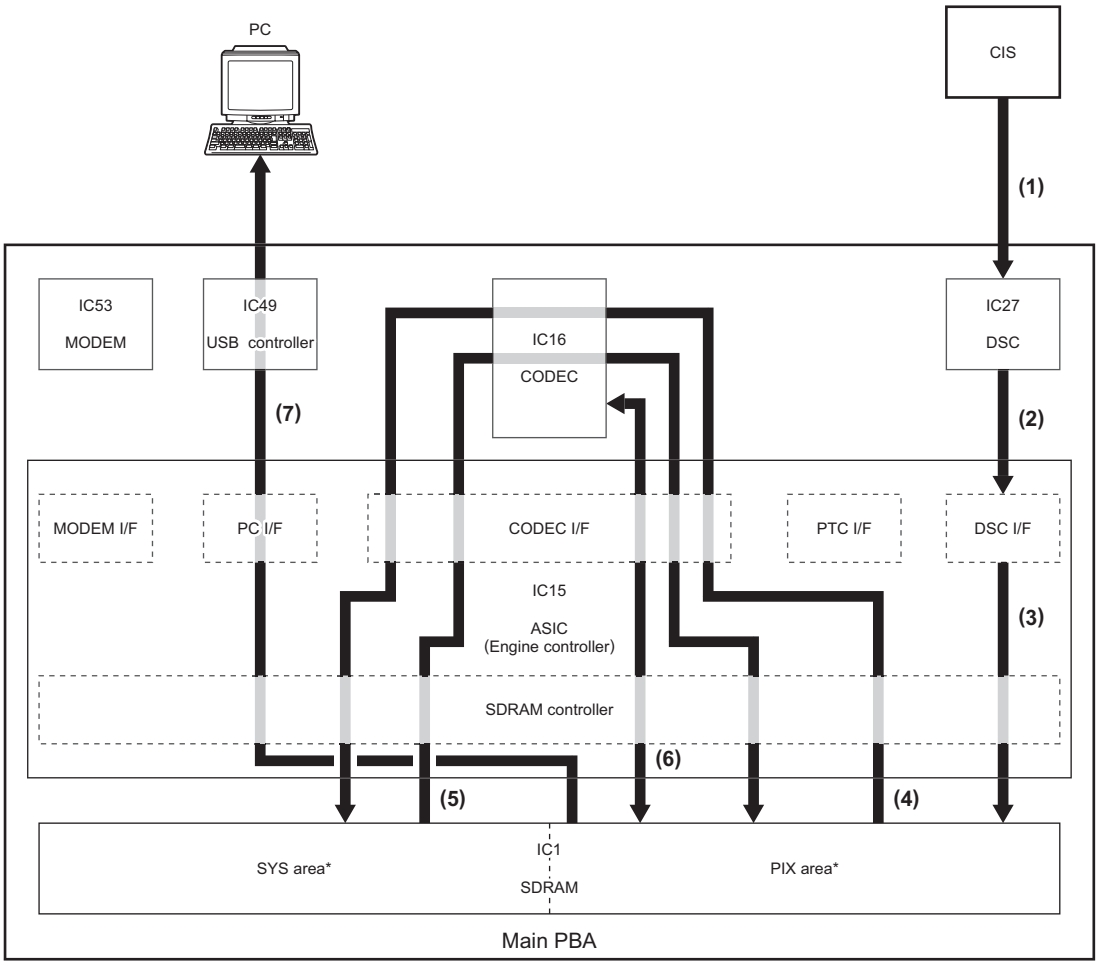

Fig. 7-15

* Details regarding each area of SDRAM used
(3): DSC I/F > SDRAM (PIX area: Scan buffer)
(4): SDRAM (PIX area: Scan buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: CODEC buffer)
(6): SDRAM (PIX area: CODEC buffer) > SDRAM (PIX area: PC buffer)
(7): SDRAM (PIX area: PC buffer) > PC I/F

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(1) The CIS detects the LED's light reflected by a document as an analog electric signal and sends it to the DSC (IC27).

(2) The DSC converts the electric signal to a digital signal and subjects it to data correction, then converts it to raster data. The raster data is serially transferred to the DSC interface of the ASIC (IC15).

(3) The raster data is converted from serial to parallel data by the DSC interface and transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC.

(4) The raster data is transferred to the CODEC (IC16) through the CODEC interface of the ASIC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the SDRAM controller. This allows the coded data for the documents for transmission to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the CODEC where it is coded in the MH coding format. Then the MH coded data is transferred to the PIX-SDRAM.

(7) The MH coded data is transferred to the PC interface of the ASIC and sent to the PC through the USB controller (IC49).

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[2] PC Facsimile Transmission

There are the following two PC facsimile transmission modes: the PC direct transmission mode in which the document data sent from the PC is transmitted page by page and the PC indirect transmission mode in which all the document data is read and stored in memory before being transmitted.

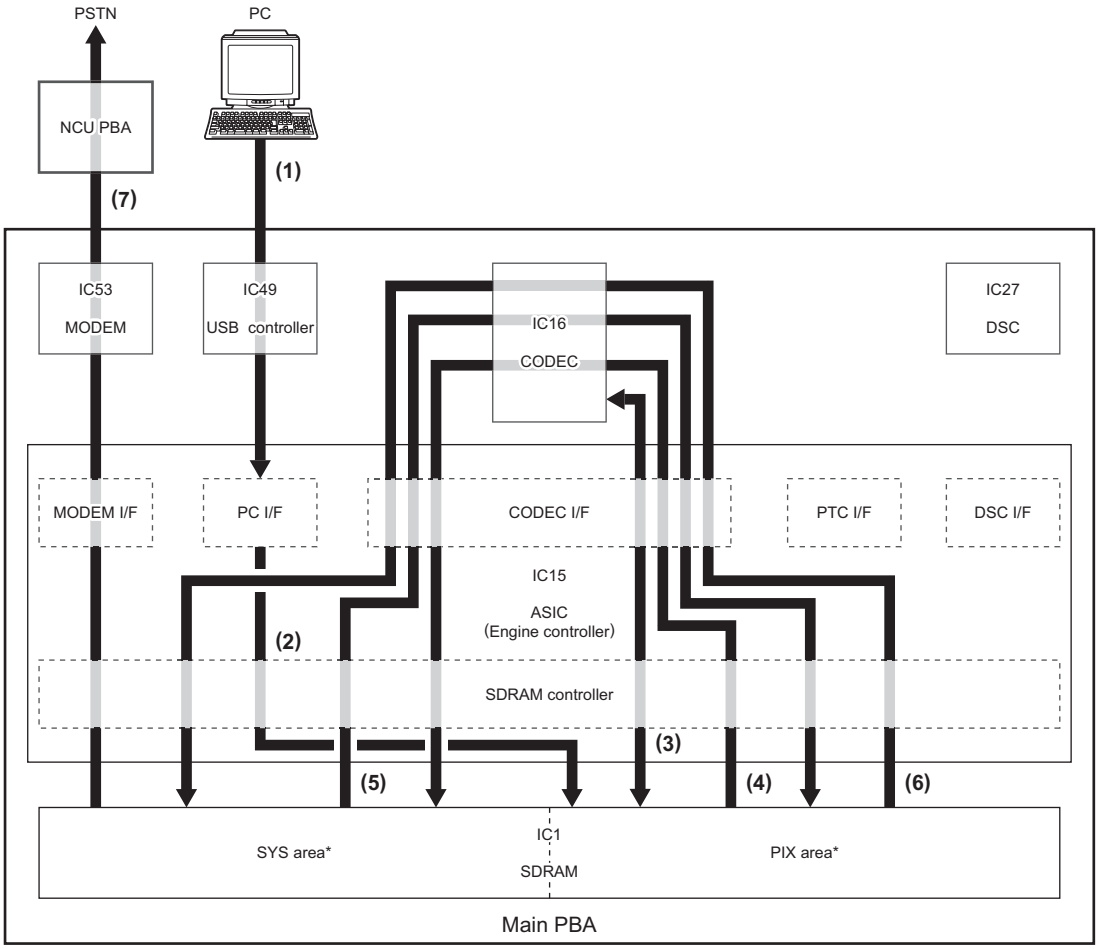

Fig. 7-16

* Details regarding each area of SDRAM used
(2): PC I/F > SDRAM (PIX area: PC buffer)
(3): SDRAM (PIX area: PC buffer) > SDRAM (PIX area: CODEC buffer)
(4): SDRAM (PIX area: CODEC buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: CODEC buffer)
(6): SDRAM (PIX area: CODEC buffer) > SDRAM (SYS area: Transmit data buffer)
(7): SDRAM (SYS area: Transmit data buffer) > MODEM I/F

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(1) The document data (coded data or raster data) sent from the PC is input to the PC interface of the ASIC (IC15) through the USB controller (IC49).

(2) The document data is transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC. During this period, the system communicates with the destination to identify the coding for the data to be transmitted.

(3) Only when the document data is coded data, the coded data is transferred through the CODEC interface of the ASIC to the CODEC (IC16) where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

For PC indirect transmission, go to step (4).
For PC direct transmission, go to step (6).

(4) The raster data is transferred to the CODEC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the SDRAM controller on the ASIC. This allows the coded data for the documents for transmission to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the CODEC where it is coded in accord with the coding format (MH, MR, MMR or JBIG) specified by the destination. Then the coded data is transferred to the SYS-SDRAM. This allows one page of coded data to be stored in the SYS-SDRAM.

(7) The coded data is transferred to the MODEM (IC53) through the MODEM interface of the ASIC where it is modulated to an analog signal for telephone lines. Then the modulated analog signal is sent to the telephone line through the NCU PBA.

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[3] PC Facsimile Reception

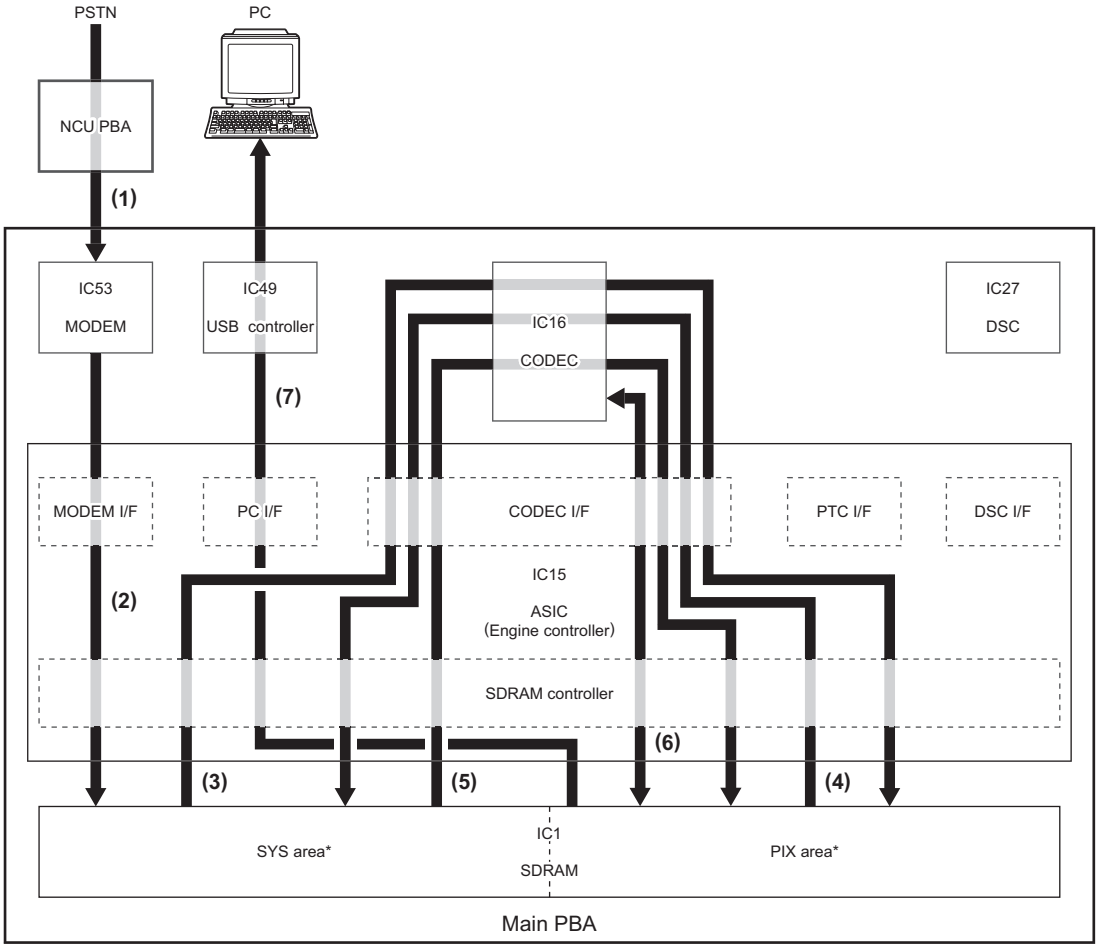

Fig. 7-17

* Details regarding each area of SDRAM used
(2): MODEM I/F > SDRAM (SYS area: Receive data buffer)
(3): SDRAM (SYS area: Receive data buffer) > SDRAM (PIX area: CODEC buffer)
(4): SDRAM (PIX area: CODEC buffer) > SDRAM (SYS area: Image memory)
(5): SDRAM (SYS area: Image memory) > SDRAM (PIX area: Page memory)
(6): SDRAM (PIX area: Page memory) > SDRAM (PIX area: PC buffer)
(7): SDRAM (PIX area: PC buffer) > PC I/F

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(1) The analog data received from the telephone line is input to the MODEM (IC53) through the NCU PBA.

(2) The analog data is demodulated to coded data by the MODEM. Then the coded data is transferred to the SYS area of the SDRAM (SYS-SDRAM: IC1) through the MODEM interface and the SDRAM controller of the ASIC (IC15).

(3) The coded data is transferred to the CODEC (IC16) through the CODEC interface of the ASIC where it is decoded to raster data. Then the raster data is transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC.

(4) The raster data is transferred to the CODEC where it is coded to data in the JBIG format. Then the JBIG coded data is transferred to the SYS-SDRAM. This allows all the coded data received to be stored in the SYS-SDRAM.

(5) The JBIG coded data is transferred to the CODEC where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(6) The raster data is transferred to the CODEC where it is coded in accord with the coding format (MH, MR or MMR) specified by the PC. Then the coded data is transferred to the PIX-SDRAM.

(7) The coded data is transferred to the PC interface of the ASIC and sent to the PC through the USB controller (IC49).

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[4] Printer

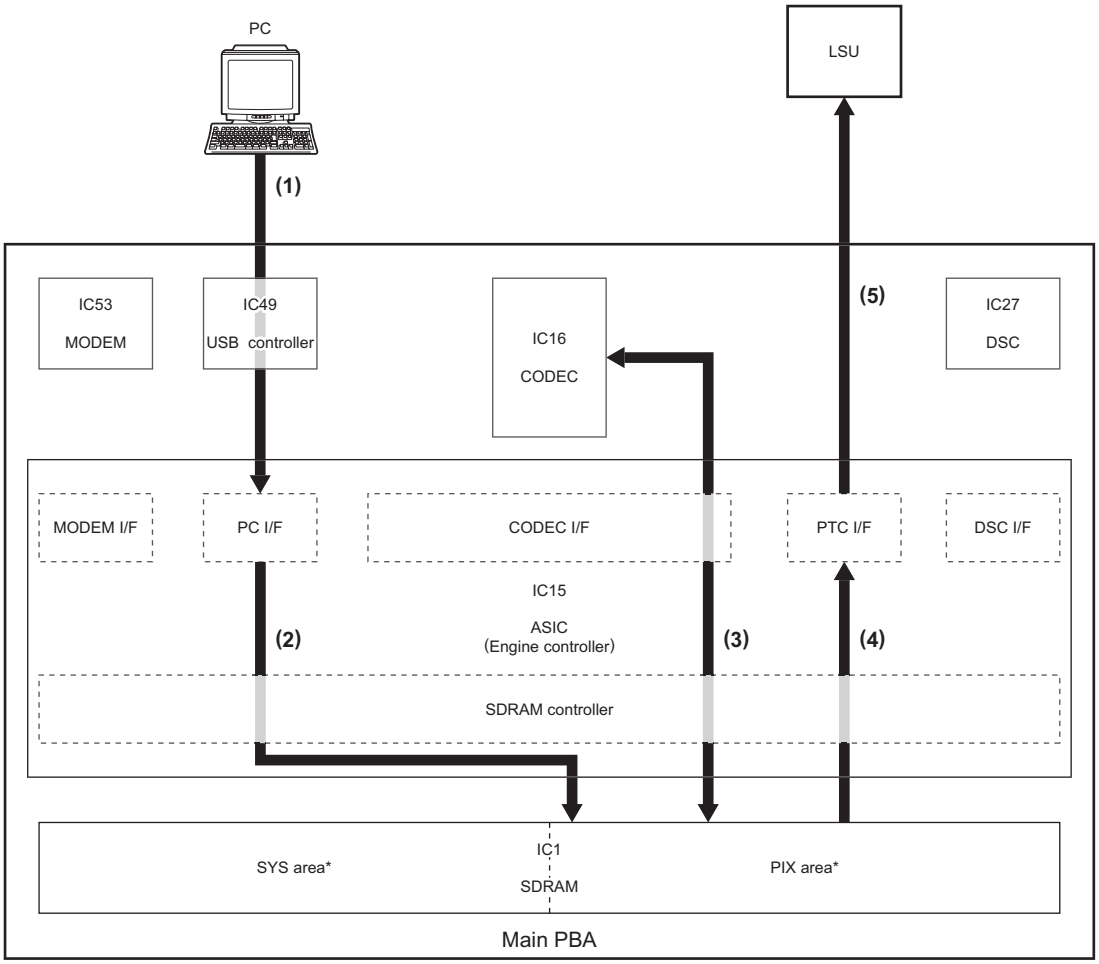

Fig. 7-18

* Details regarding each area of SDRAM used
(2): PC I/F > SDRAM (PIX area: PC buffer)
(3): SDRAM (PIX area: PC buffer) > SDRAM (PIX area: Page memory)
(4): SDRAM (PIX area: Page memory) > PTC I/F

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(1) The document data (coded data) sent from the PC is input to the PC interface of the ASIC (IC15) through the USB controller (IC49).

(2) The coded data is transferred to the PIX area of the SDRAM (PIX-SDRAM: IC1) through the SDRAM controller of the ASIC.

(3) The coded data is transferred through the CODEC interface of the ASIC to the CODEC (IC16) where it is decoded to raster data. Then the raster data is transferred to the PIX-SDRAM.

(4) The raster data is transferred to the PTC interface of the ASIC.

(5) The raster data is transferred to the LSU. The LSU is driven according to the received data for printing on the recording paper.

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7.3 MAIN PBA

This section describes the functions of each circuit on the Main PBA.

The Main PBA is the main control center of this machine. With the Main-CPU as the central component, it consists of the ASIC (Engine controller) for DMA transfer control and printer control, ASIC (I/O port) for I/O port control, Engine-CPU for control of the LSU, Sub-CPU for system control in Super Power Save mode, and other peripheral devices.

Main-CPU (IC22)
- Control of each ASIC
- Memory control
- Bus control
- Interrupt control

ASIC (Engine controller: IC15)
- Memory control
- CODEC (MH, MR, MMR, JBIG) control
- DSC (Document Scan Controller) control
- TX motor control
- MODEM control
- DMA transfer control
- Generation of speaker clocks
- Watchdog timer function
- PC interface
- Generation of print clocks

ASIC (I/O port: IC38)
- I/O port function
- NCU control

Engine-CPU (IC37)
- LSU control
- RX motor control
- Fuser control
- Thermistor temperature detection
- Toner empty detection
- Recording paper detection
  (recording paper empty, recording paper position, recording paper exit)
- Paper pickup solenoid control
- HVPS control
- Optional recording paper tray interface

Sub-CPU (IC56)
- System control in Super Power Save mode
- LVPS control
- LED control

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7.3.1 Memory Circuit

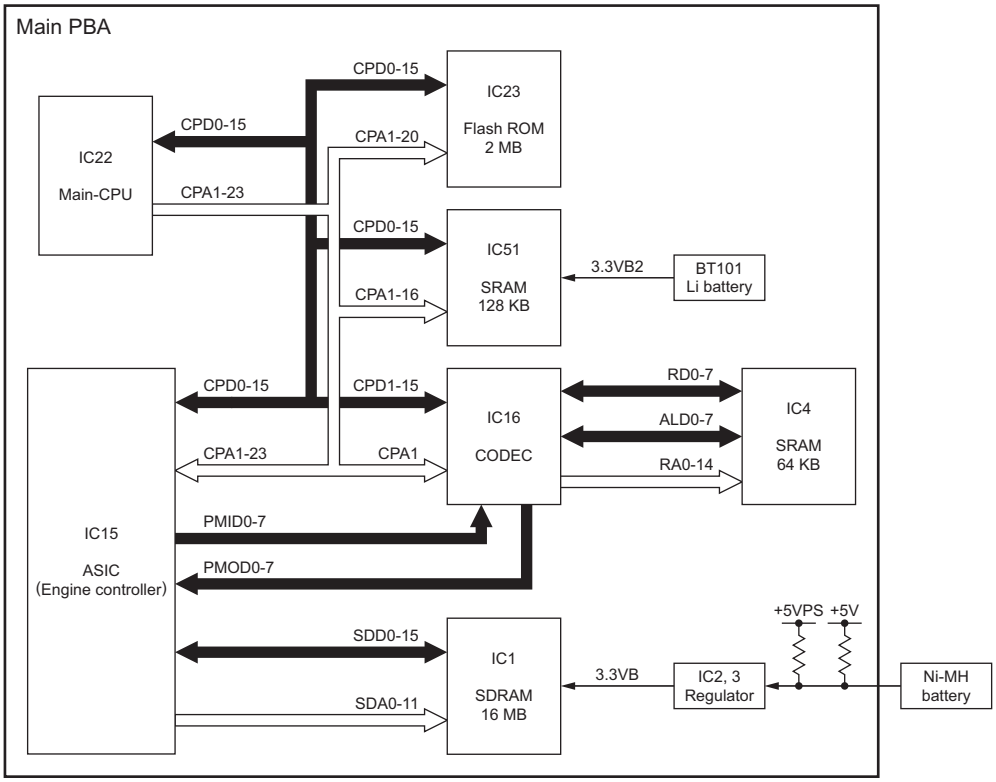

Fig. 7-19

The memory circuit consists of the memories for storing data, including the Flash ROM, SRAM and SDRAM, Main-CPU (IC22) for read/write control, ASIC (Engine controller: IC15), and other peripheral devices.

IC23 is a 2 M-Byte Flash ROM in which system programs, language data, and function settings are stored. Data communication is carried out on the CPU data bus (CPD0-15) and CPU address bus (CPA1-20).

IC51 is a 128 K-Byte SRAM where clock information and user setting information are stored. This SRAM is backed up by a lithium battery. The life of the lithium battery is about 5 years. Data communication is carried out on the CPU data bus (CPD0-15) and CPU address bus (CPA1-16).

IC4 is a 64 K-Byte SRAM and used as a work memory for the CODEC (IC16). Data communication is carried out on the CODEC work data bus (ALD0-7, RD0-7) and CODEC work address bus (RA0-14).

IC1 is a 16 M-Byte SDRAM and divided into 2 areas, SYS and PIX. The SYS area is used as the Image Memory to accumulate the image data encoded JBIG, the ECM buffer, the Transmit/receive data buffer or the Work memory. The PIX area is used as the buffer of the Page memory to store the print data or the Scan/CODEC/PC. This SDRAM is backed up by a nickel-metal hydride battery. This battery is usually charged by +5V voltage (+5VPS and +5V). If the electricity from the LVPS is interrupted due to the power being turned OFF or a power failure, this battery supplies power to SDRAM. When the battery is fully charged, the backup time is about 1 hour. Data communication is carried out on the SDRAM data bus (SDD0-15) and SDRAM address bus (SDA0-11).

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The memory capacity of SDRAM (IC1) is allotted as shown in the table below.
The contents of the memory can be completely cleared in the TEST MODE.

Total Memory	SYS area				PIX area	
	Image memory	Work memory	ECM buffer	Transmit/ receive data buffer	Page memory	Scan/ CODEC/ PC buffer
16,384 KB	7,190.5 KB	849.5 KB	128 KB	24 KB	7,932 KB	260 KB

Signal Name	Type	Active	Description	Destination
CPD0-15	I/O	-	CPU data bus	Main-CPU
CPA1-23	I	-	CPU address bus	Main-CPU
RD0-7, ALD0-7	I/O	-	CODEC work data bus	CODEC
RA0-14	I	-	CODEC work address bus	CODEC
PMID0-7	I	-	CODEC input data bus	ASIC
PMOD0-7	O	-	CODEC output data bus	ASIC
SDD0-15	I/O	-	SDRAM data bus	ASIC
SDA0-11	I	-	SDRAM address bus	ASIC

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7.3.2 Scanning Control Circuit

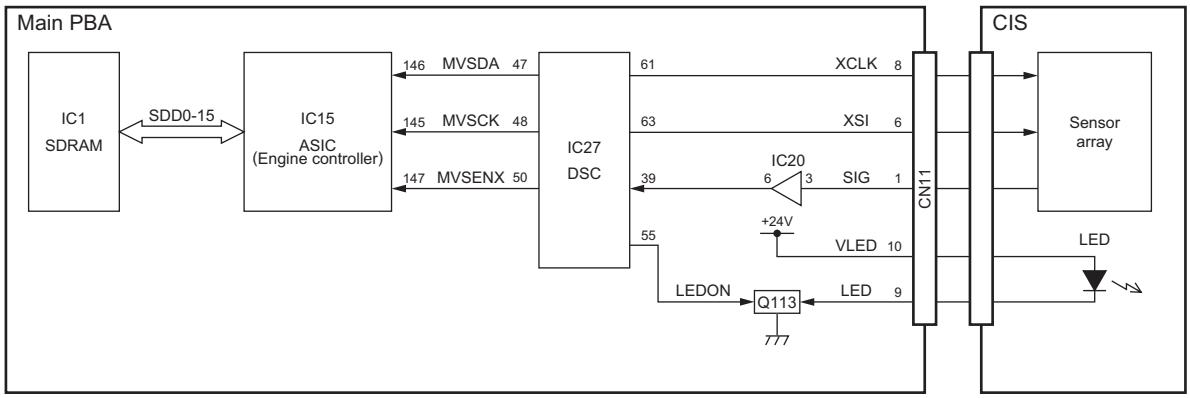

Fig. 7-20

The scanning control circuit consists of the CIS (Contact Image Scanner), DSC (IC27), ASIC (Engine controller: IC15), SDRAM (IC1), and other peripheral devices. It scans and converts documents to image data (raster data).

The CIS lights the LED when the LEDON signal output from the DSC goes HIGH to turn on Q113. Then, it scans the LED's light reflected by a document and converts it to an analog image data. Since light is reflected extensively by a white part of the document and then more light is sensed by the sensor array, the amplitude of the analog image data becomes larger.

The DSC reads the SIG signal output from the CIS through the operational amplifier (IC20) according to the timing of the XCLK signal and XSI signal. Then, it performs A/D conversion and shading correction, gamma correction and binarizing process on the read analog image data and converts it to digital image data.

The DSC serially transfers the digital image as an SD signal to the ASIC while synchronizing it with the SDE signal and SDCK signal.

The ASIC converts the transferred serial image data to 16 bits of parallel image data (raster data), and then transfers them to the SDRAM in DMA mode.

Signal Name	Type	Active	Description	Destination
LEDON	O	H	LED lighting signal	Q113
XCLK	O	-	CIS drive clock	CIS
XSI	O	-	CIS line synchronizing signal	CIS
SIG	I	-	Analog image data	IC20
MVSDA	O	-	Serial image data	DSC
MVSCK	O	-	Serial image data transfer clock	DSC
MVSENX	O	L	Serial output effective period signal	DSC

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7.3.3 LSU Drive Circuit

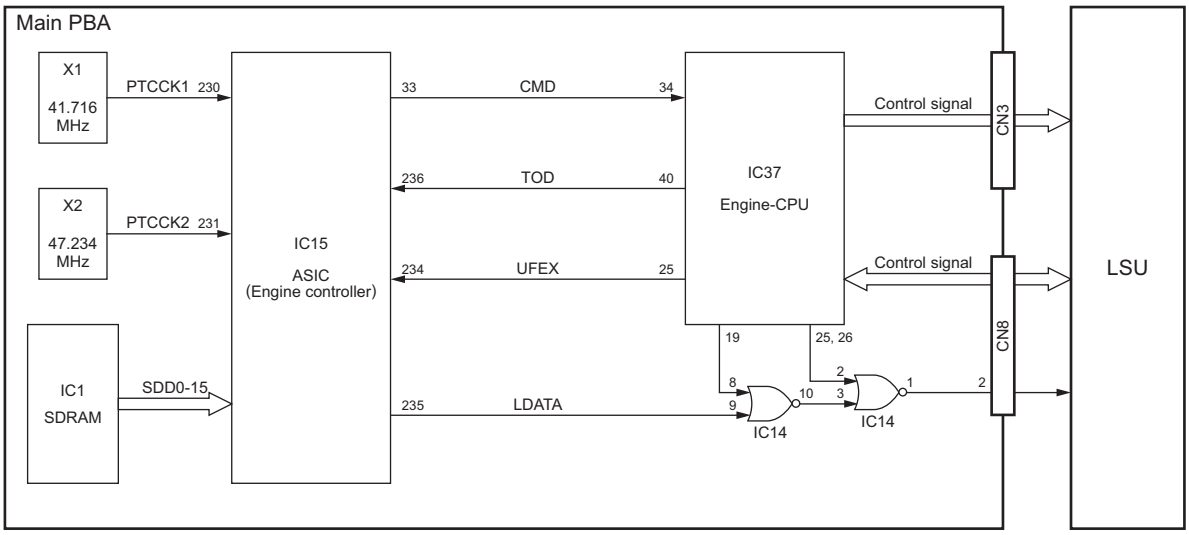

Fig. 7-21

The LSU (Laser Scanner Unit) drive circuit consists of the Engine-CPU (IC37), ASIC (Engine controller: IC15) and other peripheral devices. It drives the LSU connected to CN3 and CN8 on the Main PBA to apply a laser beam to the drum.

The ASIC sends a printing command to the Engine-CPU by the CMD signal. This allows the Engine-CPU to drive the polygonal motor in the LSU to make the polygonal mirror rotate. When the printing is ready, the Engine-CPU sends a TOD signal and a UFEX signal to the ASIC.

The ASIC reads the raster data accumulated in the SDRAM (IC1) and serially converts them to a LDATA signal. Then the ASIC detects the clock signal (OSC1 or OSC2) outputted from the facsimile oscillator (X1) or the printer oscillator (X2) according to the timing of the TOD signal and the UFEX signal, and sends the LDATA signal to the LSU according to the timing of the clock signal.

The LSU radiates a laser beam according to the input LDATA signal to make a latent image latent on the drum.

Signal Name	Type	Active	Description	Destination
CMD	O	-	Serial communication command signal	Engine-CPU
TOD	I	L	Top of data signal	Engine-CPU
UFEX	I	L	Horizontal synchronizing signal	Engine-CPU
LDATA	O	-	Print data	IC14
PTCCK1	I	-	16 dots/mm clock	X1
PTCCK2	I	-	300/600 dpi clock	X2

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7.3.4 Fuser Control Circuit

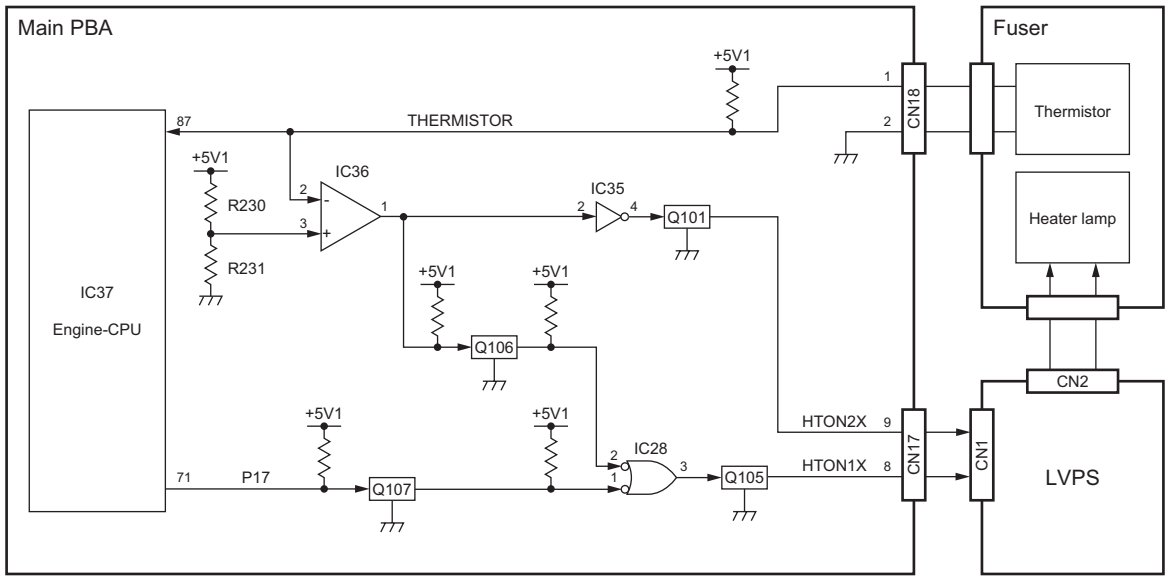

Fig. 7-22

The fuser control circuit consists of the Engine-CPU (IC37) as the central component. It calculates fixity according to the temperature information detected by the thermistor to control the heater lamp built in the fuser.

The Engine-CPU converts the THERMISTOR signal output from the thermistor from analog to digital. Then, it compares the converted measured value with the predetermined value stored in the internal register. If the measured value is lower than the predetermined value as a result of the comparison, the Engine-CPU makes the P17 signal HIGH level and turns Q107 OFF. This turns Q105 ON and the HTON1X signal to LOW level. This allows the heater drive circuit of the LVPS to supply AC power to the heater lamp to increase the fixing temperature.
For the heater drive circuit, refer to 📖 P.7-74 "7.6.4 Heater Drive Circuit" in this chapter.

If the measured value is higher than the predetermined one, it causes the HTON1X signal to go HIGH to cut off the power supply to the heater lamp and lowers the fixing temperature. If the measured value is calculated as an abnormally high or low temperature the HTON1X signal is kept at HIGH to turn off the heater lamp until the abnormal state is cleared.

Also, the voltage of the THERMISTOR signal is compared with the reference voltage on the electrical circuit by the operational amplifier. If the Fuser temperature rises abnormally for some reason, the voltage of the THERMISTOR signal becomes lower than the reference voltage and Q106 is turned ON. This turns Q105 OFF regardless of the status of the P17 signal, turns the HTONX1 signal to HIGH level and turns the heater lamp OFF. Moreover, this turns Q101 OFF on the circuit of another route, and makes the HTON2X signal HIGH level to cut off the power supply to the heater lamp.

After a fixed time elapses while the machine is in the standby state with the printer power saving function setting ON, the Engine-CPU causes the HTON1X signal to go HIGH to cut off the power supply to the heater lamp, thereby controlling power consumption.

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Signal Name	Type	Active	Description	Destination
THERMISTOR	I	-	Thermistor temperature detection signal	Thermistor
P17	O	L	Fuser control signal	Q107
HTON1X	O	L	Heater lamp ON signal 1	LVPS
HTON2X	O	L	Heater lamp ON signal 2	LVPS

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7.3.5 Reset Circuit

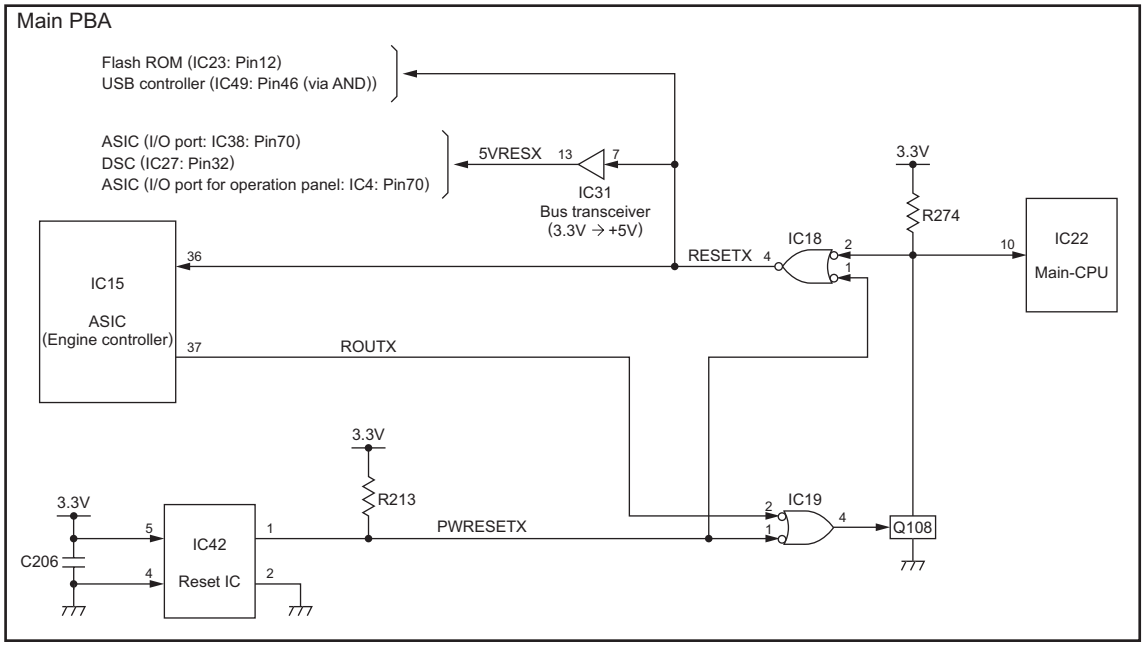

Fig. 7-23

When the logic voltage is unstable as the power switch is turned on, and so on, or an abnormal condition has occurred in the system, the reset circuit resets the respective IC's to prevent them from malfunctioning.

When the voltage of 3.3V delivered from the LVPS is 2.9V or under, the PWRESETX signal output from the Reset IC (IC42) will go LOW. This causes the RESETX signal output from the AND (IC18) to go LOW to reset the entire system including the ASIC (Engine controller: IC15), and USB controller (IC49). Also, when the PWRESETX signal goes LOW, Q108 will be turned on and reset the Main-CPU (IC22).

In case an abnormal condition has occurred in the system and the Main-CPU crashes, the ASIC causes the ROUTX signal to go LOW to turn on Q108. This causes the RESETX signal to go LOW to reset the entire system.

Signal Name	Type	Active	Description	Destination
PWRESETX	O	L	Power ON reset signal	IC19
RESETX	I	L	Reset signal	Each IC
ROUTX	O	L	Watchdog reset signal	IC5

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7.3.6 Super Power Save Circuit

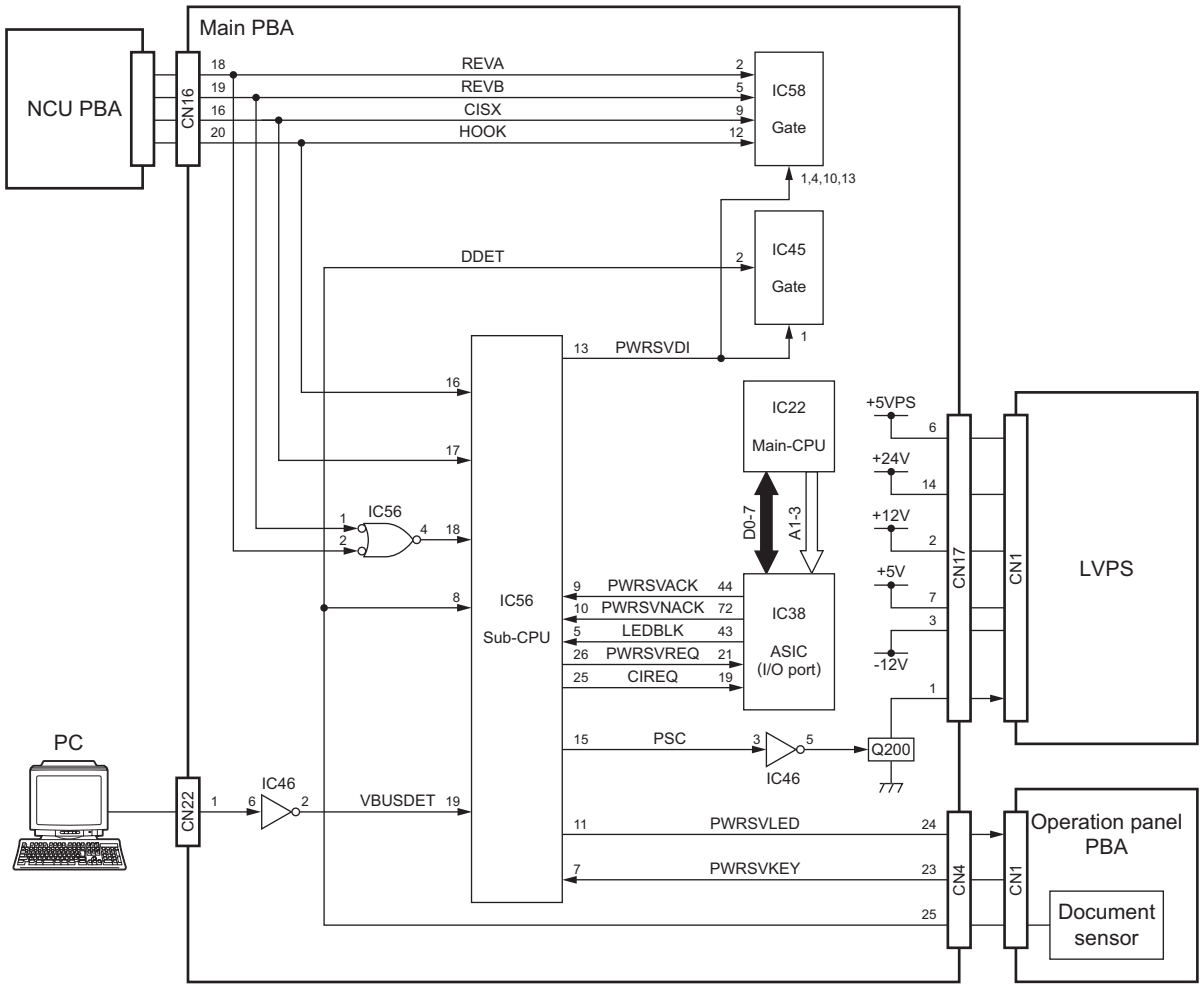

Fig. 7-24

This machine is equipped with power save functions to control the power consumption by cutting off the power of the circuits not used while in the standby state. For the power save functions, there are the printer power save function, which cuts off only the supply of power to the fuser and the super power save function, which cuts off the supply of power to any circuits other than the minimum required.
For the printer power save function, refer to 🕮 P.7-28 "7.3.4 Fuser Control Circuit" in this chapter.

Consisting of the Sub-CPU (IC56) as the central component, the super power save circuit cuts off the supply of +24V and ±12V, and +5V to other than the super power save circuit when the facsimile machine has been in the standby state for a fixed time (auto power save mode) or the SUPER ENERGY SAVER key has been pressed (manual power save mode), thereby greatly reducing the power consumption.

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[1] Initial Operation

When the main power is turned on, +5VPS is delivered from the LVPS allowing the Sub-CPU to be placed in the operating state. After power on resetting, the Sub-CPU performs initialization causing the PSC signal to go HIGH. This allows the power supply voltages of 24V, ±12V, and +5V to be delivered to the entire system from the LVPS.

When the ASIC (I/O port: IC38) is placed in the operating state and the PWRSVACK signal and PWRSVNACK go HIGH, the Sub-CPU causes the PWRSVDI signal to be LOW to enable the port (IC45, 58).

[2] Auto Power Save Mode

To use the Auto Power Save Mode, set the Super Power Save Mode setting to Auto.

When the machine is placed in the standby state, the ASIC (I/O port) causes the LEDBLK signal to go LOW and outputs it to the Sub-CPU. Upon receipt the LEDBLK signal, the Sub-CPU makes the PWRSVLED signal to go LOW to light the power save LED installed on the Operation panel PBA and activate the super power save reserved state.

When a fixed time has elapsed in the super power save reserved state, the ASIC (I/O port) causes the PWRSVACK signal to go HIGH and outputs it to the Sub-CPU. The Sub-CPU causes the PSC signal to go LOW through IC46 turn on Q200, thereby cutting off the supply of power to other than the super power save circuit. This allows the machine to be placed in the super power save mode to light the power save LED.

[3] Manual Power Save Mode

To use the Manual Power Save Mode, set the Super Power Save Mode setting to Manual.

When the power save key installed on the Operation panel PBA is pressed, the Sub-CPU causes the PWRSVREQ signal to go LOW and outputs it to the ASIC (I/O port).

At this time, ASIC (I/O port) assumes the super power save reserved state until the process in execution ends. It causes the LEDBLK signal to go LOW and outputs it to the Sub-CPU. Upon receipt of the LEDBLK signal is input, the Sub-CPU makes the PWRSVLED signal to go LOW to light the power save LED on the Operation panel PBA. When the power save key is pressed again while the power save LED is lighting, the super power save reserved state will be deactivated to turn off the power save LED.

When the process in execution ends, the super power save reserved state changes to the super power save state or the super power save is cancelled depending on the following conditions.

- An error has occurred or image data are held in the SDRAM (IC1) (the super power save state cannot be assumed).

  The ASIC (I/O port) causes the PWRSVNACK signal to be HIGH and outputs it to the Sub-CPU. The Sub-CPU causes the PWRSVREQ signal to be HIGH to cancel the power save reserved state. (The power save LED goes out.)

- Normal state or paper empty error (the super power save state can be assumed).

  The ASIC (I/O port) causes the PWRSVACK signal to be HIGH and outputs it to the Sub-CPU. The Sub-CPU causes the PWRSVREQ signal to be HIGH to cancel the super power save reserved state. Then it causes the PSC signal to be LOW to cut off the supply of power from the LVPS to other than the super power save circuit. This allows the super power save state to be assumed to light the power save LED.

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[4] Restoration from Super Power Save Mode

Restoration from the Super Power Save Mode is achieved by any of the following:

- Key depression PWRSVKEY signal (Key input detect signal) = LOW
- Placement of document DDET signal (Document detect signal) = LOW
- Off-hook HOOK signal (Hook detect signal) = LOW
- CI detection CISX signal (CI detect signal) = LOW
- Line current detection REVA signal, REVB signal (Line current detect signals) = LOW
- Detection of an interrupt signal from the PC
  VBUSDET signal (PC interrupt signal) = LOW

When CI is detected, the Sub-CPU causes the CIREQ signal to go LOW and outputs it to the ASIC (I/O port).

The power save LED lights (When in Auto Power Save Mode) or goes out (When in Manual Power Save Mode) after restoration from the super power save state is achieved.

Signal Name	Type	Active	Description	Destination
PSC	O	H	Power save control signal	LVPS
PWRSVACK	I	H	Power save acknowledge signal	Sub-CPU
PWRSVNACK	I	H	Power save non-acknowledge signal	Sub-CPU
PWRSVDI	O	L	Port enable signal	IC45, 58
LEDBLK	I	L	Power save reserve signal	ASIC (I/O port)
PWRSVLED	O	L	Power save LED lighting signal	Operation panel PBA
PWRSVREQ	O	L	Power save request signal	ASIC (I/O port)
PWRSVKEY	I	L	Key input detect signal	Operation panel PBA
CIREQ	O	L	CI request signal	ASIC (I/O port)

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7.3.7 Toner Empty Detect Circuit

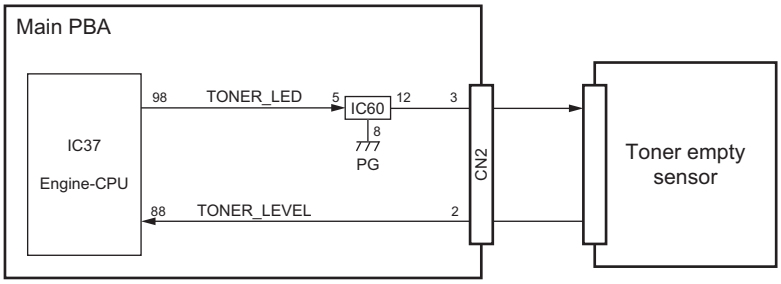

Fig. 7-25

The toner empty detect circuit consists of the Engine-CPU (IC37) as the central component. It detects the amount of toner according to the output signal of the toner empty sensor connected to CN2 on the Main PBA.

The Engine-CPU causes the TONER_LED signal to go HIGH to turn on IC60. This allows the LED of the toner empty sensor to emit light. The light is emitted into the toner cartridge through its glass window. At this time, the light is shut off if toner is present, and reflected by the reflective plate in the toner cartridge if not. The light detecting element of the toner empty sensor detects the light reflected and sends a TONER_LEVEL signal to the Engine-CPU.

The TONER_LEVEL signal goes HIGH if toner is present, and LOW if not. This detect operation is repeated. When the time for which the Toner signal is at Low level exceeds a certain time and the Low level count happens more than five times, a toner near empty state will be assumed. After that, when the time for which the signal is at Low level becomes longer and the detected count exceeds five times, a toner empty state will be assumed.

Signal Name	Type	Active	Description	Destination
TONER_LED	O	H	Toner empty sensor LED signal	IC60
TONER_LEVEL	I	-	Toner empty sensor output signal	Toner empty sensor

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7.3.8 RX Motor Drive Circuit

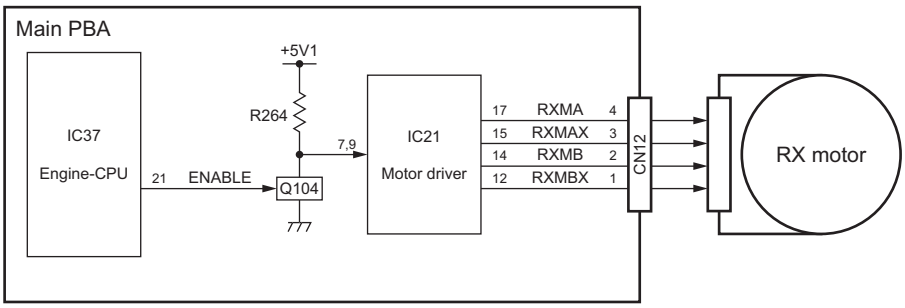

Fig. 7-26

The RX motor drive circuit consists of the Engine-CPU (IC37), Motor driver (IC21), and other peripheral devices. It drives the stepping motor connected to CN12 to drive the rollers and transport paper.

The Engine-CPU turns the ENABLE signal to HIGH level and turns Q104 ON. This allows the Motor driver to generate the drive signal (RXMA, RXMAX, RXMB, RXMBX) of RX motor and sends it to the RX motor.
The RX motor is driven in steps according to the input drive phase signals.

Signal Name	Type	Active	Description	Destination
ENABLE	O	H	RX motor driver enable signal	Q104
RXMA, AX, B, BX	O	-	RX motor drive phase signals A, AX, B, BX	RX motor

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7.3.9 TX Motor Drive Circuit

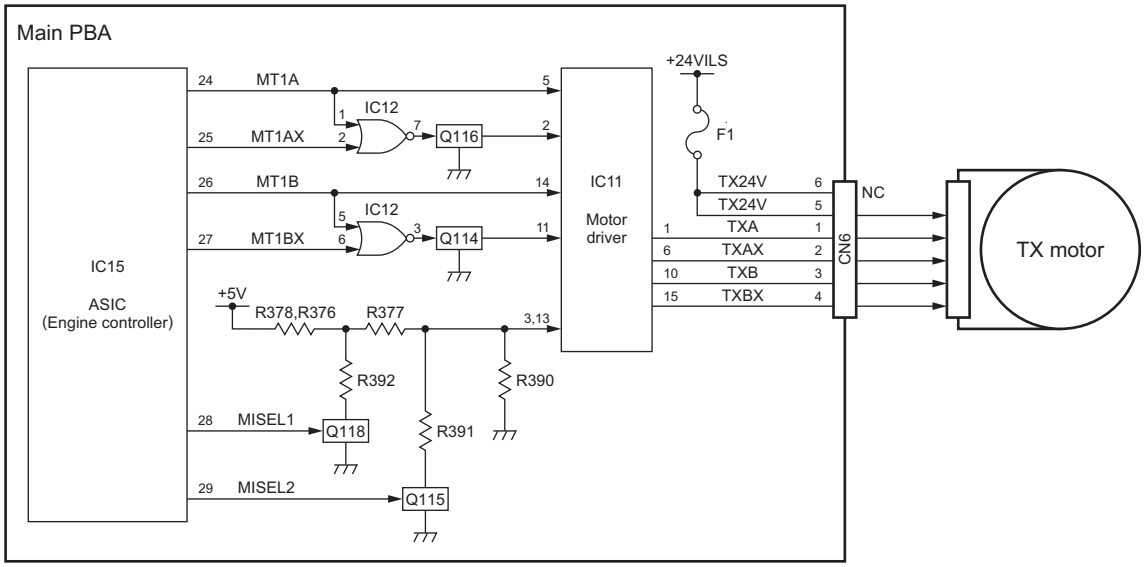

Fig. 7-27

The TX motor drive circuit consists of the ASIC (Engine controller: IC15), Motor driver (IC11), and other peripheral devices. It drives the stepping motor connected to CN6 in a 2-phase excitation (STD, FINE) / 1-2 phase excitation (S-FINE) mode to transport a document in facsimile transmission and copy modes.

The ASIC outputs the MT1A, MT1AX, MT1B, and MT1BX signals and the MISEL1 and MISEL2 signals to the Motor driver. The Motor driver generates the TXA, TXAX, TXB and TXBX signals based on the input signals and outputs them to the TX motor. The TX motor is driven in steps according to the input drive phase signals.

Signal Name	Type	Active	Description	Destination
MT1A, AX, B, BX	O	-	TX motor driver signals A, AX, B, BX	Motor driver
MISEL1, 2	O	-	TX motor current control signals 1, 2	Q118, Q115
TXA, AX, B, BX	O	-	TX motor drive phase signals A, AX, B, BX	TX motor

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7.3.10 Fan Motor Drive Circuit

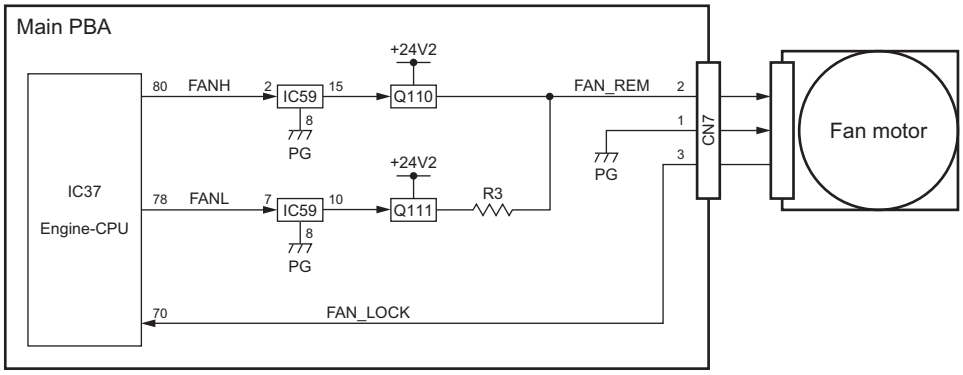

Fig. 7-28

The fan motor drive circuit consists of the Engine-CPU (IC37) as the central component. It drives the DC motor connected to CN7 to operate the fan for cooling this machine.

The fan motor is driven by the FANL signal and FANH signal which are output from the Engine-CPU. When the FANL signal is turned to HIGH level, Q111 is turned ON and the voltage (+24V2) to the FAN_REM signal with the resistance along the path is applied; thus the fan motor is driven at low speed.
When FANH signal is turned to HIGH level, Q110 is turned ON and the voltage (+24V2) to the FAN_REM signal is applied; thus the fan motor is driven at high speed.

Also, the Engine-CPU detects the rotation of the fan motor by detecting the signal levels of the FAN_LOCK. If the rotation of the fan motor is interfered with and become locked for some reason, the FAN_LOCK signal is turned to HIGH level.

Signal Name	Type	Active	Description	Destination
FANL	O	H	Fan motor low speed drive signal	IC59
FANH	O	H	Fan motor high speed drive signal	IC59
FAN_REM	O	-	Fan motor drive signal	Fan motor
FAN_LOCK	I	H	Fan motor lock status detect signal	Fan motor

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7.3.11 Document Detect Circuit

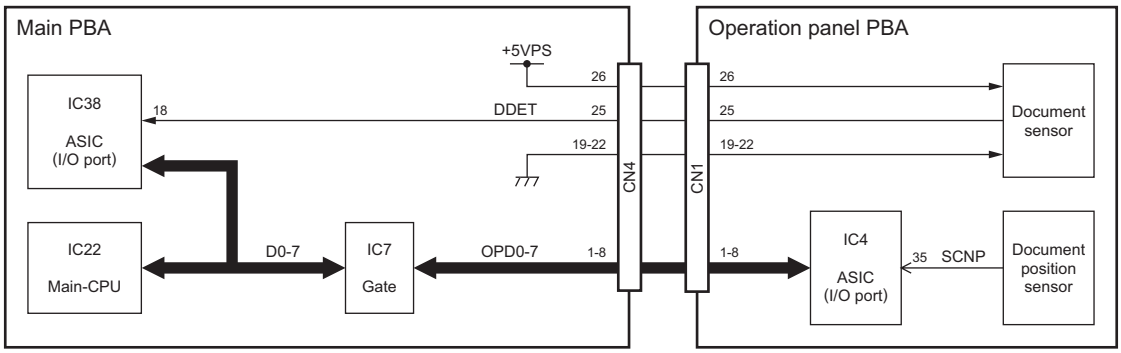

Fig. 7-29

The document detect circuit consists of the ASIC (I/O port: IC38) as the central component. It detects the presence or absence of a document through the document sensor installed on the Operation panel PBA, and the scanning position through the document position sensor.

When a document is loaded in the machine, the actuator of the document sensor is pushed down by the document to turn on the sensor. This causes the DDET signal to go LOW and input to the ASIC to detect the presence of a document.

When the document loaded is transported by the TX motor to the scanning position, the actuator of the document position sensor is pushed down by the document to turn on the sensor.

This causes the SCNP signal to go LOW and input to the ASIC (I/O port for operation panel: IC4) on the Operation panel PBA to detect that the transport of the document to the scanning position is completed.

If the SCNP signal does not return to HIGH level even after the scanning of the document has started and a fixed time has elapsed, the occurrence of a document jam will be assumed.

Signal Name	Type	Active	Description	Destination
DDET	I	L	Document detect signal	Document sensor
SCNP	I	L	Document scanning position detect signal	Document position sensor

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7.3.12 Paper End Detect Circuit

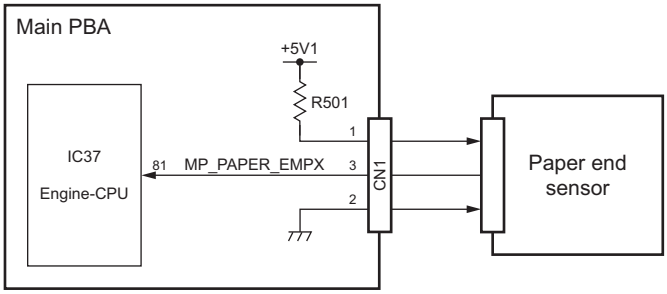

Fig. 7-30

The paper end detect circuit consists of the Engine-CPU (IC37) as the central component. It detects the presence or absence of recording paper placed in the recording paper tray and bypass tray through the paper end sensor connected to CN21.

When recording paper is loaded in the machine, the actuator of the paper end sensor is pushed down by the recording paper to turn on the sensor. This causes the MP_PAPER_EMPX signal to go LOW and input to the Engine-CPU to detect the presence of recording paper.

Signal Name	Type	Active	Description	Destination
MP_PAPER_EMPX	I	L	Paper end detection signal	Paper end sensor

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7.3.13 Paper Jam Detect Circuit

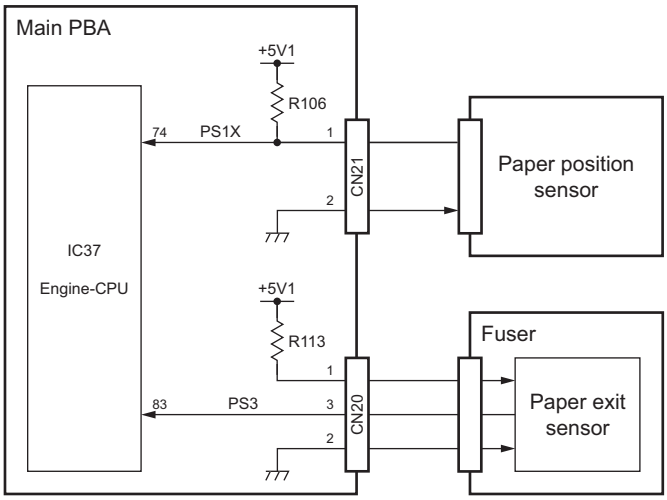

Fig. 7-31

The paper jam detect circuit consists of the Engine-CPU (IC37) as central component. It detects the transport status of recording paper by judging the outputs of the paper position sensor connected to CN21 and the paper exit sensor connected to CN20.

When recording paper is transported to the printing position by the RX motor, the actuator of the paper position sensor is pushed down by the recording paper to turn on the sensor. This causes the PS1X signal to go LOW and input to the Engine-CPU to detect that the transport of recording paper to the printing position is completed.
After the start of printing, the recording paper is further transported. At this time, the recording paper length is judged by measuring the time for which the PSX1 signal is at LOW level. If the PS1X signal does not return to HIGH level even after a fixed time has elapsed, the occurrence of a recording paper jam will be assumed.

When recording paper is transported to the fuser by the RX motor, the actuator of the paper exit sensor is pushed down by the recording paper to turn on the sensor. This causes the PS3 signal to go LOW and input to the Engine-CPU to detect that the recording paper is being transported in the fuser. When the recording paper then goes through the fuser, the PS3 signal goes HIGH to detect the exit of the recording paper. If the PS3 signal does not return to HIGH level even after a fixed time has elapsed, the occurrence of a recording paper jam will be assumed.

Signal Name	Type	Active	Description	Destination
PS1X	I	L	Printing position detect signal	Paper position sensor
PS3	I	L	Paper exit detection signal	Paper exit sensor

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7.3.14 Solenoid Drive Circuit

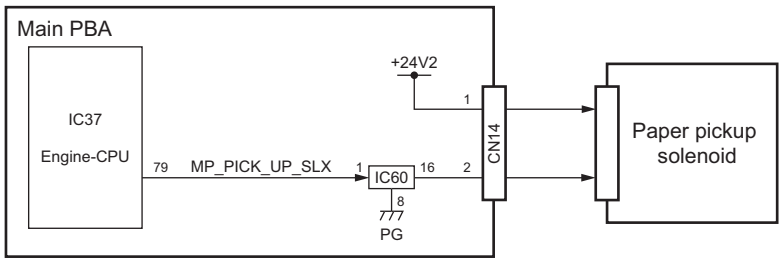

Fig. 7-32

The solenoid drive circuit consists of the Engine-CPU (IC37) as the central component. It drives the paper pickup solenoid connected to CN14 and controls the paper feed timing for the recording paper placed in the recording paper tray and bypass tray.

The Engine-CPU causes the MP_PICK_UP_SLX signal to go HIGH to turn on IC60. This allows the paper pickup solenoid to be driven to transmit power to the pickup roller for feeding the recording paper.

Signal Name	Type	Active	Description	Destination
MP_PICK_UP_SLX	O	L	Solenoid drive signal	IC60

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7.3.15 Cover Open Detect Circuit

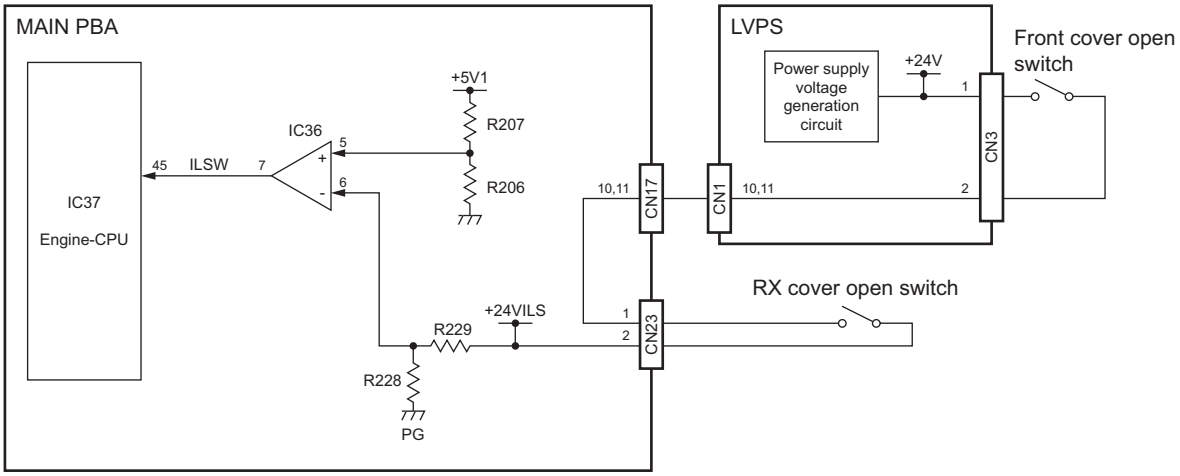

Fig. 7-33

The cover open detect circuit consists of the Engine-CPU (IC37) as the central component. It detects the open or closed status of the Front cover or RX cover by monitoring the voltage of +24VILS supplied from LVPS and the output signal of the Exit sensor.

+24VILS delivered from LVPS is supplied or cut off by the Front cover open switch connected to CN3 of the LVPS and the RX cover open switch connected to CN23 of the Main PBA.
When the cover is closed, each switch is turned ON by each cover plate to deliver the +24VILS power supply.
When the cover is open, each switch is turned OFF to cut off the power supply of the +24VILS.

Also, the voltage of +24VILS is compared with the standard voltage by the OP amplifier. If +24VILS has been supplied, ILSW signal is turned to LOW level and the Engine-CPU judges that the Front cover and RX cover are closed.
When +24VILS is cut off, ILSW signal is turned to HIGH level and the Engine-CPU judges whether any of the covers are open.

Signal Name	Type	Active	Description	Destination
ILSW	I	L	+24VILS detect signal	IC36

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7.3.16 PC I/F Circuit

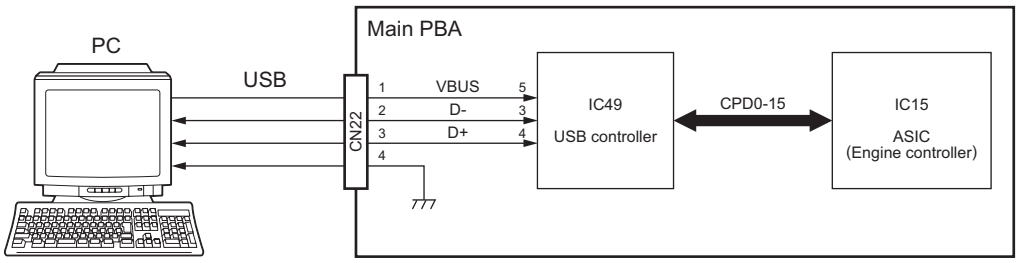

Fig. 7-34

The PC I/F circuit consists of the USB controller (IC49) as the central component and connects this machine with the PC through the USB interface for communication of image data and control signals.

With the machine connected to the PC, PC facsimile transmission by which the data transferred from the PC are transmitted to the telephone line, PC facsimile reception by which the data received from the telephone line are transferred to the PC, and use of the PC scanner by which a document is scanned by the machine and the data are transferred to the PC are enabled. This machine can also be used as a printer.
To connect the PC to the machine, connect one end of the USB cable to CN22 and connect the other end to the USB port of the PC.

The USB controller monitors the status of the VBUS signal. When this signal is changed from LOW to HIGH level, the USB controller judges that the PC is connected, and when this signal is changed from HIGH to LOW level, it judges that the PC is disconnected.

Communication data between the USB controller and the PC is transferred or received through the D- and D+ signals.

Signal Name	Type	Active	Description	Destination
VBUS	I	-	USB Vbus signal	PC
D-, D+	I/O	-	USB data signals	PC

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Pin function table

- Main-CPU (IC22) Signal Table

Pin No.	Signal name	I/O	Function
1	RWX	O	Read/write signal (Low-active) Requests each IC to read or write data.
2	DTACKX	I	Data acknowledge signal (Low-active) The ASIC (Engine controller: IC15) indicates the end of data transfer.
3	BGX	O	Bus grant signal (Low-active) The Main-CPU (IC22) indicates the release of the bus.
4	BRX	I	Bus request signal (Low-active) The ASIC (Engine controller) makes a request for bus control.
5, 41	VCC	-	3.3V
6	CPUCK	I	Main-CPU operation clock (16 MHz)
7, 23, 56	GND	-	Signal ground
8	MODE	-	Pull-up: 3.3V
9	HALTX	O	Halt signal (Low-active) Indicates that the Main-CPU is stopped.
10	RESETX	I	Reset signal (Low-active) Resets the system.
11	AVECX	-	Pull-up: 3.3V
12	BERRX	-	Pull-up: 3.3V
13-15	IPL0X-2X	I	Interrupt request 0-2 signals (Low-active) The ASIC (Engine controller) makes requests for interrupt processing.
16-18	FC0-2	O	Main-CPU operating status 0-2 signals Indicate the operating status of the Main-CPU to the ASIC (Engine controller).
19	CPA[0]	-	Not used (Open)
20-22, 24-40, 42-44	CPA[1]-[23]	O	CPU address bus
45-55, 57-61	CPD[0]-[15]	O	CPU data bus
62	ASX	O	Address bus strobe signal (Low-active) Causes the CPU address bus data to be latched.
63	UDSX	O	Upper data bus strobe signal (Low-active) Causes the CPU upper data bus data to be latched.
64	LDSX	O	Lower data bus strobe signal (Low-active) Causes the CPU lower data bus data to be latched.

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- ASIC (Engine controller: IC15) signal table

Pin No.	Signal name	I/O	Function
1, 2, 20, 41, 51, 59, 60, 70, 80, 93, 101, 121, 122, 139, 149, 158, 161, 170, 179, 180, 191, 200, 210, 221, 229	VSS	-	Signal ground
3	TMS	-	Pull-up: 3.3V
4	TCK	-	Pull-down: signal ground
5	SMC	-	Pull-down: signal ground
6	TD1	-	Pull-up: 3.3V
7	TOD	-	Not used (Open)
8	TRST	-	Pull-down: signal ground
9-11	MON1-3	-	Not used (Open)
12	PLLCLK	I	PLL reference clock Reference clock for PLL (Phased-Lock Loop) function.
13-15	TMD0-2	-	Pull-down: signal ground
16	TOUT	-	Not used (Open)
17-19, 22	TST0-3	-	Pull-down: signal ground
21, 40, 61, 81, 100, 111, 120, 140, 160, 181, 201, 220, 228, 240	VCC	-	3.3V
23	TEB	-	Pull-up: 3.3V
24, 25, 26, 27	MT1A, AX, B, BX	O	TX motor driver signals A, AX, B, BX Drives the TX motor for document transport.
28, 29	MISEL1, 2	O	TX motor current control signals 1, 2 Drives the TX motor for document transport.
30	INTPF	I	Power failure interrupt detect signal (Low-active) Detects the cut off of 3.3V voltage supply due to power failure.
31	CTBSYX	O	Engine I/F controller status busy signal (Low-active) The ASIC (Engine controller) indicates to the Engine-CPU (IC37) that serial information is being transmitted.
32	ETBSYX	I	Engine I/F status busy signal (Low-active) The Engine-CPU indicates to the ASIC (Engine controller) that status is sent by using the STS signal.
33	CMD	O	Engine I/F command signal Signal used for the ASIC (Engine controller) to send serial information in units of 8 bits to the Engine-CPU.
34	STS	I	Engine I/F status signal Signal used for the Engine-CPU to send serial information in units of 8 bit to the ASIC (Engine controller).
35	SRCLKX	O	Engine I/F serial transfer clock Synchronizing clock for status communication between the ASIC (Engine controller) and the Engine-CPU.
36	RESETX	I	Reset signal (Low-active) Resets the system.
37	ROUTX	O	Watchdog reset signal (Low-active) Detects crashing of the Main-CPU (IC22).
38, 39	USBRQ0X, 1X	I	USB DMA transfer request signals (Low-active) The USB controller (IC49) requests the ASIC (Engine controller) to perform DMA transfer.

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Pin No.	Signal name	I/O	Function
42, 43	USBAK0X, 1X	O	USB DMA transfer acknowledge signals (Low-active) The ASIC (Engine controller) enables the USB controller to perform DMA transfer.
44	IOWRLX	O	USB lower data write signal (Low-active) Writes the lower data bus data to the USB controller.
45	IOWRHX	O	USB upper data write signal (Low-active) Writes the upper data bus data to the USB controller.
46	INTUSB	I	USB interrupt signal (Low-active) Detects the interrupt signal from the USB controller.
47	USBCSX	O	USB controller chip select signal (Low-active) Selects USB controller.
48-50, 52-58, 62-69, 71-75	CPA[1]-[23]	I	CPU address bus
76-78	FC0-2	I	Main-CPU operating status 0-2 signals The Main-CPU (IC22) indicates the operating status.
79	CPUCK	O	Main-CPU operation clock (16 MHz) Operation clock for the Main-CPU.
82-84	IPL0X-2X	O	Interrupt request 0-2 signals (Low-active) The ASIC (Engine controller) requests the Main-CPU to perform interrupt processing.
85	BRX	O	Bus request signal (Low-active) The ASIC (Engine controller) requests the Main-CPU to pass bus control.
86	BGX	I	Bus grant signal (Low-active) The Main-CPU indicates the release of the bus to the ASIC (Engine controller).
87	DTACKX	O	Data acknowledge signal (Low-active) Indicates the end of data transfer to the Main-CPU.
88	RWX	I	Read/write signal (Low-active) The Main-CPU instructs the ASIC (Engine controller) to read or write data.
89	LDSX	I	Lower data bus strobe signal (Low-active) Causes the lower CPU data bus data to be latched.
90	UDSX	I	Upper data bus strobe signal (Low-active) Causes the upper CPU data bus data to be latched.
91	ASX	I/O	Address bus strobe signal (active-low) Causes the CPU address bus data to be latched.
92, 94-99, 102-110	CPD[0]-[15]	I/O	CPU data bus
112	BUFDIR	O	Data bus transmitting direction switch signal (H: Writes data to I/O device, L: Reads data from I/O device) Switches the data transmitting direction of each bus transceiver from the data bus.
113	BUF1GX	O	Gate control signal 1 (Low-active) Allows the data to transmit to each bus transceiver between the CPU bus and the SYS bus.
114	BUF2GX	O	Gate control signal 2 (Low-active) Allows the data to transmit to each bus transceiver between the SYS bus and the Operation panel bus.
115	MRDX	O	Memory read signal (Low-active) Reads data from Flash ROM (IC23), SRAM (IC51) or ROM on the Recovery ROM PBA.
116	MWRX	O	Memory write signal (Low-active) Writes data into Flash ROM, SRAM or ROM on the Recovery ROM PBA.
117	IORDX	O	I/O read signal (Low-active) Reads data into each IC and I/O device.

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Pin No.	Signal name	I/O	Function
118	IOWRX	O	I/O write signal (Low-active) Writes data to each IC and I/O device.
119	RMA21	O	Address bus [21] for Flash ROM
123	FROM1CSX	O	Flash ROM chip select signal (Low-active) Selects the Flash ROM.
124	SRMCSX	O	SRAM chip select signal (Low-active) Selects the SRAM.
125, 126	RROM1CSX, 2CSX	O	Recovery ROM chip select signal (Low-active) Selects the ROM to be installed on the Recovery ROM PBA.
127	ROMSEL	I	Recovery ROM detect signal (L: Installed) Detects the connected status of the Recovery ROM PBA.
128	V34CSX	O	MODEM chip select signal (Low-active) Selects the MODEM (IC53).
129	IOCS3X	O	ASIC (I/O port) chip select signal (Low-active) Selects the ASIC (I/O port: IC38).
130	LCDCSX	O	LCD chip select signal (Low-active) Selects the ASIC (I/O port: IC4) on the Operation panel PBA.
131	IOCS7	O	RTC chip select signal (High-active) Selects the RTC (IC52).
132	SCLK	O	RTC serial transfer clock Synchronizing clock for data communication between the ASIC (Engine controller) and the RTC.
133	SI	I	RTC serial data input Serial data from RTC.
134	SO	O	RTC serial data output Serial data to RTC.
135	ANSDET	I	Frequency detect signal Detects the frequency of the telephone line.
136	SPK	O	Speaker clock signal Outputs a clock for the pseudo ring and tone signals.
137	MDRRQ1	I	MODEM receive data transfer request signal (High-active) The MODEM makes a request to transfer receive data.
138	MDTRQ1	I	MODEM transmit data transfer request signal (High-active) The MODEM makes a request to transfer transmit data.
141	EXTINT	-	Pull-down: signal ground
142	INTMD1	I	MODEM interrupt signal (High-active) The MODEM requests the ASIC (Engine controller) to perform interruption.
143	IMGINT	I	DSC interrupt signal (High-active) The DSC (IC27) requests the ASIC (Engine controller) to perform image read cycle interruption.
144	DSCCSX	O	DSC chip select signal (Low-active) Selects the DSC.
145	MVSCK	I	Serial image data transfer clock Transfer synchronizing clock for serial image data.
146	MVSDA	I	Serial image data Raster data of a document read by the CIS.
147	MVSENX	I	Serial output effective period signal Indicates a period during which the DSC sends serial image data to the ASIC (Engine controller).

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Pin No.	Signal name	I/O	Function
148	DSCCK	O	DSC operation clock (16 MHz) Operation clock for the DSC.
150	OBACKX	O	CODEC bus acknowledge 2 signal (Low-active) Indicates release of the bus to the CODEC.
151	ODREQX	I	CODEC DMA request 2 signal (Low-active) The CODEC makes a request for DMA transfer.
152	ODACKX	O	CODEC DMA acknowledge 2 signal (Low-active) Indicates the start of DMA transfer to the CODEC.
153	PM22CSX	O	CODEC chip select signal (Low-active) Selects the CODEC.
154	INTPMX	I	CODEC interrupt signal The CODEC requests the ASIC (Engine controller) to perform interruption.
155	IBACKX	O	CODEC bus acknowledge 1 signal (Low-active) Indicates release of the bus to the CODEC.
156	IDREQX	I	CODEC DMA request 1 signal (Low-active) The CODEC makes a request for DMA transfer.
157	IDACKX	O	CODEC DMA acknowledge 1 signal (Low-active) Indicates the start of DMA transfer to the CODEC.
159	PM22CK	O	CODEC operation clock (32 MHz) Operation clock for the CODEC.
162-169	PMID[0]-[7]	O	CODEC output data bus Bus for data output to CODEC.
171-178	PMOD[0]-[7]	I	CODEC input data bus Bus for data input from CODEC.
182	X32M	I	System clock input (32 MHz)
183-190, 192-199	SDD[0]-[15]	I/O	SDRAM data bus Data bus for the SDRAM (IC1).
202	SDDQMH	O	SDRAM upper data DQM signal (Low-active) Masks the SDRAM upper data.
203	SDCLK	O	SDRAM operation clock (64 MHz)
204	SDCKIN	I	SDRAM operation clock detect signal
205	SDCKE	O	SDRAM clock enable signal (High-active) Enables the SDCLK signal inputted in the SDRAM.
206-209, 211-213, 223-227	SDA[0]-[11]	O	SDRAM address bus Address bus for the SDRAM.
214	SDDQML	O	SDRAM lower data DQM signal (Low-active) Masks the SDRAM lower data.
215	SDWEX	O	SDRAM write signal (H: Read, L: Write) Writes data to the SDRAM or reads data from the SDRAM.
216	SDCASX	O	SDRAM CAS signal (Low-active) CAS signal for the SDRAM.
217	SDRASX	O	SDRAM RAS signal (Low-active) RAS signal for the SDRAM.
218	SDCSX	O	SDRAM chip select signal (Low-active) Selects the SDRAM.
219, 222	SDBA[0], [1]	O	SDRAM bank address bus Address bus for the bank memory function of the SDRAM.
230	PTCCK1	I	16 dots/mm clock (Facsimile-related clock) Reference clock for printing in 16 dots/mm (406 dpi).
231	PTCCK2	I	300/600 dpi clock (Printer-related clock) Reference clock for printing in 300/600 dpi.
232	IDTCLK	-	Not used

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Pin No.	Signal name	I/O	Function
233	HSYNCX	-	Not used
234	UFEX	I	Horizontal synchronizing signal (Low-active) Synchronizing reference signal in the feed direction.
235	LDATA	O	Print data Print data to the LSU.
236	TODX	I	Data start signal (Low-active) Synchronizing signal in the feed direction for starting the printing of one page.
237	EETCSX	-	Not used
238	OUTCLK	-	Not used
239	MON4	-	Not used (Open)

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• ASIC (I/O port: IC38) Signal Table

Pin No.	Signal name	I/O	Function
1, 25, 41, 52, 61	VDD	-	+5V
2-9	D[0]-[7]	I/O	Data bus
10, 34, 42, 46, 51, 56, 60, 71	VSS	-	Signal ground
11	IOPTX	I	ASIC (I/O port) chip select signal (Low-active) Selects the ASIC (I/O port).
12	HIOWX	I	I/O write signal (Low-active) Writes data to each IC and I/O device.
13	HIORX	I	I/O read signal (Low-active) Reads data into each IC and I/O device.
14-16	A[1]-[3]	I	Address bus
17	HSWC0	-	Pull-down: signal ground
18	DDETO	I	Document detect signal (Low-active) Detects the presence or absence of a document.
19	CIREQ	I	CI request signal (Low-active) Indicates that the Sub-CPU (IC56) has detected the CI signal.
20	HSWC3	-	Pull-down: signal ground
21	PWRSVREQ	I	Super power save request signal (Low-active) Requests the Sub-CPU to move to the Super Power Save mode.
22	HSWC5	-	Pull-down: signal ground
23	HSWC6	-	Pull-down: signal ground
24	HSWC7	-	Pull-up: +5V
26-28	SPVOL0-2	O	Speaker volume control signal Controls the volume of the speaker.
29	RING/TONE	O	Ring/tone select signal (H: Pseudo ring, L: Tone) Selects the signal to be output from the speaker.
30	MDM1RESX	O	MODEM reset signal (Low-active) Resets the MODEM (IC53).
31	TONESEL	O	Line/tone select signal (H: Line monitor, L: Ring or tone) Selects the signal to be output from the speaker.
32, 33	HSWS6, 7	-	Not used (Open)
35	CISXO	I	CI detect signal (L: Detected) Detects the ring signal sent from the contacted communication station.
36	REVAO	I	Line current detect signal Detect current flowing through the line.
37	REVBO	I	Current reverse line current detect signal Detect current flowing through the line.
38	HOOKO	I	Hook detect signal (H: On-hook, L: Off-hook) Detects the hook status of the handset.
39	EXTHK	I	External TEL hook detect signal (H: On-hook, L: Off-hook) Detects the hook status of the external TEL.
40	HSER5	-	Pull-down: signal ground
43	LEDBLK	O	Power save LED blinking signal Requests the Sub-CPU to blink the power save LED.
44	PWRSVACK	O	Power save acknowledge signal (Low-active) Enables the Sub-CPU to move to the Super Power Save mode.
45	PRTRESX	O	Printer reset signal (Low-active) Resets the Engine-CPU.
47	CPRDYX	O	Controller power ready signal (Low-active) The ASIC (I/O port) indicates to the Engine-CPU that sending and receiving of signals is ready.

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Pin No.	Signal name	I/O	Function
48	USBRESX	O	USB controller reset signal (Low-active) Resets the USB controller (IC49).
49	CML	O	CML relay control signal (H: MODEM, L: Telephone) Switches the CML relay installed on the NCU PBA.
50	LD	O	Dial pulse generation signal (H: Dial make) Sends a dial pulse to the telephone line.
53	ERCL/HOOK	O	External TEL relay control signal (H: External TEL hook detection L: Normal) Switches the external TEL relay installed on the NCU PBA.
54	ATT3DB	O	Attenuator control signal (H: 3dB inserted) Connects the attenuator to attenuate the reception level by 3dB.
55, 57	RLADJ1, 2	O	Return loss adjust signal Adjusts the return loss by switching the circuit. RLADJ2 RLADJ1 L L SG, HK L H Not used H L AU, NZ H H CTR21
58	NCUOUT	O	External TEL ring generate signal Outputs a clock for the external TEL ring signal.
59	HLEB7	-	Not used (Open)
62, 63	HSER6, 7	-	Not used (Open)
64	PRRDYX	I	Printer ready signal (Low-active) The Engine-CPU indicates to the ASIC (I/O port) that print operation is ready.
65	EPRDYX	I	Engine power ready signal (Low-active) The Engine-CPU indicates to the ASIC (I/O port) that sending and receiving of signals is ready.
66	CPVOP	I	Cover open detect signal (L: Front or RX cover opened) The Engine-CPU indicates to the ASIC (I/O port) that the front or RX cover is opened.
67	PUDETI	I	CSIC PBA output signal Communication data from the CSIC PBA of the toner cartridge.
68	ILSW	I	+24VILS detect signal Detects the +24VILS voltage outputs.
69	MDSEL	-	Pull-up: +5V
70	5VRESX	I	Reset signal (Low-active) Resets the system.
72	PWRSVNACK	O	Power save non-acknowledge signal (Low-active) Indicates return from the Super Power Save mode to the Sub-CPU.
73	PUDETO	O	CSIC PBA input signal Communication data to the CSIC PBA of the toner cartridge.
74, 75, 76, 78, 79	HCTR1, 2, 3, 5, 6	-	Not used (Open)
77	PM22PLL	O	CODEC PLL control signal Control signal for PLL function of the CODEC (IC16).
80	G1HZ	-	Not used (Open)

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- Sub-CPU (IC56) Signal Table

Pin No.	Signal name	I/O	Function
1	XOUT	O	Sub-CPU operation clock output (4 MHz)
2	XIN	I	Sub-CPU operation clock input (4 MHz)
3	2WRESETX	I	Sub-CPU power on reset signal (Low-active) Resets the Sub-CPU (IC56) when the power is turned on.
4	WTOX	O	Sub-CPU reset signal (Low-active) Resets the Sub-CPU.
5	LEDBLK	I	Power save LED blinking signal (Low-active) The ASIC (I/O port: IC38) requests the Sub-CPU to blink the power save LED.
6	R72	I	+5VPS power up detect signal (High-active)
7	PWRSVKEY	I	Key input detect signal (Low-active) Detects the press status of each key switch installed on the Operation panel PBA.
8	DDET	I	Document detect signal (Low-active) Detects the presence or absence of a document.
9	PWRSVACK	I	Power save acknowledge signal (Low-active) The ASIC (I/O port) enables the Sub-CPU to move to the Power Save mode.
10	PWRSVNACK	I	Power save non-acknowledge signal (Low-active) The ASIC (I/O port) indicates return from the Power Save mode to the Sub-CPU.
11	PWRSVLED	O	Power save LED lighting signal (L: Lit) Controls the lighting of the power save LED installed on the Operation panel PBA.
12	R51	-	Not used (Open)
13	PWRSVDI	O	Port enable signal (Low-active) Controls the inputs of the signals input to the NCU PBA and the document detect signal.
14	VSS	-	Signal ground
15	PSC	O	Power save control signal (Low-active) Limits the power supply from the LVPS in Power Save mode.
16	HOOK	I	Hook detect signal (H: On-hook, L: Off-hook) Detects the hook status of the handset.
17	CISX	I	CI detect signal (H: Undetected, L: Detected) Detects the ring signal sent from the line.
18	REV	I	Line current detect signal Detects the current and the reverse current flowing through the line.
19	VBUSDET	I	PC interrupt signal (Low-active) Detects the interrupt signal from the PC.
20-23	R80-83	-	Pull-down: signal ground
24	R90	-	Not used (Open)
25	CIREQ	O	CI request signal (Low-active) Indicates the detection of CI to the ASIC (I/O port).
26	PWRSVREQ	O	Power save request signal (Low-active) Requests the ASIC (I/O port) to move to the Power Save mode.
27	KE0X/HOLDX	-	Pull-up: +5VPS
28	VDD	-	+5VPS

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7.4 NCU PBA

This section describes the function of each circuit on the NCU PBA.

The NCU PBA consists of the transformer, relay, analog switch, and other peripheral devices. It controls switching the line path, generates dial pulses, detects line current, detects a ring signal, and monitors the line.

The NCU PBA is connected to CN16 on the Main PBA.

US/CA models, SG/HK models

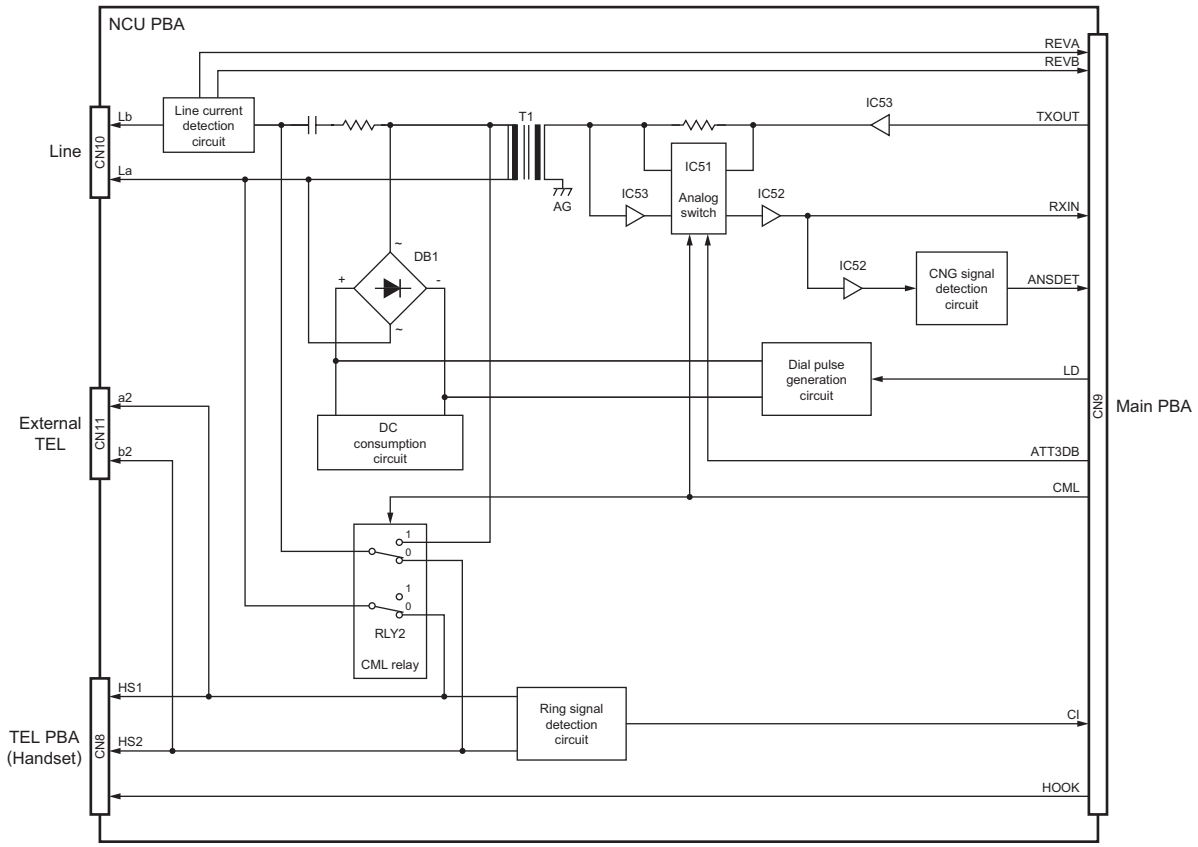

Fig. 7-35

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EU/AU models

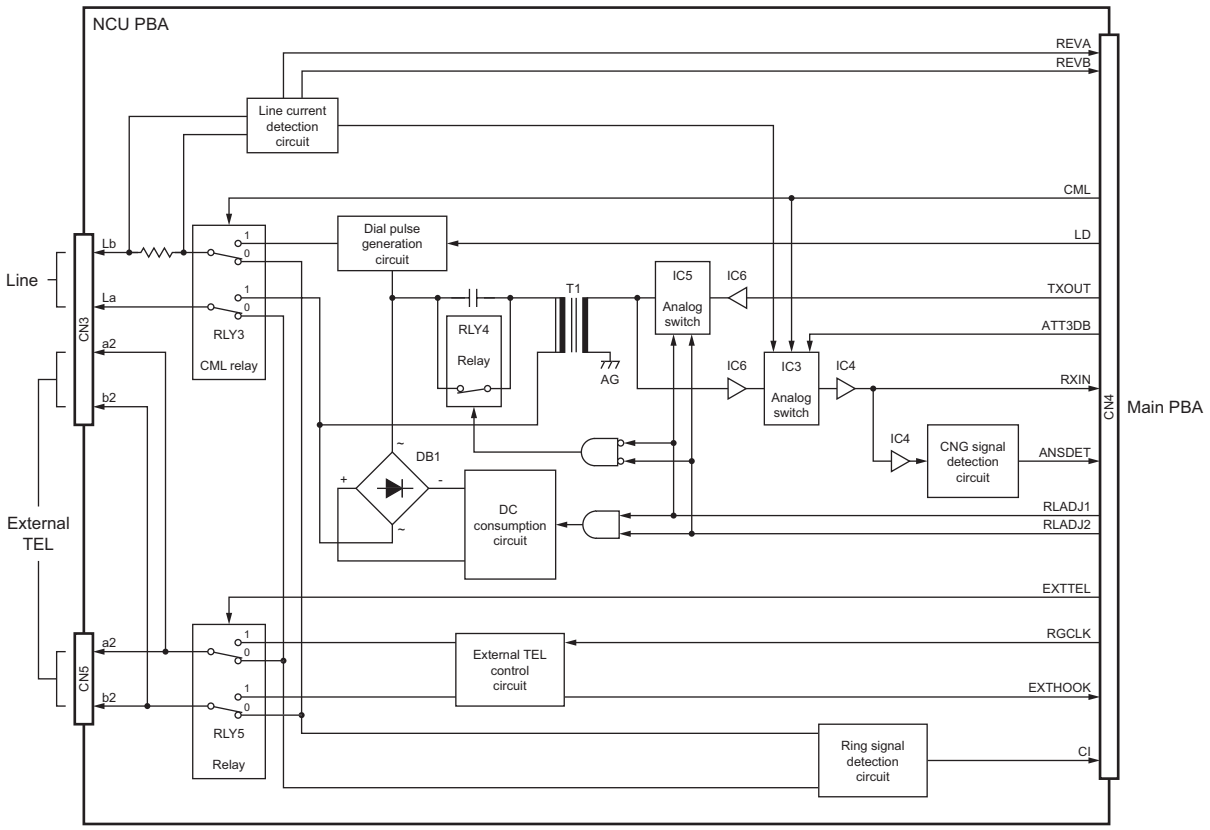

Fig. 7-36

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7.4.1 Line Path Switching Control Circuit

US/CA models, SG/HK models

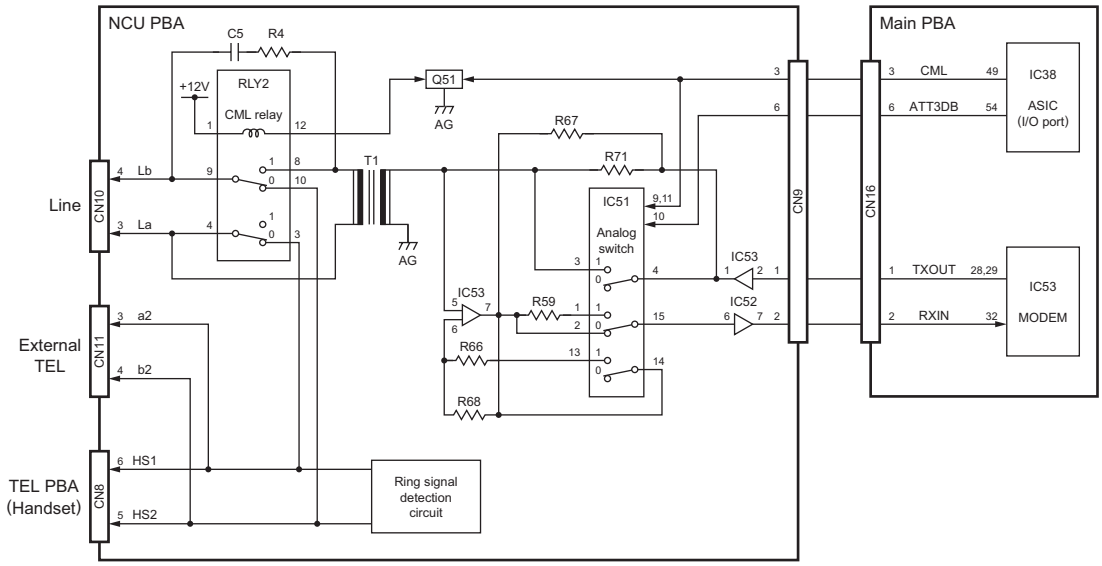

Fig. 7-37

The line path switching control circuit consists of the CML relay (RLY2) and analog switch (IC51), the ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It changes the path for facsimile send/receive signals and connects it to each control circuit.

The CML relay is switched according to the CML signal output from the ASIC on the Main PBA. When the CML signal goes HIGH, Q51 turns on and +12V is applied to the CML relay to turn on.

The analog switch is switched according to the CML signal and ATT3DB signal. When the CML signal or ATT3DB signal goes HIGH, the analog switch turns on.

Turning on the CML relay and analog switch allows the MODEM to be connected to the line.

Signal Name	Type	Active	Description	Destination
CML	O	H	CML relay control signal	Q51, IC51
ATT3DB	O	H	Attenuator control signal	IC51

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EU/AU models

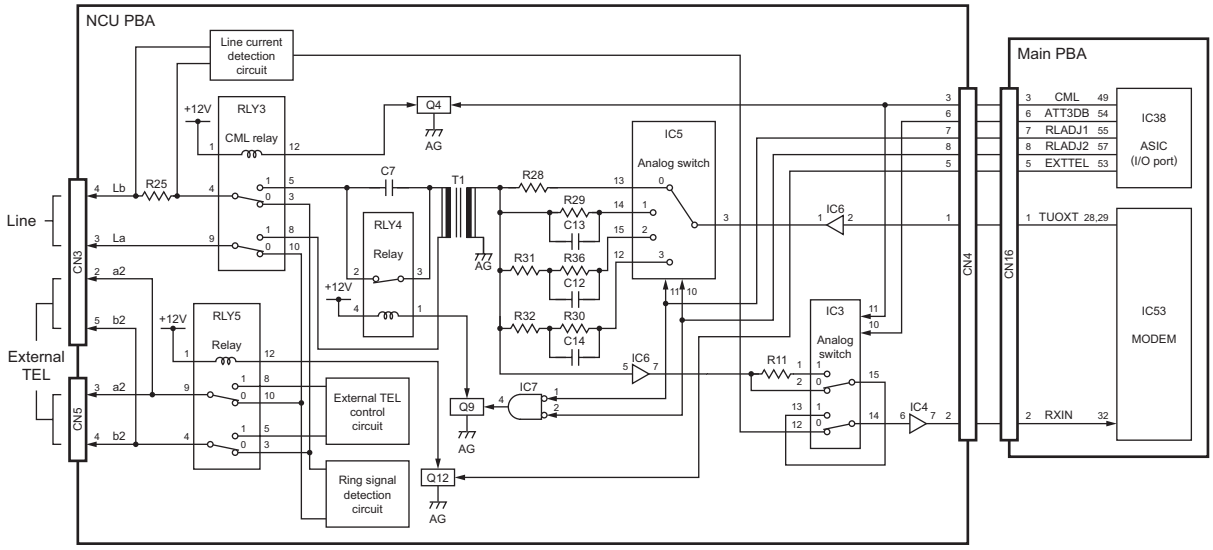

Fig. 7-38

The line path switching control circuit consists of the relays (RLY3, RLY4, RLY5) and analog switches (IC3, IC5), the ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It changes the path for facsimile send/receive signals and connects it to each control circuit.

The CML relay (RLY3) is switched according to the CML signal output from the ASIC on the Main PBA. When the CML signal goes HIGH, Q4 turns on and +12V is applied to the CML relay to turn on.

The relay (RLY4) is switched according to the RLADJ1 and RLADJ2 signals. When the RLADJ1 and RLADJ2 signals goes LOW, Q9 turns on and +12V is applied to the relay to turn on.

The relay (RLY5) is switched according to the EXTTEL signal. When the EXTTEL signal goes HIGH, Q12 turns on and +12V is applied to the relay to turn on.

The analog switch (IC3) is switched according to the CML signal and ATT3DB signal. When the CML signal or ATT3DB signal goes HIGH, the analog switch turns on.

The analog switch (IC5) is switched according to the RLADJ1 and RLADJ2 signals. The analog switch is switched according to the states of the RLADJ1 and RLADJ2 signals.

Turning on the CML relay and analog switch allows the MODEM to be connected to the line.

Signal Name	Type	Active	Description	Destination
CML	O	H	CML relay control signal	Q4, IC3
RLADJ1, 2	O	H	Return loss adjust signal	IC5, IC7
EXTTEL	O	H	External TEL relay control circuit	Q12
ATT3DB	O	H	Attenuator control signal	IC3

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7.4.2 Dial Pulse Generation Circuit

US/CA models, SG/HK models

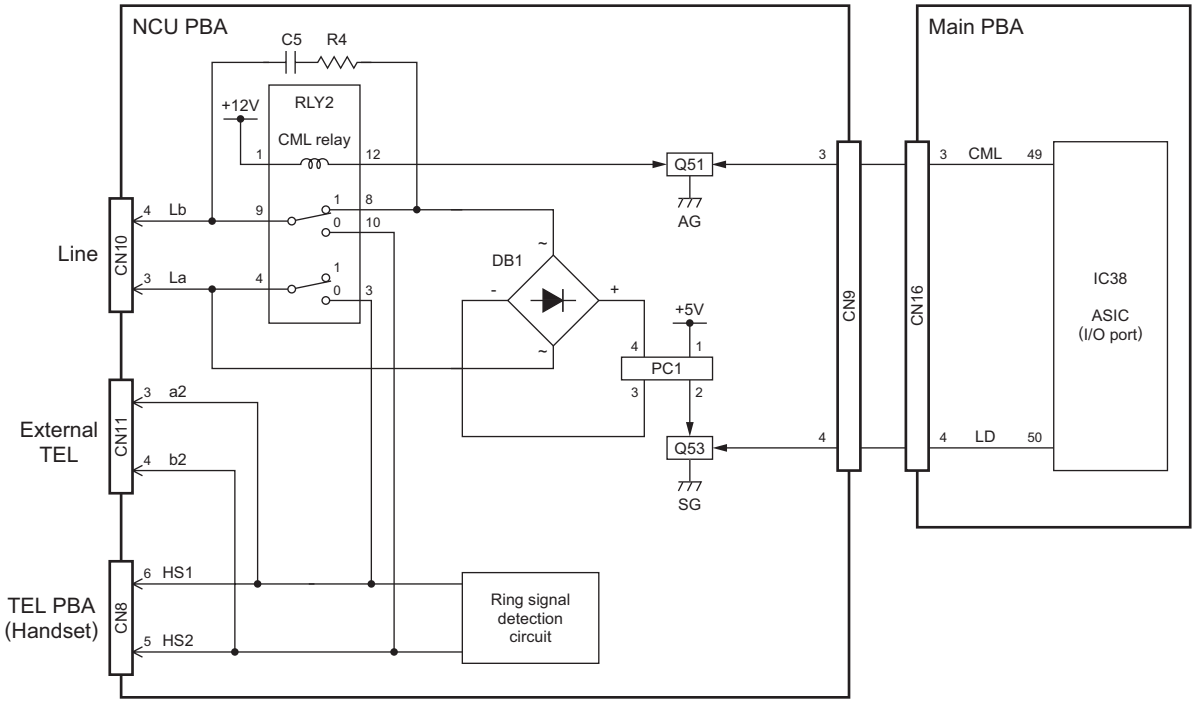

Fig. 7-39

The dial pulse generation circuit consists of the diode bridge (DB1), photo-coupler (PC1), the ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It generates dial pulses in facsimile transmission and dialing outside.

The ASIC causes the CML signal to go HIGH to connect the line to the MODEM side. To achieve a dial make, the ASIC causes the LD signal to go HIGH to turn on Q53. This allows the photo-coupler to turn on and allow current to flow through the diode bridge for sending dial pulses to the line.

Signal Name	Type	Active	Description	Destination
LD	O	H	Dial pulse generate signal	Q53

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EU/AU models

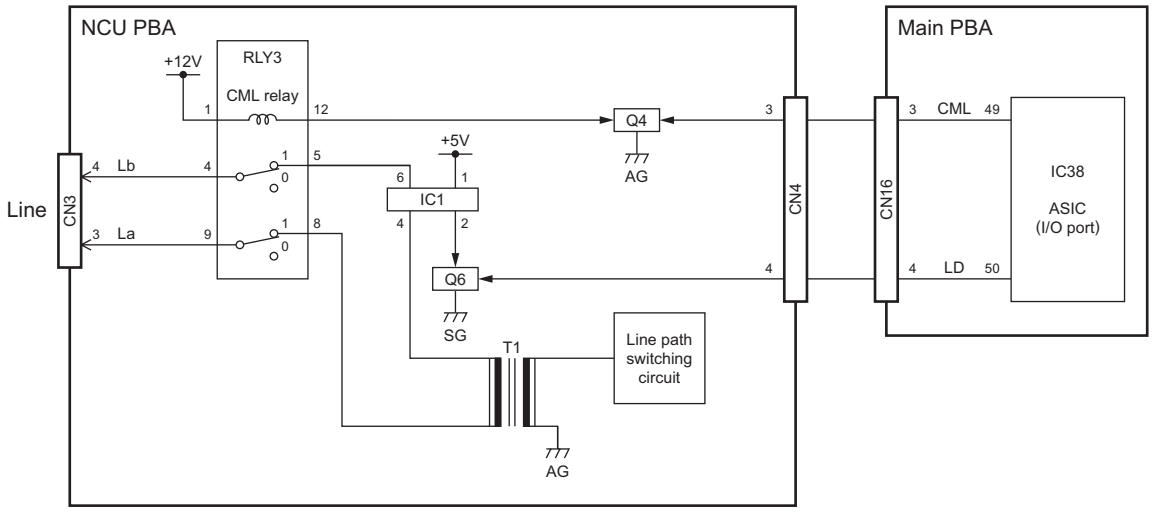

Fig. 7-40

The dial pulse generation circuit consists of the photo-coupler (IC1), the ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It generates dial pulses in facsimile transmission and dialing outside.

The ASIC causes the CML signal to go HIGH to connect the line to the MODEM side. To achieve a dial make, the ASIC causes the LD signal to go HIGH to turn on Q6. This allows the photo-coupler to turn on and allow current to flow through the line for sending dial pulses.

Signal Name	Type	Active	Description	Destination
LD	O	H	Dial pulse generate signal	Q6

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7.4.3 Line Current Detect Circuit

US/CA models

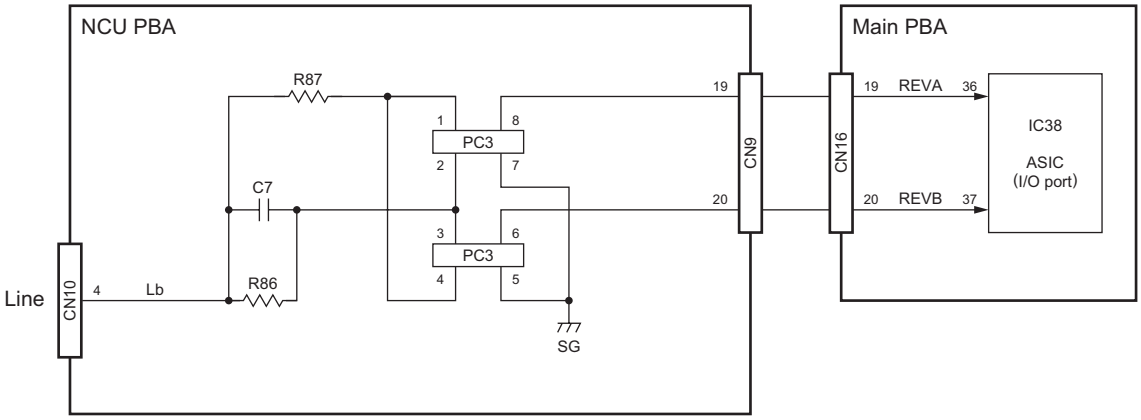

Fig. 7-41

The line current detect circuit consists of the photo-coupler (PC3), ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It detects a dial tone and the hook status of the external telephone from the current flowing through the line.

When a dial tone is input from the telephone line, current flows through the line and the photo-coupler repeats turning on and off. This allows the REVA and REVB to be pulse signals and input to the ASIC to detect the dial tone.

When the handset is lifted from the external telephone, current also flows through the line and the photo-coupler turns on and off to detect the off-hook status.

Signal Name	Type	Active	Description	Destination
REVA	I	-	Line current detect signal	ASIC
REVB	I	-	Current reverse line current detect signal	ASIC

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EU/AU models

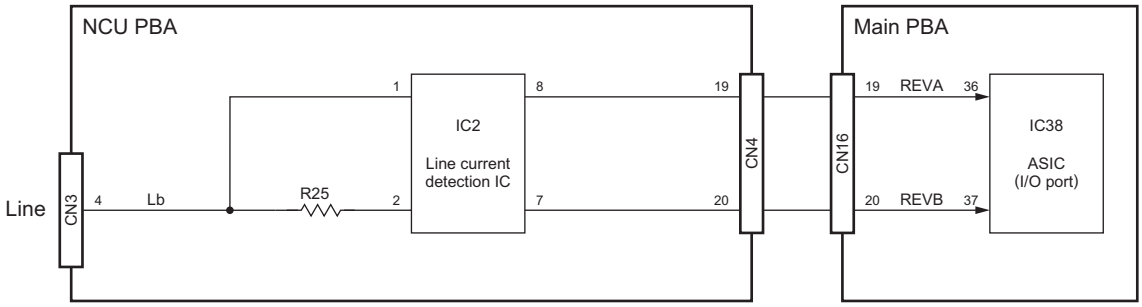

Fig. 7-42

The line current detect circuit consists of the line current detection IC (IC2), ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It detects a dial tone and the hook status of the external telephone from the current flowing through the line.

When a dial tone is input from the telephone line, current flows through the line. The line current detection IC sends the REVA and REVB to the ASIC as pulse signals. This allows a dial tone to be detected.

Signal Name	Type	Active	Description	Destination
REVA	I	-	Line current detect signal	ASIC
REVB	I	-	Current reverse line current detect signal	ASIC

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SG/HK models

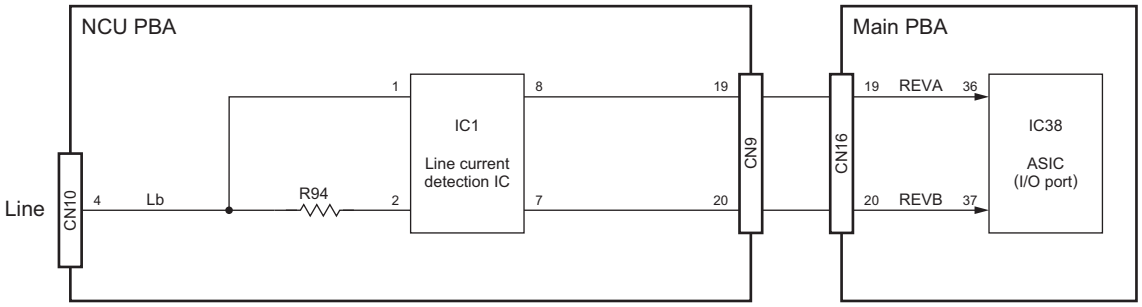

Fig. 7-43

The line current detect circuit consists of the line current detection IC (IC1), ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices. It detects a dial tone and the hook status of the external telephone from the current flowing through the line.

When a dial tone is input from the telephone line, current flows through the line. The line current detection IC sends the REVA and REVB to the ASIC as pulse signals. This allows a dial tone to be detected.

Signal Name	Type	Active	Description	Destination
REVA	I	-	Line current detect signal	ASIC
REVB	I	-	Current reverse line current detect signal	ASIC

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7.4.4 CI Detect Circuit

US/CA models, SG/HK models

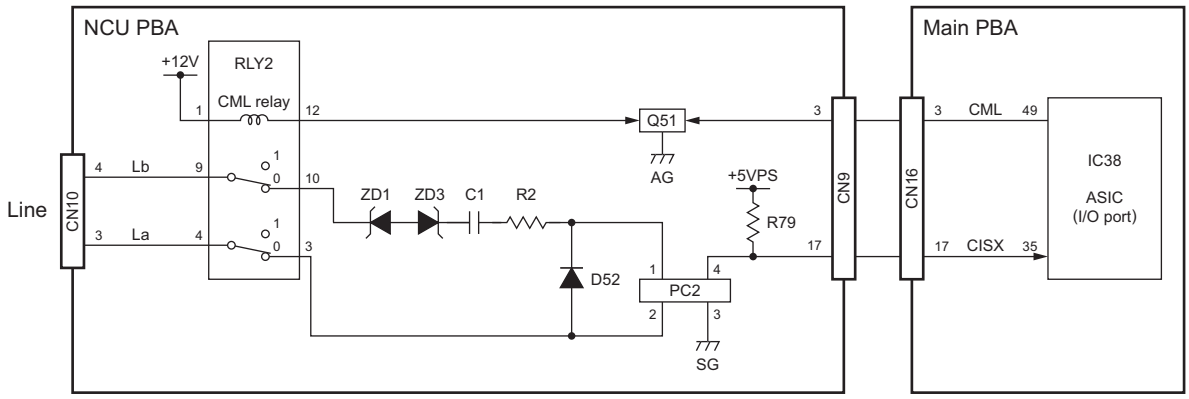

Fig. 7-44

The CI detect circuit consists of the photo-coupler (PC2), ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices to detect a ring signal input from the telephone line.

The ASIC causes the CML signal to go LOW to connect the CI detection circuit to the telephone line. When a ring signal is input from the telephone line, the photo-coupler repeats turning on and off. This allows the CISX signal to be a pulse signal and input to the ASIC on the Main PBA, thereby detecting the ring signal.

Signal Name	Type	Active	Description	Destination
CISX	I	-	CI detect signal	ASIC

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EU/AU models

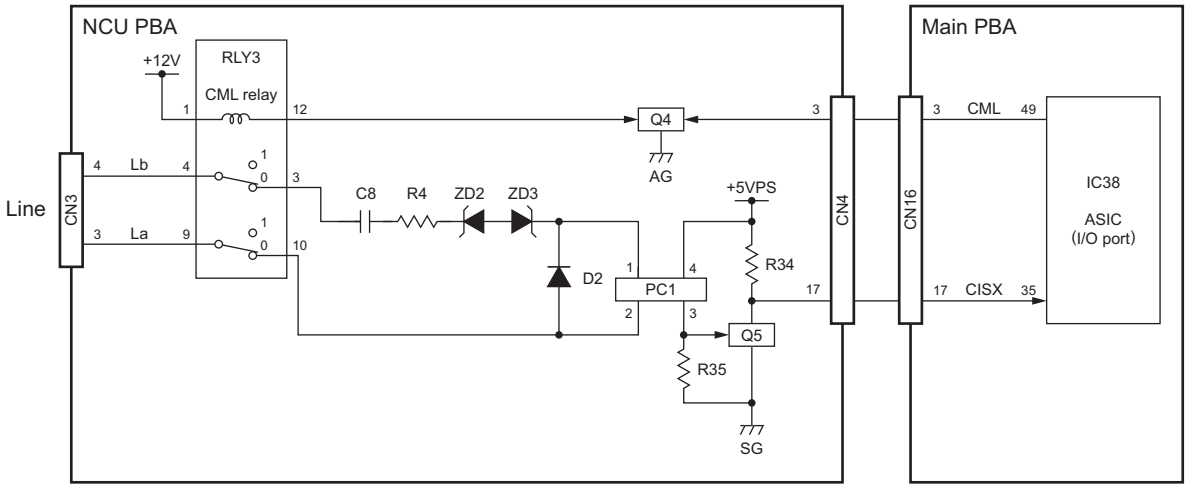

Fig. 7-45

The CI detect circuit consists of the photo-coupler (PC1), ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices to detect a ring signal input from the telephone line.

The ASIC causes the CML signal to go LOW to connect the CI detection circuit to the telephone line. When a ring signal is input from the telephone line, the photo-coupler repeats turning on and off. This causes Q5 to turn on and off allowing the CISX signal to be a pulse signal and input to the ASIC on the Main PBA, thereby detecting the ring signal.

Signal Name	Type	Active	Description	Destination
CISX	I	-	CI detect signal	ASIC

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7.4.5 Line Monitor Circuit

US/CA models, SG/HK models

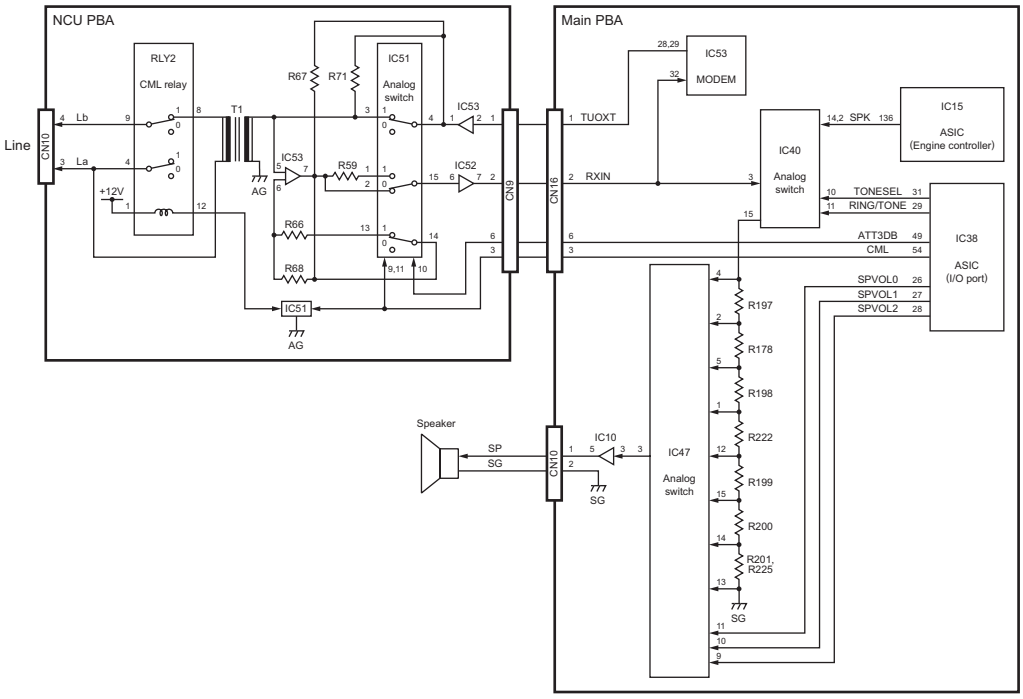

Fig. 7-46

EU/AU models

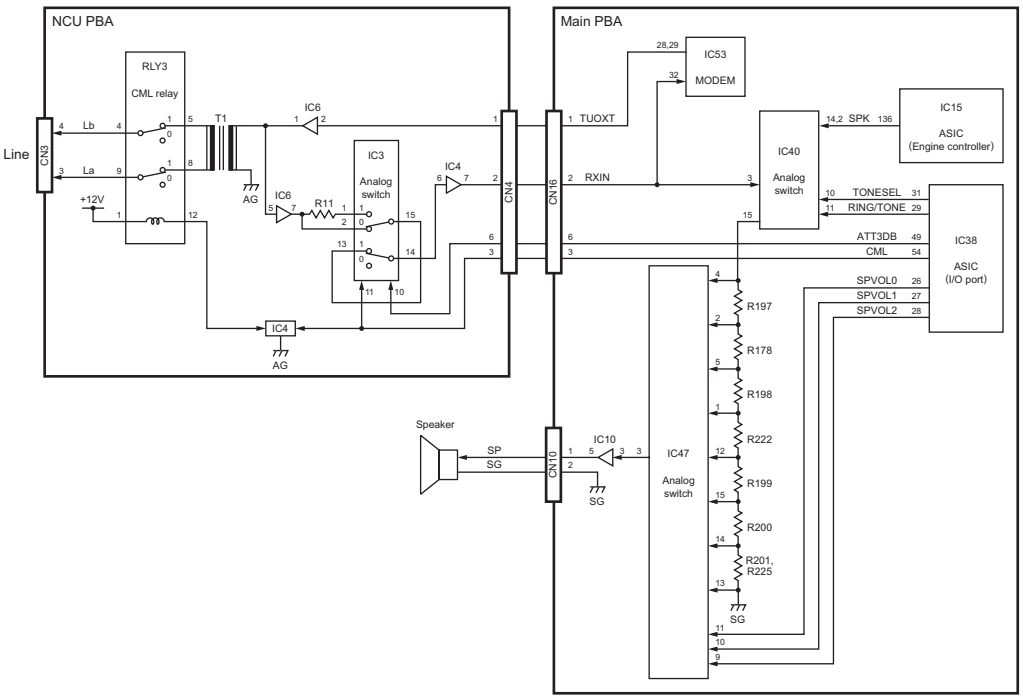

Fig. 7-47

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The line monitor circuit consists of the CML relay (US/CA/SG/HK: RLY2, EU/AU: RLY3), analog switch (US/CA/SG/HK: IC51, EU/AU: IC3), the ASIC (I/O port: IC38) and analog switches (IC40, IC47) on the Main PBA, and other peripheral devices. It switches the telephone line path with the analog switch and monitors the line status, pseudo-ring, and tone signal in facsimile transmission and reception with the speaker connected to CN10 on the Main PBA. It also switches the analog switch to output a buzzer tone from the speaker.

The signal to be monitored is selected by switching the analog switch (IC40) according to the TONE-SEL signal and RING/TONE signal which are output from the ASIC (I/O port).

To monitor the line during transmission and reception, the ASIC (I/O port) causes the CML signal to go HIGH to switch the CML relay and analog switch and connect the line to the MODEM side.
For line path switching control, refer to 📖 P.7-55 "7.4.1 Line Path Switching Control Circuit" in this chapter.

The correspondence between the respective signal levels and monitoring signals is shown in the table below.

Monitoring Signal Name	TONSEL	RING/TONE
Line monitor	HIGH	-
Pseudo-ring	LOW	HIGH
Alarm/Key touch tone	LOW	LOW

The monitoring signal selected by IC40 is input to the analog switch (IC47) to select an output sound volume. The sound volume is controlled according to the SPVOL0-2 signals output from the ASIC (I/O port).

The correspondence between the respective signal levels and sound volumes is shown in the table below.

Sound Volume	SPVOL2	SPVOL1	SPVOL0
Silent (0)	LOW	LOW	LOW
Min. (1)	LOW	LOW	HIGH
(2)	LOW	HIGH	LOW
(3)	LOW	HIGH	HIGH
(4)	HIGH	LOW	LOW
(5)	HIGH	LOW	HIGH
(6)	HIGH	HIGH	LOW
Max. (7)	HIGH	HIGH	HIGH

The monitoring signal volume-controlled by IC47 is amplified by the OP amplifier (IC10) and output to the speaker.

Signal Name	Type	Active	Description	Destination
TONSEL	O	H	Line/tone select signal	IC40
RING/TONE	O	H	Ring/tone select signal	IC40
SPVOL0-2	O	H	Speaker volume control signals 0-2	IC47

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7.4.6 Hook Detect Circuit (US/CA models and SG/HK models only)

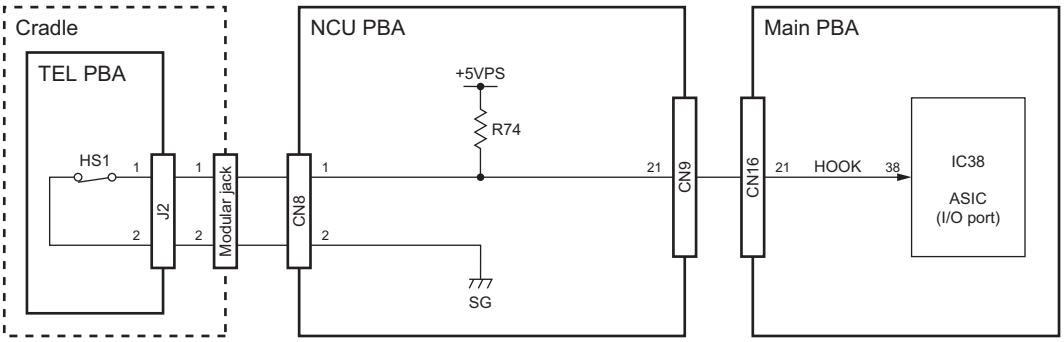

Fig. 7-48

The hook detect circuit consists of the hook switch (HS1) installed on the TEL PBA, ASIC (I/O port: IC38) on the Main PBA, and other peripheral devices to detect the hook status of the handset. The hook detect circuit is provided on the US/CA models and SG/HK models only.

When the handset is replaced, the hook switch is pushed down by the handset. This causes the HOOK signal to go HIGH and input to the ASIC to detect that the handset is replaced.

The hook status of the external telephone is detected by detecting current flowing through the line by the line current detection circuit when the handset is lifted.

Signal Name	Type	Active	Description	Destination
Hook	I	H	Hook detect signal	ASIC

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7.4.7 External TEL Control Circuit (EU/AU models only)

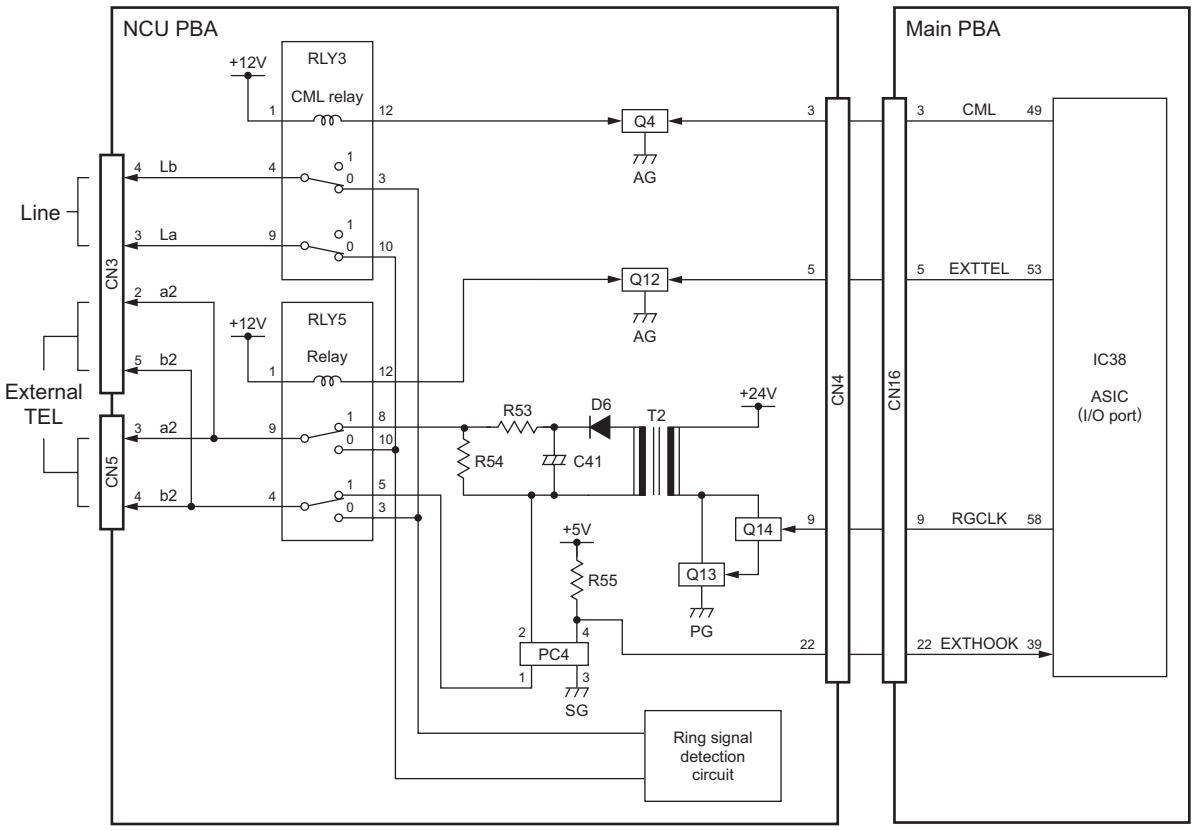

Fig. 7-49

The external TEL control circuit consists of the transformer (T2), relay (RLY5) and photo-coupler (PC4), the ASIC (I/O port: IC38) on the main PBA, and its peripheral devices. It outputs a ring signal to the external telephone and detects the hook status of the external telephone connected to CN3 or CN5.

When the EXTTEL signal output from the ASIC goes HIGH, Q12 turns on and +12V is applied to RLY5 to turn it on. This allows the external TEL control circuit to be connected to the external telephone for each control described below.

Upon receiving a CI signal, the ASIC outputs the RGCLK signal as a pulse signal to turn on and off Q13 and Q14. This causes +24V to be supplied or cut off to the coil in the primary circuit of T2 and a call signal to be output from the secondary circuit to the external telephone. Then it causes the external telephone to ring.

When the handset of the external telephone has been lifted, current flows through the line to turn on PC4. This causes the EXTHOOK signal to go LOW and input to the ASIC to detect that the handset of the external telephone is lifted.

Signal Name	Type	Active	Description	Destination
EXTTEL	O	H	External TEL relay control signal	Q12
EXTHOOK	I	L	External TEL hook detect signal	ASIC
RGCLK	O	-	External TEL ring generate signal	Q14

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7.5 OPERATION PANEL PBA

This section describes the functions of the Operation panel PBA.

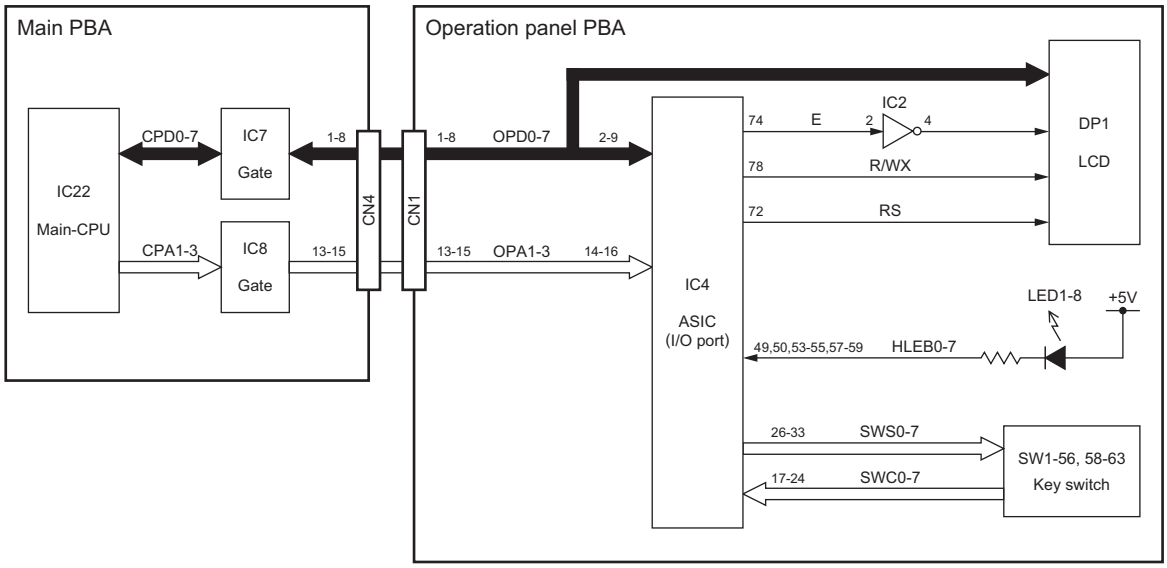

Fig. 7-50

The Operation panel PBA consists of the ASIC (I/O port: IC4), LCD (DP1), LED's (LED1-8), key switches (SW1-56, 58-63), and other peripheral devices. It controls the display of the LCD and the lighting of the LED's and detects the pressed status of each key switch. The document sensor and document position sensor are also installed on the Operation panel PBA and detect a scanning document. The Operation panel PBA is connected to CN4 on the Main PBA.

Data communication is carried out between the Operation panel PBA and Main PBA through OPD0-7 and OPA1-3.

Display of the LCD is controlled by the drivers built in the LCD which control the display of each dot according to the OPD0-7 signals output from the Main PBA, and the E signal, R/WX signal and RS signal which are output from the ASIC.

Lighting of the LED's is controlled by the ASIC which outputs the lighting signal for each LED (LED1-8) according to the OD0-7 signals output from the Main PBA. The ASIC causes the HLEB0-7 signals to go LOW. This allows voltage to be applied to each LED to turn on.

The pressed status of each key switch is detected by judging the levels of the SWS0-7 signals output to each key switch (SW1-54, 56, 58-63) from the ASIC and the SWC0-7 signals input to the ASIC from each key switch (SW1-56, 58-63). The ASIC causes the SWS signals to go LOW. At this time, when the SWC signal input is at "LOW" level, it is judged that the key has been pressed.

For detection of the scanning document, refer to 🕮 P.7-38 "7.3.11 Document Detect Circuit" in this chapter.

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Signal Name	Type	Active	Description	Destination
OPD0-7	I/O	-	Operation panel data bus	IC4
OPA1-3	I	-	Operation panel address bus	IC4
E	O	-	Enable signal	DP1
R/WX	O	-	Read/write signal	DP1
RS	O	-	Reset signal	DP1
HLEB0-7	O	L	LED lighting control signal	LED1-8
SWS0-7	O	L	Key switch row signals 0-7	SW1-54, 56, 58-63
SWC0-7	I	L	Key switch column signals 0-7	SW1-56, 58-63

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7.6 LVPS

This section describes the functions of each circuit on the LVPS.

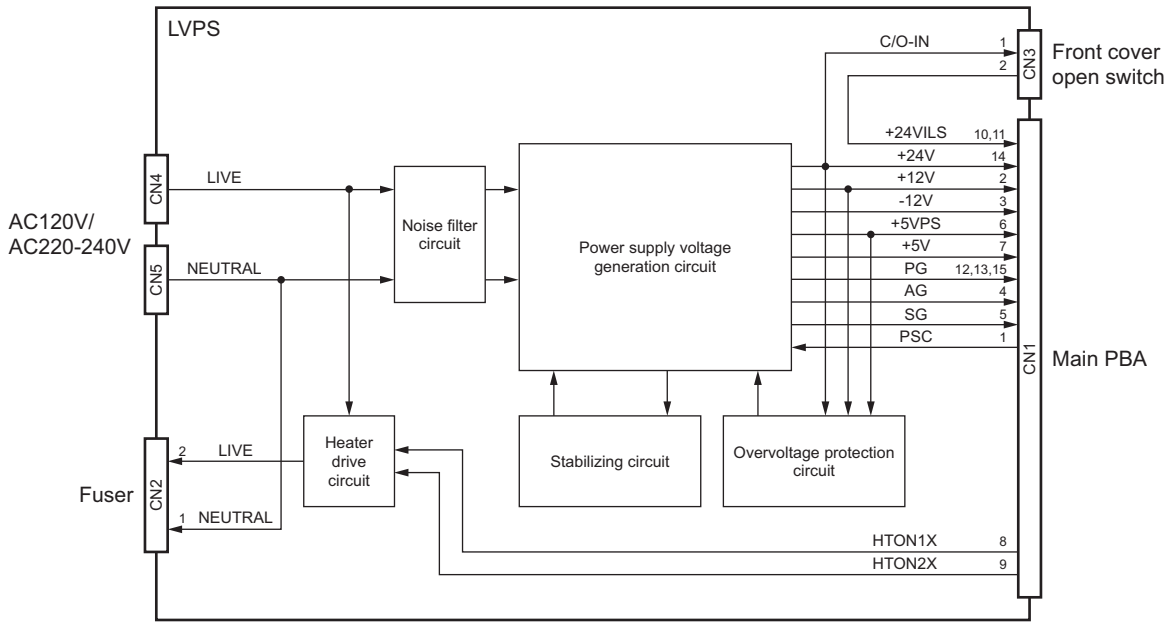

Fig. 7-51

The LVPS consists of the transformer, regulator, photo-coupler, and other peripheral devices.
It delivers each stable power supply (+24V, ±12V, +5V) to the entire system. The power unit is connected to CN17 on the Main PBA.

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7.6.1 Power Supply Voltage Generation Circuit

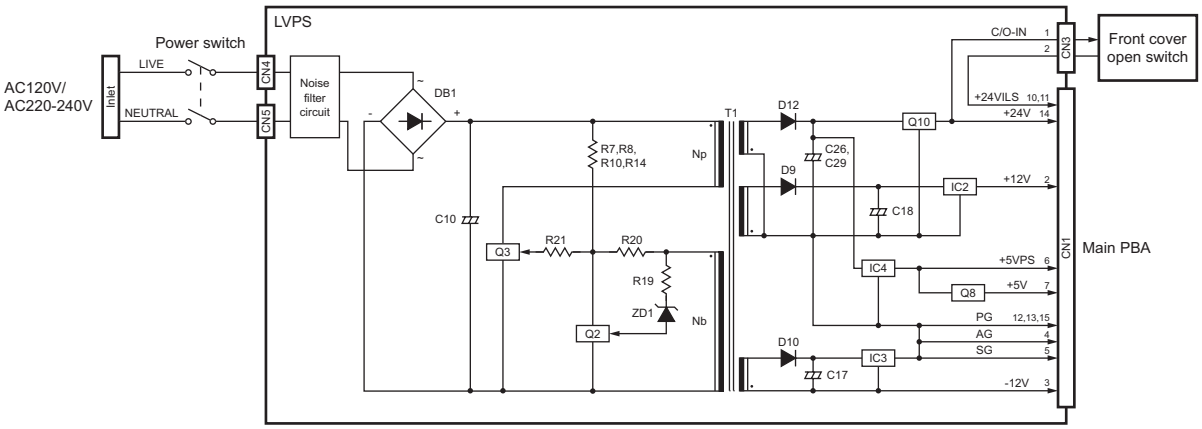

Fig. 7-52

The power supply voltage generation circuit converts the AC voltage to DC voltages of +24V, ±12V and +5V and delivers them to the entire system.

When the power switch of this machine is turned on, an AC voltage is input from the inlet. The input AC voltage is passed through the noise filter, rectified to a DC voltage by the diode bridge (DB1), and then smoothed by C10.

When the DC voltage is applied, voltage is applied to the gate of Q2 through R7, R8, R10, and R14 to turn on Q3 and current flows through winding Np in the primary circuit of the transformer (T1). Then voltage is produced in winding Nb and voltage is applied to the gate of Q3 through R20 and R21 to maintain the on state of Q3. At the same time, current begins to flow in the base of Q2 through R19 and ZD1.

As Q3 continues to maintain its on state, the voltage produced from Nb rises. Then, the base current of Q2 also increases to turn on Q2. This causes the gate voltage of Q3 to drop to turn off Q3. When Q3 turns off, the energy accumulated in the transformer allows current to flow from each winding in the secondary circuit.

After that, the current ends flowing as the accumulated energy runs out. However, residual energy is present in each winding in the secondary circuit. This energy causes voltage to be produced in winding Nb in the primary circuit to turn on Q3 again.

In this way, the switching operation performed by Q3 allows a high-frequency voltage to be produced in each winding in the secondary circuit. The produced voltage is rectified by the diodes (D9, D10, D12) and smoothed by the capacitors (C17, C18, C26, C29). Then, it is converted to stable DC voltages (+24V, ±12V, +5V) by the regulators (IC2 to IC4) before being delivered to the system.

As the output load of the LVPS becomes larger, the time for the on state of Q3 becomes longer to obtain the energy required. However, being determined according to the time constant of the equivalent series resistance of R19 and ZD1, the maximum on time of Q3 does not extend beyond a certain value and the output voltage drops for protection against overcurrent.

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7.6.2 Stabilizing Circuit

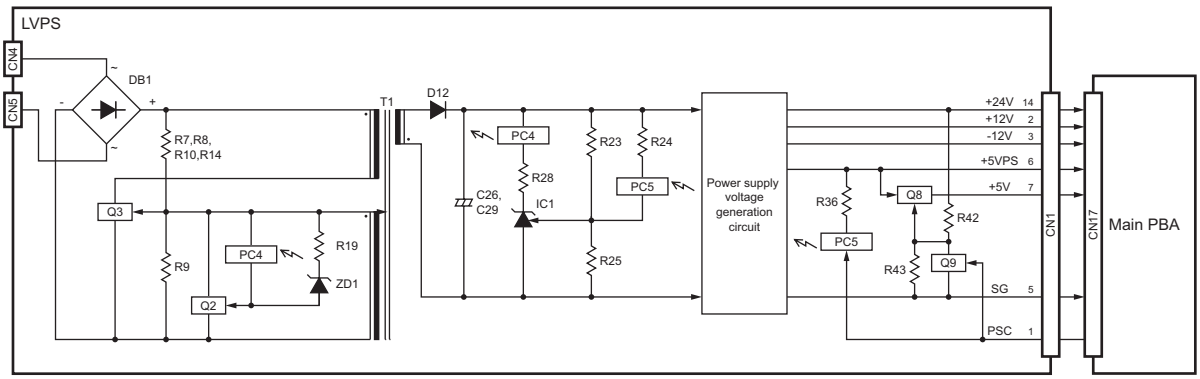

Fig. 7-53

The stabilizing circuit monitors the +24V voltage in the secondary circuit of the transformer (T1) through the shunt regulator (IC1) and feeds back its status to the primary circuit through the photo-coupler (PC4) to stabilize the power output.

IC1 compares the voltage produced by dividing the +24V power output through R23 and R25 with the reference voltage. When the +24V voltage rises, the cathode current of IC1 changes to allow current to flow through the LED of PC4. This causes the light detector of PC4 to conduct to turn on Q2 so that Q3 will turn off due to a drop in its gate voltage and cut off the current in the primary circuit of the transformer. When the current in the primary circuit is cut off, the emission power of the secondary circuit will drop to decrease the output voltage for stabilization.

When this machine shifts to the super power save mode, the PSC signal output from the super power save circuit on the Main PBA goes LOW to turn on the photo-coupler (PC5), thereby increasing the voltage to be applied to IC1. This allows IC1 to turn on PC4 at a voltage lower than that in regular operation. For this reason, the emission power of the secondary circuit drops so that the voltages of +24V and ±12V will no longer be output.

And if the PSC signal goes LOW, Q9 is turned ON. This turns Q8 OFF to cut off the +5V voltage output.

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7.6.3 Overvoltage Protection Circuit

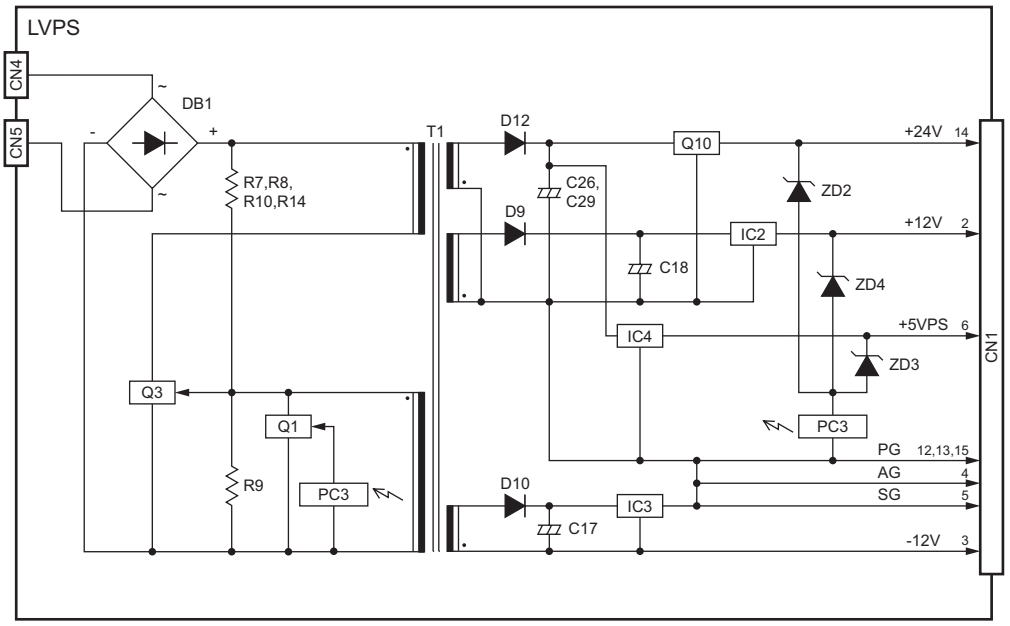

Fig. 7-54

The overvoltage protection circuit monitors each power voltage (+24V, ±12V, +5V), which is output from the secondary circuit of the transformer (T1), through the Zener diodes (ZD2-4).
When overvoltage occurs, it stops the oscillation operation of the primary circuit to prevent the overvoltage from being applied to each PBA.

When overvoltage occurs, the power voltage exceeds the constant-voltage of the Zener diode, the cathode current changes, and current flows through the LED of PC3. This causes the light detector of PC3 to conduct to turn on Q1 so that Q3 will turn off due to a drop in its gate voltage and cut off the current in the primary circuit of the transformer. Cutting off the current in the primary circuit causes the emission power of the secondary circuit to drop and the power voltage to drop, thereby preventing overvoltage.

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7.6.4 Heater Drive Circuit

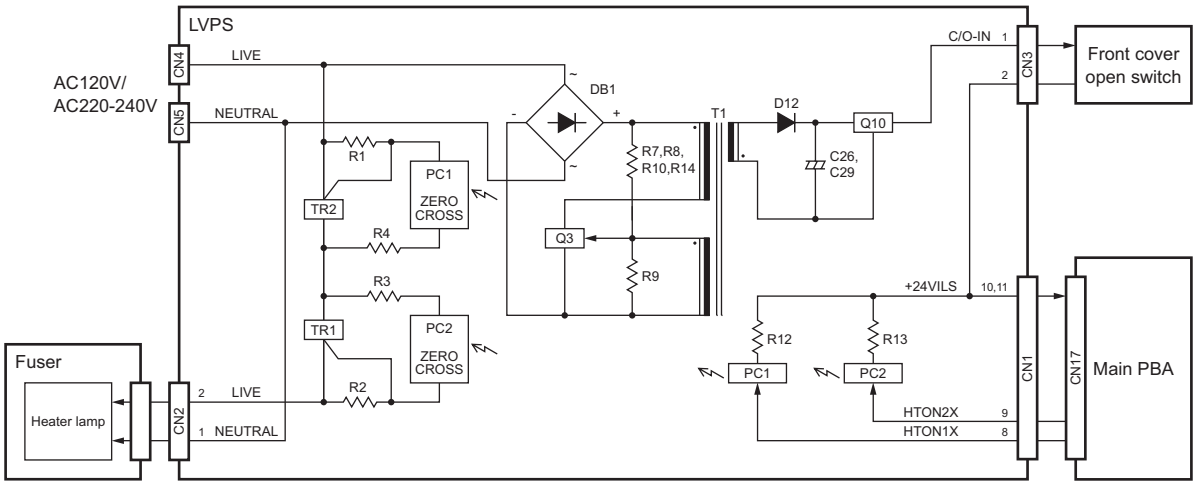

Fig. 7-55

The heater drive circuit supplies and controls AC power to the heater lamp in the fuser.

The heater lamp may be damaged due to sudden supply of a high voltage. To prevent it, this circuit performs control so that power is supplied only when the AC power is around 0V.

When the HTON1X and HTON2X signal output from the fuser control circuit on the Main PBA goes LOW, the LED of the photo-couplers (PC1 and PC2) light and the light detectors attempt to become conducting status. At this time, if the AC power is a high voltage, the light detectors of PC1 and PC2 do not become conducting status by zero-cross, the triacs (TR1 and TR2) are turned OFF and power is not supplied to the heater lamp. If the AC power is around 0V, the light detectors of PC1 and PC2 become conducting status by zero-cross, TR1 and TR2 are turned ON and power is supplied to the heater lamp.

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7.7 HVPS

This section describes the functions of the HVPS.

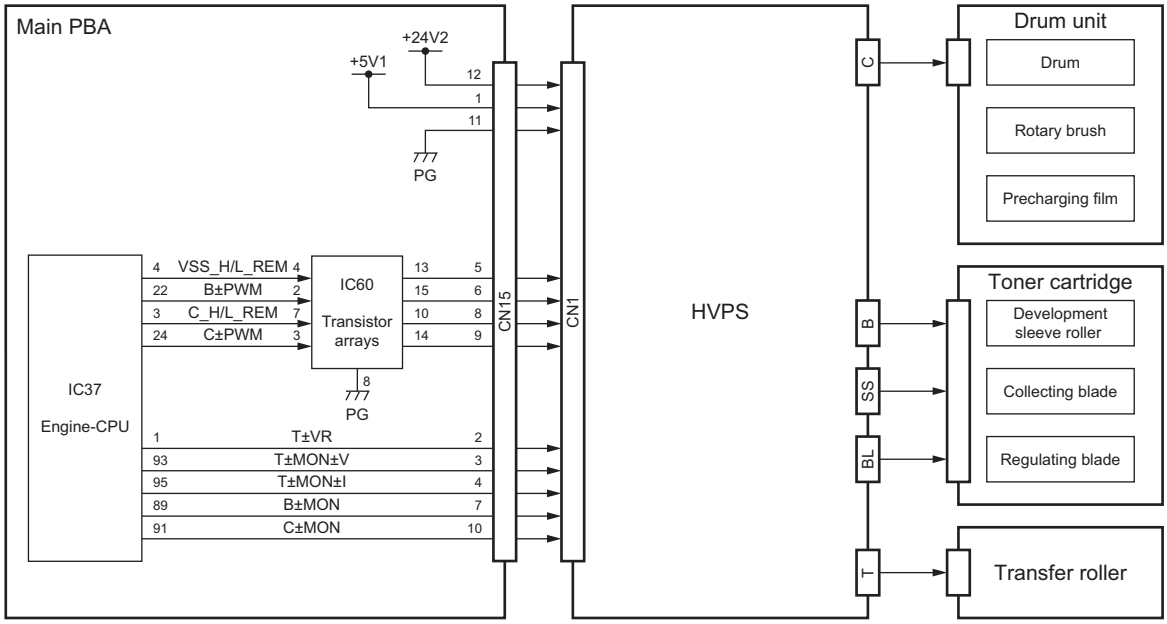

Fig. 7-56

The HVPS generates stable high voltage from +24V supplied from the LVPS and delivers it to the transfer roller, the drum, rotary brush and pre-charging film in the drum unit and the development sleeve roller, collecting blade and regulating blade in the toner cartridge. It is connected to CN15 on the Main PBA.

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7.8 TEL PBA (US/CA models: Option, SG/HK models: Standard)

This section describes the functions of the TEL PBA.

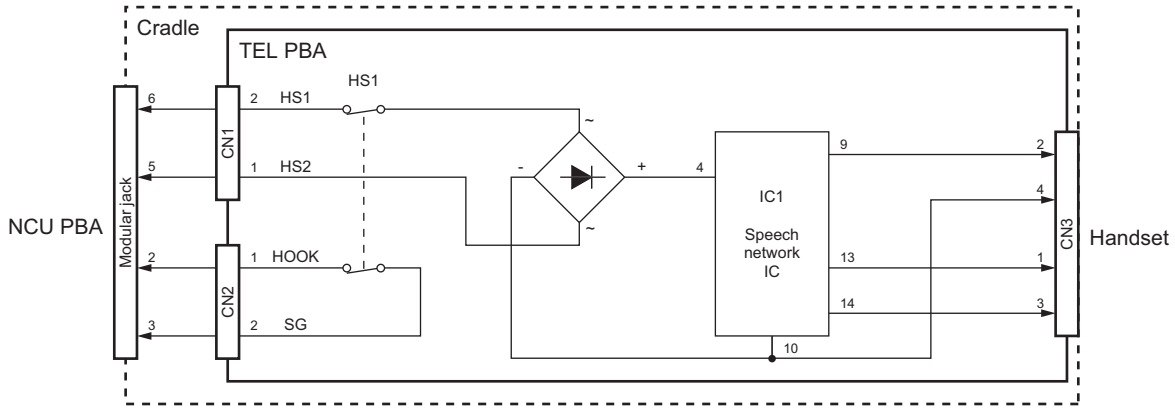

Fig. 7-57

The TEL PBA is built in the cradle for the handset installed on this machine (US/CA models: Option, SG/HK models: Standard).

The TEL PBA consists of the speech network IC (IC1) and other peripheral devices and relays signals to the handset and detects the hook state of the handset. The TEL PBA is connected to CN8 on the NCU PBA.

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7.9 OPTIONAL TRAY PBA

This section describes the function of each circuit on the Optional tray PBA.

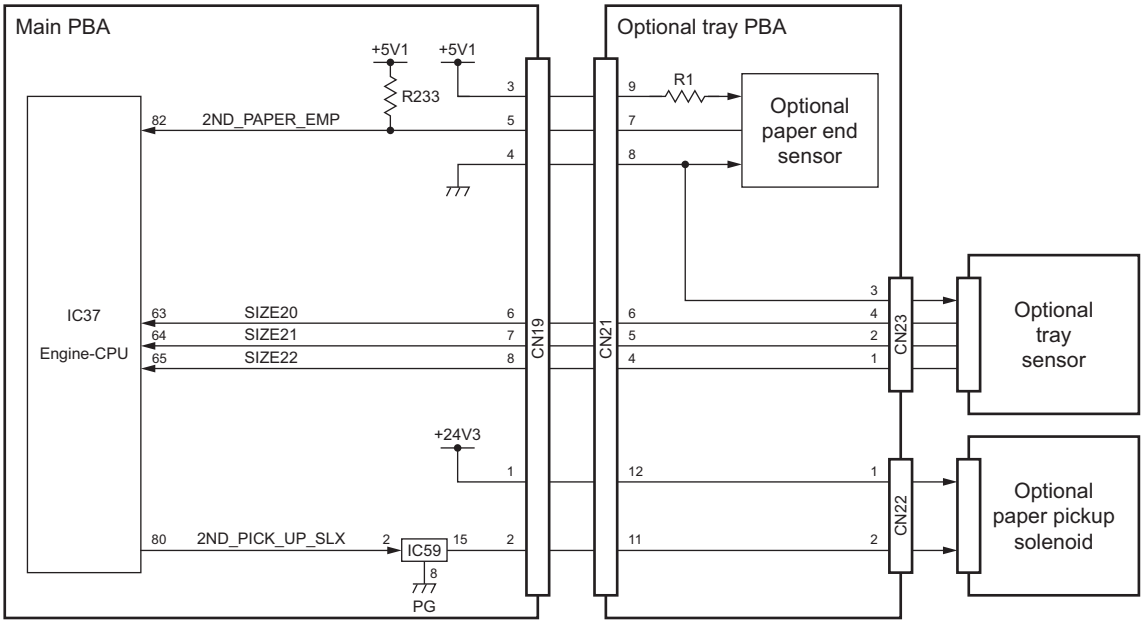

Fig. 7-58

The Optional tray PBA is contained in the optional recording paper tray optionally installed in this machine. It detects the presence and absence of recording paper in the recording paper tray and relays the recording paper tray detects sensor output signals and paper pickup solenoid drive signal.

The presence or absence of recording paper in the optional recording paper tray is detected by the optional paper end sensor. The optional paper end sensor turns on when the actuator of the optional paper end sensor is pushed down by the recording paper. This allows the 2ND_PAPER_EMPX signal to go LOW and input to the Engine-CPU (IC37) on the Main PBA to detect that recording paper is placed in the recording paper tray.

The presence or absence of recording paper tray is detected by the optional tray sensor connected to CN23. The sensor is pushed down by the projection on the side of the recording paper tray to turn on. This causes the SIZE20-2 signals to go LOW and input to the Engine-CPU to detect the recording paper tray placed.

The recording paper placed in the optional recording paper tray is fed by driving the optional paper pickup solenoid. The Engine-CPU causes the 2ND_PICK_UP_SLX signal to go LOW. This allows the optional paper pickup solenoid to be driven to transmit power to the pickup roller for feeding the recording paper.

Signal Name	Type	Active	Description	Destination
2ND_PAPER_EMPX	I	L	Optional paper detect signal	Optional paper end sensor
SIZE20-2	I	L	Optional recording paper tray detect signals 0-2	Optional tray sensor
2ND_PICK_UP_SLX	O	L	Optional paper pickup solenoid drive signal	IC59

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8. Removal/Replacement/Adjustment

8.1 Before Disassembling or Reassembling

Caution:

- This machine has high-voltage components. Before disassembling or reassembling any part, be sure to disconnect the power cord. Disassembling or reassembling with the power ON may result in an electrical shock.
- Be sure not to touch high-temperature sections such as the fuser unit and areas around it.
- Unplug the power cable and clean the area around the prongs of the plug and socket outlet once a year or more. A fire may occur when dust lies on this area.
- Avoid expose to laser beam during service. This equipment uses a laser diode. Be sure not to expose your eyes to the laser beam. Do not insert reflecting parts or tools such as a screwdriver on the laser beam path. Remove all reflecting metals such as watches, rings, etc. before starting service.
- The laser beam is not visible. Pay the closest attention when handling the laser unit components or performing operations such as adjustment of the laser beam, and this kind of operation is very dangerous and must be performed only by specially trained staff. The warning label shown below is attached on the inner housing at the upper side of the LSU.
- The beam of the semiconductor laser is very weak (15 mW of maximum power output and 770 to 800 nm of wavelength), however, the focused parallel rays create great energy which is hazardous. Some materials of the components of the laser optical unit are metal. Since the unit is in a sealed container, there is no danger of laser leakage during normal operation.

Fig. 8-1

- There is a danger of a component explosion, if the battery and IC-RAM is incorrectly replaced. Replace only with the same or equivalent type recommended by Toshiba TEC Corporation.
- Regarding the recovery and disposal of the equipment, supplies, packing materials, used batteries and IC-RAMs including lithium batteries, follow the relevant local regulations or rules.

Caution:
- Dispose of used batteries and IC-RAMs including lithium batteries according to this manual.

Attention:
- Se débarrasser de batteries et IC-RAMs usés y compris les batteries en lithium selon ce manuel.

Vorsicht:
- Entsorgung des gebrauchten Batterien und IC-RAMs (inclusive der Lithium-Batterie) nach diesem Handbuch.

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Warning

- Following are NON-REPAIRABLE parts. Never try to disassemble these parts.
  - Drum unit
  - Toner cartridge
  - CIS
  - LSU
  - Fuser
- Be sure to use screwdrivers suitable for the respective screws.
- Do not use damaged parts or screws. The use of damaged parts or screws may result in malfunction or failure of the machine.
- When disassembling or reassembling, do not touch the PC boards. Static electricity on you can damage parts. Before touching any PC board, be sure to ground yourself.
- When the drum unit is removed from the machine, do not touch the drum surface. Also place the toner cartridge and drum unit on a level surface.
- Do not leave the drum unit exposed to room light for more than a few minutes, or the drum unit may become damaged and unusable.

Notes:

- Before disassembling, be sure to print out the following programming lists: Abbreviated dial list, alphabet dial list, group list, service parameter list. When the power is shut off, this data may be lost or return to their initial values.
- Before disassembling, remove the phone line cord, handset, process unit (toner cartridge, drum unit), interface cable, and paper tray.
- All screws are standard ISO. And all dimensions are given in mm.
- Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.
- Be careful not to touch the sharp edge on the left side frame indicated in the figure.

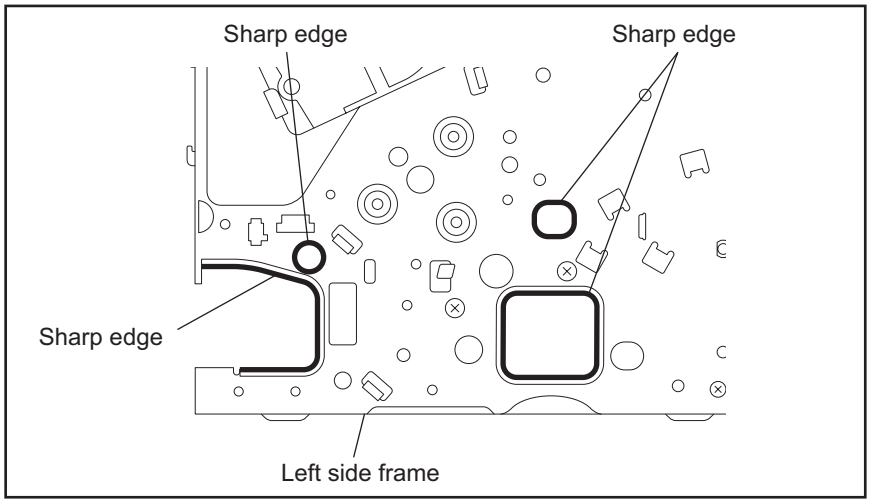

Fig. 8-2

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8.2 Disassembly and Reassembly

8.2.1 Cover Block

[1] Operation Panel Assembly

Before disassembling or reassembling, be sure to refer to 📖 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Open the operation panel assembly, and release the operation panel stopper.

(2) Disconnect the connector from the operation panel assembly.

(3) Remove the one screw from the FG cable terminal.

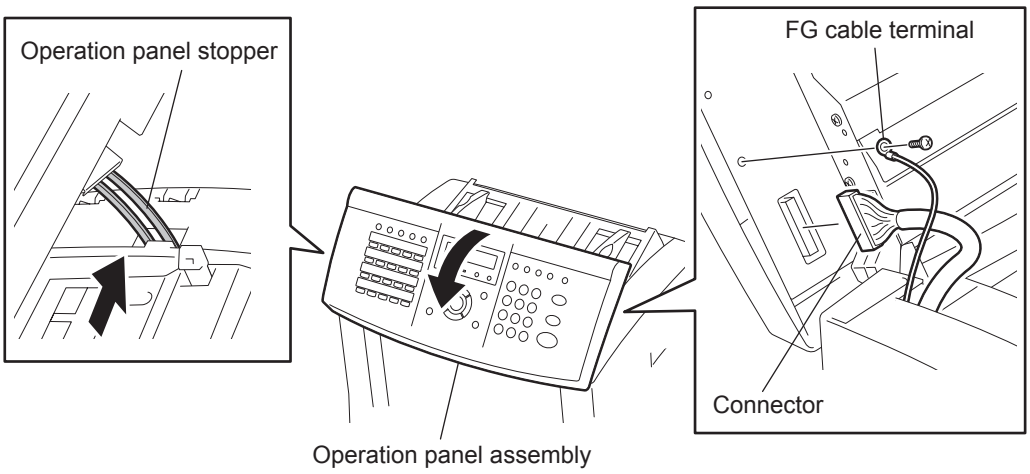

Fig. 8-3

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(4) Rotate the operation panel assembly until the right boss of the operation panel assembly comes to the release position. Then, lift the operation panel assembly and remove the right boss of the operation panel assembly from the hinge.

(5) Slide the operation panel assembly to the right, and remove the operation panel assembly.

Note:

After reassembling, perform the operation panel test referring to the 📖 P.11-15 "[1] OPE. PANEL TEST [MENU], [9], [4], [01]"

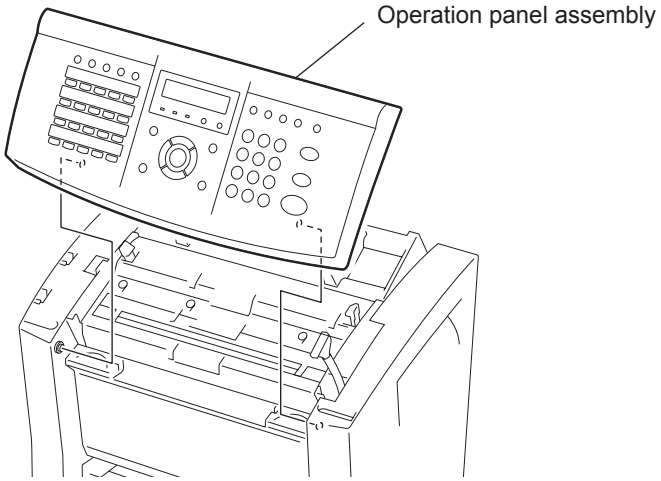

Fig. 8-4

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[2] Right Side Cover

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the operation panel assembly. (🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Remove the four screws from the right side cover, and remove the right side cover.

Note:
When installing the right side cover, align the four hooks on the front side of the right side cover with the holes of the frame.

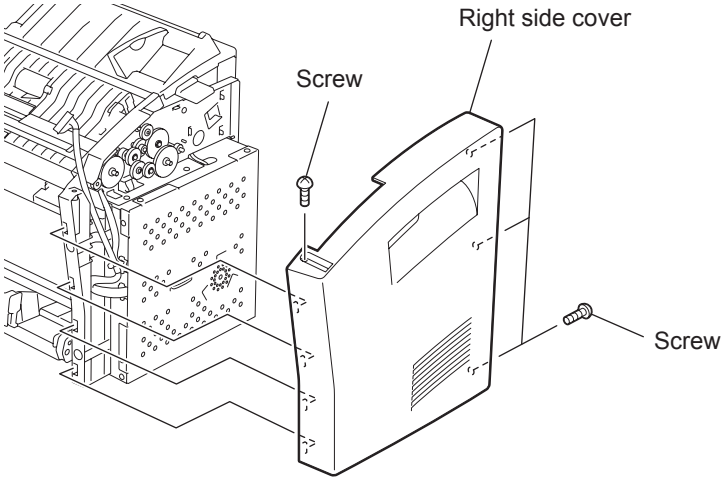

Fig. 8-5

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[3] Left Side Cover

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the operation panel assembly. (🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Remove the four screws from the left side cover, and remove the left side cover.

Note:

When installing the left side cover, align the four hooks on the front side of the left side cover with the holes of the frame.

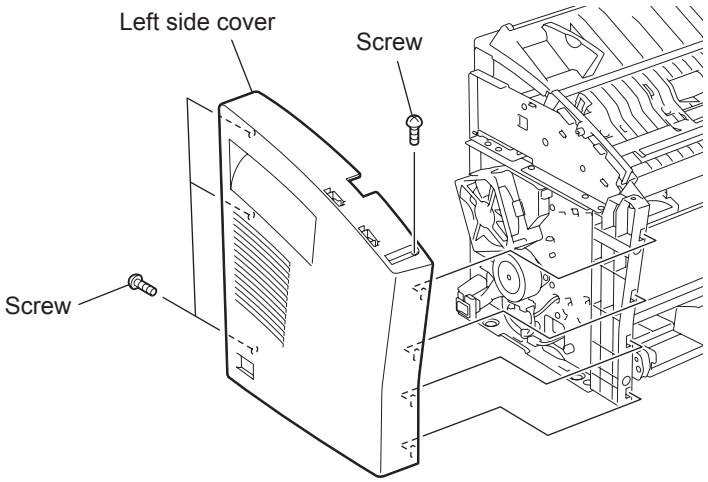

Fig. 8-6

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[4] RX Cover Assembly

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Push the release button and open the RX cover assembly.

(2) Remove the one screw. Slide the RX cover stopper and pull out the hook of the RX cover stopper from the hole.

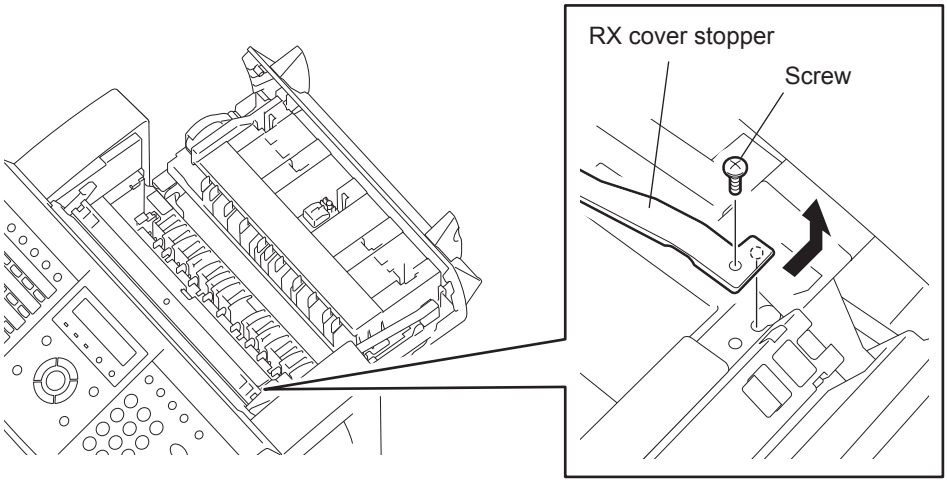

Fig. 8-7

(3) Remove the one screw to remove the one boss. Remove the RX cover assembly by sliding it.

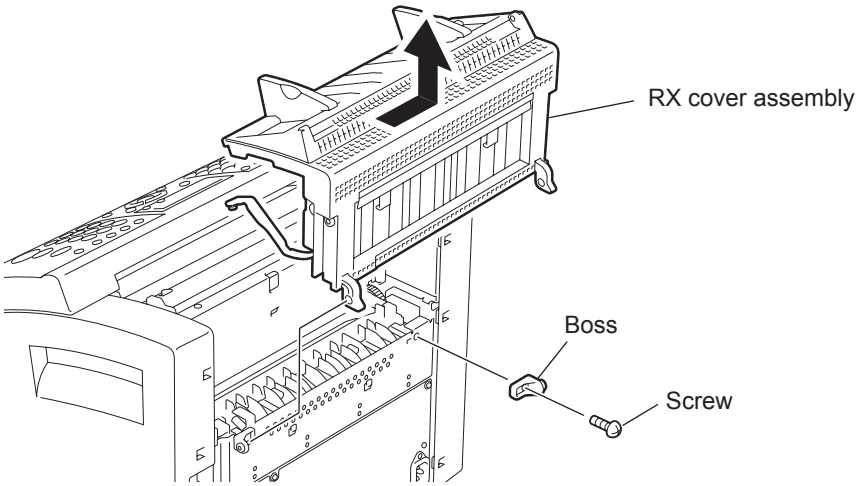

Fig. 8-8

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[5] Rear Cover Assembly

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the left side cover. (🕮 P.8-6 "[3] Left Side Cover")

(2) Remove the five screws from the rear cover assembly, and pull put the rear cover assembly.

Note:
Do not pull the rear cover assembly strongly since the harness is connected to this assembly.

(3) Disconnect the three connectors from the rear cover assembly, and remove the rear cover assembly.

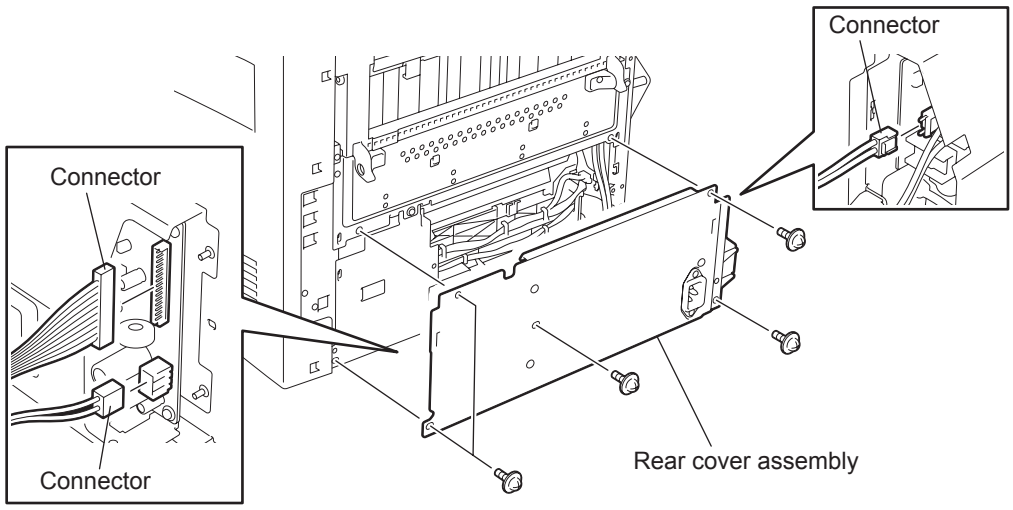

Fig. 8-9

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[6] Front Cover

Before disassembling or reassembling, be sure to refer to 📖 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Open the front cover.

(2) Pull out the left boss of the front cover and then draw out the front cover toward you.

(3) Pull out the right boss of the front cover and then remove the front cover.

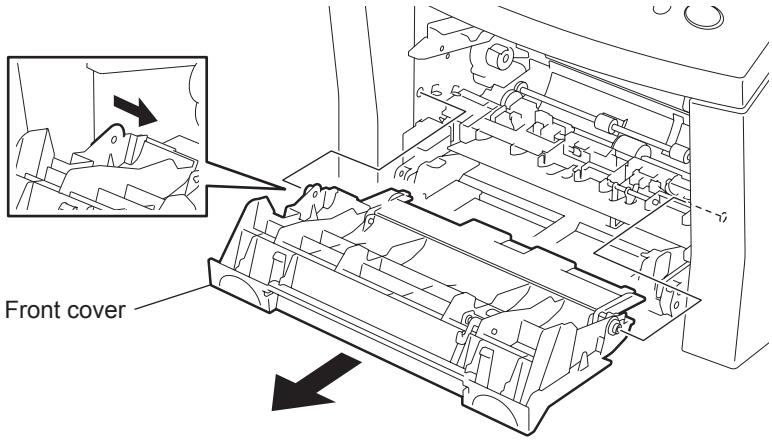

Fig. 8-10

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8.2.2 PBA Block

[1] NCU PBA

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the operation panel assembly. (Refer to 🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Remove the right side cover. (Refer to 🕮 P.8-5 "[2] Right Side Cover")

(3) Remove five screws from the main PBA cover, and pull out the main PBA cover.

Note:
A speaker and a battery cell are installed inside of the main PBA cover. Each harness of this speaker and this battery cell is connected to the main PBA. Therefore do not pull the main PBA cover strongly.

(4) Disconnect the two connectors from the main PBA, and remove the main PBA cover.

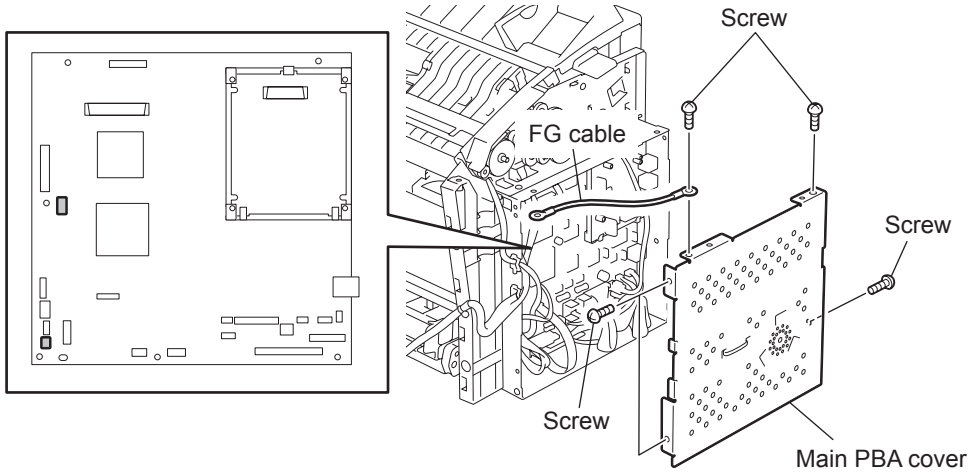

Fig. 8-11

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(5) Remove the ground cable from the W1 or W2 on the NCU PBA.

(6) Release the three hooks of the PBA plate, and remove the NCU PBA.

Notes:

- Carefully handle the boards that are directly connected together to avoid damaging the connectors and boards.
- For IT, DK, and FI machines of EU model, connect the ground cable to the W1. Connect the ground cable to the W2 with the machines of EU and AU models for all other destinations.
- US/CA, SG and HK model equip the terminal W1 only (no W2 is equipped).

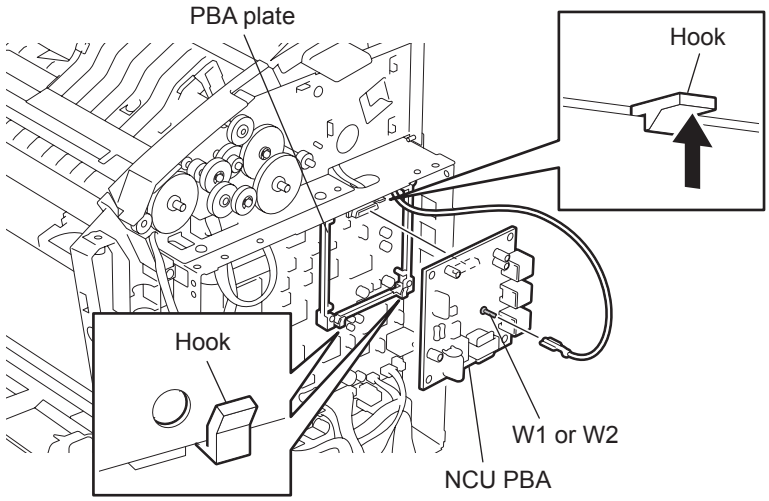

Fig. 8-12

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[2] Main PBA

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the NCU PBA. (🕮 P.8-10 "[1] NCU PBA")

(2) Disconnect the eighteen connectors from the main PBA.

(3) Remove the seven screws from the main PBA, and remove the main PBA and ground cable.

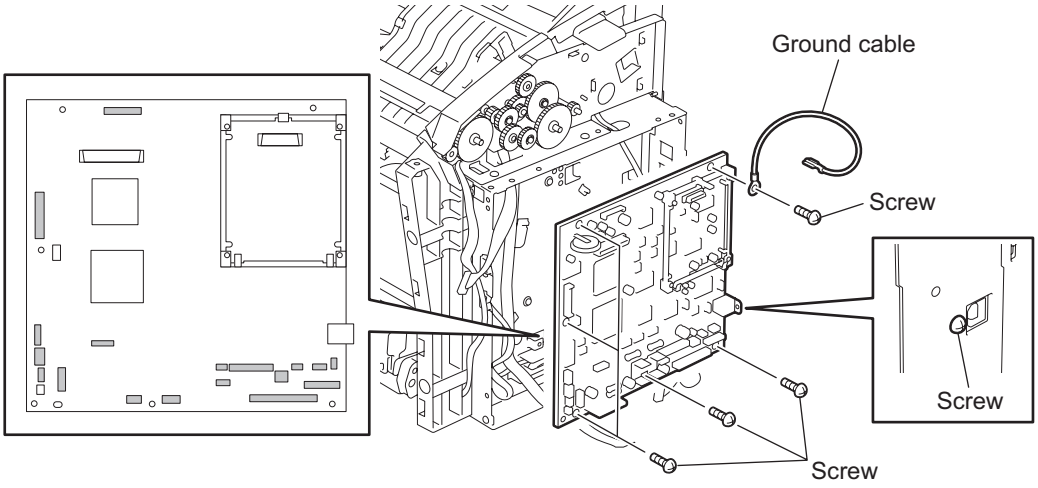

Fig. 8-13

Caution:

There is a danger of a component explosion, if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to this manual.

Note:

After reassembling, turn the power switch ON, and execute and confirm the following:

- Perform the memory clear (ALL) referring to the 🕮 P.11-25 "[1] MEMORY CLEAR [MENU], [9], [5], [01]"
- Set the country/region where the machine is used referring to the 🕮 P.8-58 "8.3.2 Country/Region Setting"
- According to the pre-output lists of the registration and programming, set the function again.
- Perform the edge registration adjustment referring to the 🕮 P.8-56 "8.3.1 Edge Registration"
- Reset all counter data in the memory write mode using the hex data provided on the communication journal referring to the 🕮 P.11-28 "[3] MEMORY WRITE [MENU], [9], [5], [03]"
  SCAN COUNT: F06DAA - F06DAD
  PRINT COUNT: F06DB2 - F06DB5

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[3] LVPS

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the rear cover assembly. (Refer to 🕮 P.8-8 "[5] Rear Cover Assembly")

(2) Remove the three screws from the rear cover assembly, and remove the LVPS.

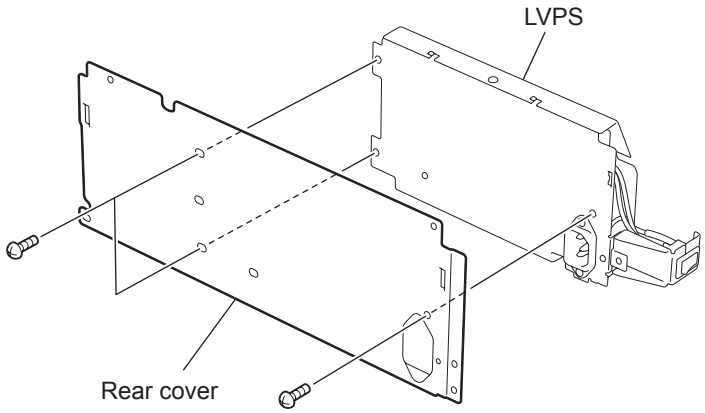

Fig. 8-14

(3) Remove the two screws from the LVPS, and remove the LVPS cover.

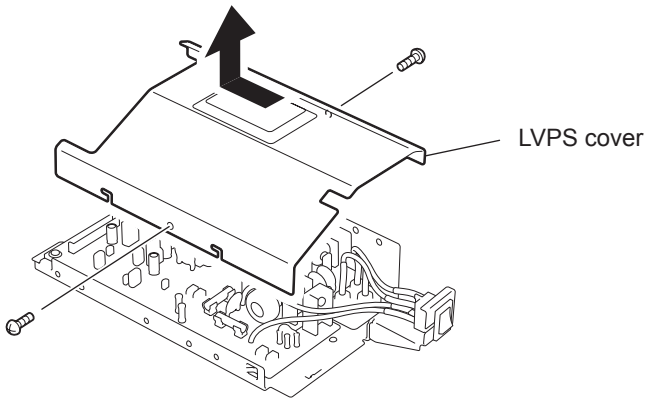

Fig. 8-15

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[4] HVPS

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the fuser. (Refer to 🕮 P.8-32 "[4] Fuser")

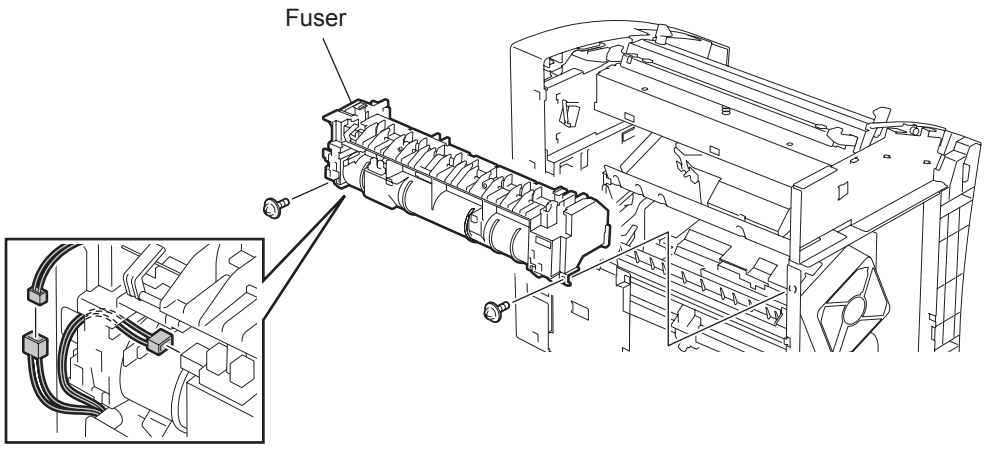

Fig. 8-16

(2) Remove the three screws to remove the HVPS, and then disconnect the one connector from the HVPS.

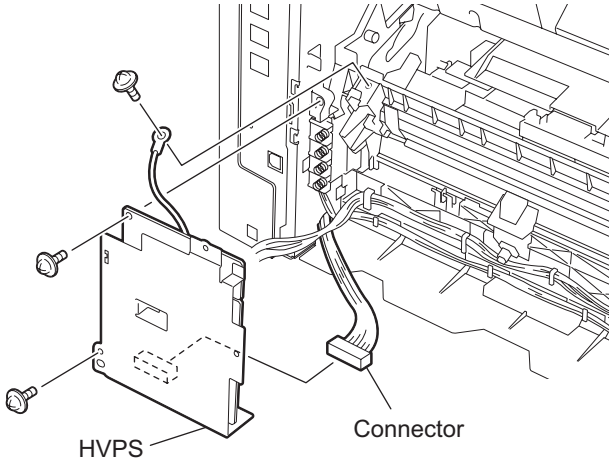

Fig. 8-17

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8.2.3 Top Block

[1] TX Drive Assembly

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the operation panel assembly. (Refer to 🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Remove the right side cover. (Refer to 🕮 P.8-5 "[2] Right Side Cover")

(3) Remove the left side cover. (Refer to 🕮 P.8-6 "[3] Left Side Cover")

(4) Remove the five screws from the main PBA cover, and remove the FG cable and main PBA cover.

Note:

A speaker and a battery are installed inside of the main PBA cover. Each harness of this speaker and this battery is connected to the main PBA. Therefore do not pull the main PBA cover strongly.

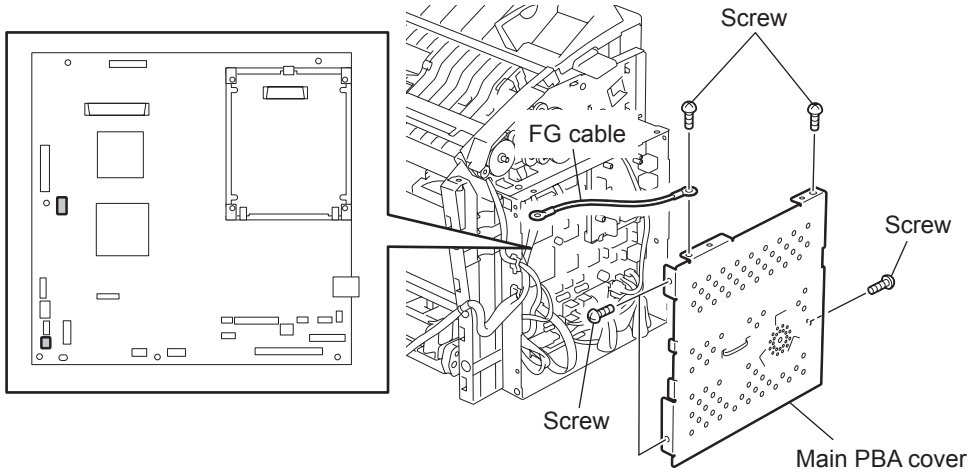

Fig. 8-18

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(5) Remove the one screw. Slide the RX cover stopper and pull out the hook of the RX cover stopper from the hole.

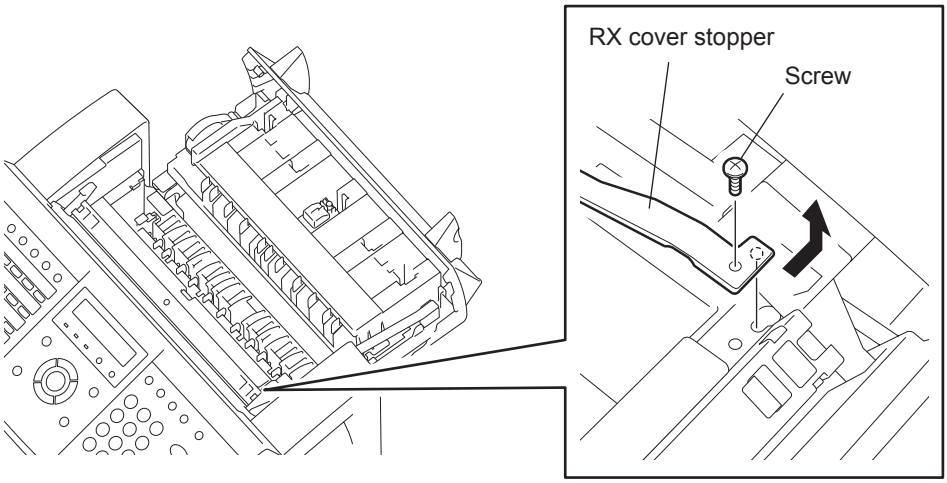

Fig. 8-19

(6) Disconnect the three connectors from the main PBA. Remove the seven screws from the TX drive assembly to remove the assembly.

Note:
When reassembling, make sure that the harness is not caught between the frame and the TX drive assembly.

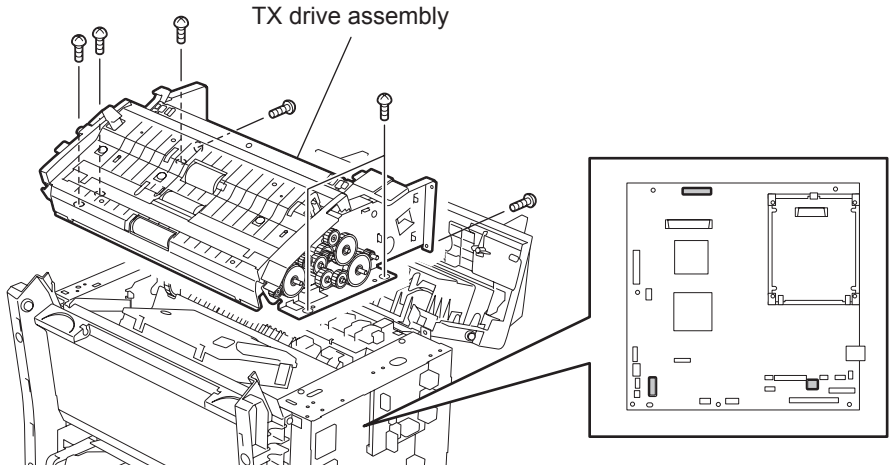

Fig. 8-20

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[2] TX Cover

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the operation panel assembly. (Refer to 🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Remove the right side cover. (Refer to 🕮 P.8-5 "[2] Right Side Cover")

(3) Push the release button and open the RX cover assembly.

(4) Remove the three screws from TX cover, and remove the TX cover.

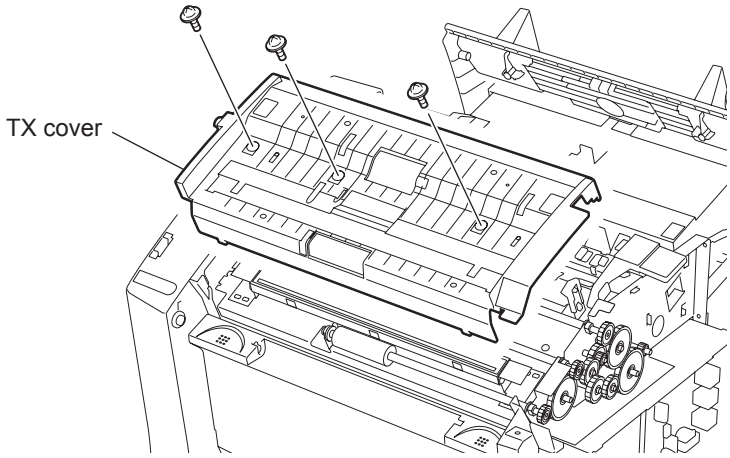

Fig. 8-21

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[3] CIS

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX cover. (Refer to 🕮 P.8-17 "[2] TX Cover")

(2) Remove the two screws from the CIS. Disconnect the one connector from the CIS, and remove the CIS.

Notes:

- Do not scratch or scan the glass surface. If it is dirty, wipe it with a lens cleaning cloth.
- After reassembling, load a document and press the [COPY] key. Confirm that copying and feeding normally operate. If necessary, perform the control level set referring to the 🕮 P.11-29 "[4] SET CONT. LEVEL [MENU], [9], [5], [04]".

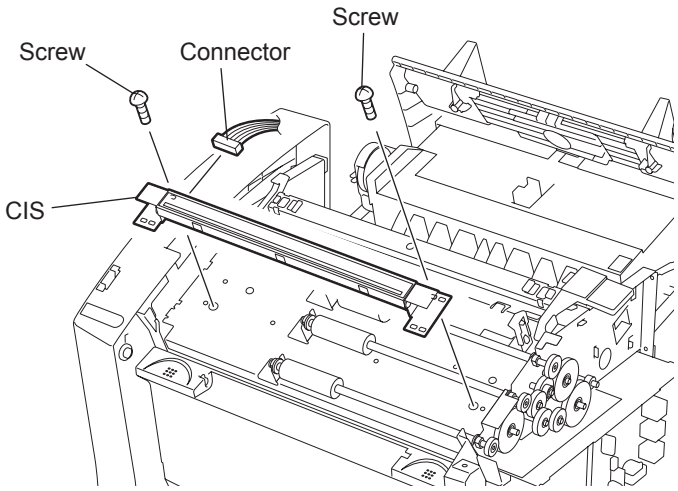

Fig. 8-22

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[4] TX Feed Rollers

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX cover. (Refer to 🕮 P.8-17 "[2] TX Cover")

(2) Lift the TX feed roller assembly, and release the left side of the TX feed roller from the guide.

(3) Slide the TX feed roller assembly to the left, and release the shaft holder on the right of the TX feed roller assembly from the TX frame. Then, remove the TX feed roller assembly.

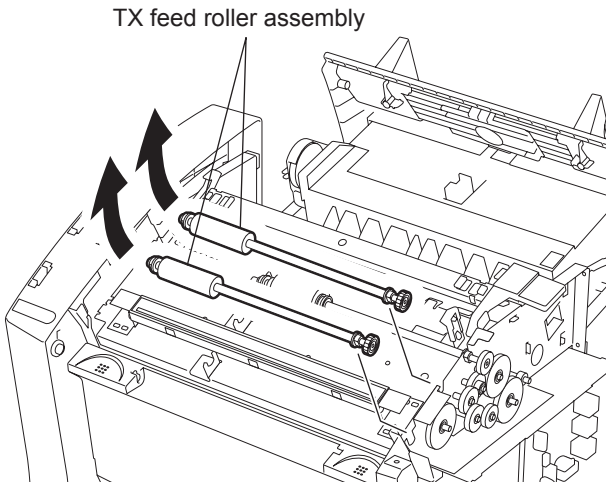

Fig. 8-23

(4) Remove the gear and the two shaft holders from the TX feed roller assembly.

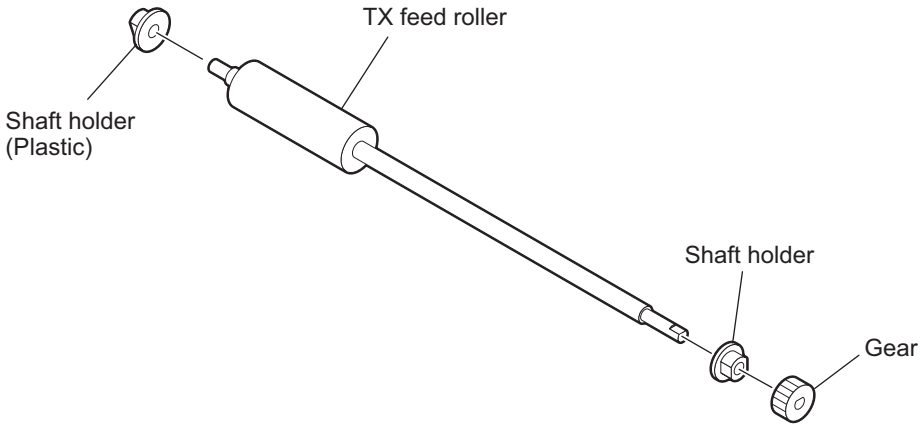

Fig. 8-24

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[5] ADF Roller

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX cover. (Refer to 🕮 P.8-17 "[2] TX Cover")

(2) Lift the ADF roller assembly, and release the left side of the ADF roller assembly from the guide.

(3) Slide the ADF roller assembly to the left, and release the shaft holder on the right of the ADF roller assembly from the TX frame. Then, remove the ADF roller assembly.

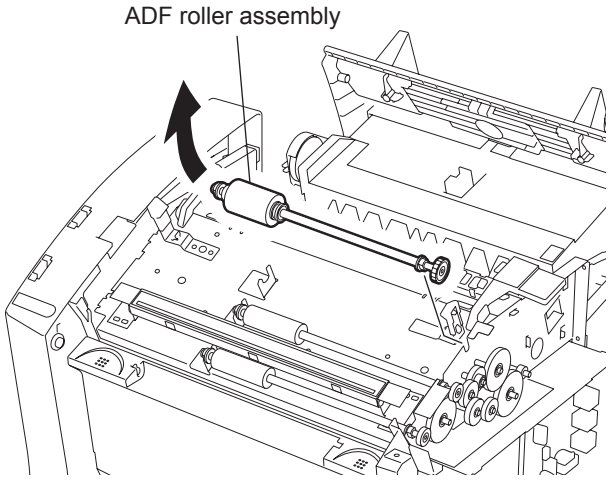

Fig. 8-25

(4) Remove the gear, two shaft holders, two washers, ADF roller, and spring from the ADF roller assembly.

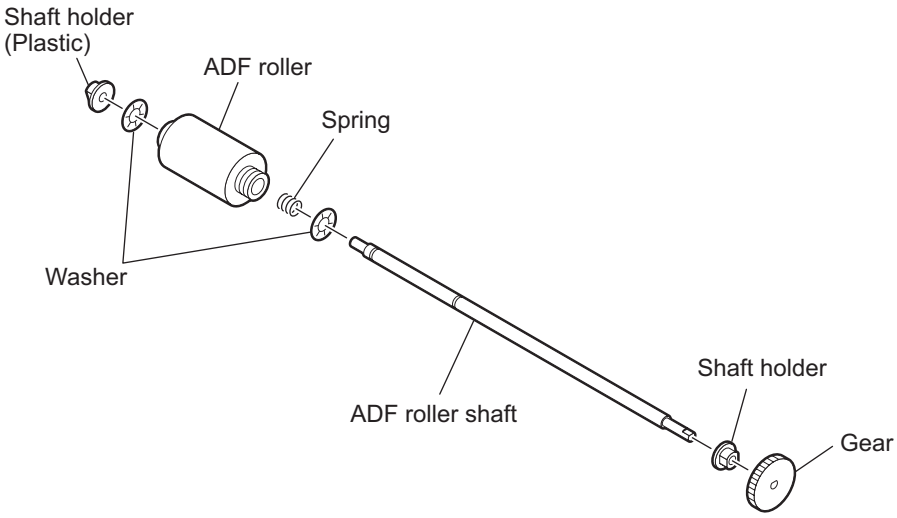

Fig. 8-26

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[6] TX Gears

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX cover. (Refer to 🕮 P.8-17 "[2] TX Cover")

(2) Remove the E-rings and release the hooks, and then remove the TX gears from the frame.

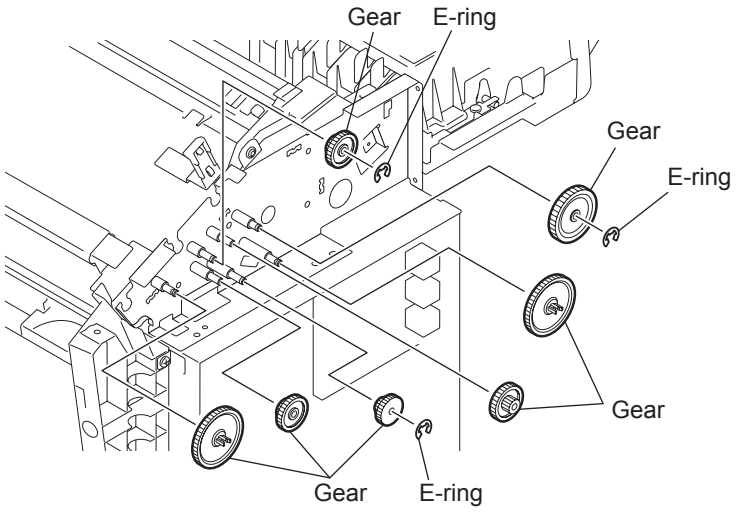

Fig. 8-27

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[7] TX Motor

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX drive assembly. (Refer to 🕮 P.8-15 "[1] TX Drive Assembly")

(2) Remove the two screws from the TX inner cover, and remove the TX inner cover.

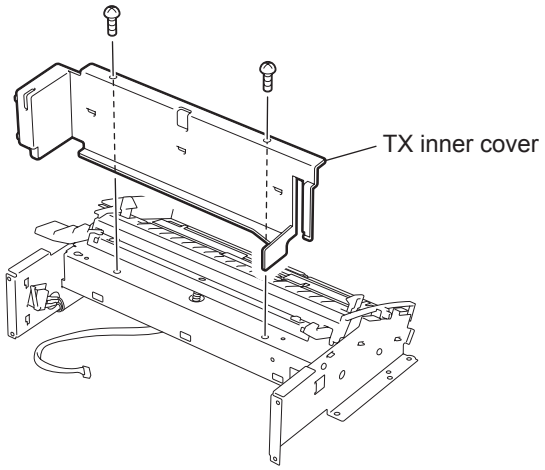

Fig. 8-28

(3) Remove the two screws from the TX motor, and remove the TX motor.

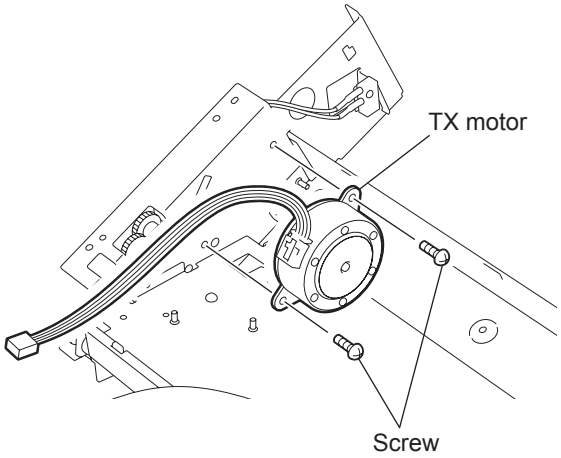

Fig. 8-29

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[8] RX Cover Open Switch

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX drive assembly. (Refer to 🕮 P.8-15 "[1] TX Drive Assembly")

(2) Remove two screws and remove the TX inner cover.

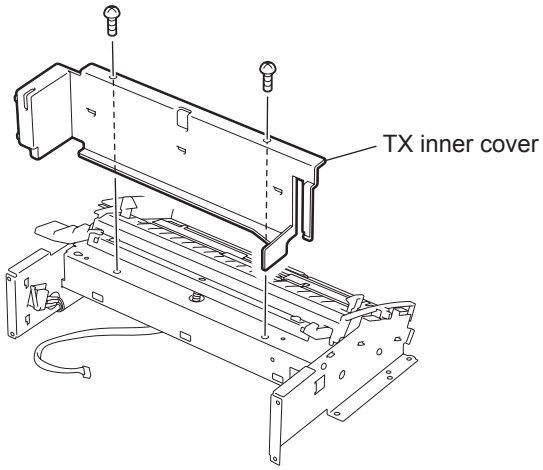

Fig. 8-30

(3) Remove one screw from the RX cover open switch and remove the RX cover open switch.

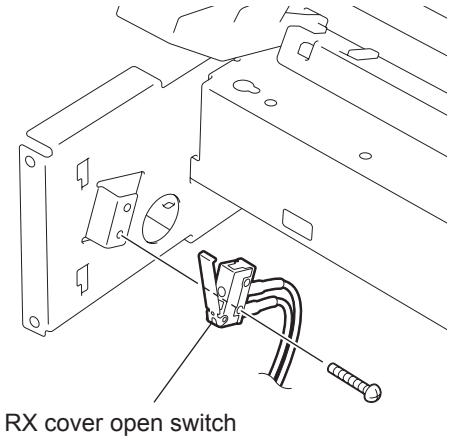

Fig. 8-31

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[9] ADF Pad Assembly

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Open the operation panel.

(2) Lift the ADF pad assembly while pushing the tab on the bottom of the ADF pad assembly.

(3) Pull out the ADF pad assembly from the guide.

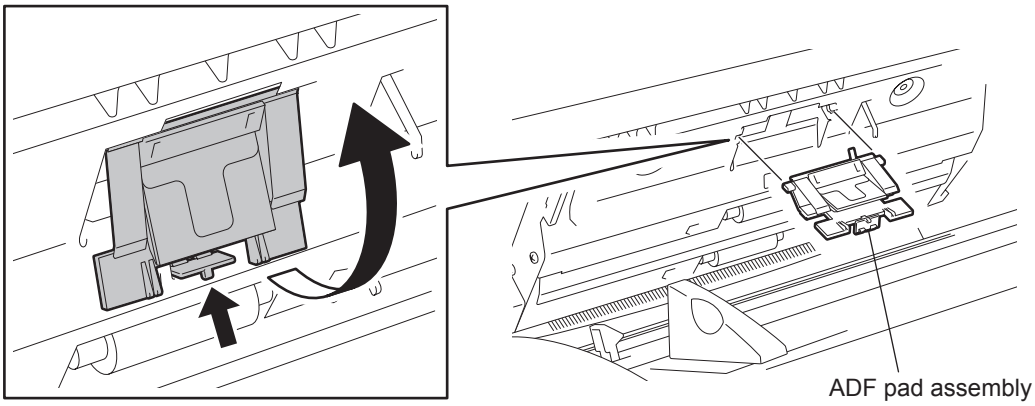

Fig. 8-32

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[10] TX Pinch Rollers

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the operation panel assembly. (Refer to 🕮 P.8-3 "[1] Operation Panel Assembly")

(2) Release the two hooks of the operation panel assembly, and remove the operation panel frame.

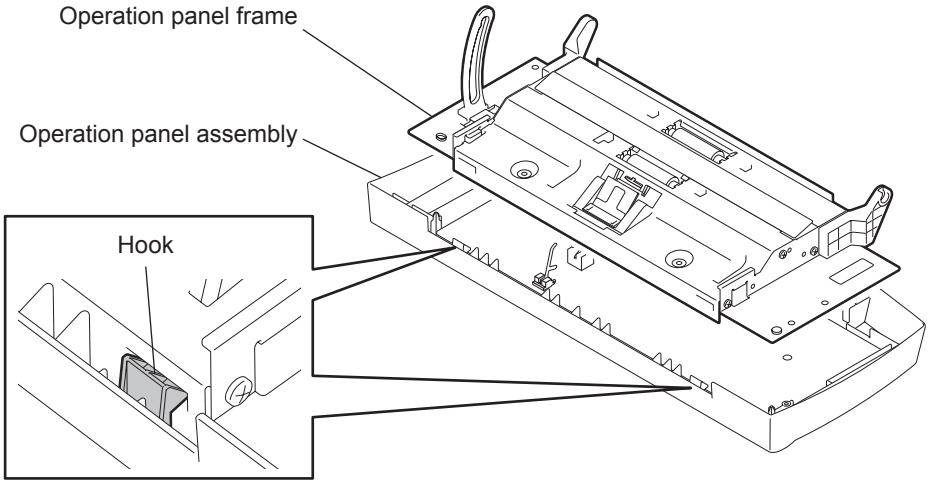

Fig. 8-33

(3) Remove the two screws from the pinch roller springs, and remove the two pinch roller springs.

(4) Remove the two pinch rollers.

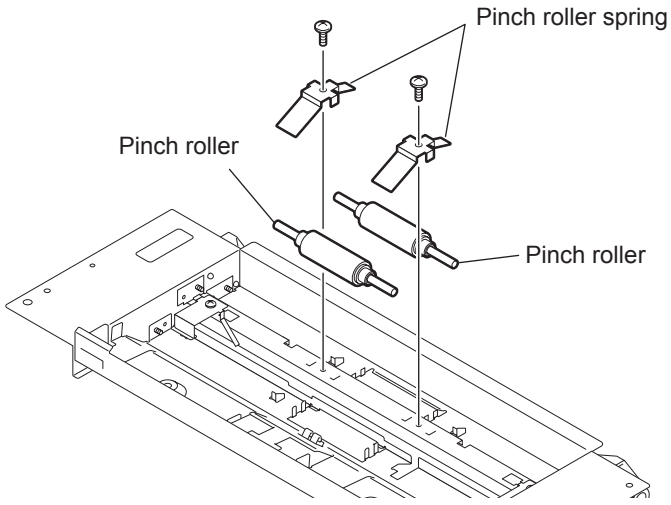

Fig. 8-34

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[11] Scanner Guide

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX pinch rollers. (Refer to 🕮 P.8-25 "[10] TX Pinch Rollers")

(2) Remove the two screws from the scanner guide springs, and remove the two scanner guide springs.

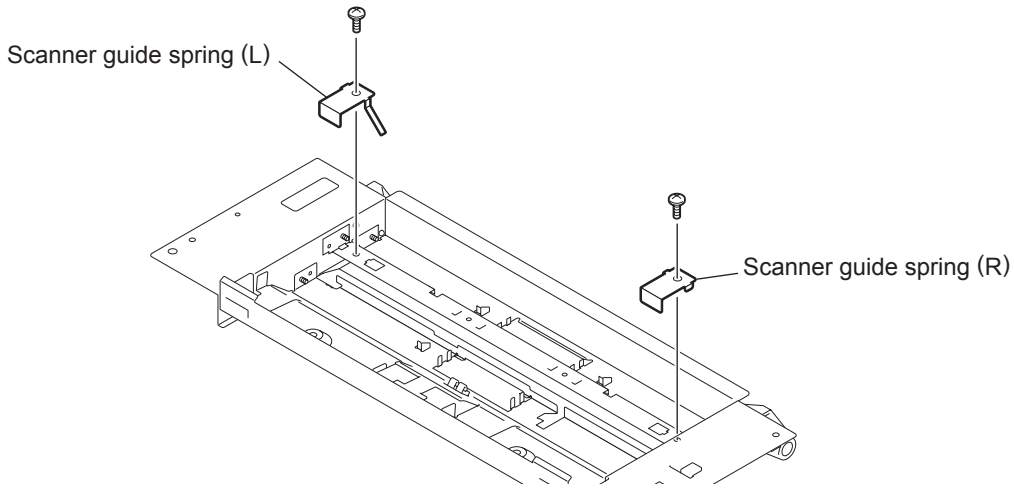

Fig. 8-35

(3) Release the two hooks of the scanner guide, and remove the scanner guide.

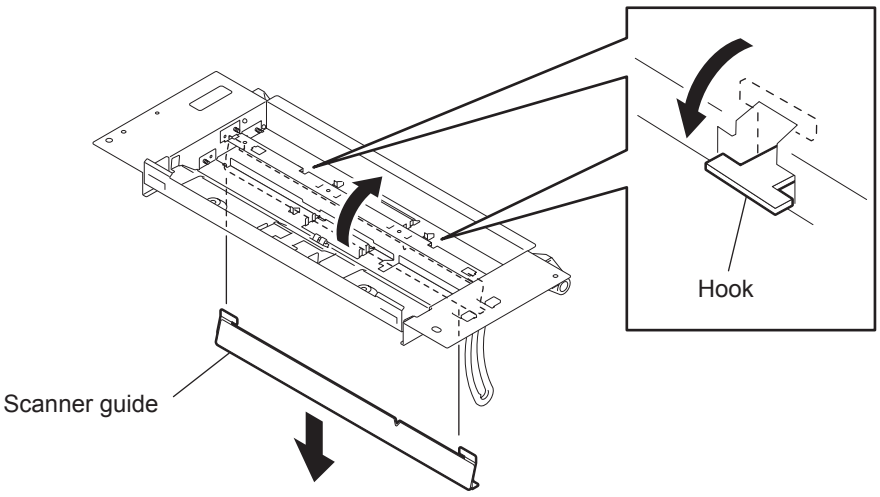

Fig. 8-36

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[12] RX Feed Roller

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the RX cover assembly. (Refer to 🕮 P.8-7 "[4] RX Cover Assembly")

(2) Turn the RX gear cover to engage the grooves with the protrusions.
And then release the hook of the RX gear cover and remove the RX gear cover.

Note:
Make sure that the arm does not go over the peg when installing the RX gear cover.

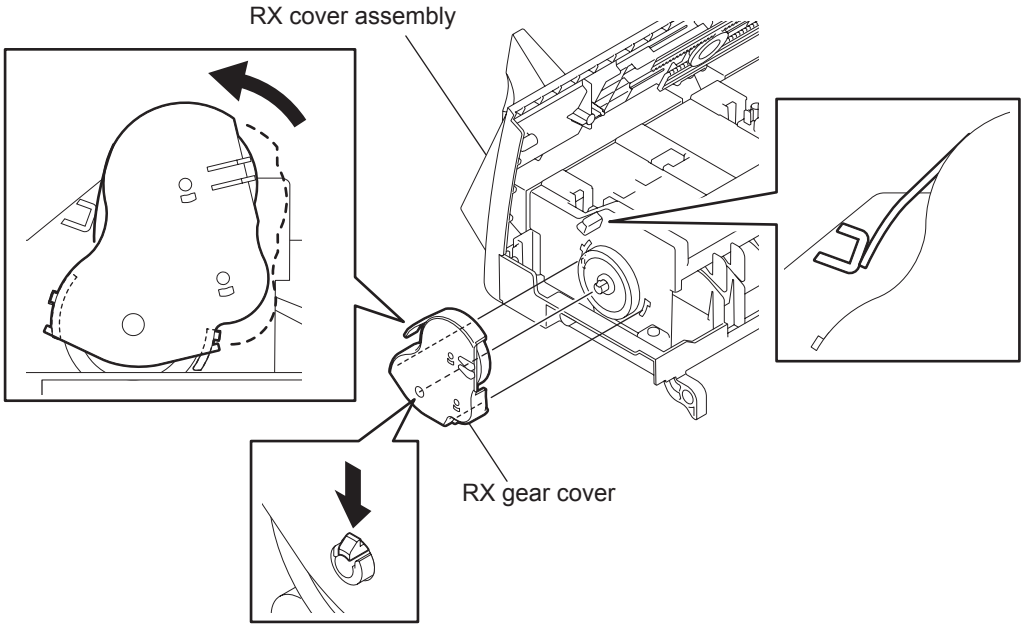

Fig. 8-37

(3) Remove the five screws from the RX guide, and remove the RX guide.

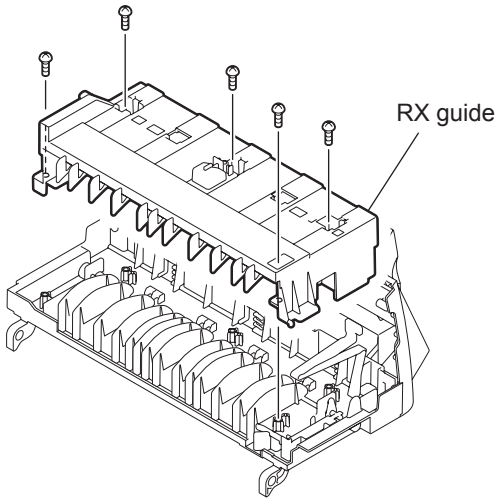

Fig. 8-38

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(4) Remove the one screw from the ground plate, and remove the ground plate.

(5) Remove the one screw from the RX cover stopper, and remove the RX cover stopper.

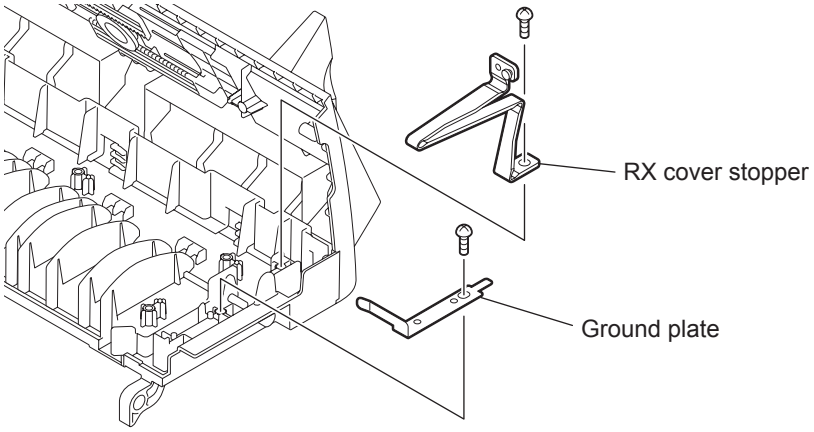

Fig. 8-39

(6) Rotate the shaft holders on the both ends of the RX feed roller shaft until they can be released from the guide of the RX cover. Then, lift the RX feed roller shaft to remove.

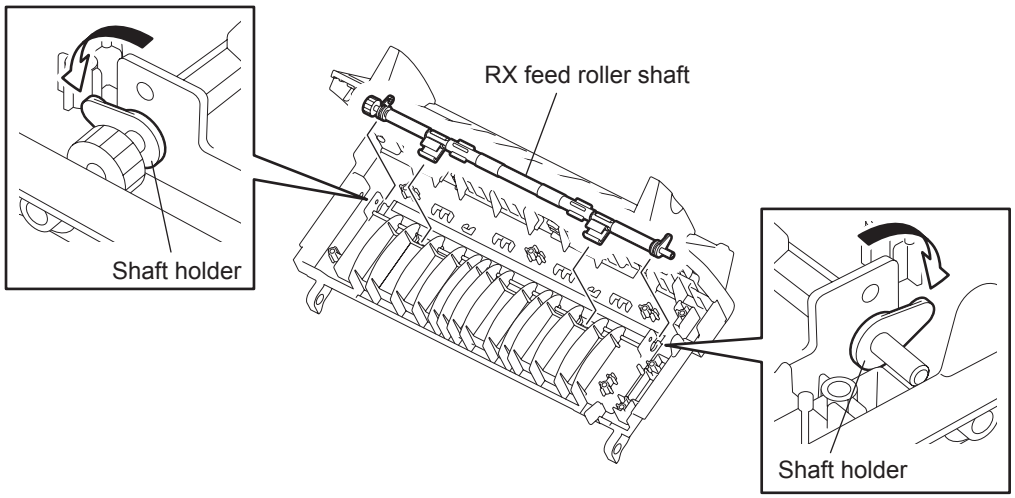

Fig. 8-40

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8.2.4 Base Block

[1] Pickup Roller

Before disassembling or reassembling, be sure to refer to 📖 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Open the front cover.

(2) While lifting the hook, slide the pickup roller to the right.

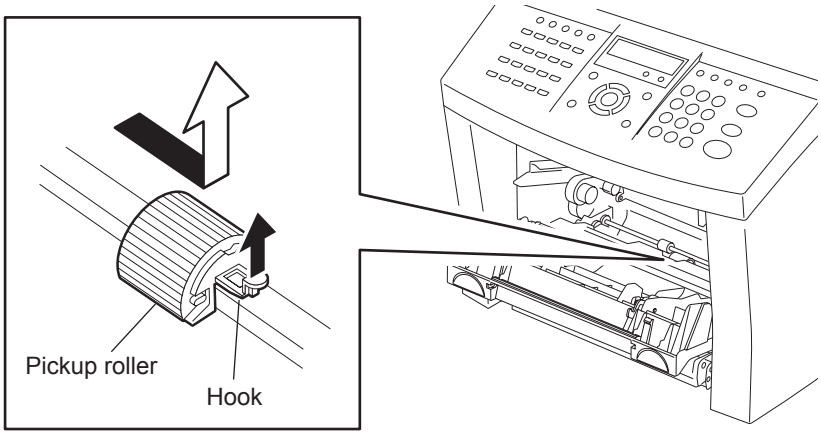

Fig. 8-41

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[2] Transfer Roller

Before disassembling or reassembling, be sure to refer to 📖 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Open the front cover.

(2) Rotate the bushings on the sides of the transfer roller until they can be released from the guide. Then, remove the Transfer roller.

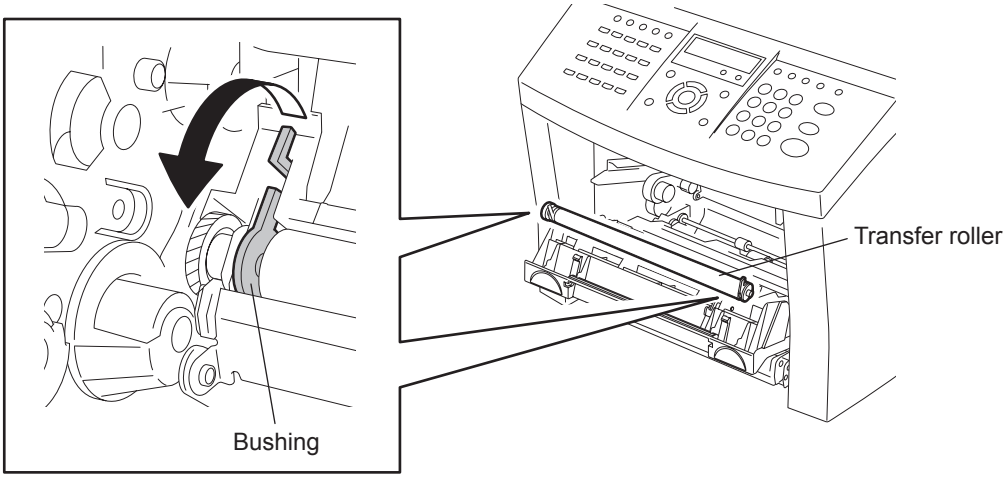

Fig. 8-42

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[3] LSU

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the TX drive assembly. (Refer to 🕮 P.8-15 "[1] TX Drive Assembly")

(2) Disconnect the one connector from the main PBA.

(3) Remove the three screws and disconnect the one cable from the LSU, and then remove the LSU.

Note:

After reassembling, perform the print test referring to the 🕮 P.11-12 "[7] PRINT TEST [MENU], [9], [2], [07]". If necessary, perform the edge registration adjustment referring to the 🕮 P.8-56 "8.3.1 Edge Registration".

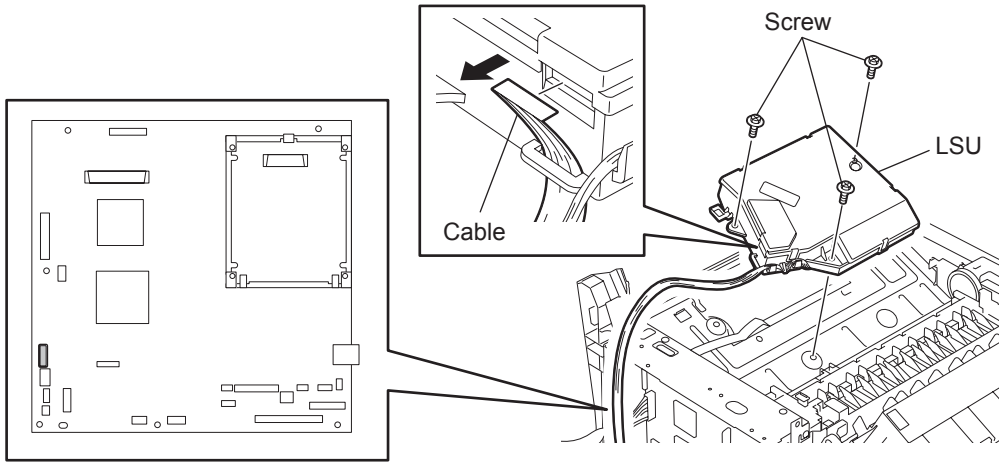

Fig. 8-43

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[4] Fuser

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the rear cover assembly. (Refer to 🕮 P.8-8 "[5] Rear Cover Assembly")

(2) Push the release button and open the RX cover assembly.

(3) Remove the one screw. Slide the RX cover stopper and pull out the hook of the RX cover stopper from the hole.

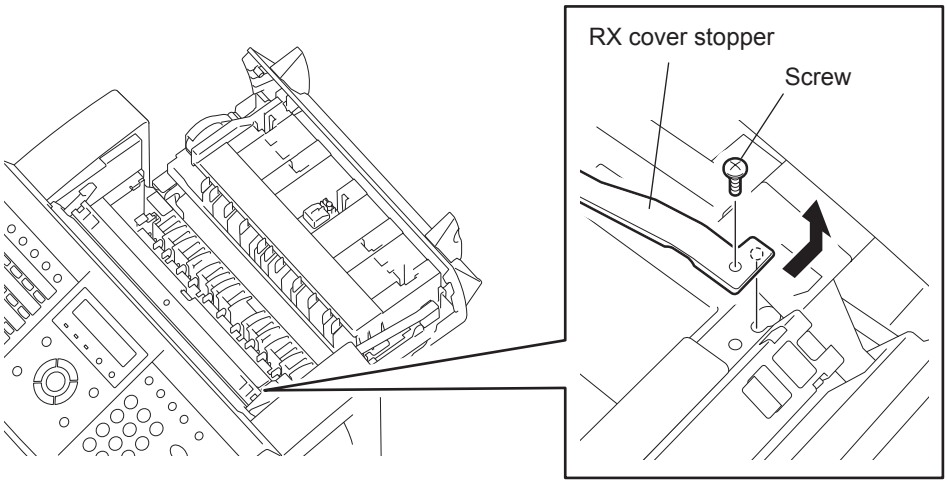

Fig. 8-44

(4) Remove the three screws from the RX unit. Remove the RX unit by sliding it upward.

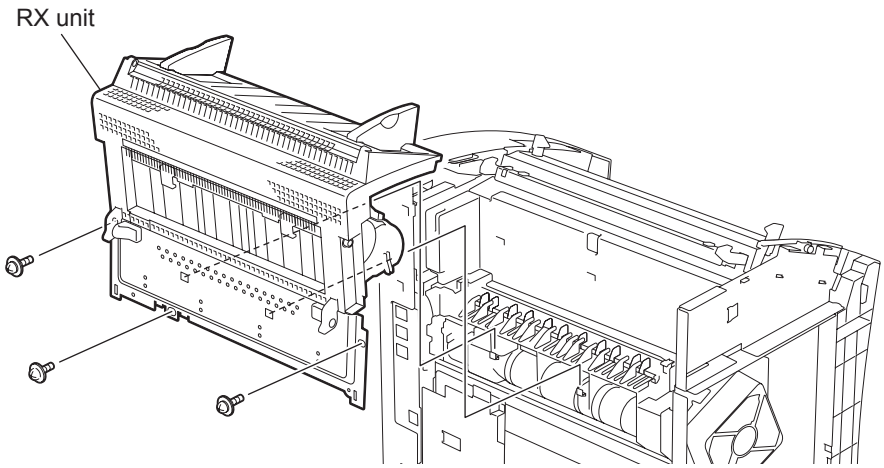

Fig. 8-45

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(5) Remove the two screws from the TX inner cover, and remove the TX inner cover.

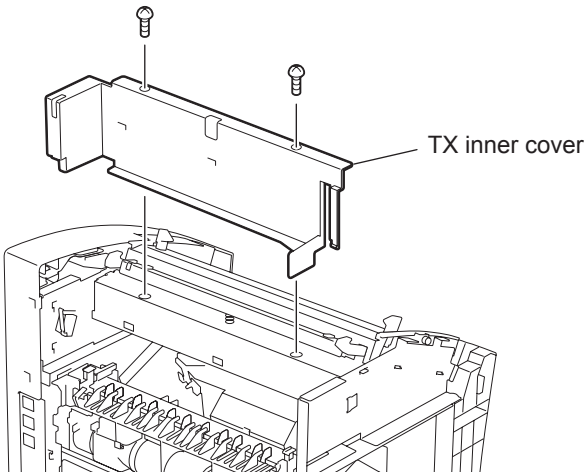

Fig. 8-46

(6) Disconnect the two connectors of the fuser. Remove the two screws from the fuser and remove the fuser.

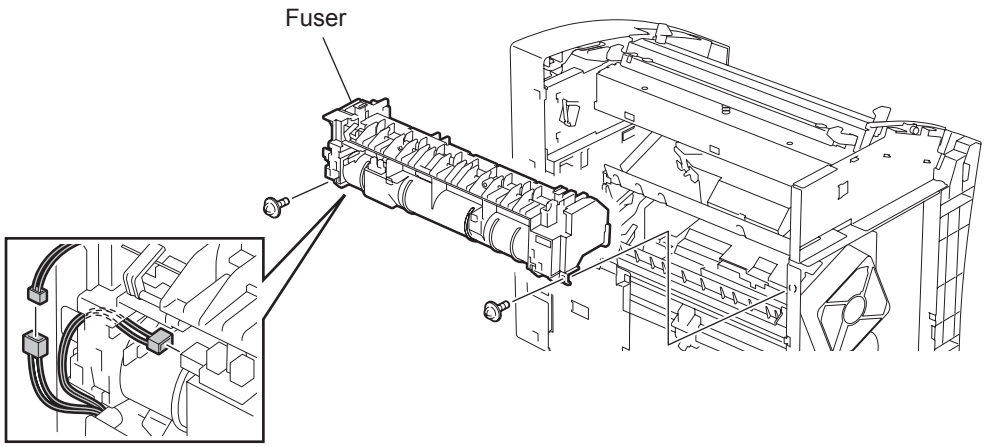

Fig. 8-47

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(7) Remove the two screws from the fuser.

(8) Open the fuser lower cover as if to turn upward to release the lock. After releasing the lock, lift up the fuser lower cover to remove.

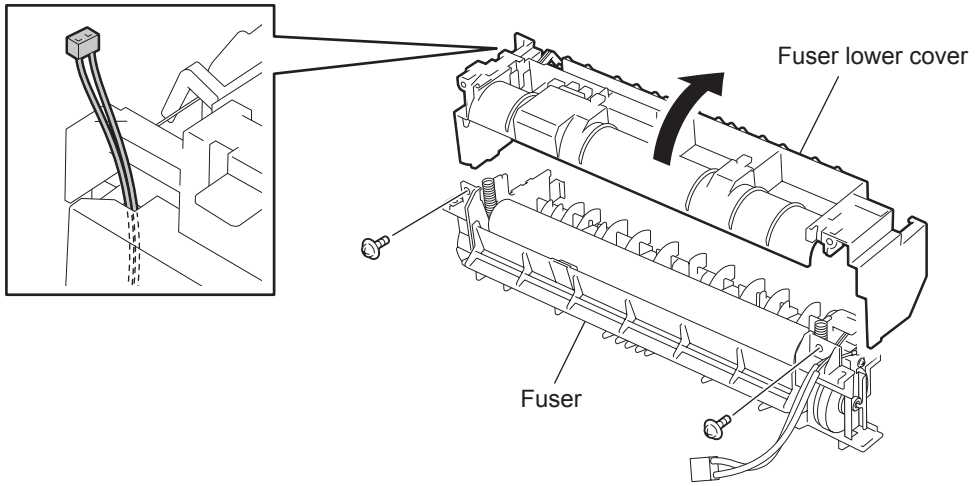

Fig. 8-48

(9) Remove the two springs, two pressure roller bushings and the pressure roller.

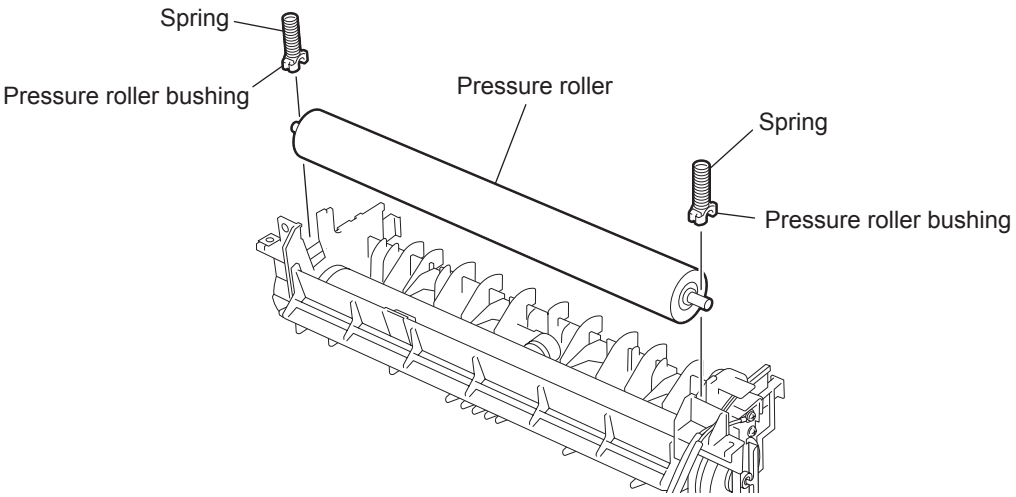

Fig. 8-49

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[5] RX Motor

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the left side cover. (Refer to 🕮 P.8-6 "[3] Left Side Cover")

(2) Disconnect the connector of the RX motor, remove the two screws from the RX motor, and remove the RX motor.

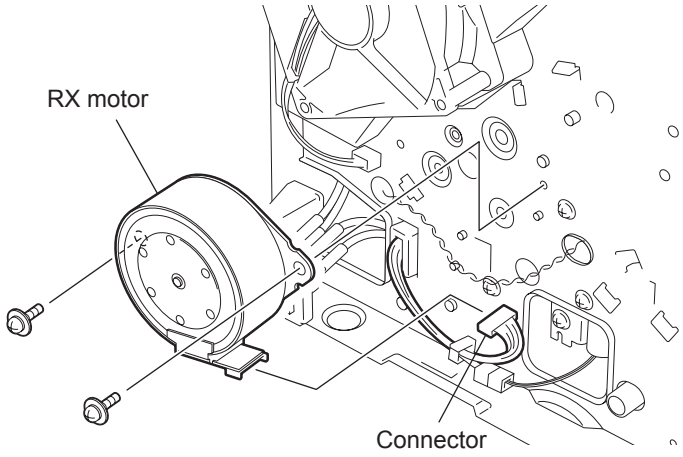

Fig. 8-50

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[6] FAN Motor

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the left side cover. (Refer to 🕮 P.8-6 "[3] Left Side Cover")

(2) Disconnect the connector of the FAN motor, release the four hooks of the bracket, and remove the FAN motor.

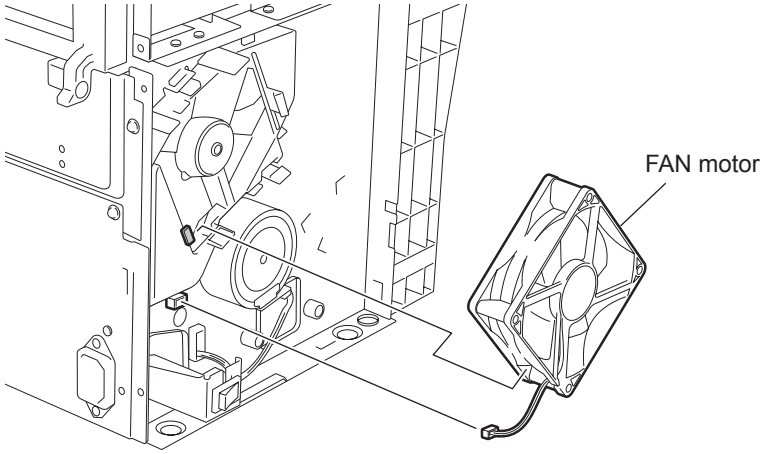

Fig. 8-51

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[7] Paper Pickup Solenoid

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the left side cover. (Refer to 🕮 P.8-6 "[3] Left Side Cover")

(2) Disconnect the connector of the paper pickup solenoid. Remove the one screw, and remove the paper pickup solenoid.

Note:
Installing the paper pickup solenoid while pushing the actuator of the pickup solenoid.

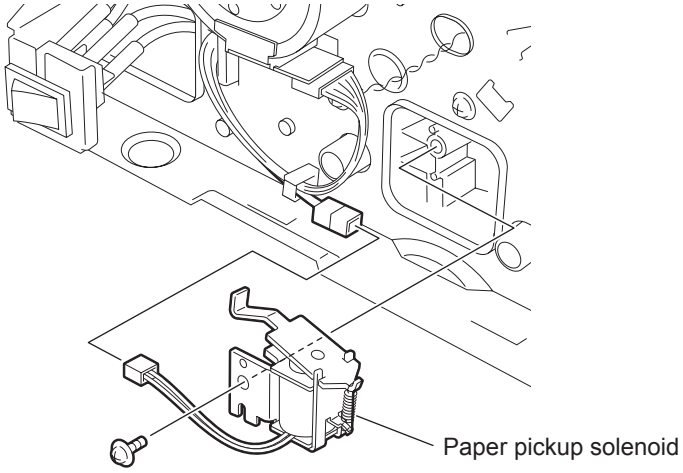

Fig. 8-52

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[8] Feed Upper Guide

- Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".
- Be careful not to touch the sharp edge on the left side frame indicated in notes of chapter 8.1.

(1) Remove the TX drive assembly. (Refer to 🕮 P.8-15 "[1] TX Drive Assembly")

(2) Remove the front cover. (Refer to 🕮 P.8-9 "[6] Front Cover")

(3) Remove the fuser. (Refer to 🕮 P.8-32 "[4] Fuser")

(4) Disconnect the two connectors from the main PBA.

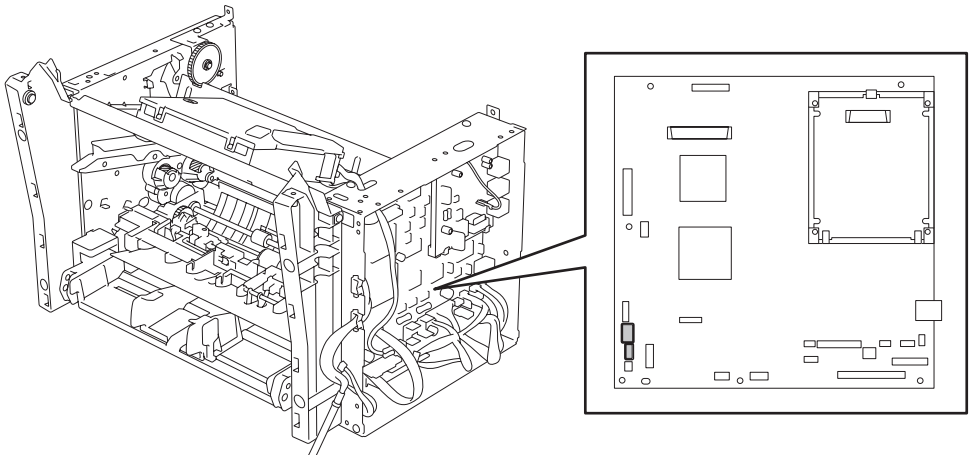

Fig. 8-53

(5) Disconnect the one connector from the feed upper guide.

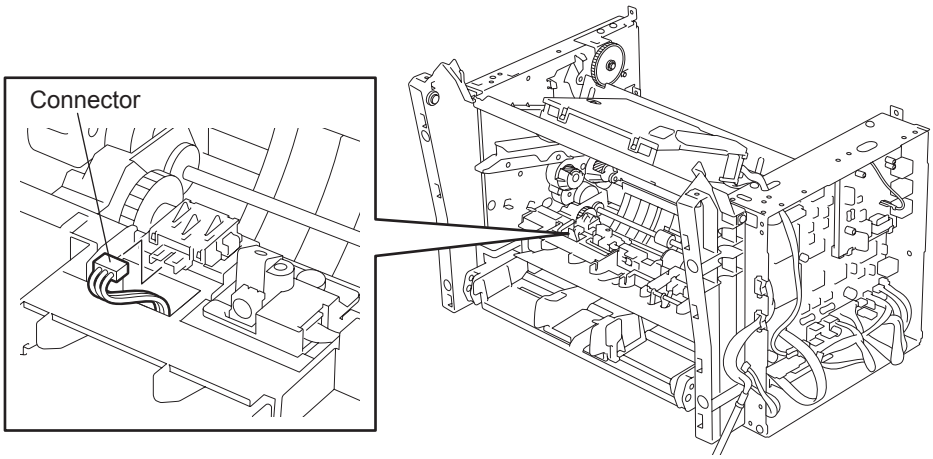

Fig. 8-54

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(6) Release the two hooks of the both ends of feed upper guide, and pull out the feed upper guide.

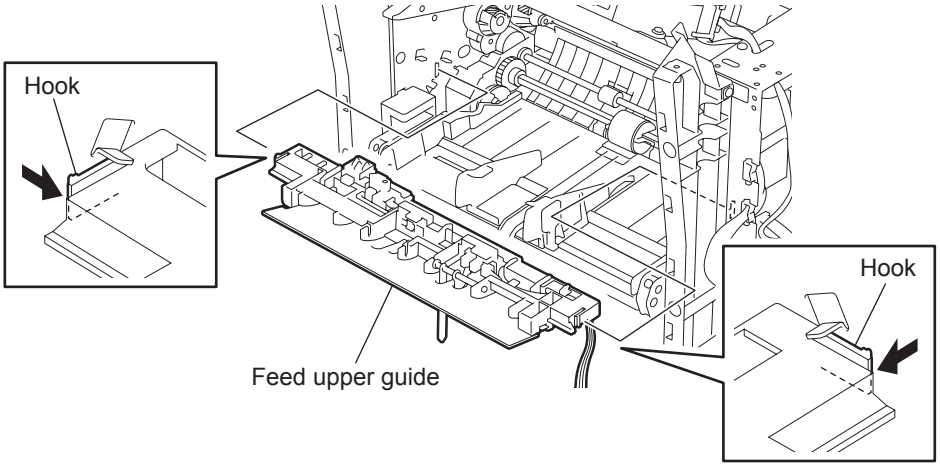

Fig. 8-55

(7) Release the two hooks and remove the feed upper guide.

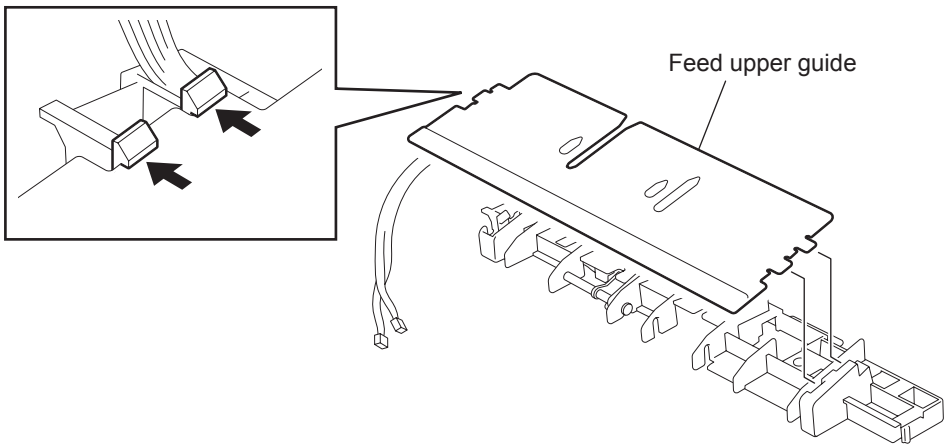

Fig. 8-56

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(8) Remove the actuator. Disconnect the connector and remove the paper end sensor.

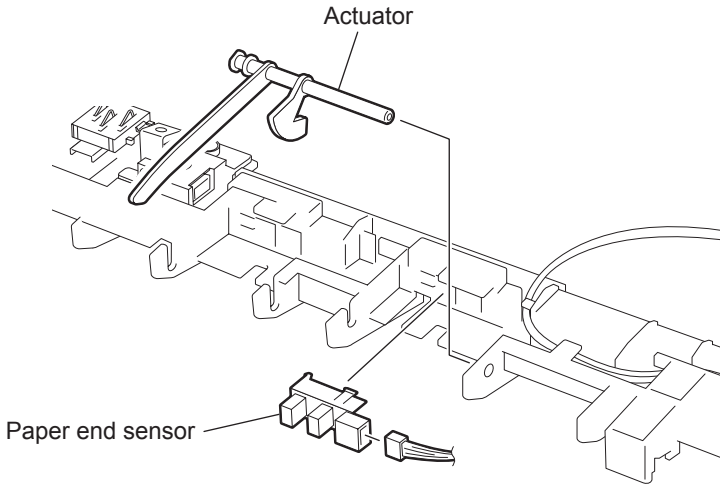

Fig. 8-57

(9) Disconnect the connector and remove the toner empty sensor.

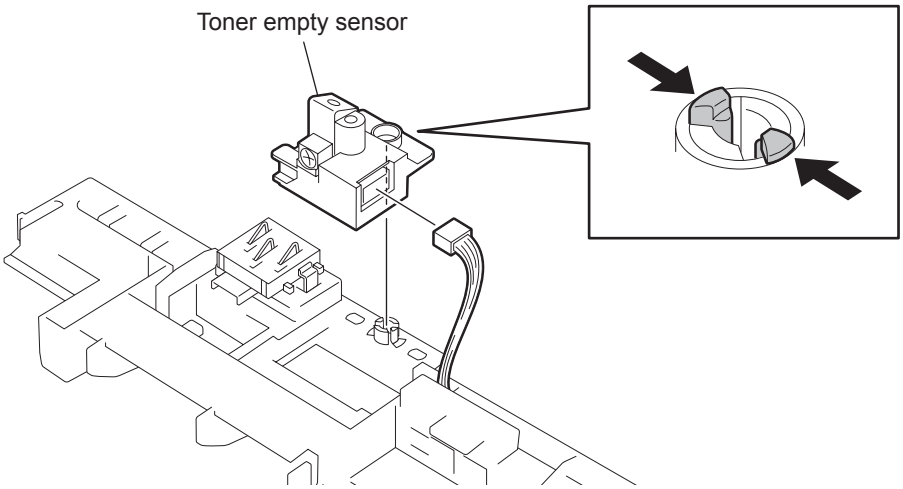

Fig. 8-58

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(10) Remove the toner cartridge contact.

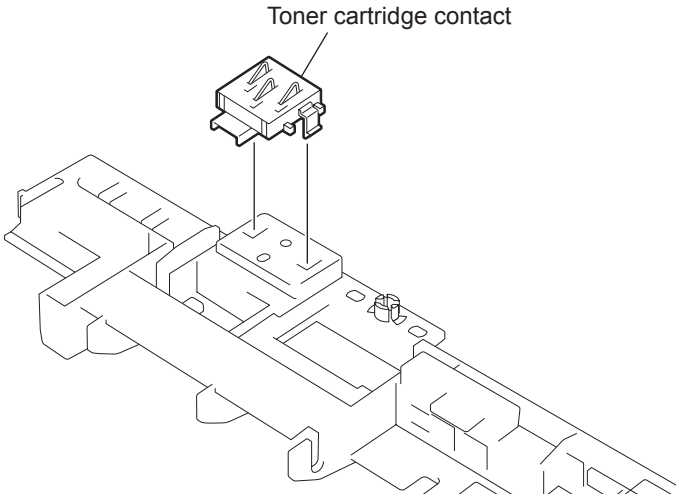

Fig. 8-59

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[9] RX Drive Gear Assembly

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the TX drive assembly. (Refer to 🕮 P.8-15 "[1] TX Drive Assembly")

(2) Remove the front cover. (Refer to 🕮 P.8-9 "[6] Front Cover")

(3) Remove the fuser. (Refer to 🕮 P.8-32 "[4] Fuser")

(4) Remove the feed upper guide. (Refer to 🕮 P.8-38 "[8] Feed Upper Guide")

(5) Remove each boss of both right and left sides of the paper guide assembly from the frame. Remove the paper guide assembly by drawing it out toward you. Remove the two springs.

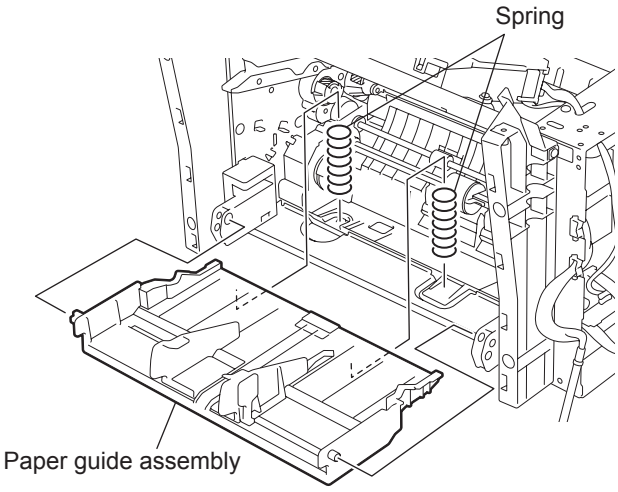

Fig. 8-60

(6) Remove the RX motor. (Refer to 🕮 P.8-35 "[5] RX Motor")

(7) Remove the FAN motor. (Refer to 🕮 P.8-36 "[6] FAN Motor")

(8) Remove the Paper pickup solenoid. (Refer to 🕮 P.8-37 "[7] Paper Pickup Solenoid")

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(9) Remove the five screws from the left side frame, and remove the left side frame.

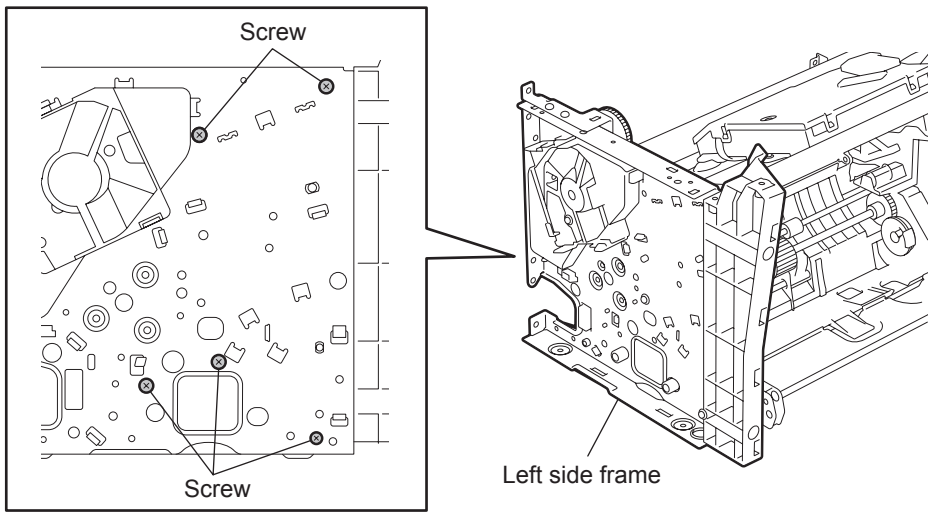

Fig. 8-61

(10) Remove the two screws from the left side cover and remove the gear cover.

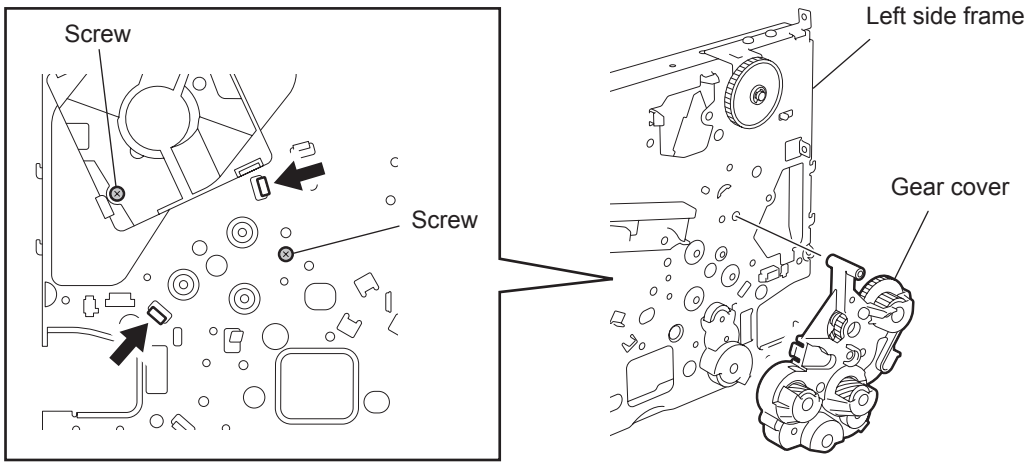

Fig. 8-62

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8.2.5 Optional Recording Paper Tray Block

[1] Optional Recording Paper Tray

Before disassembling or reassembling, be sure to refer to 📖 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Lift the facsimile unit to separate it from the optional recording paper tray.

Note:

Place the facsimile unit over the optional recording paper tray with aligning the two bosses of the optional recording paper tray with the holes on the bottom of the facsimile unit.

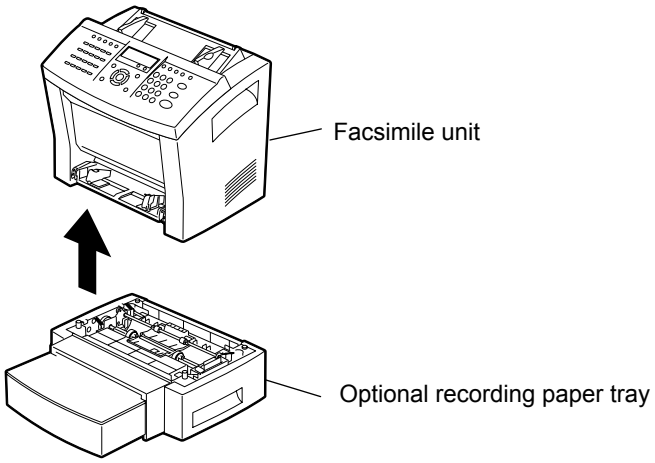

Fig. 8-63

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[2] Optional Paper Pickup Rollers

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional recording paper tray.
(Refer to 🕮 P.8-44 "[1] Optional Recording Paper Tray".)

(2) While lifting the hooks, slide the optional paper pickup rollers to the right.

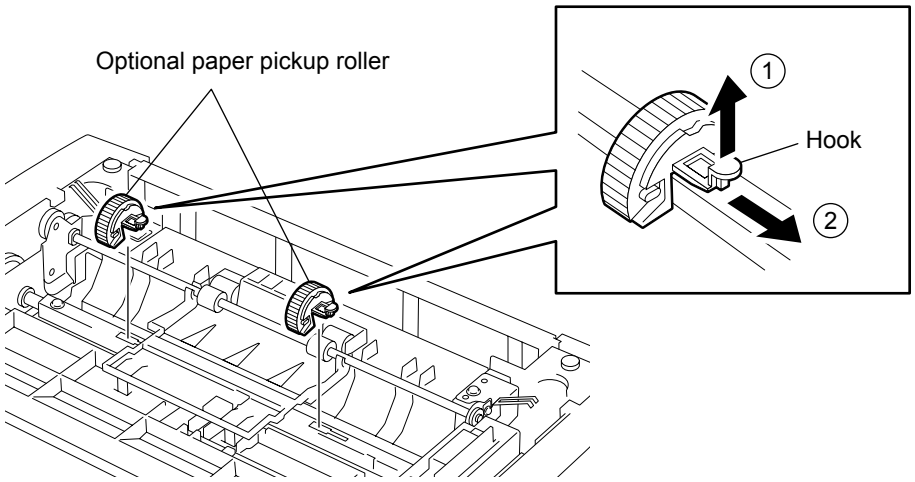

Fig. 8-64

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[3] Optional Paper End Actuator

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional recording paper tray.
(Refer to 🕮 P.8-44 "[1] Optional Recording Paper Tray".)

(2) Release the two hooks and stand the optional paper guide B.

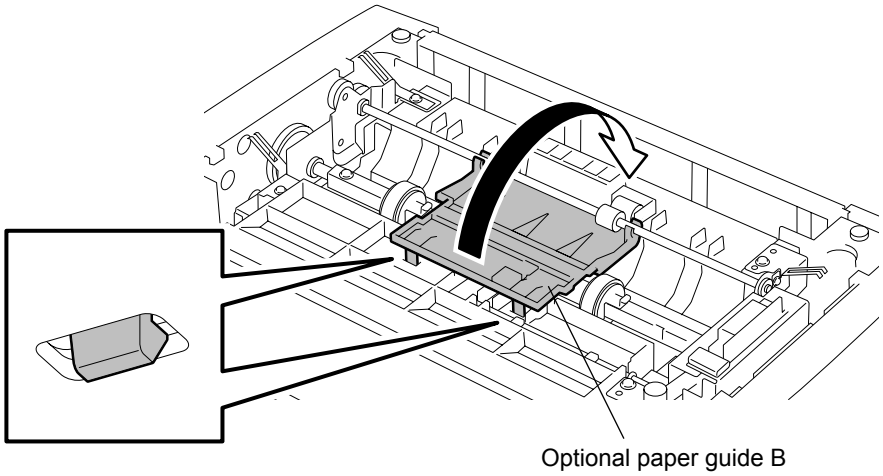

Fig. 8-65

(3) Release the optional paper end actuator from the two hooks, and remove the optional paper end actuator.

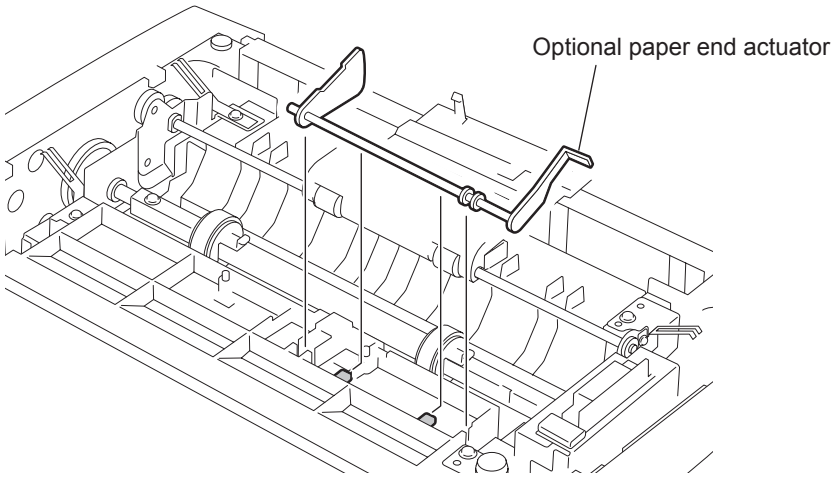

Fig. 8-66

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[4] Optional Pinch Roller

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional recording paper tray.
(Refer to 🕮 P.8-44 "[1] Optional Recording Paper Tray".)

(2) Remove the one screw from the optional paper bracket, and remove the optional paper bracket.

(3) Remove the two springs, and remove the optional pinch roller.

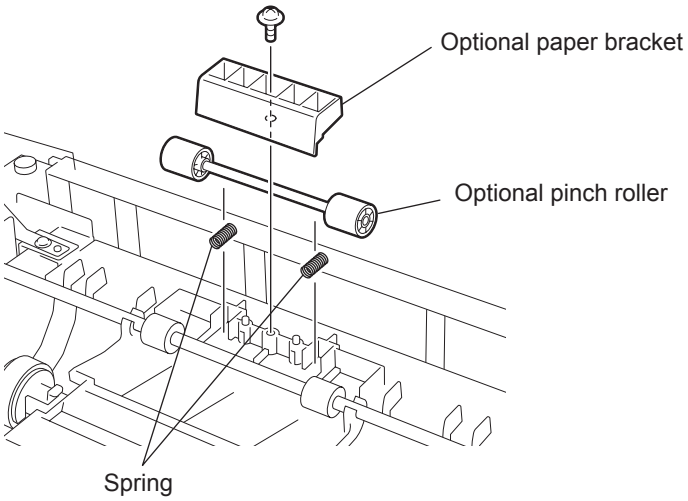

Fig. 8-67

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[5] Optional Paper Guide B

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional recording paper tray.
(Refer to 🕮 P.8-44 "[1] Optional Recording Paper Tray")

(2) Release the two hooks and stand the optional paper guide B.

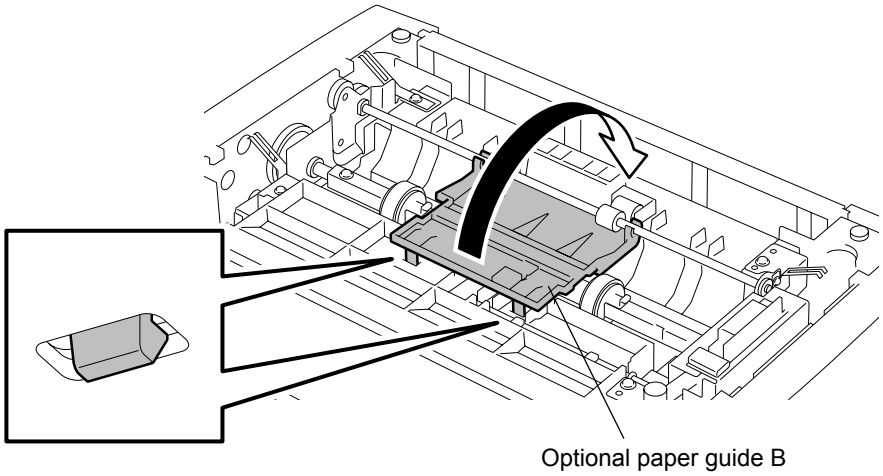

Fig. 8-68

(3) Remove the optional paper guide B from the optional paper feed roller.

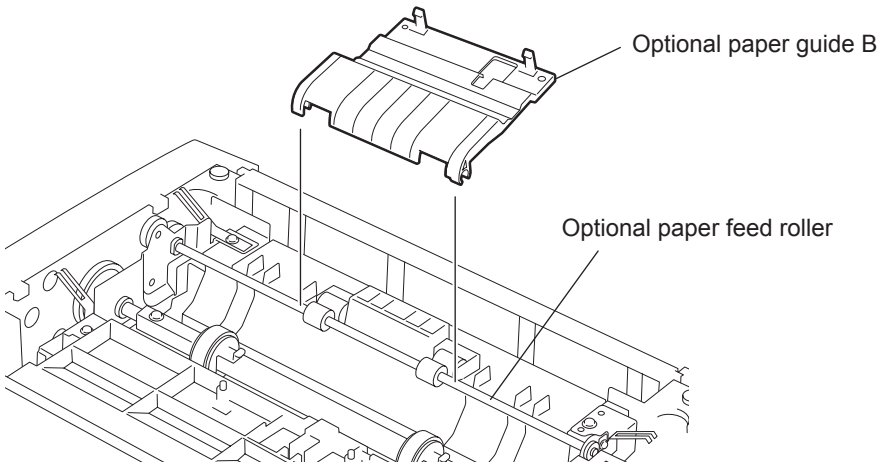

Fig. 8-69

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[6] Optional Mechanical Block

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional recording paper tray.
(Refer to 🕮 P.8-44 "[1] Optional Recording Paper Tray")

(2) Remove the optional paper end actuator. (Refer to 🕮 P.8-46 "[3] Optional Paper End Actuator")

(3) Remove the optional paper guide B. (Refer to 🕮 P.8-48 "[5] Optional Paper Guide B")

(4) Disconnect the one connector, and then release the cable from the hook.

(5) Remove the two screws on the bottom of the optional recording paper tray.

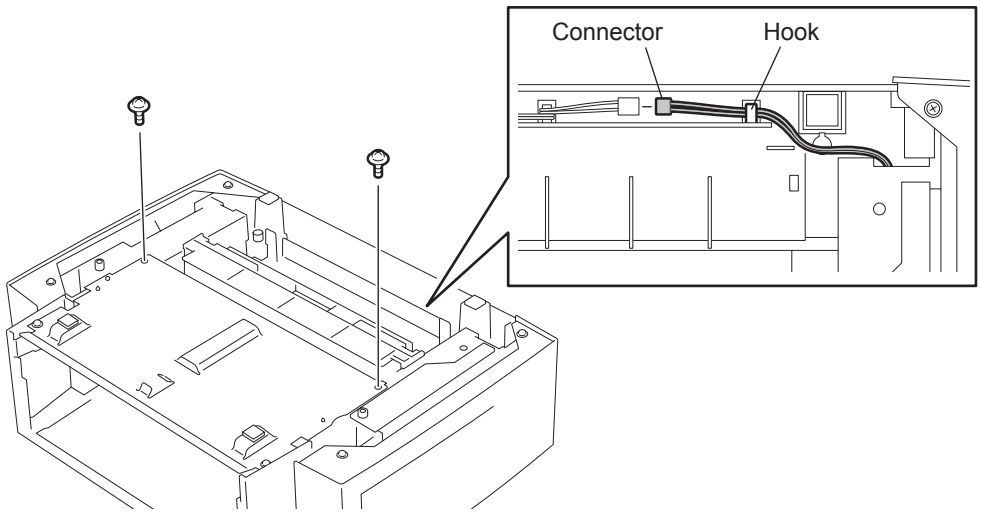

Fig. 8-70

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(6) Disconnect the one connector from the optional tray PBA.

(7) Remove the four screws and then remove the one optional earth plate.

(8) Remove the optional mechanical block.

Note:
Make sure that the optional tray sensor is not caught on the frame.

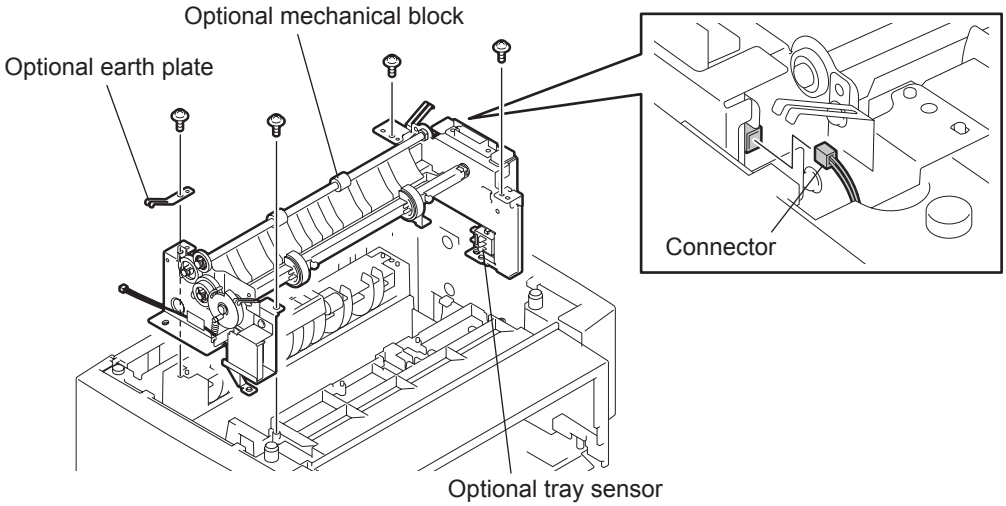

Fig. 8-71

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[7] Optional Paper Pickup Solenoid

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional mechanical block. (Refer to 🕮 P.8-49 "[6] Optional Mechanical Block")

(2) Remove the one screw from the solenoid cover, and remove the solenoid cover.

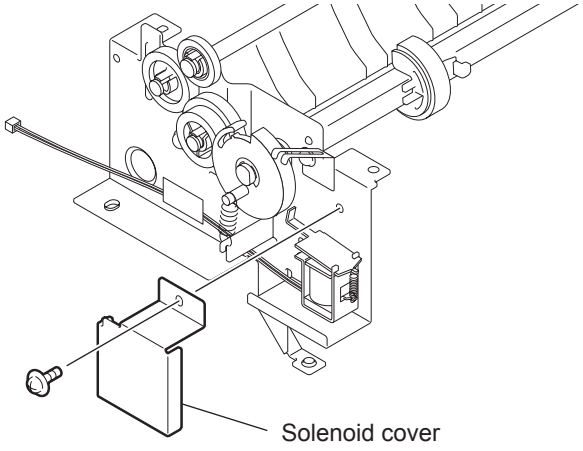

Fig. 8-72

(3) Release the cable from the tape.

(4) Remove the one screw from the optional paper pickup solenoid, and remove the optional paper pickup solenoid.

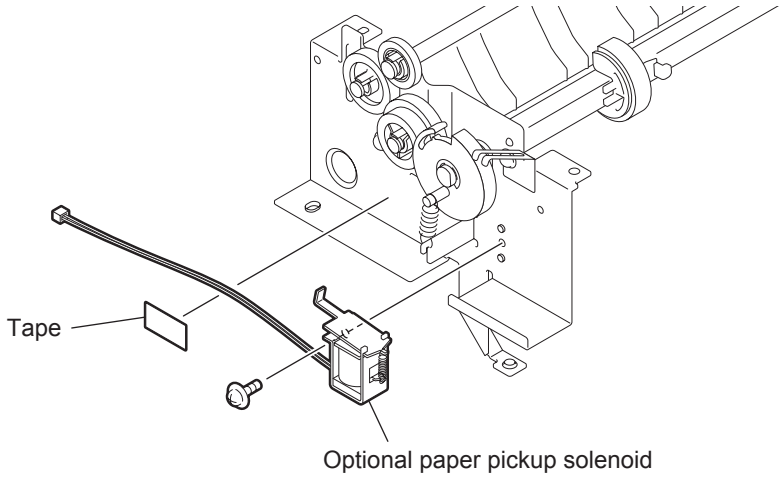

Fig. 8-73

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[8] Optional Tray PBA

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional mechanical block. (Refer to 🕮 P.8-49 "[6] Optional Mechanical Block")

(2) Disconnect the one connector from the optional tray PBA.

(3) Remove the one screw from the PBA cover, and remove the PBA cover.

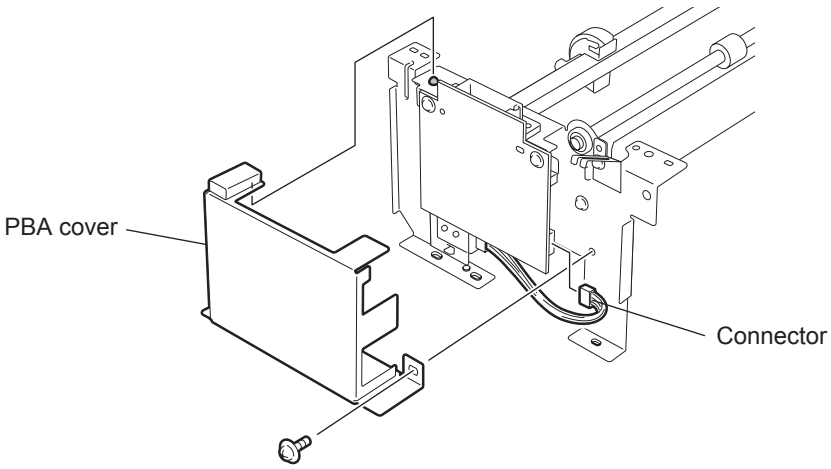

Fig. 8-74

(4) Remove the two screws from the optional tray PBA, and remove the optional tray PBA.

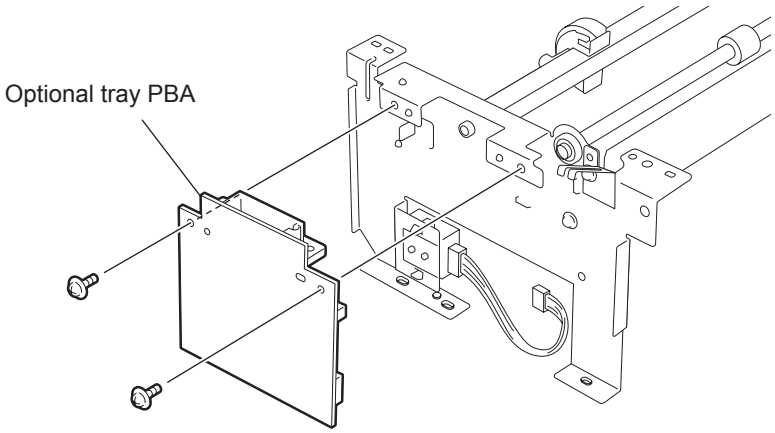

Fig. 8-75

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[9] Optional Tray Sensor

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional mechanical block. (Refer to 🕮 P.8-49 "[6] Optional Mechanical Block")

(2) Disconnect the connector from the optional paper tray sensor.

(3) Release the two hooks of the optional tray sensor, and remove the optional tray sensor.

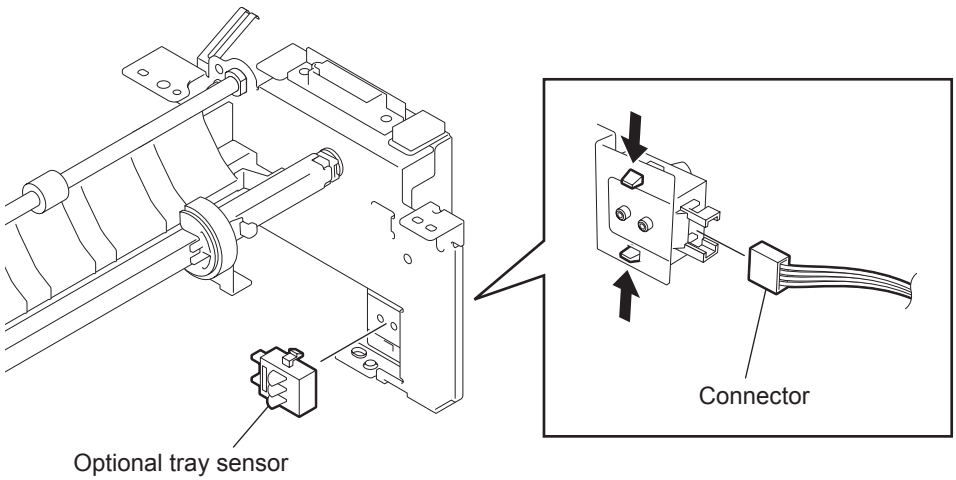

Fig. 8-76

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[10] Optional Paper Gears

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional mechanical block. (Refer to 🕮 P.8-49 "[6] Optional Mechanical Block")

(2) Remove the one spring and one E-ring. Remove the gear A while pressing the actuator of the optional paper pickup solenoid.

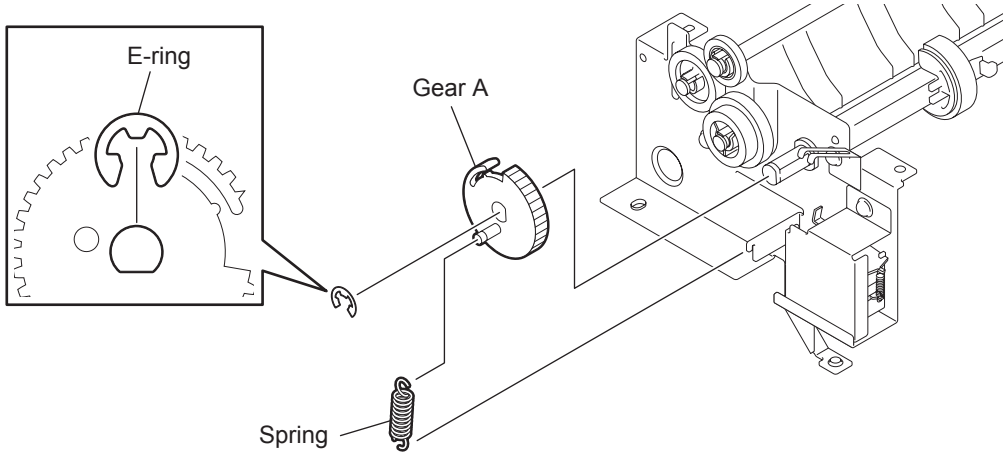

Fig. 8-77

(3) Release the hook of each gear and then remove the gear B, gear C, and gear D.

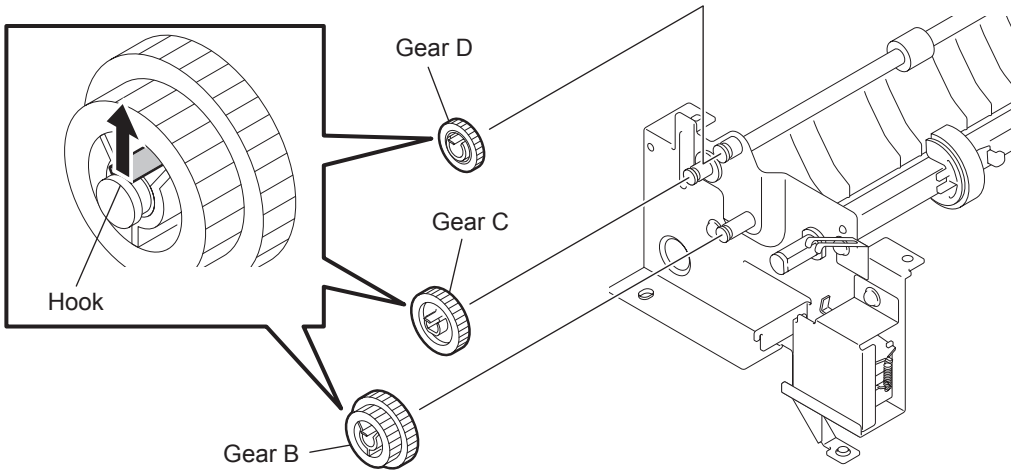

Fig. 8-78

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[11] Optional Paper Feed Roller

Before disassembling or reassembling, be sure to refer to 🕮 P.8-1 "8.1 Before Disassembling or Reassembling".

(1) Remove the optional mechanical block. (Refer to 🕮 P.8-49 "[6] Optional Mechanical Block")

(2) Release the hook and remove the gear D. (Refer to 🕮 P.8-54 "[10] Optional Paper Gears")

(3) Remove the one E-ring.

(4) Remove the shaft holders on the each sides of the optional tray paper feed roller, and remove the optional paper feed roller.

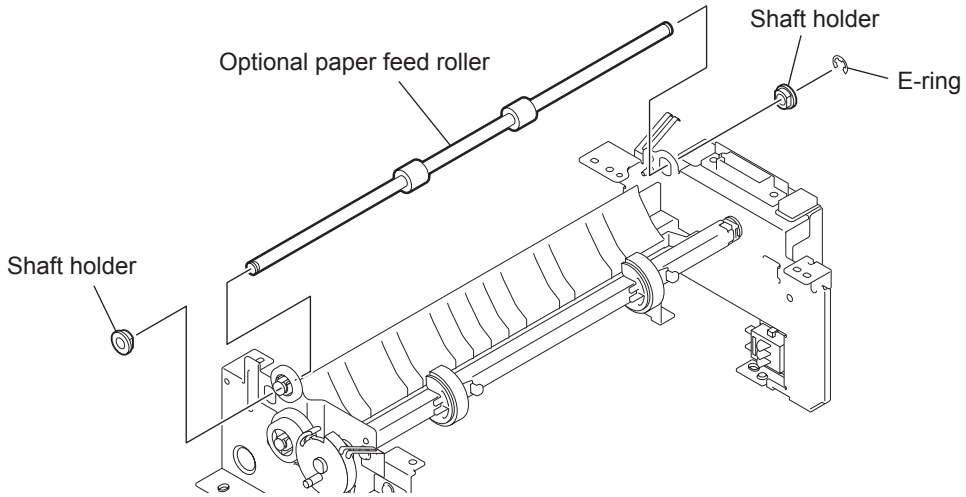

Fig. 8-79

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8.3 Adjustment and Setting

8.3.1 Edge Registration

The starting print position is determined by the “Lead Edge” and “Side Edge” offset data stored in memory. Do this adjustment when the main PBA is replaced or when MEMORY CLEAR is performed. Do it also when the LSU is replaced if necessary.

Adjustment

Adjust the Lead Edge and Side Edge so that four lines are printed in each of the top and bottom, and three lines are printed in each of the left and right of the PRINT TEST (PATTERN 1) as shown in the figure. The Lead Edge offset represents the distance from the top edge of the page.
The Side Edge offset represents the distance from the left edge of the page. Using the Edge Registration procedure, the lead edge offset positions can be adjusted from -7.5mm to +7.5mm and side edge offset positions can be adjusted from -6.0mm to +8.0mm, in increments of 0.5mm.

(1) Turn the power ON. Press the keys in the following order to perform the print test.
[MENU] → [9] → [2] → [0] → [7]

(2) After the test pattern is printed, press the [STOP] key twice to exit to the standby mode.

(3) Press the keys in the following order to enter the service mode.
[MENU] → [*] → [#] → [*] → [*]

(4) Press the keys in the following order to enter the edge registration mode.
[MENU] → [9] → [5] → [0] → [6]

(5) Use the [↑] or [↓] key to set the LEAD EDGE (upper side), then press the [ENTER] key.

(6) Use the [↑] or [↓] key to set the SIDE EDGE (left side).

(7) Press the [ENTER] key to complete the setting and return to the standby mode.

(8) Print the test pattern again to check the print position.

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(9) Repeat this procedure until the correct starting print position is achieved.

Note:
The facsimile automatically returns to the standby mode after each test is completed.

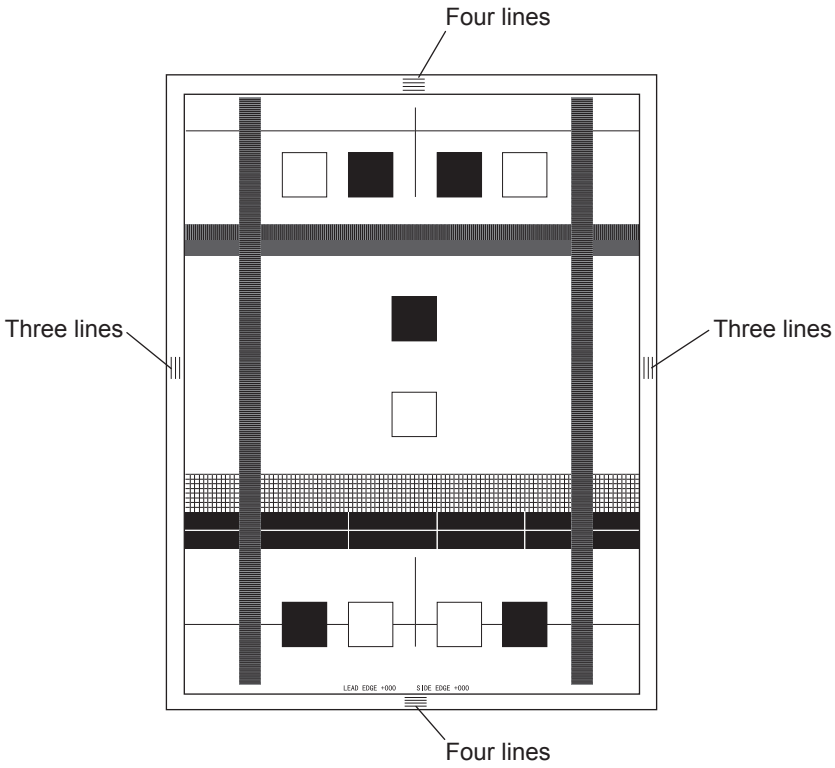

Fig. 8-80

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8.3.2 Country/Region Setting

When the main PBA is replaced, the country/region setting must be performed to set the country/region where the machine is used.

Note:
All setting data stored in the SRAM except the drum counter and print edge margins will be cleared by performing this country/region setting procedure.

Settings

(1) Turn the power ON while holding the [0] and [2] keys to enter the country/region setting.

(2) Select the country/region code (as shown in table) by pressing the dial keys.

(3) Press the [ENTER] key to complete the setting and return to the standby mode.

Country/Region	Code
US/CA	1
DE	49
GB	44
IT	39
SE	46
NO	47
DK	45
CH	41
FI	358
NL	31
AT	43
BE	32
PT	351
ES	34
FR	33
SG	65
HK	852
AU/NZ	61

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8.4 Lubrication

8.4.1 Mechanisms and Parts not to be Lubricated

Note:
Avoid lubricating the areas around the following mechanism and parts. Should they be lubricated or if oil runs down into them, thoroughly remove oil with clean rags.

- Drum
- ADF pad assembly
- Scanner guide
- CIS
- All PBA
- Fuser
- Rubber rollers
- Separation pad
- Cover and plastic part

8.4.2 Notes on Lubrication

Before lubrication, thoroughly remove old oil, rust-preventing oil, dust and dirt with rags. Then, apply a proper amount of oil. Oil should be applied to only the specified points.

8.4.3 Oil types and Makers

Lubricant Type	Specified oil	Maker
1	Molykote-grease EM-30L	DOW CORNING CORPORATION
2	Micro-carbon Grease (2.5k)	KYODO YUSHI CO., LTD.
3	Molykote-grease EM-50L	DOW CORNING CORPORATION
4	Multi-purpose Grease G-258	KANTO KASEI LTD.
5	Molykote-grease X5-6020	DOW CORNING CORPORATION
6	MHSURF FT-240	HARVES CO., LTD

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8.4.4 Lubrications Points

[1] Lubricate the Shafts, Gear Teeth and TX Motor Gear Teeth of TX Gear Assembly

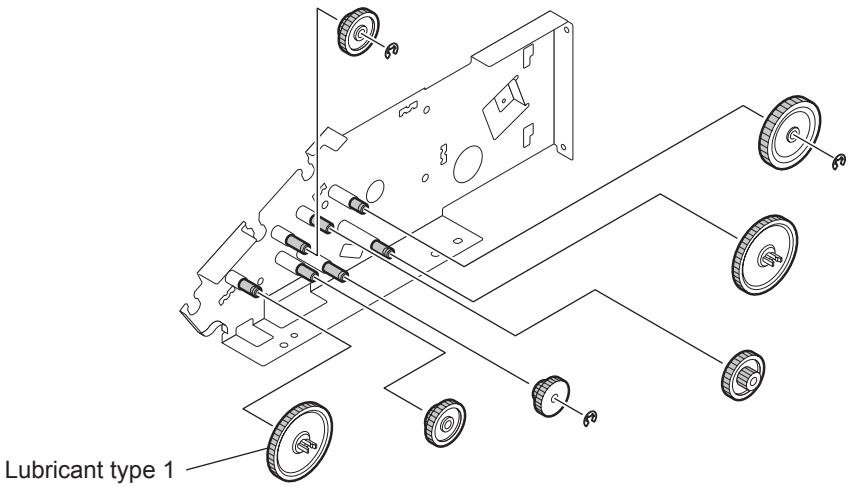

Fig. 8-81

[2] Lubricate the Pinch Roller Shaft of TX Pinch Roller

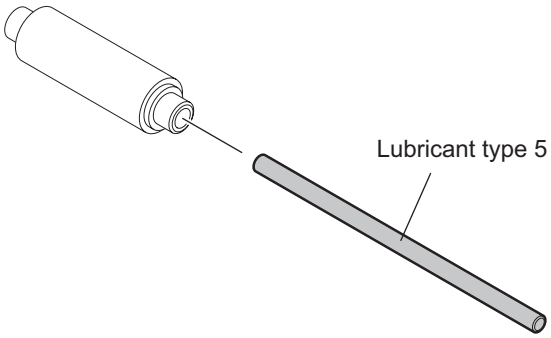

Fig. 8-82

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[3] Lubricate the Shaft of RX Feed Roller Shaft and between the RX Feed Roller Shaft and Ground Plate

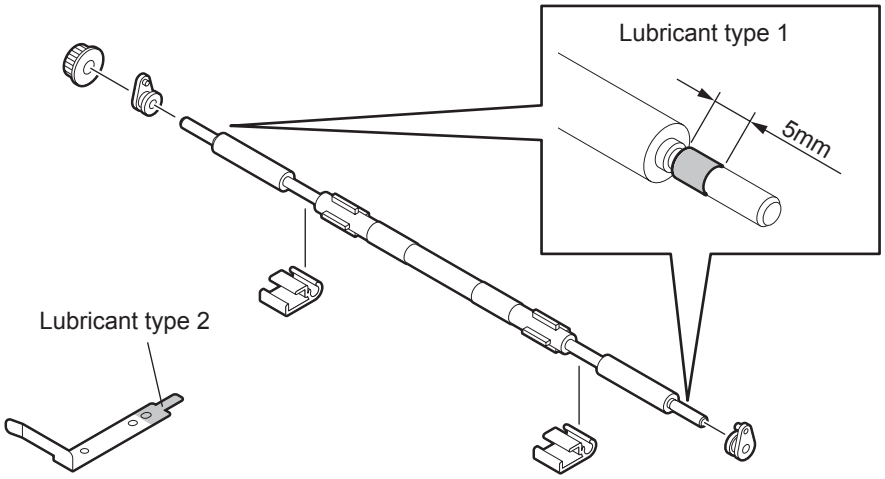

Fig. 8-83

[4] Lubricate the shaft and Gear Teeth of the RX Idle Gear

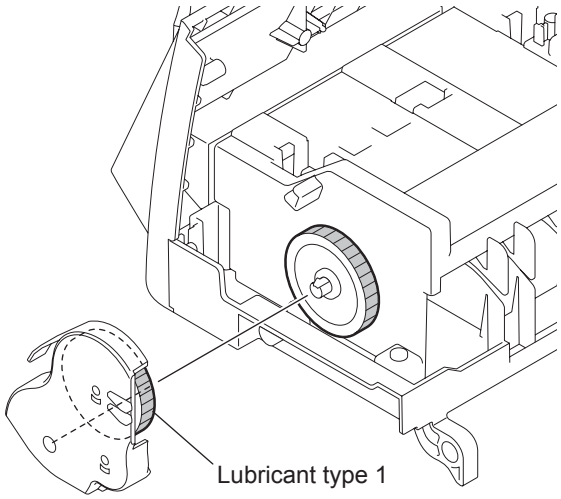

Fig. 8-84

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[5] Lubricate the Shaft and Gear Teeth of TX Gear Assembly

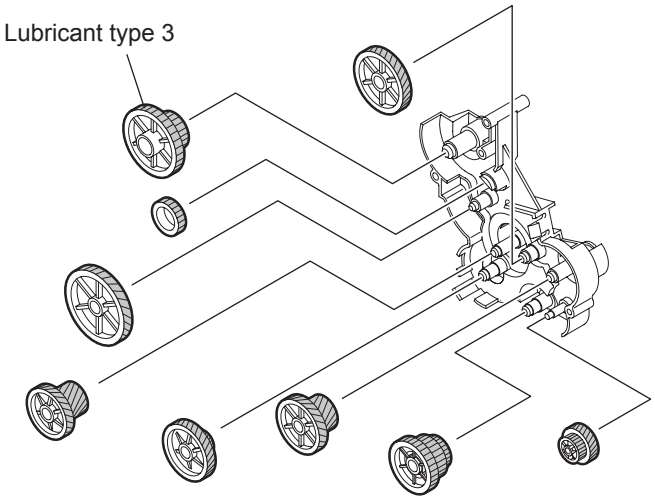

Fig. 8-85

[6] Lubricate the shaft of ADF Roller Assembly

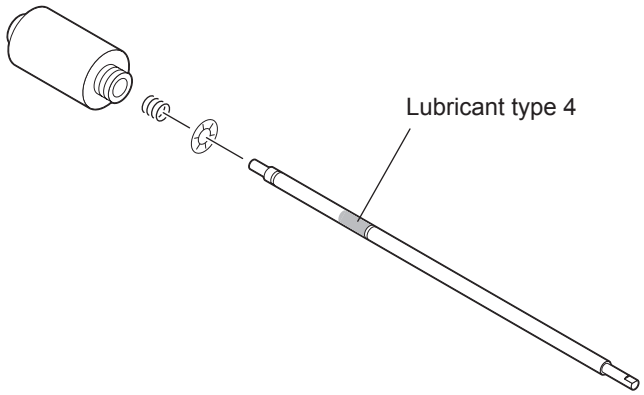

Fig. 8-86

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[7] Lubricate the Shaft and Gear Teeth of RX Relay Gear

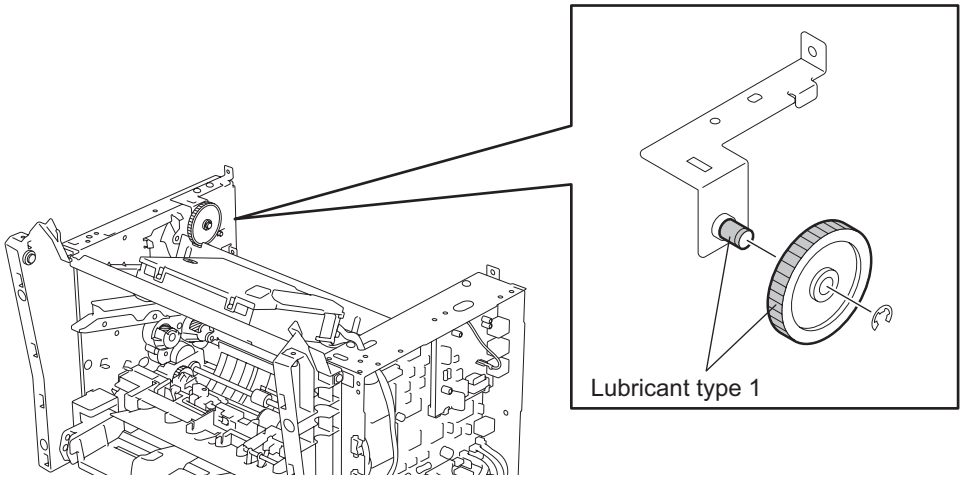

Fig. 8-87

[8] Lubricate the Front cover

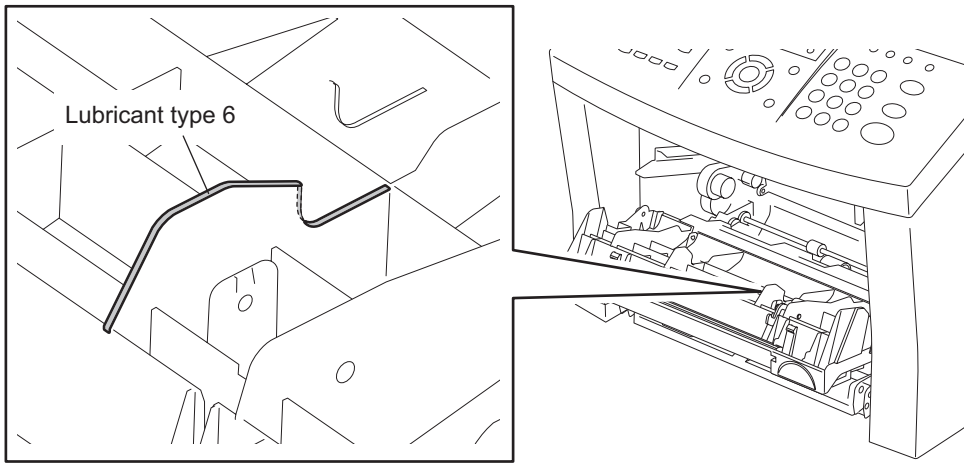

Fig. 8-88

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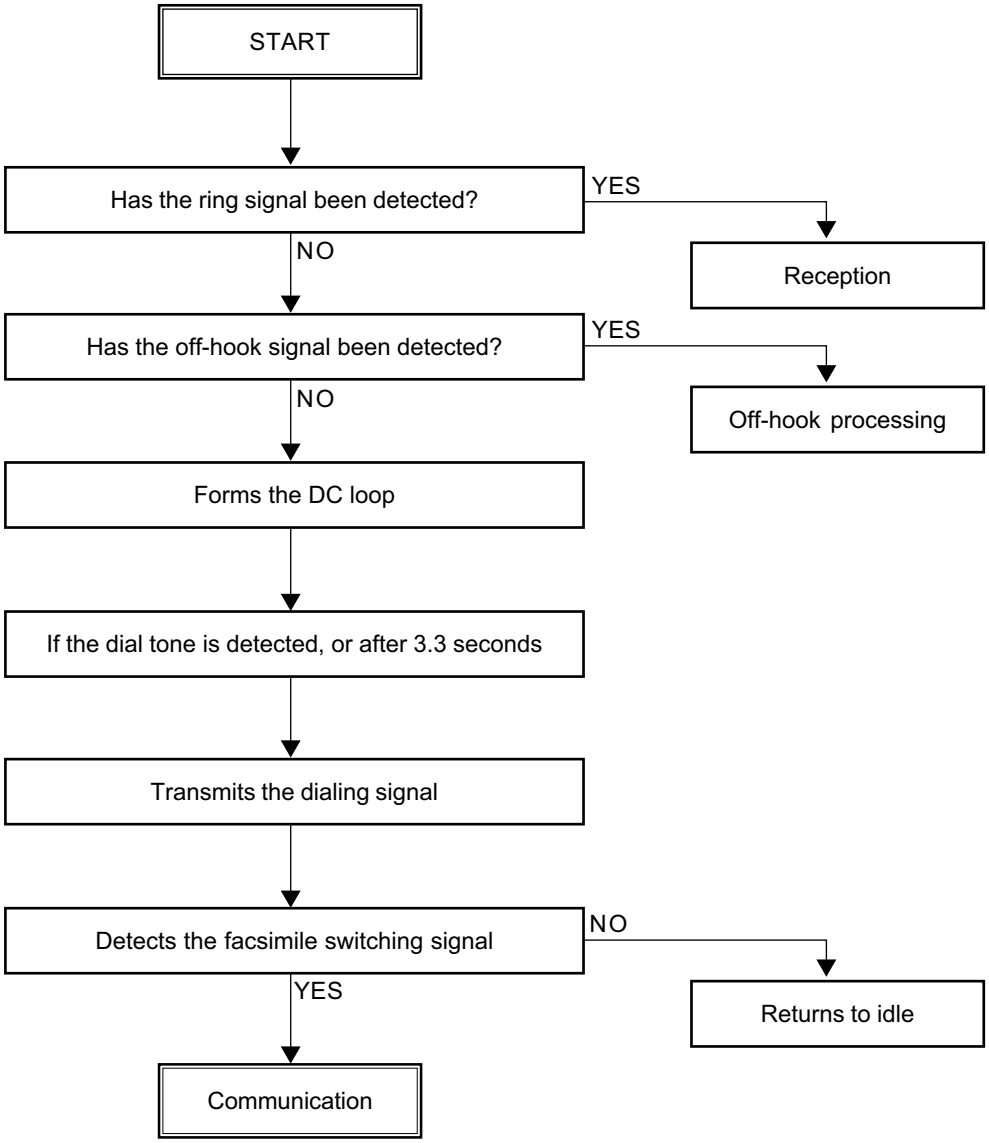
9. Dialing and Communication Procedure

9.1 Line Connection and Mode Change Procedure

9.1.1 Call to external telephone line



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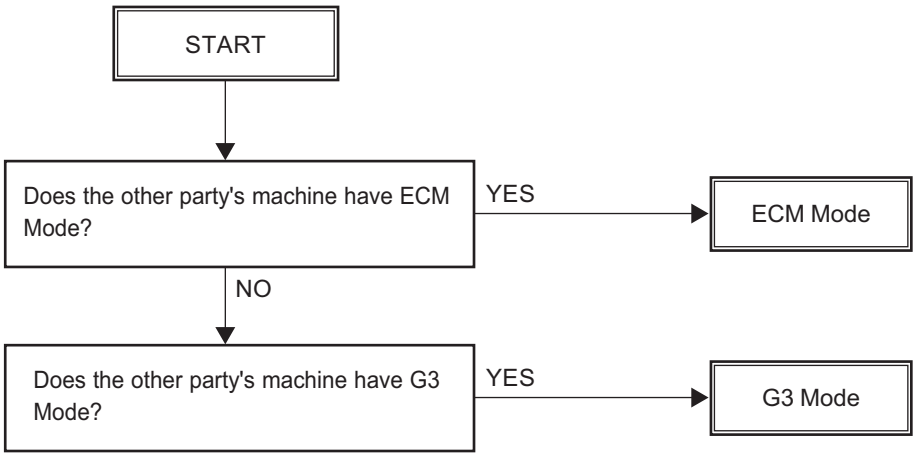
9.1.2 TX mode selecting procedure



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9.2 Signal Format and Communication Procedure

9.2.1 Network control signal format

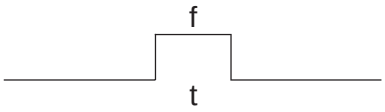
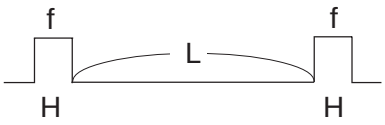
The following signals are used as part of both the binary procedure and tonal procedure.

[1] Network control signals

CED	Called Electronic Device Indicates that the facsimile is in the automatic called mode. (*1)
CNG	Calling Tone Indicates that the facsimile is in the automatic calling mode. (*1)

*1: This machine can generate the signal by manual operation as well.

[2] Signal format

Signal name	Signal format	Specifications
CED		f: 2100 + 15 Hz t: 2.6 to 4.0 sec.
CNG		f: 1100 + 38 Hz (H: 0.5 sec., L: 3 sec.)

9

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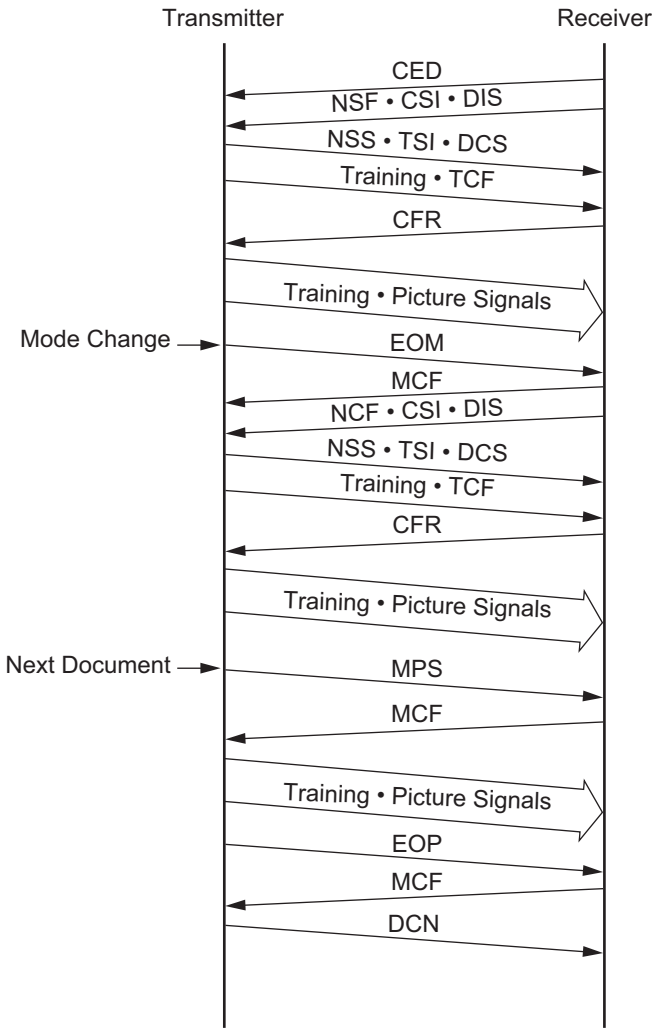
9.2.2 Communication by binary signals

In the G3 mode, the communication is achieved according to the following binary procedure.

[1] Binary procedure

- TX and RX in G3 mode



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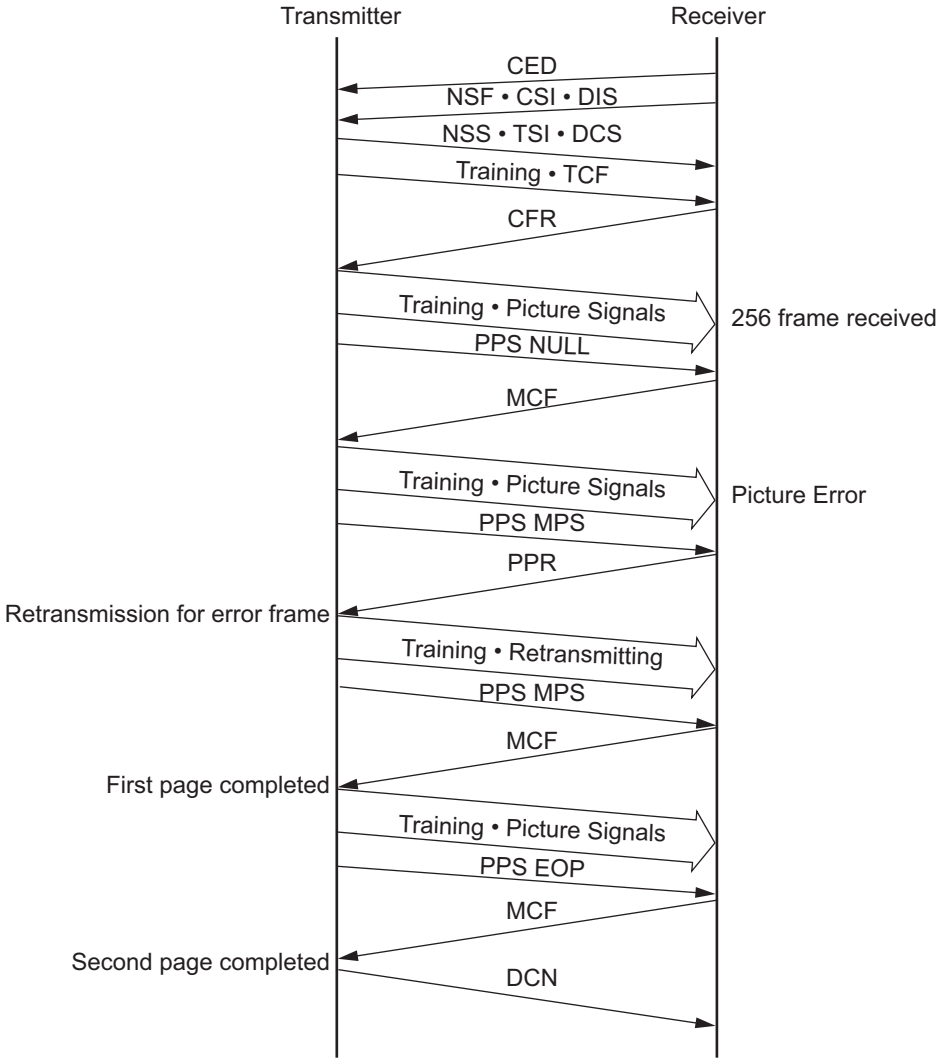
- TX and RX in ECM mode
  The ECM (Error Correction Mode) conforms to T.30. When an error occurs in the received picture data, the receiving station notifies the sending station and the sending station transmits the picture data again.



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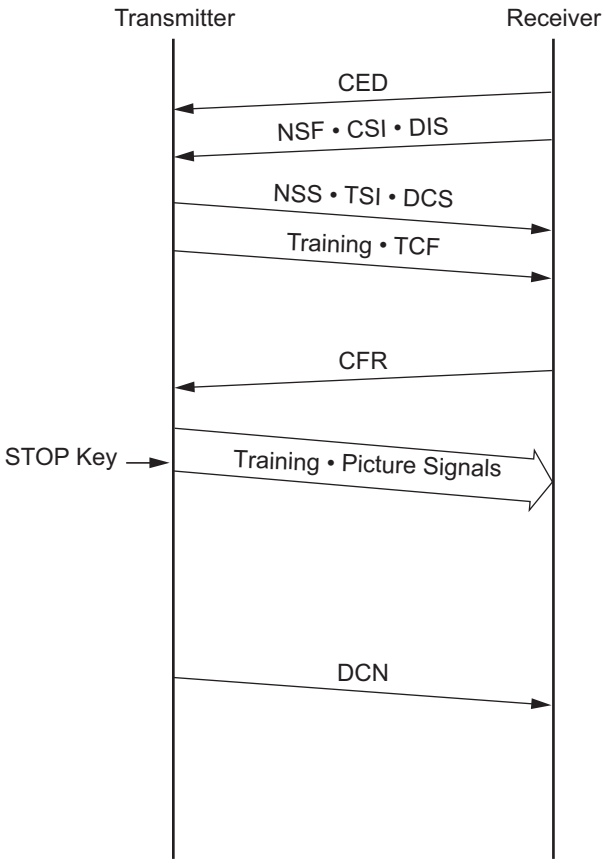
- Resetting during transmission
  If the [STOP] key is pressed during transmission of picture data, the communication ends normally regardless of existence of the next document pages and mode changes.

  If the [STOP] key is pressed in any time except transmission of picture data, DCN is forcibly sent to end the communication.



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[2] Binary signals

NSF	Non-Standard Facility Informs that the receiving station (machine) has a non-standard facility (i.e., HS/ECM, etc.).
NSC	Non-Standard Facility Command Commands to transmit with the non-standard facility which is selected corresponding to NSF (i.e., Polling etc.).
NSS	Non-Standard Facility Set-up Commands to transmit with the non-standard facility which is selected corresponding to NSF or NSC.
CSI	Called Station Identification Provides the telephone number of the called station. Used to check the identity of the called station.
CIG	Calling Station Identification Provides the telephone number of the calling station. Used to check the identity of the calling station (Polling, etc.).
TSI	Transmitting Station Identification Provides the telephone number of transmitting station. Used to check the identity of the transmission station.
DIS	Digital Identification Signal Informs that the receiving station (machine) has a standard facility (G3/G2).
DTC	Digital Transmit Command Commands to transmit with the standard facility which is selected corresponding to DIS (i.e., Polling, etc.).
DCS	Digital Command Signal Commands to transmit with the standard facility which is selected corresponding to DIS or DTC.
CFR	Confirmation to Receive Informs that the facsimile is in the receivable status.
FTT	Failure to Train Informs that the TCF signal has not received correctly and requests re-training.
EOM	End of Message Informs that a document has been transmitted and another document is loaded; commands to return to the beginning of phase B.
MPS	Multi-page Signal Informs that a document has been transmitted and another document is loaded; commands to return to the beginning of phase C.
EOP	End of Procedure Informs that a document has been transmitted and no additional documents are loaded.
MCF	Message Conformation A reply of MPS, EOM, or EOP; informs that picture signals have been received correctly. For EOM and MPS, informs that the facsimile is in the receivable status.
RTN	Retrain Negative Informs that a document has not been received correctly; demands a re-training (HS/G3) or phase signal (G2) before receiving another document.
PIP	Procedure Interrupt Positive Informs that a document has been received correctly and demands a voice reply by telephone or to return to the beginning of phase B in order to receive another document (i.e., CALL Request, etc.).
PIN	Procedure Interrupt Negative Informs that a document has not been received correctly and demands a voice reply by telephone or to return to the beginning of phase B in order to receive another document.
DCN	Disconnect Commands to disconnect the FAX line and to connect the telephone line. A reply is not required.

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RR	Receive Ready Informs that the facsimile is in the receivable status and demands the data to be specified the received mode. (EC mode)
RNR	Receive Not Ready Informs that the facsimile is not in the receivable status. (EC mode)
PPR	Partial Page Request Informs that the ECM block (partial page) has not been received correctly. The frame number required a correction is informed by the FIF. (EC mode)
PPS	Partial Page Signal Informs that the ECM block (partial page) or one page has been transmitted. (EC mode)
CTC	Continue to Correct Replies for the 4th PPR which demands to correct the picture signal; informs that the transmitting station will continue to correct the frame data. (EC mode)
CTR	Response for Continue to Correct Replies for CTC and informs that the receiving station has received and consented to the CTC. (EC mode)
EOR	End of Retransmission Informs that the transmitting station has completed the correction of the error frame data (binary signal) of previous ECM block. (EC mode)
ERR	Response for End Retransmission Replies for EOR and demands to transmit the picture signal of next ECM block. (EC mode)
RTP	Retrain Positive Informs that the message has been received completely and that the message can be continued after receiving the synchronization signal and CFR signal.
SUB	Sub-address Indicates that the FIF information is a sub-address in the domain on the call-in side.
SEP	Select Polling Indicates that the FIF information is a sub-address for polling mode.
PWD	Password Indicates that the FIF information is a sub-address for polling mode in a reception. Indicates that the FIF information is a password for transmission in a transmission.

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[3] Frame structure of binary signals

Each binary signal frame is composed of the following sequences and fields. However, some binary signals have an FIF field inserted, and others do not.

F	F	A	C	FCF	FIF	FCS	F

F: Flag Sequence
Indicates the start or end of a frame. It also establishes the frame synchronization.

A: Address Field
Informs of the address.

C: Control Field
Informs whether this frame is the final frame in this procedure or not.

FCF: Facsimile Control Field
Informs of the kind of binary signal.

FIF: Facsimile Information Field
Informs of the functions of the facsimile, etc.

FCS: Frame Check Sequence
Checks if there was any error in the transmission from “A” to “FIF.”

- Formats of F, A, and C

	Format							
	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8
F	0	1	1	1	1	1	1	0
A	1	1	1	1	1	1	1	1
C	1	1	0	0	X	0	0	0

When this frame is the final frame, X=1.

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- FCF format of each binary signal

Binary Signal	Format							
	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8
NSF	0	0	0	0	0	1	0	0
NSC	1	0	0	0	0	1	0	0
NSS	X	1	0	0	0	1	0	0
CSI	0	0	0	0	0	0	1	0
CIG	1	0	0	0	0	0	1	0
TSI	X	1	0	0	0	0	1	0
DIS	0	0	0	0	0	0	0	1
DTC	1	0	0	0	0	0	0	1
DCS	X	1	0	0	0	0	0	1
CFR	X	0	1	0	0	0	0	1
FTT	X	0	1	0	0	0	1	0
EOM	X	1	1	1	0	0	0	1
MPS	X	1	1	1	0	0	1	0
EOP	X	1	1	1	0	1	0	0
MCF	X	0	1	1	0	0	0	1
RTN	X	0	1	1	0	0	1	0
PIP	X	0	1	1	0	1	0	1
PIN	X	0	1	1	0	1	0	0
SUB	X	1	0	0	0	0	1	1
SEP	1	0	0	0	0	1	0	1
PWD (RX)	1	0	0	0	0	0	1	1
PWD (TX)	X	1	0	0	0	1	0	1
DCN	X	1	0	1	1	1	1	1
RR	X	1	1	1	0	1	1	0
RNR	X	0	1	1	0	1	1	1
PPR	X	0	1	1	1	1	0	1
PPS	X	1	1	1	1	1	0	1
CTC	X	1	0	0	1	0	0	0
CTR	X	0	1	0	0	0	1	1
EOR	X	1	1	1	0	0	1	1
ERR	X	0	1	1	1	0	0	0
RTP	X	0	1	1	0	0	1	1

- X=1 for the station that receives the DIS signal.
- X=0 for the station that receives the reply signal to the DIS signal.

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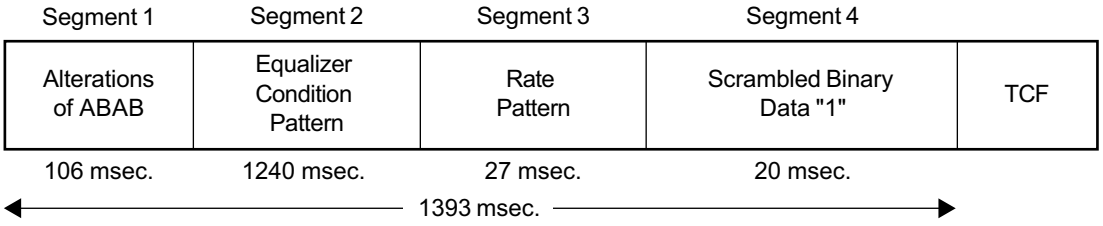
[4] Training

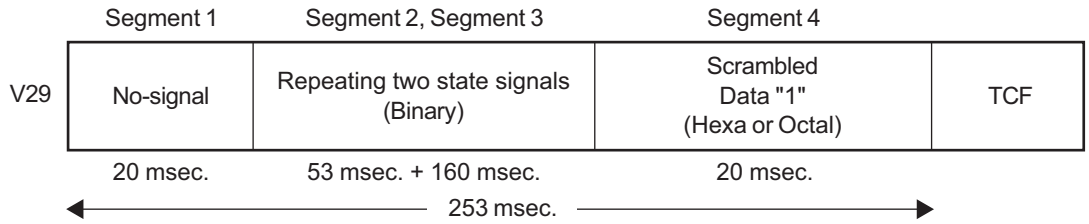
The training signal involves a pre-determined picture signal which is used to check the capability of the phone line to reliably support facsimile traffic.

- Training signal
  The training signal is transmitted following DCS with the modem speed to be selected by DCS. At the receiving station, the automatic equalizer is adjusted by the training signal.

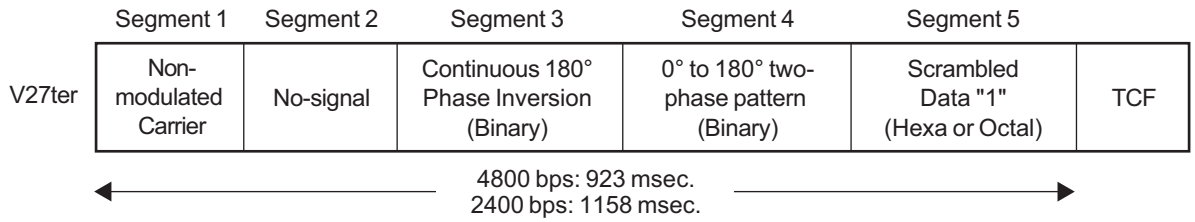
- Format of the training signal
  <14.4 Kbps, 12 Kbps>



<9600 bps, 7200 bps>



<4800 bps, 2400 bps>



- TCF signal
  When training is not performed correctly, an error may occur in the picture signal. The TX station transmits a TCF signal and checks if any error occurs in picture data before the picture data communication to follow. When the RX station detects an error in the TCF signal, the RX station sends an FTT signal to the TX station and request for re-training. When normal, a CFR signal is sent instead.

  The modem speed of TCF signal is the same as the training signal, and it transmits all zeros for 1.5 seconds.

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9.3 High-speed Transmission Procedure

The V.34 modem recommended by ITU-T (Max. transmission rate: 33.6 Kbps) is used. Therefore, the transmission time of the image data is cut substantially when compared to conventional model.

9.3.1 V.8/V.34 procedure

[1] Outline

- V.8 is performed as a start up procedure to switch to V.34. V.8 can connect an existing facsimile machine to equipment using data modem or other V series modems. The V.34 modem includes a modem circuit which can also be connected to the previously recommended modems. Therefore, it is upwardly compatible.

- The new techniques such as the pre-emphasis techniques *1 and the probing techniques *2, are fully used. Pre-emphasis techniques not only make the speed of modulation method high, but also gain the S/N ratio. Probing techniques measure the line characteristics and optimize the modem for the line state. Therefore, these techniques do not simply speeding-up transmission momentarily, but do so at the average level when the data transmission is actually performed.

- For V.8 and the pre/post-fax transmission for V.34, the procedure is speeded up by full duplex communication.

- The following 14 types of image transmission speed *3 are available:
  33.6 Kbps /31.2 Kbps /28.8 Kbps /26.4 Kbps /24.0 Kbps /21.6 Kbps /19.2 Kbps /16.8 Kbps /
  14.4 Kbps /12.0 Kbps /9.6 Kbps /7.2 Kbps /4.8 Kbps /2.4 Kbps

- The modulating speed (baud rate) *4 can be selected from 2400, 3000, 3200 symbol/sec (mandatory), or 2743, 2800, 3429 symbol/sec (option). The data rate can be set more accurately than the conventional modem.

*1: A signal is sent by raising the output level in the high-frequency band - in which the noise is relatively loud.
*2: The tone called “Probing Tone” is sent. The receiver measures the line characteristics.
*3: In the ITU-T Recommendation, it is described as “data rate”. “Image transmission speed” is the same as “data rate”.
*4: In the ITU-T Recommendation, it is described as “symbol speed”. “Symbol rate”, “Modulating speed”, and “Baud rate” have the same meaning. This machine cannot use the speed of “2743 symbol/sec”.

Notes:

1. In the V.34 procedure, ECM is used. If the ECM transmission/reception of user data is set to “Not performed”, the V.8 procedure is not performed. Therefore, the procedure does not switch to V.34, and V.17 or the prior, is selected.
2. Also when the transmission/reception speed is set to 14.4 Kbps or less, the V.8 procedure is not performed, and V.17 or the prior, is selected.
3. To switch to the V.8/V.34 procedure after starting V.21 procedure (Refer to 📖 P.9-20 "[3-1] Late start").
4. After the V.34 procedure starts, fallback is performed in the V.34 procedure. However, fallback for V.17 mode or before is not performed.

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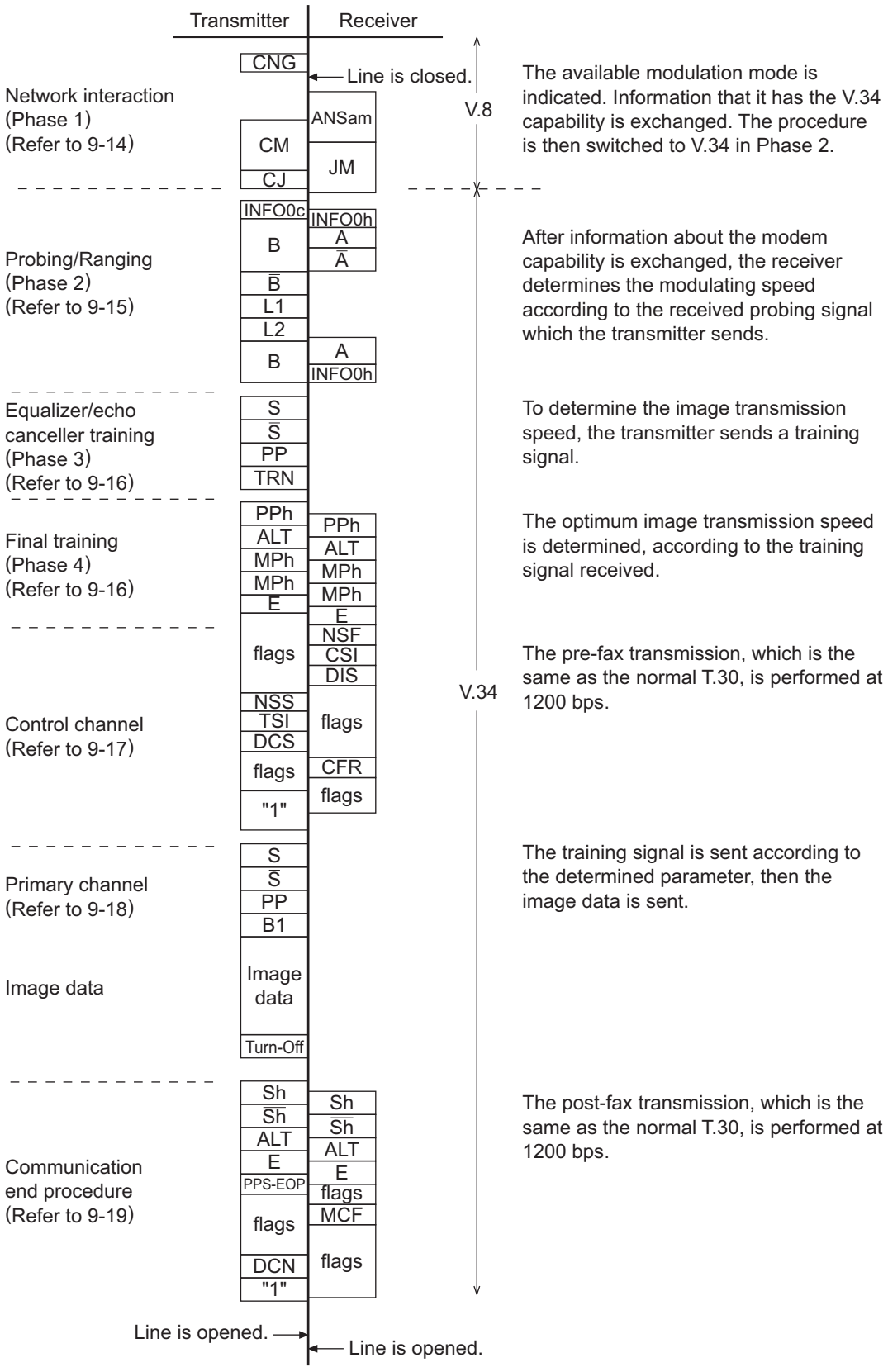
[2] Standard procedure



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[2-1] Network interaction (Phase 1)

The V.8 procedure is performed as the start up procedure for the V.34 high-speed modem.
In the V.8 procedure, mainly the optimum modulation method (V series modem mode) that can be operated between transmitter and receivers, is determined.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
Calling tone	CNG	1,100-Hz tone specified by T.30 indicating the facsimile machine has the automatic call function.	
Call Menu signal	CM	It mainly indicates an available modulation method such as V.21, V.27ter, V.29, V17 and V.34.	It is modulated by V.21 (L) *1. Transmission rate: 300 bps
CM terminator	CJ	It indicates the detection of the JM signal or the termination of CM signal.	It is modulated by V.21 (L) *1. Transmission rate: 300 bps
Call Indicator signal	CI	It indicates the general communication functions. It is sent when the V.8 procedure restarts.	For late start only. See figure 3-40. It is modulated by V.21 (L) *1. Transmission rate: 300 bps

- Receiver

Signal name	Abbreviation	Meaning	Remark
Answer amplitude tone	ANSam	2,100-Hz tone amplitude-modulated to 15 Hz.	Tone equivalent to CED of the conventional machine.
Joint Menu signal	JM	It indicates the terminal type such as a facsimile machine, and is a response to a CM sent from the transmitter and indicates jointly available modulation method.	It is modulated by V.21 (H) *1. Transmission rate: 300 bps

*1 V.21 (L).....Low frequency channel defined by V.21 recommendation
1,080±100 Hz (980 Hz: 1,1180 Hz: 0)
V.21 (H).....High frequency channel defined by V.21 recommendation
1,750±100 Hz (1,650 Hz: 1,1850 Hz: 0)

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[2-2] Probing/Ranging (Phase 2)

Line characteristics are measured, then the parameter setting for modulation such as the modulating speed, is made.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
INFO sequence	INFO0c	It indicates modem capability such as modulating speed and frequency transmission capability (two frequency bands - high and low - used for measuring the line characteristics), and requests for adjusting.	Transmission rate: 600 bps
Tone $\underline{B}$ Tone $\overline{B}$	$\underline{B}$ $\overline{B}$	Synchronization between modems by 1200-Hz tone	$\overline{B}$ is a signal that shifts phase B 180°.
Line probing signal L1 Line probing signal L2	L1 L2	Tone for analyzing the line characteristics by probing	Probing is to measure the line characteristics. Tone between 150 Hz and 3750 Hz in units of 150 Hz

- Receiver

Signal name	Abbreviation	Meaning	Remark
INFO sequence	INFO0a	It indicates the modem capability such as the modulating speed and frequency transmission capability.	Transmission rate: 600 bps
Tone $\underline{A}$ Tone $\overline{A}$	$\underline{A}$ $\overline{A}$	Synchronization between modems by 2400-Hz tone	$\overline{A}$ is a signal that shifts phase A 180°.
INFO sequence	INFO0h	Based on the analysis of the line probing signal sent from the transmitter, it indicates the pre-emphasis filter and modulating speed to be used for the data transmission.	Transmission rate: 600 bps

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[2-3] Equalizer and echo canceller training (Phase 3)

To optimize the filters such as an equalizer, the training (adjustment) is performed according to the parameters set in phase 2.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
S signal	S	Short training	$\overline{S}$ is a signal that makes a transition from phase S.
$\overline{S}$ signal	$\overline{S}$		
PP signal	PP	The modem of receiver uses it for training the equalizer.	
TRN signal	TRN	It is used for determining the transmission rate by the receiver.	

[2-4] Final training (Phase 4)

The settings such as the maximum value for the data rate, selection of the trellis encoder, and data rate which can be supported, are made.

- Calling/receivers

Signal name	Abbreviation	Meaning	Remark
PPh signal	PPh	The modem of other unit uses it for training the equalizer.	
ALT signal	ALT	-	
Modulation parameter	MPh	It indicates the parameters used for image transmission such as the maximum data signaling rate, type of trellis coding, and type of precoding.	
E sequence	E	-	20-bit sequence of “1”s in binary

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[2-5] Control channel

The conventional T.30 procedure is performed. The transmission rate is 1200 bps.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
Flag	flags	It maintains synchronization.	7E (H)
Non-standard facilities setting	NSS	It receives an NSF sent from the receiver. It selects the available mode according to the received NSF, then specifies the mode for reception.	
Transmitting Subscriber ID	TSI	It indicates the telephone number of the transmitter.	
Digital Command Signal	DCS	It specifies the mode that can be communicated.	
-	1	It declares to switch to the highspeed procedure.	“1” is sent continuously.

- Receiver

Signal name	Abbreviation	Meaning	Remark
Non-Standard Facilities	NSF	It indicates the facilities which are not recommended by ITU-T, abbreviated user’s name, and manufacturer code.	
Called Subscriber ID	CSI	It indicates the telephone number of the receiver.	
Digital Identification Signal	DIS	It indicates the standard facilities recommended by ITU-T.	
Flag	flags	It maintains synchronization.	7E (H)
Confirmation to receive	CFR	It indicates that the training of the modem is complete, and the receiver is ready to receive the image signal.	

Note:

In the control channel, the frequency of a signal to be sent is different between transmission and reception. The signal echoed back has never been misidentified as a signal sent from the other unit. Therefore, this channel is not influenced by a signal echoed back.

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[2-6] Primary channel

The training is performed according to the parameters set in phase 4. The transmission rate is 1200 bps.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
S signal	S	Short training	$\overline{S}$ is a signal that makes a transition from phase S.
$\overline{S}$ signal	$\overline{S}$		
PP signal	PP	The modem of receiver uses it for training the equalizer.	
B1 sequence	B1	Scrambled data frame to be sent when startup is completed	

[2-7] Image data

Image data is sent.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
Image data	Image data	Encoded image data	
-	Turn-off	-	Scrambled 1 is sent for 35 ms.

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[2-8] Communication end procedure

This procedure ends the communication. The transmission rate is 1200 bps.

- Transmitter

Signal name	Abbreviation	Meaning	Remark
Sh signal	Sh	Short training	
$\overline{\text{Sh}}$ signal	$\overline{\text{Sh}}$		
ALT signal	ALT	-	
E sequence	E	-	
End of procedure signal	PPS-EOP	The transmission of one page is completed.	
Flag	flags	It maintains synchronization.	7E (H)
Disconnect signal	DCN	It signals to release the line.	

- Receiver

Signal name	Abbreviation	Meaning	Remark
Sh signal	Sh	Short training	
$\overline{\text{Sh}}$ signal	$\overline{\text{Sh}}$		
ALT signal	ALT	-	
E sequence	E	-	
Flag	flags	It maintains synchronization.	7E (H)
Message confirmation	MCF	It indicates that the image signal is received normally, and the receiver is ready for receiving more pages.	

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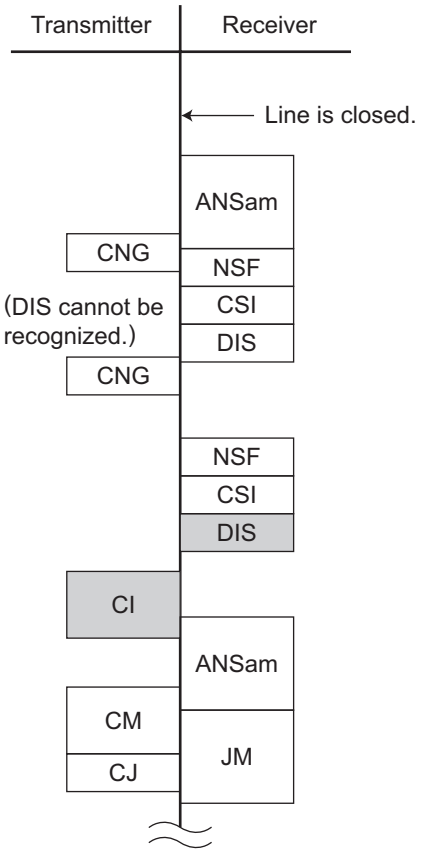
[3] Example of protocol

The signal shaded below means the most noteworthy one in the procedure.

[3-1] Late start

The receiver cannot detect a CM signal while sending the ANSam signal. Therefore, it sends a DIS signal to indicate V.8 support. The transmitter sends a CI signal that causes the receiver to send another ANSam signal, which makes the receiver switch to the V.8 procedure.



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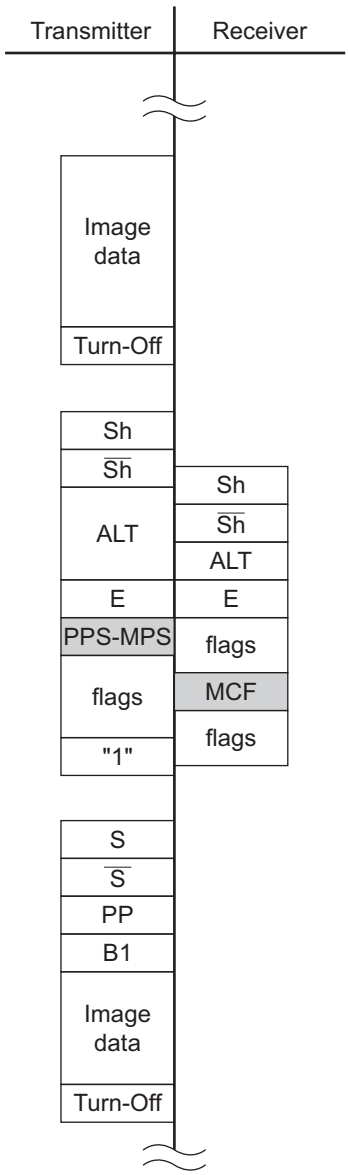
[3-2] Multi-page sequence

In the same manner as the T.30 procedure, the transmitter sends a PPS-MPS signal after sending the image data. The receiver sends an MCF signal and switches to the next page transmission.



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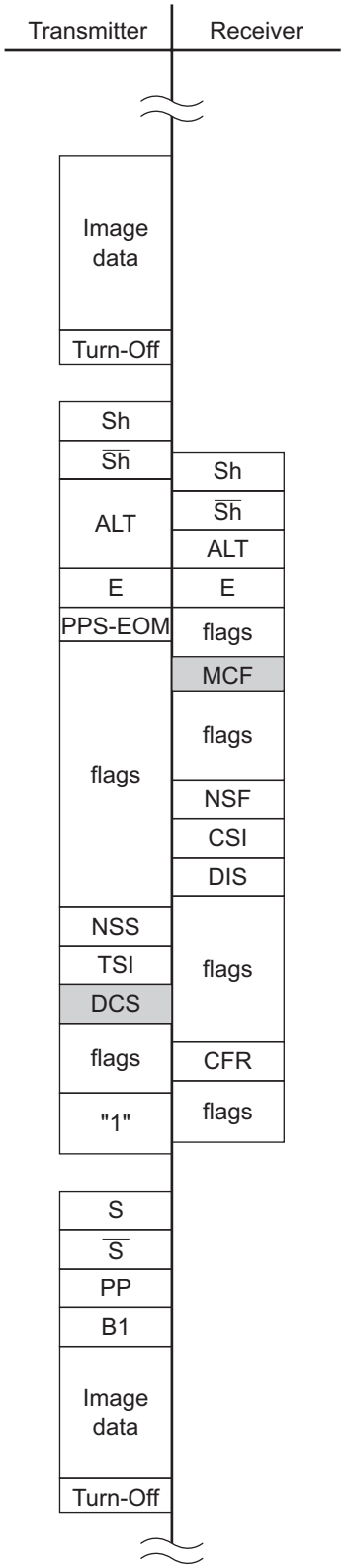
[3-3] Mode change

The transmitter and receiver send a PPS-EOM signal and an MCF signal, respectively.
Then, to change the mode, the receiver and transmitter send a DIS signal and a DCS signal, respectively.



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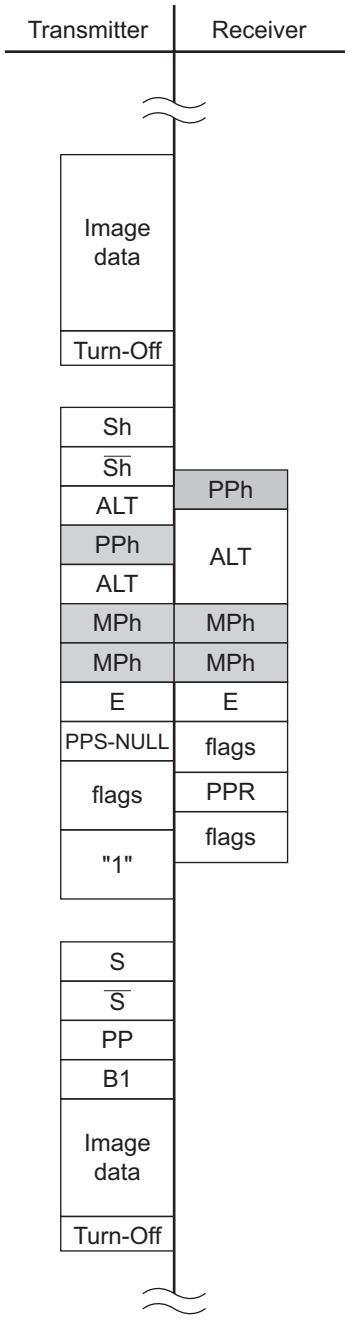
[3-4] Change of image transmission speed by the receiver

The receiver sends a PPh signal for an Sh signal sent by the transmitter. Then, the image transmission speed is determined, according to the MPh sequence sent from both modems.



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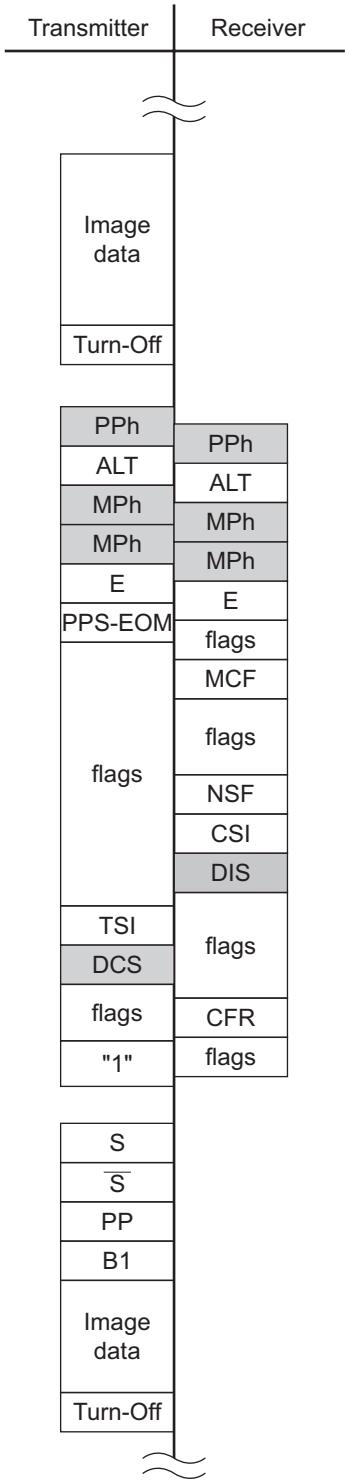
[3-5] Change of image transmission speed by the transmitter

The transmitter sends a PPh signal after sending the image data. The receiver returns a PPh signal. Then, the image transmission speed is determined, according to the MPh sequence sent from both modems.



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10. Preventive Maintenance

10.1 Overview

By checking and cleaning periodically, you can maintain this facsimile machine in the best condition. Therefore, the effects will further be improved by checking and cleaning during trouble calls, as well as during preventative maintenance inspections.

10.1.1 Preventive Maintenance Routine

For checking and cleaning, follow the routine below.

1) Output the telephone number lists and the function list and keep them until the maintenance service is completed. Also, check the print quality when the lists are printed. As for details of the sample list and operation, refer to the operator manual.

   Telephone number lists output procedure
   - Press the [MENU], [2], [5], [0], [1] key.

   Function list output procedure
   - Press the [MENU], [2], [1] key.

2) Ask the user if any trouble occurred before. If necessary, make an investigation following the procedure, refer to 📖 P.11-1 "11. Troubleshooting".

3) With the facsimile in the standby mode, press the [JOURNAL] key to output a communication journal, and analyze whether any communication troubles have occurred referring to the error code table. If any communication errors are indicated, perform the following procedures:

   Procedure 1: Carry out a transmission/reception test with the indicated location to confirm the error. Only when a communication error reoccurs, follow the procedure 2.
   Procedure 2: Adjust the transmission attenuator and cable equalizer.

4) Perform the normal checking and cleaning (refer to 📖 P.10-3 "10.2.3 How to Check, How to Clean".)

5) Make 2 or 3 copies using this facsimile, and check the copied picture quality.

   Copying procedure
   - Load the document face down in the document support, and press the [COPY] key.
   - Press the [→] key and select the sort copy function ON/OFF using the [↓] key.
   - Press the [→] key and select the paper tray function TRAY1/BYPASS/TRAY2 (If installed) using the [↓] key.
   - Enter the number of copies, and press the [ENTER] key.

6) Again, output a telephone number lists and a function lists, and confirm that the contents in the lists match those in the lists output prior to the maintenance operation.

7) Confirm that transmissions are performed correctly to other facsimiles.

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10.2 Preventive Maintenance

10.2.1 Replacement of Consumables

The following are consumables used on this facsimile. The consumables are supply item that are not covered by the machine warranty.

Name	Period of replacement
Toner cartridge (A4 paper, with 3.2% print)	Initial toner: Approx. 2,000 sheets or over (Continuous printing) Supply toner: Approx. 8,000 sheets or over (Continuous printing)
Drum unit (A4 paper, with 5% print)	Approx. 20,000 sheets (Continuous printing)

10.2.2 Periodically Replaced Parts

The following table shows the parts to be replaced periodically on this facsimile machine. Be sure to check and clean these parts at the time of the periodical checkups and when calling on the user.

If the maintenance contract has been made, replace the parts that have reached their lives. If the maintenance contract has not been made, recommend to replace such parts (to be charged).
As for the replacing procedure, refer to 🕮 P.8-1 "8. Removal/Replacement/Adjustment".

Name	Life
ADF pad assembly	12,000 sheets or 1 year
Transfer roller	50,000 sheets
Fuser	50,000 sheets

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10.2.3 How to Check, How to Clean

When checking or cleaning, follow the procedure below. If any wear or damage is found, refer to 🕮 P.8-1 "8. Removal/Replacement/Adjustment" to replace such defective part with a new part.

Remarks:

- Before checking and cleaning, be sure to unplug the power cord from the AC outlet.
- The fuser is very hot. Do not touch the fuser until it cools down after turning the power OFF.

Notes:

- Before checking or cleaning, be sure that the residual memory on the LCD indicates 100% and then turn OFF the power switch.
  If the power is turned OFF with the residual memory less than 100%, the data stored in memory will be lost.
- While the drum unit is removed from the machine unit, cover it with cloth, etc. to prevent the photo-sensitive part from being deteriorated.
- For checking or cleaning, be sure to remove the following parts beforehand: Process unit (drum unit and toner cartridge), recording paper tray, document exit tray and recording paper exit tray.

The following are the parts to be checked or cleaned. If any part is found to be worn or damaged, replace it with a new part referring to 🕮 P.8-1 "8. Removal/Replacement/Adjustment".

1) CIS glass surface (P.10-4 "Fig. 10-2")
2) Scanner guide (P.10-5 "Fig. 10-3")
3) ADF pad (P.10-5 "Fig. 10-4")
4) TX pinch roller (P.10-6 "Fig. 10-5")
5) TX feed roller (P.10-6 "Fig. 10-6")
6) ADF roller (P.10-7 "Fig. 10-7")
7) TX cover (P.10-7 "Fig. 10-8")
8) Paper pickup roller (P.10-9 "Fig. 10-12")
9) Drum unit contacts (P.10-10 "Fig. 10-13")
10) Toner cartridge contacts (P.10-10 "Fig. 10-14")
11) RX feed roller shaft (P.10-12 "Fig. 10-17")
12) Optional pinch roller (P.10-13 "Fig. 10-19")
13) Optional feed roller (P.10-13 "Fig. 10-20")
14) Optional paper pickup roller (P.10-14 "Fig. 10-21")
15) Optional paper guide (P.10-14 "Fig. 10-22")
16) Optional earth plate (P.10-15 "Fig. 10-23")
17) Outside of the machine (P.10-16 "Fig. 10-25")

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Procedure

(1) Open the operation panel assembly.

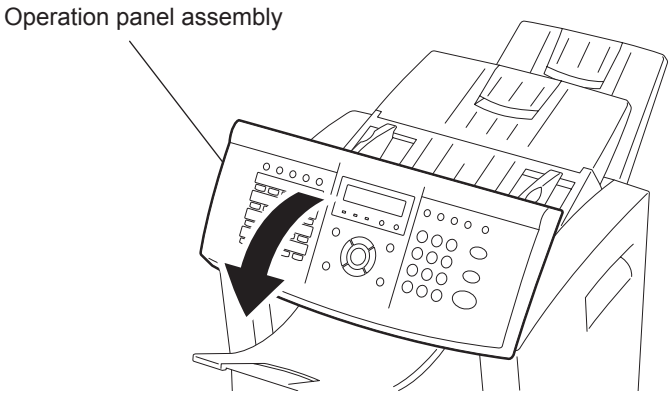

Fig. 10-1

(2) Wipe the CIS glass surface with a soft dry cloth (lens cleaner cloth). If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

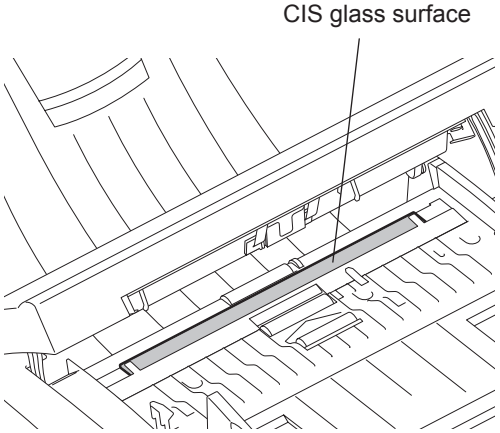

Fig. 10-2

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(3) Wipe the scanner guide with a soft dry cloth (lens cleaner cloth). If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

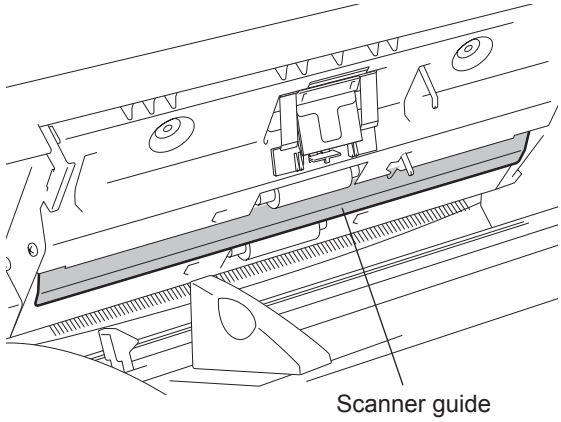

Fig. 10-3

(4) Wipe the ADF pad with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

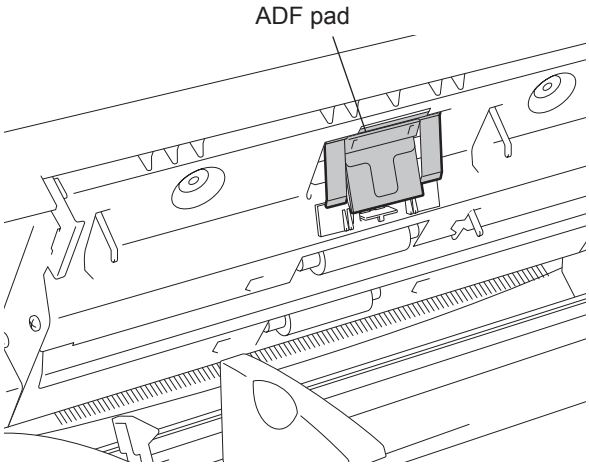

Fig. 10-4

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(5) Wipe the TX pinch rollers with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

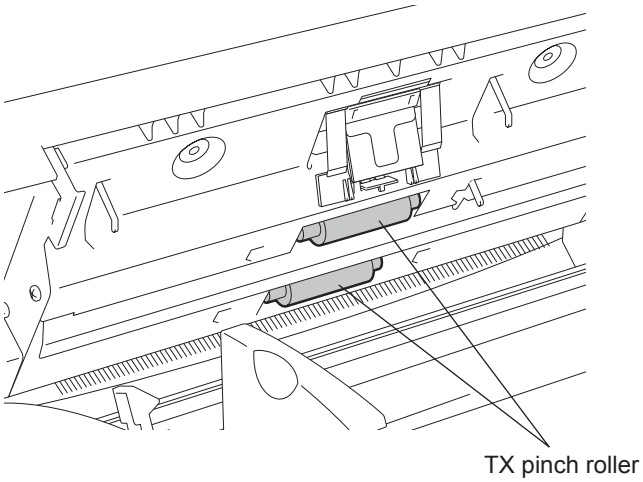

Fig. 10-5

(6) Wipe the TX feed rollers with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

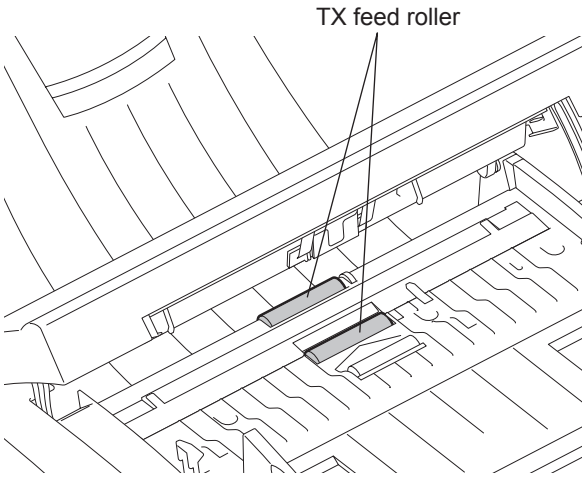

Fig. 10-6

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(7) Wipe the ADF roller with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

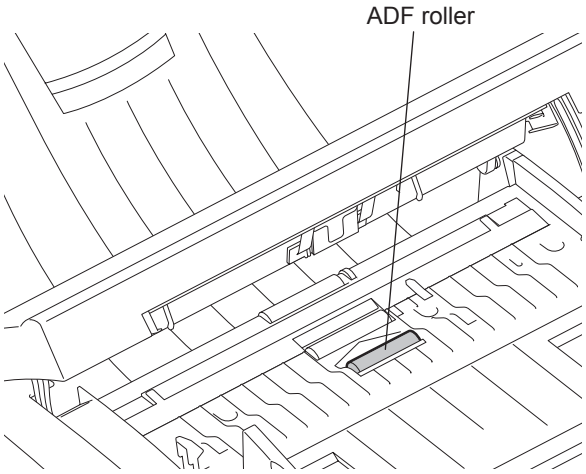

Fig. 10-7

(8) Wipe the TX cover with a dry cloth.

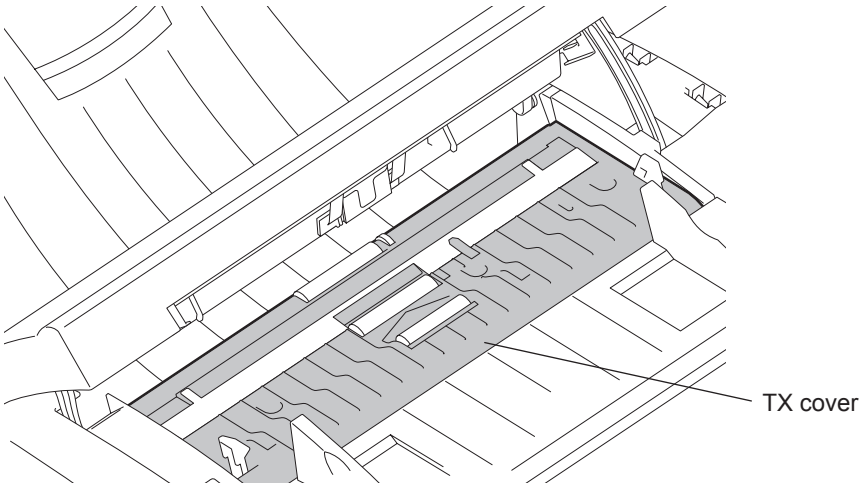

Fig. 10-8

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(9) Close the operation panel assembly.

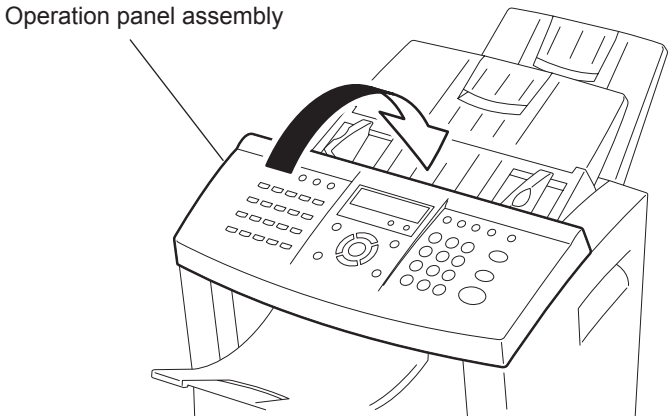

Fig. 10-9

(10) Open the front cover.

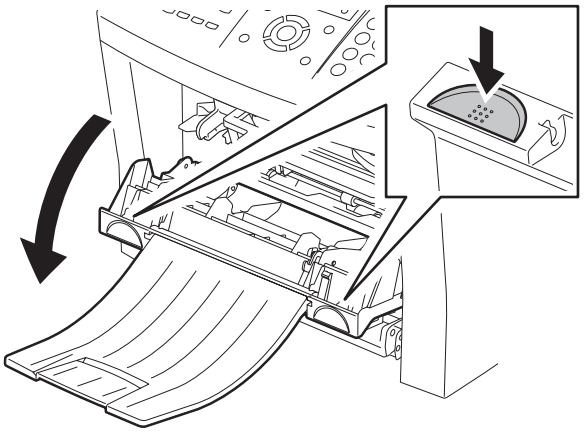

Fig. 10-10

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(11) Remove the process unit (toner cartridge and drum unit) from the machine by the green handle. Place the drum unit on a level surface. Cover the unit with a clean cloth to protect the drum from exposure to light.

Note:

Always hold the drum unit by the green handles. Do not touch the green drum area or the black roller. Do not leave the drum unit out of the machine for an extended period. Touching the drum or exposing the drum unit to light could lower the print quality.

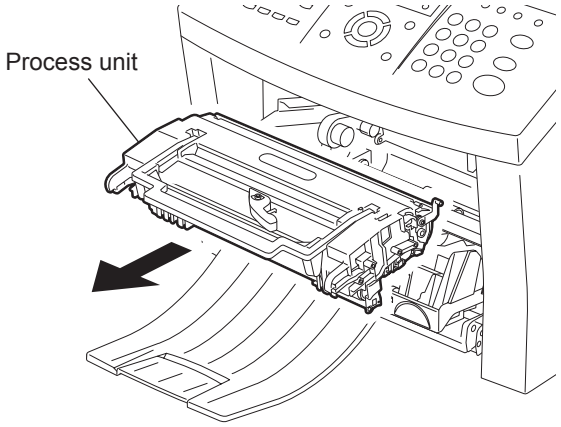

Fig. 10-11

(12) Wipe the paper pickup roller with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

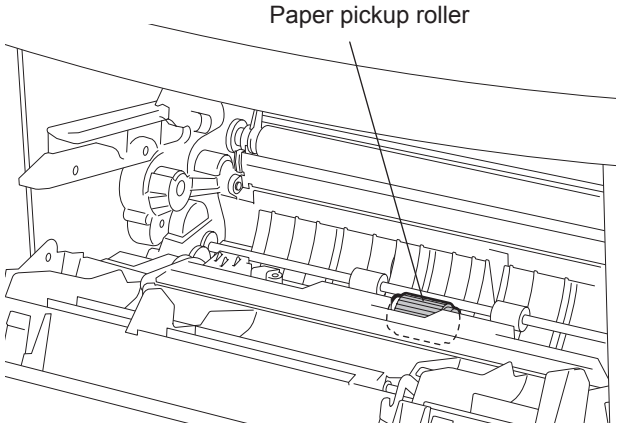

Fig. 10-12

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(13) Use a cotton swab to clean the drum unit contacts in the machine.

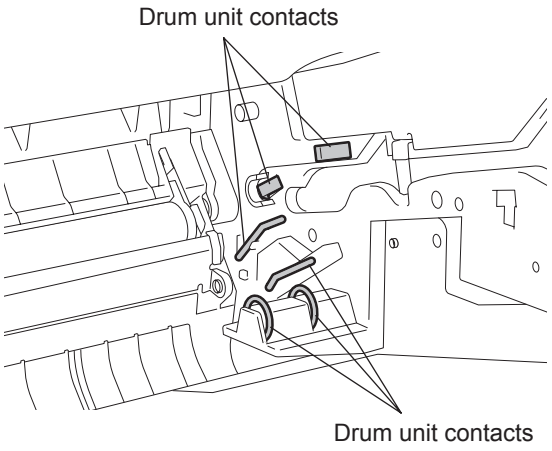

Fig. 10-13

(14) Use a cotton swab to clean the toner cartridge contacts in the machine.

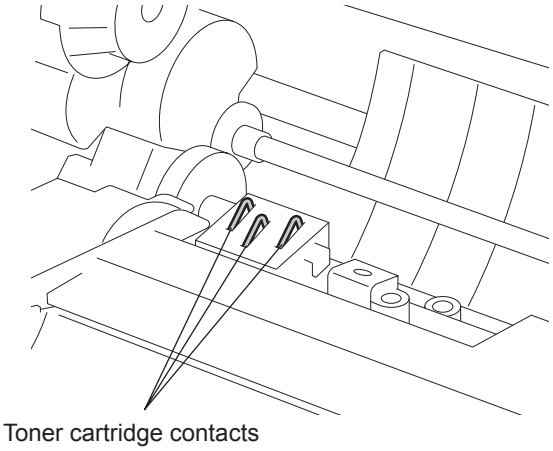

Fig. 10-14

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(15) Holding onto the process unit's handle and install the process unit into the machine, aligning the guides of the unit with the grooves inside the machine.

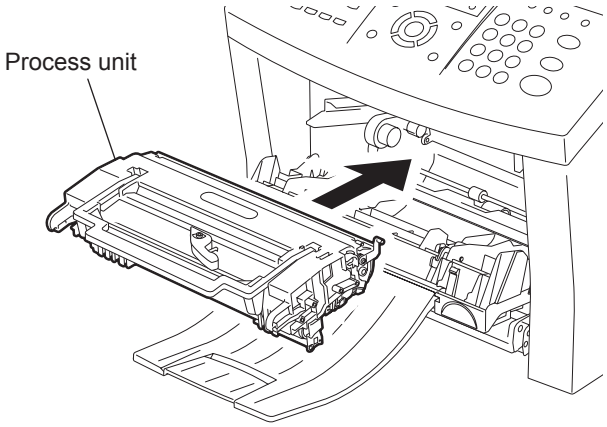

Fig. 10-15

(16) Close the front cover.

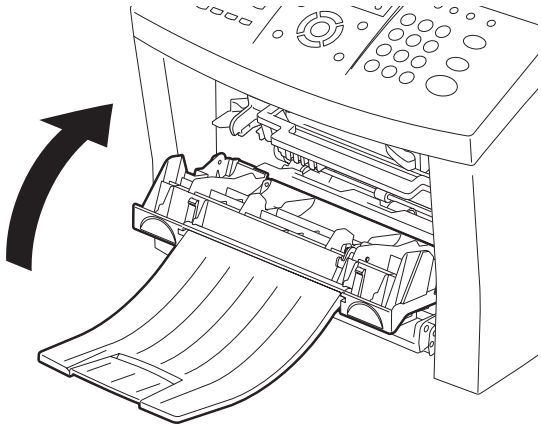

Fig. 10-16

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(17) Wipe the RX feed roller shaft with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

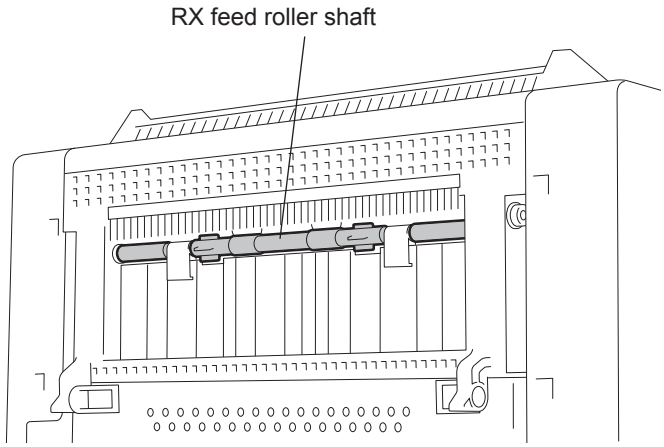

Fig. 10-17

(18) Remove the machine from the optional paper tray.

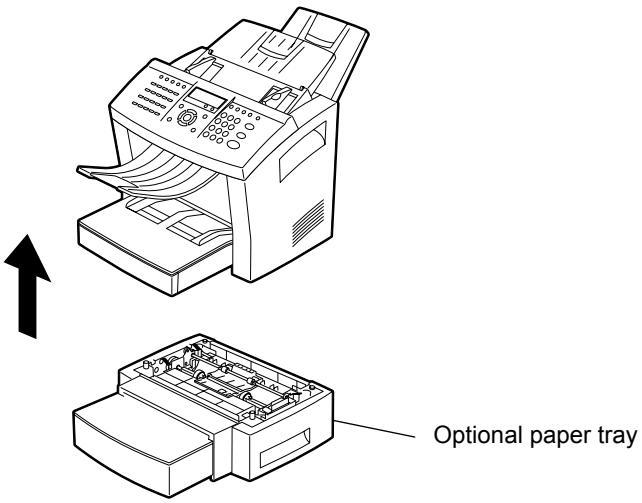

Fig. 10-18

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(19) Wipe the optional pinch rollers with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

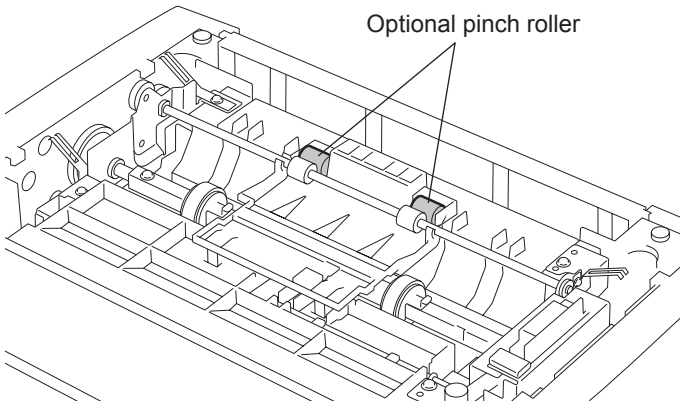

Fig. 10-19

(20) Wipe the optional feed roller with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

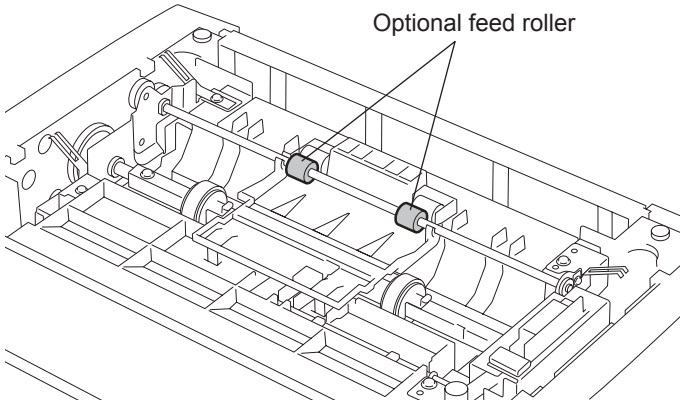

Fig. 10-20

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(21) Wipe the optional paper pickup roller with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

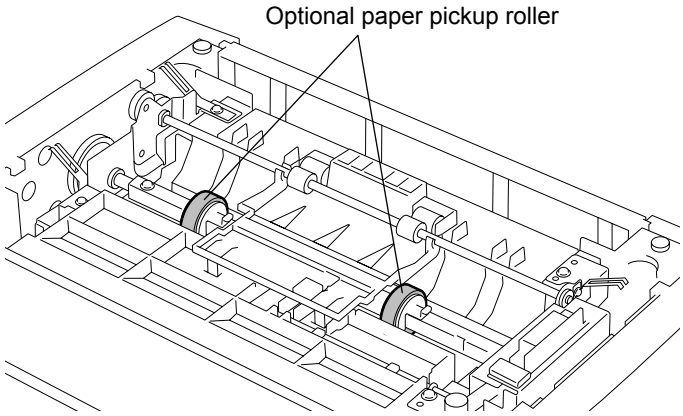

Fig. 10-21

(22) Wipe the optional paper guide with a soft dry cloth. If the surfaces require moisture to remove the dirt, use a cloth slightly dampened with water to remove the dirt, followed by a dry cloth to remove streaks.

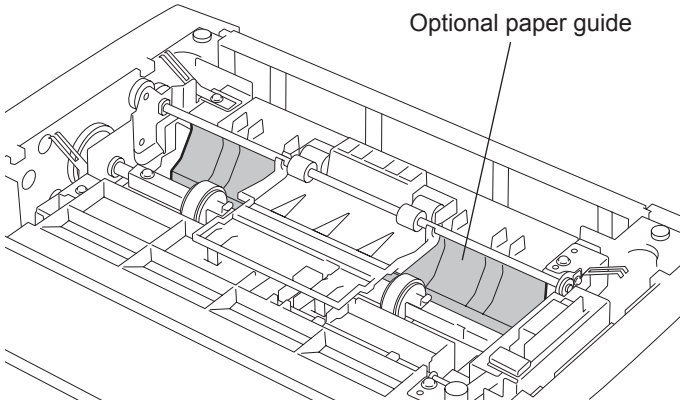

Fig. 10-22

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(23) Use a cotton swab to clean the optional earth plates in the machine.

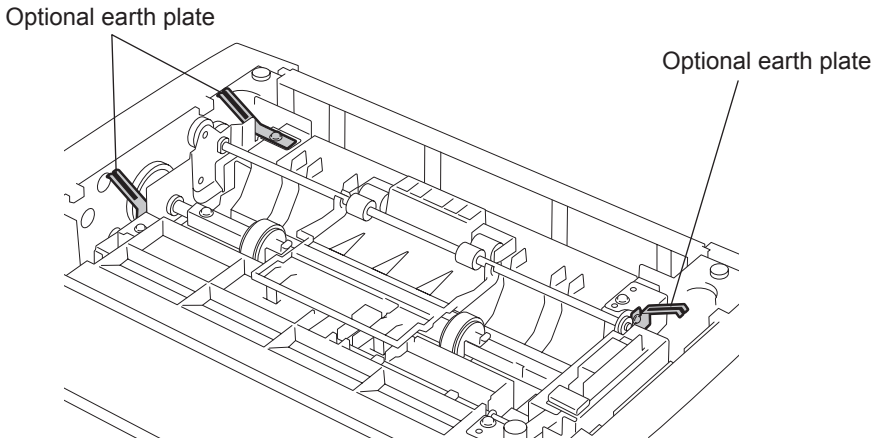

Fig. 10-23

(24) Attach the machine to optional paper tray.

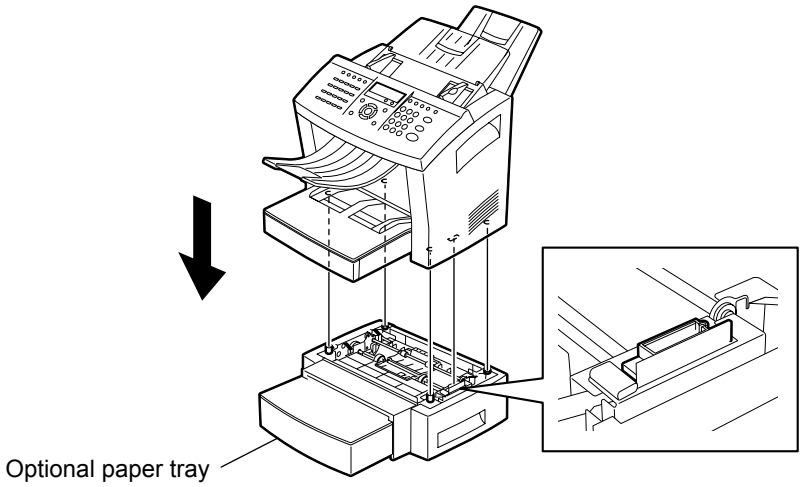

Fig. 10-24

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(25) Attach the recording paper tray, document exit tray, and recording paper exit tray.

(26) Wipe the machine with a damp cloth to remove dust and fingerprints. Use water to dampen the cloth. Do not use chemicals for cleaning, as this may cause discoloration or damage to the finish of the machine.

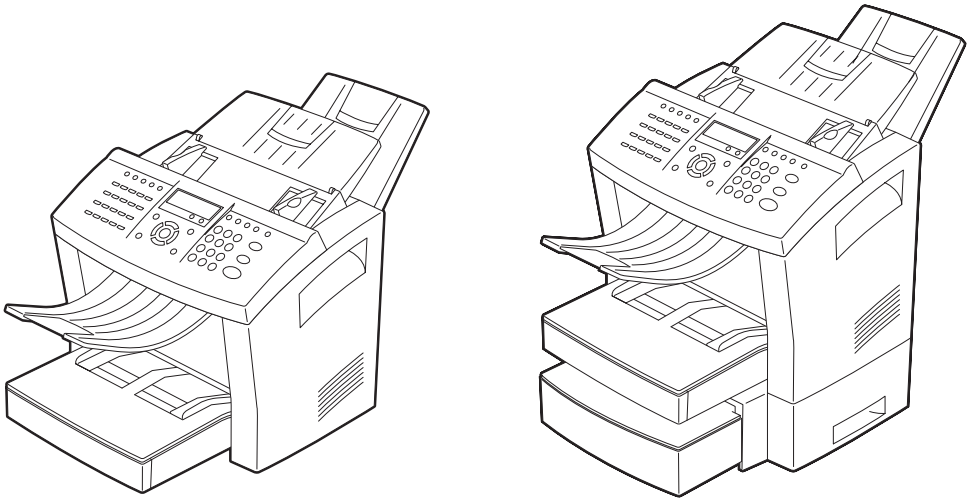

Fig. 10-25

(27) Plug the power cord in the AC power outlet, turn the power switch ON, and make 2 or 3 copies. Confirm that the document is correctly fed and no dirt is stuck to it.

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11. Troubleshooting

This chapter describes various test functions which can be useful in recovering data and diagnosing troubles that may occur on this facsimile machine.

Remark:

To select a menu item, you may use the [↑] or [↓] key to display the required item followed by pressing the [ENTER] key, as described above, or you may directly enter the item number found to the right of the title of each item menu through the dial keypad.

11.1 TEST MODE [MENU], [9]

In test mode, there are various functions available to users and service technicians to test the machine during maintenance. When a PBA or major part has been replaced because of the occurrence of a problem with this machine, an operation check must be made.

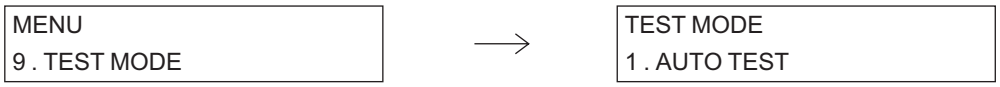
Remarks:

- Before replacing the Main PBA, it is necessary to print the current function settings so that the unit can be reconfigured to the same setting.
- Before turning off the power switch, be sure to check with the LCD display that no PIX data and received data is stored in memory. Turning off the power switch without such checking may result in the loss of data.

Test Mode Operation Overview

1) Turn on the power switch. When the standby mode screen is displayed, press the [MENU] key.

2) Use the [↑] or [↓] key to select “9. TEST MODE”, and then press the [ENTER] key.



3) Use the [↑] or [↓] key to select the desired item, and then press the [ENTER] key.

The test mode provides the test functions listed below. For details, refer to the respective pages.

TEST MODE 1 . AUTO TEST	Ch.11.1.1
2 . INDIVIDUAL TEST	Ch.11.1.2
3 . TEST RESULT LIST	Ch.11.1.3
4 . FUNCTION TEST*	Ch.11.1.5
5 . MAINTENANCE*	Ch.11.1.6
6 . SERVICE LIST*	Ch.11.1.7

Remark:

Tests marked with an asterisk (*) can be performed by service technicians only. These tests are available by changing to SERVICE MODE. For changing to SERVICE MODE, refer to 📖 P.11-14 "11.1.4 SERVICE MODE".

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11.1.1 AUTO TEST [MENU], [9], [1]

In AUTO TEST mode, the users follow the procedure to automatically perform a series of test items in succession.

Note:
AUTO TEST cannot be performed if the data, such as received data, delayed transmission, or polling data, is stored in the memory.

The test items to be performed in AUTO TEST mode are as follows:

- FLASH ROM TEST
  Checks the firmware, function data, and language data stored in the Flash ROM.

- SRAM TEST
  Performs a read/write test on the SRAM.
  (For the contents of the test, refer to 📖 P.11-17 "[3] SRAM TEST [MENU], [9], [4], [03]".)

- DRAM TEST
  Performs a read/write test on the DRAM.
  (For the contents of the test, refer to 📖 P.11-18 "[4] DRAM TEST [MENU], [9], [4], [04]".)

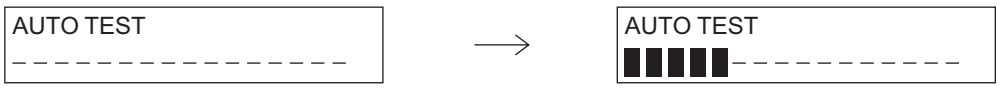
- MODEM TEST (Quick test)
  Performs a read/write test on the MODEM register and detects a line current.

- SCANNER TEST
  Tests the image scanning operation of the CIS and performs a read/write test on the internal memory of the DSC.
  (For the contents of the test, refer to 📖 P.11-23 "[10] SCANNER TEST [MENU], [9], [4], [10]".)

- CODEC TEST
  Tests the coding/decoding operation of the CODEC.
  (For the contents of the test, refer to 📖 P.11-23 "[11] CODEC TEST [MENU], [9], [4], [11]".)

- PRINTER TEST
  Prints a test pattern sheet to check the operation of each section (HVPS, LSU, Fuser, and so on) of the printer.

1) Use the [↑] or [↓] key to select “1. AUTO TEST”, and then press the [ENTER] key.
   The auto test starts, and ■ appears on the screen indicating that the test is in execution.



Remark:
To suspend the auto test, press the [STOP] key.

2) When all the tests completed, the "OPERATION COMPLETED" message is displayed and the display returns to showing the standby mode screen.

Remark:
The result of the auto test can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the auto test is judged to be NG, perform the relevant function test listed above to solve the problem.

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11.1.2 INDIVIDUAL TEST [MENU], [9], [2]

In INDIVIDUAL TEST mode, the users follow the procedure to test this machine in interactive mode.

1) Use the [↑] or [↓] key to select “2. INDIVIDUAL TEST”, and then press the [ENTER] key.

2) Use the [↑] or [↓] keys to select the desired item, and then press the [ENTER] key.
There are the following individual tests. For details, refer to the description of each test item listed below.

INDIVIDUAL TEST 01 . ADF TEST	Ch.11.1.2 [1]
02 . KEY TEST	Ch.11.1.2 [2]
03 . LED TEST	Ch.11.1.2 [3]
04 . LCD TEST	Ch.11.1.2 [4]
05 . SPEAKER TEST	Ch.11.1.2 [5]
06 . SENSOR TEST	Ch.11.1.2 [6]
07 . PRINT TEST	Ch.11.1.2 [7]
08 . TONER IC TEST	Ch.11.1.2 [8]

[1] ADF TEST [MENU], [9], [2], [01]

This test checks the operation of the ADF by transporting and unloading documents. You can check that the ADF is normal if the number of documents loaded is consistent with the number of documents transported and unloaded.

1) Use the [↑] or [↓] key to select “01. ADF TEST”, and then press the [ENTER] key.

Set the document

ADF TEST LOAD DOCUMENT	→	ADF TEST PRESS [START]

Remark:

You can change the transport speed by pressing the [MODE] key.

STD:	Fast
FINE (Same when HALF TONE is set):	Medium
S-FINE (Same when HALF TONE is set):	Slow

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2) Load the documents in the document support and press the [START] key. The documents will be transported one by one and the number of documents unloaded will be displayed at the lower right on the screen.

After transporting all the documents

ADF TEST PAGES 00	→	ADF TEST PAGES XX	

Remark:

If a document jam occurs during transport, the screen below is displayed.
Remove the jammed documents. You can resume the test by pressing the [START] key.

Remove the jammed document

ADF TEST DOCUMENT JAM	→	ADF TEST PAGES XX	

3) To end the test, press the [STOP] key.

ADF TEST 1 . OK

4) Use the [↑] or [↓] key to select “1.OK” or “2.NG”, and then press the [ENTER] key.
If the number of documents loaded is consistent with the number of documents unload, select “1.OK”. If a document is not unloaded even once, select “2.NG”.

5) The "OPERATION COMPLETED" message is displayed and the display returns to the test item select screen of the INDIVIDUAL TEST.

Remark:

The result of the ADF TEST can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the ADF TEST is judged to be NG, replace the TX feed rollers and ADF roller assembly by referring to 📖 P.8-19 "[4] TX Feed Rollers" and 📖 P.8-20 "[5] ADF Roller".

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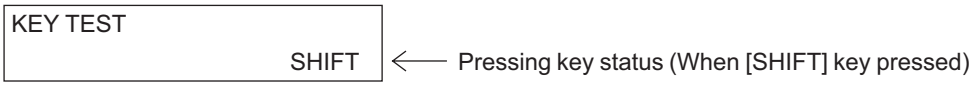
[2] KEY TEST [MENU], [9], [2], [02]

This test checks the key switch operation on the Operation panel.

1) Use the [↑] or [↓] key to select “02. KEY TEST”, and then press the [ENTER] key.

2) Press all the keys except the [STOP] key. At this time, the status of each key pressed is shown at the lower right on the screen.

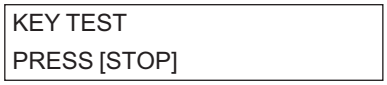


Remark:
The statuses of the keys shown when pressed are listed in the table below.

Key Status Table

Key name	Display	Key name	Display
[0] to [9], [#], [*]	TK0 to TK9, #, *	[↑/MENU]	UP/MENU
[MULTI/CHANGE CODE]	MULTI	[←]	LEFT/BACK
[SPEED DIAL/ALPHA]	ABB	[→]	RIGHT
[REDIAL/PAUSE]	PAUSE	[↓]	DOWN
[MONITOR]	MONITOR	[JOB CANCEL]	CANCEL
[START]	START	[ENTER]	ENTER
[STOP]	STOP	[DIRECT SEND]	A
[COPY]	COPY	[TX REPORT]	P
[MODE]	MODE	[CHAIN DIAL]	C
[CONTRAST]	CONTRAST	[JOURNAL]	M
[INSERT]	INSERT	[AUTO]	R
[DELETE]	DELETE	One touch keys	OT01 to OT19
[JOB STATUS]	JOB STATUS	[SHIFT]	SHIFT
[SUPER ENERGY SAVER]	POWER SAVE		

When all the keys except the [STOP] key are pressed, the display will show the following screen.



Remark:
If no key has been pressed and a period of 10 seconds has elapsed, the test result will be “NG”.

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3) Press the [STOP] key, and the test result (“OK” or “NG”) will be displayed and the display will return to the test item select screen for INDIVIDUAL TEST.

KEY TEST
OK

Remark:

The result of the KEY TEST can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".

If the result of the KEY TEST is judged to be NG, solve the problem by referring to 📖 P.11-15 "[1] OPE. PANEL TEST [MENU], [9], [4], [01]".

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[3] LED TEST [MENU], [9], [2], [03]

This test checks the LED operation by lighting all the LED's on the Operation panel.

1) Use the [↑] or [↓] key to select “03. LED TEST”, and then press the [ENTER] key.

LED TEST
[STOP] TO COMPLETE

2) The LED's of SUPER ENERGY SAVER, FINE, U-FINE, HALF TONE, DARKER and LIGHTER are lit. Also, the LED's of ALARM, BUSY and ON LINE turn on and off at one second intervals. Check that each LED turns on and off normally. After checking, press the [STOP] key.

LED TEST
1 . OK

3) Use the [↑] or [↓] key to select “1.OK” or “2.NG”, and then press the [ENTER] key.
If all the LED's are turn on, select “1.OK”. If even one of them is not lit, select “2.NG”.

4) The "OPERATION COMPLETED" message is displayed and the display returns to the test item select screen of the INDIVIDUAL TEST.

Remark:

The result of the LED TEST can be checked with the self test report. For printing the self test report, refer to 🕮 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the LED TEST is judged to be NG, solve the problem by referring to 🕮 P.11-15 "[1] OPE. PANEL TEST [MENU], [9], [4], [01]".

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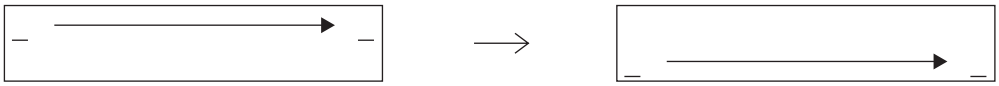
[4] LCD TEST [MENU], [9], [2], [04]

This test checks the LCD operation by turning on and off all the dots of the LCD on the Operation panel.

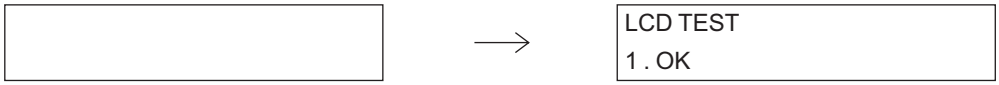
1) Use the [↑] or [↓] key to select “04. LCD TEST”, and then press the [ENTER] key.

2) Press the [START] key, and cursors will be successively displayed upper left to lower right on the screen.



3) All the dots of the LCD are turned on for 5 seconds.

4) All the dots are turned off for 5 seconds.



5) Use the [↑] or [↓] key to select “1.OK” or “2.NG”, and then press the [ENTER] key.
If all dots of the LCD turn on and off normally, select “1.OK”. If even one dot fails to turn on and off, select “2.NG”.

6) The "OPERATION COMPLETED" message is displayed and the display returns to the test item select screen of the INDIVIDUAL TEST.

Remark:

The result of the LCD TEST can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the LCD TEST is judged to be NG, solve the problem by referring to 📖 P.11-15 "[1] OPE. PANEL TEST [MENU], [9], [4], [01]".

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[5] SPEAKER TEST [MENU], [9], [2], [05]

This test checks the speaker operation by changing the volume output from the speaker.

1) Use the [↑] or [↓] key to select “05. SPEAKER TEST”, and then press the [ENTER] key.

SPEAKER TEST
PRESS [START]

2) Press the [START] key, and the display will show the following screen and a key touch tone will be heard. The sound volume is indicated by the number of “>” symbols and changes each time the [START] key is pressed. One “>” symbol indicates the minimum sound volume, seven such symbols the maximum sound volume, and “OFF” no tone.

Press [START] key

SPEAKER TEST
>

→

SPEAKER TEST
>>

3) Check those all the sound volumes are correct, then press the [STOP] key.

SPEAKER TEST
1 . OK

4) Use the [↑] or [↓] key to select “1.OK” or “2.NG”, and then press the [ENTER] key.
If all volumes are output normally, select “1.OK”. If even one of them is not output normally, select “2.NG”.

5) The "OPERATION COMPLETED" message is displayed and the display returns to the test item select screen of the INDIVIDUAL TEST.

Remark:

The result of the SPEAKER TEST can be checked with the self test report.
For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the SPEAKER TEST is judged to be NG, replace the Speaker or the Main PBA by referring to 📖 P.8-12 "[2] Main PBA".

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[6] SENSOR TEST [MENU], [9], [2], [06]

This test checks if the detection sensors operate normally.

The test items in SENSOR TEST mode are as follows:

- Detection of top cover open/closed status
- Detection of Recording paper presence/absence status

Remark:

If no operation is performed within 40 seconds after an operational instruction is displayed on the screen in the switch test, the test result will be judged to be NG.

1) Use the [↑] or [↓] key to select “06. SENSOR TEST”, and then press the [ENTER] key.

SENSOR TEST
OPEN TOP COVER

2) Open the top cover. When its open state is detected, the screen below appears. After checking that the screen is displayed, close the top cover.

Detects the open state of the top cover

SENSOR TEST
CLOSE TOP COVER

Close the top cover

→

SENSOR TEST
OPEN FRONT COVER

3) Open the front cover. When its open state is detected, the screen below appears. After checking that the screen is displayed, close the front cover.

Detects the open state of the front cover

SENSOR TEST
CLOSE FRONT COVER

Close the front cover

→

SENSOR TEST
REMOVE PAPER

4) Take out the recording paper from the Recording paper tray. When the absence of recording paper is detected, the screen below appears. After checking that the screen is displayed, place the recording paper in the Recording paper tray.

Detects the absence of Recording paper

SENSOR TEST
PUT IN PAPER

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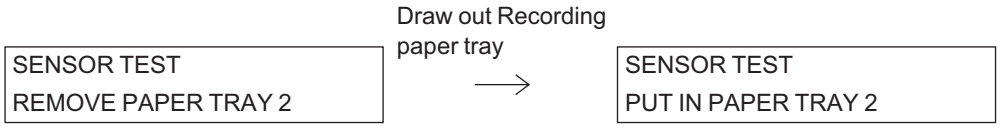
Remark:

If the Optional recording paper tray is installed, the screen below is displayed.
In this case, perform the following operation. Draw out the Recording paper tray from the Optional recording paper tray. When the absence of recording paper is detected, the screen below appears. After checking that the screen is displayed, install the Recording paper tray.



5) The test result (“OK” or “NG”) is displayed, and the display returns to the test item select screen for INDIVIDUAL TEST.

Remark:

The result of the SENSOR TEST can be checked with the self test report.
For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the SENSOR TEST is judged to be NG, solve the problem by referring to 📖 P.11-19 "[5] SENSOR TEST [MENU], [9], [4], [05]".

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[7] PRINT TEST [MENU], [9], [2], [07]

This test checks the print function (HVPS, LSU, Fuser) by printing the test patterns.

1) Use the [↑] or [↓] key to select “07. PRINT TEST”, and then press the [ENTER] key.

PRINT TEST
PRINTING LIST

2) The test pattern is printed and the following screen is displayed.

PRINT TEST
1 . YES

3) Use the [↑] or [↓] key to select “1. YES” or “2. NO”, and then press the [ENTER] key. If the pattern is normally printed, select “1. YES”. If the pattern fails to be printed normally, select “2. NO”.

Remarks:

- For a sample of the test pattern (PATTERN 1) to be printed in the test print, refer to 📖 P.11-16 "[2] PRINT TEST [MENU], [9], [4], [02]".
- The result of the PRINT TEST can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
  If the result of the PRINT TEST is judged to be NG, solve the problem by referring to 📖 P.11-16 "[2] PRINT TEST [MENU], [9], [4], [02]".

[8] TONER IC TEST [MENU], [9], [2], [08]

This test checks if the manufacturing code of the Toner IC chip corresponds to the original code.

1) Use the [↑] or [↓] key to select “08. TONER IC TEST”, and then press the [ENTER] key.

TONER IC TEST
TESTING

2) The test result (“OK” or “NG”) is displayed, and the display returns to the test item select screen for INDIVIDUAL TEST.

TONER IC TEST
OK

Remark:

The result of the TONER IC TEST can be checked with the self test report. For printing the self test report, refer to 📖 P.11-13 "11.1.3 TEST RESULT LIST [MENU], [9], [3]".
If the result of the TONER IC TEST is judged to be NG, solve the problem by referring to 📖 P.11-24 "[12] TONER IC TEST [MENU], [9], [4], [12]".

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11.1.3 TEST RESULT LIST [MENU], [9], [3]

This test prints out the result of the AUTO TEST and the INDIVIDUAL TEST as a self test report.

1) Use the [↑] or [↓] key to select “3. TEST RESULT LIST”, and then press the [ENTER] key.

2) After completion of the list output, the display returns to the standby mode screen.
   - Print sample

XXXXXXXXXXX

TEST RESULT REPORT

TIME : JAN-31-2005 05:25PM
TEL NUMBER :
NAME :

TEST CONTENTS	RESULT	NOTE	DATE & TIME
AUTO TEST			
FLASH ROM			
PROGRAM	NG	2C86	JAN-31-2005 02:18PM
FUNCTION	NG	59E5	JAN-31-2005 02:18PM
LANGUAGE	NG	805B	JAN-31-2005 02:19PM
SRAM			
ADDRESS BUS	OK		JAN-31-2005 02:19PM
DATA BUS	OK		JAN-31-2005 02:19PM
DRAM			
ADDRESS BUS	OK		JAN-31-2005 02:19PM
DATA BUS	OK		JAN-31-2005 02:25PM
MODEM	--		JAN-31-2005 02:25PM
SCANNER			
RAM	OK		JAN-31-2005 02:25PM
SHADING	OK		JAN-31-2005 02:25PM
CODEC	OK		JAN-31-2005 02:25PM
PRINTER	OK		JAN-31-2005 02:26PM
INDIVIDUAL TEST			
ADF TEST	OK	STD	JAN-31-2005 05:24PM
KEY TEST	--		
LED TEST	OK		JAN-31-2005 03:44PM
LCD TEST	OK		JAN-31-2005 03:44PM
SPEAKER TEST	OK		JAN-31-2005 02:45PM
SWITCH TEST	OK		JAN-31-2005 03:47PM
PRINT TEST	--		JAN-31-2005 02:25PM

TEST CONTENTS:
Test item

RESULT:
Test result. Printed as “OK” or “NG”. “--” indicates that no test has been conducted.

NOTE:
The address at which an error has occurred is indicated and test conditions are described.

DATE:
Test conducted time. Year, month, day, and time are printed.

Remark:
If NG is found in the test result, solve the problem by referring to the explanation of the relevant test item in this chapter.

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11.1.4 SERVICE MODE

The SERVICE MODE is available for service technicians to conduct tests. Therefore, general users cannot conduct the tests in this mode. By changing to the service mode, you can conduct the FUNCTION TEST, MAINTENANCE, and SERVICE LIST.

Service Mode Operation Overview

These are following two methods to enter the service mode.

Note:

When you enter the service mode using this procedure, the facsimile automatically returns to the standby mode after each test is completed.

- When the facsimile is in the standby mode:
  1) Press the following keys in the order of [MENU], [*], [#], [*] and [*].
  2) When you change to the service mode, the following three test items are added following "3. TEST RESULT LIST" of “9. TEST MODE”.

TEST MODE 4 . FUNCTION TEST	Ch.11.1.5
5 . MAINTENANCE	Ch.11.1.6
6 . SERVICE LIST	Ch.11.1.7

- When the facsimile is turned OFF:
  1) Turn the power switch ON while holding the dial keys [1] and [3] down.

Remark:

The service mode can be canceled by turning OFF and ON the power switch.

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11.1.5 FUNCTION TEST (In SERVICE MODE only) [MENU], [9], [4]

The FUNCTION TEST Mode is used to check various functions of this machine

FUNCTION TEST 01 . OPE. PANEL TEST	Ch.11.1.5 [1]
02 . PRINT TEST	Ch.11.1.5 [2]
03 . SRAM TEST	Ch.11.1.5 [3]
04 . DRAM TEST	Ch.11.1.5 [4]
05 . SENSOR TEST	Ch.11.1.5 [5]
06 . MODEM TEST	Ch.11.1.5 [6]
07 . DIAL TEST	Ch.11.1.5 [7]
08 . MF RX TEST	Ch.11.1.5 [8]
09 . CLOCK TEST	Ch.11.1.5 [9]
10 . SCANNER TEST	Ch.11.1.5 [10]
11 . CODEC TEST	Ch.11.1.5 [11]
12 . TONER IC TEST	Ch.11.1.5 [12]

[1] OPE. PANEL TEST [MENU], [9], [4], [01]

This test is used to check the LCD, LED and scanner LED, and each key on the Operation panel.

1) Use the [↑] or [↓] key to select the “01. OPE. PANEL TEST”, and then press the [ENTER] key.

2) The LED's of SUPER ENERGY SAVER, FINE, U-FINE, HALF TONE, DARKER and LIGHTER are lit. Also, the LED's of ALARM, BUSY and ON LINE turn on and off at one second intervals. Check that each LED turns on and off normally.

3) Press the [START] key, and “START” will appear on the display and the cursor automatically will move upper left to lower right. Then all the dots will turn on.
Check if the LCD display is normal.

4) Press all the keys except the [STOP] key, and the status of each key will be displayed.
Remark:
For the display status of each key, refer to the key status table in 📖 P.11-5 "[2] KEY TEST [MENU], [9], [2], [02]".

5) When you complete the test, press the [STOP] key to return to the standby mode screen.

6) Depending on the result of the test, replace the Operation panel assembly by referring to 📖 P.8-3 "[1] Operation Panel Assembly".

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[2] PRINT TEST [MENU], [9], [4], [02]

This test checks the print condition of the printer using preprogrammed print patterns.

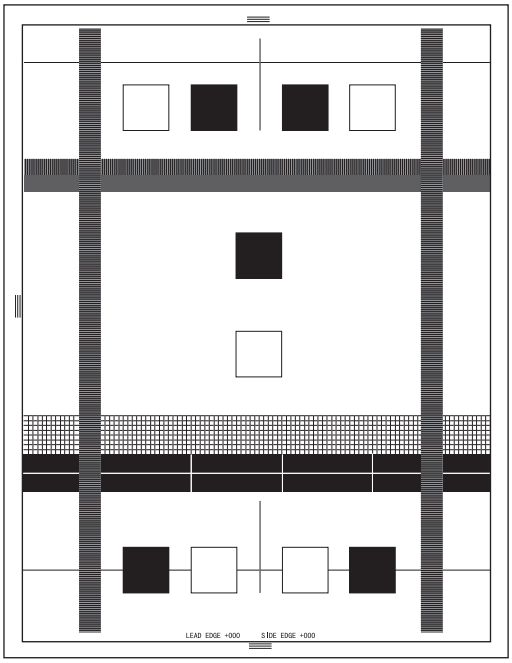
1) Use the [↑] or [↓] key to select "02. PRINT TEST", and then press the [ENTER] key.

2) The screen below is displayed. Use the [↑] or [↓] key to select the desired test pattern, and then press the [ENTER] key.

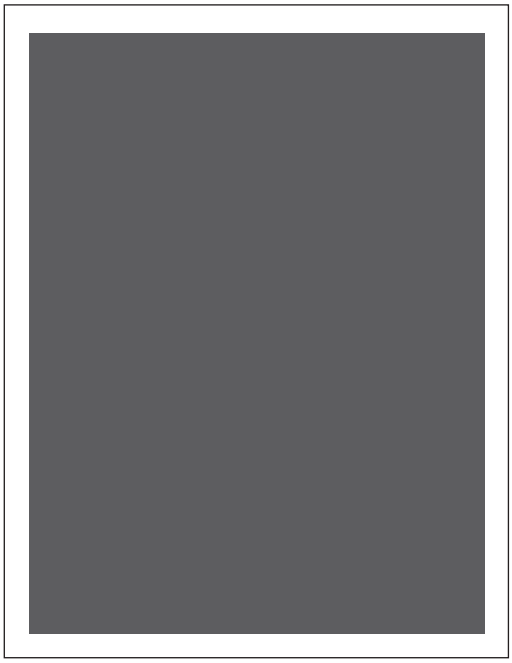
```
PRINT TEST
1 . PATTERN 1
2 . PATTERN 2
```

- **Print samples**

PATTERN 1



PATTERN 2



3) Depending on the result of the test, replace the LSU, referring to 📖 P.8-31 "[3] LSU".

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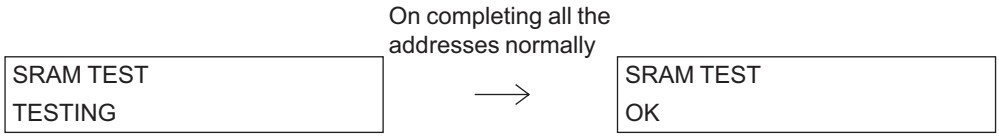
[3] SRAM TEST [MENU], [9], [4], [03]

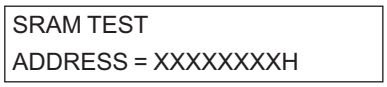
This test conducts a read/write test on all the areas of the SRAM.

1) Use the [↑] or [↓] key to select the "03. SRAM TEST", and then press the [ENTER] key.



Remark:

If a memory error occurs, the address where the error occurred is displayed and the procedure is suspended. The test will resume upon pressing the [START] key.



Remark:

The address assigned to each memory is as in the table below.
When an error occurs, refer to this table.

Address (H)	IC No.	Installed PBA
F00000 to F0FFFF	IC4, IC51	Main PBA

2) When you complete the test, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the Main PBA referring to 📖 P.8-12 "[2] Main PBA".

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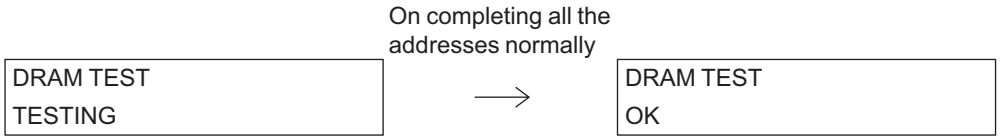
[4] DRAM TEST [MENU], [9], [4], [04]

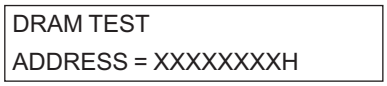
This test conducts a read/write test on all the areas of the DRAM except the work area.

1) Use the [↑] or [↓] key to select the "04. DRAM TEST", and then press the [ENTER] key.



Remark:

If a memory error occurs, the address where the error occurred is displayed and the procedure is suspended. The test will resume upon pressing the [START] key.



Remark:

The address assigned to each memory is as in the table below.
When an error occurs, refer to this table.

Address (H)	IC No.	Installed PBA
400000 to BFFFFF	IC1	Main PBA

2) When you complete the test, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the Main PBA referring to 📖 P.8-12 "[2] Main PBA".

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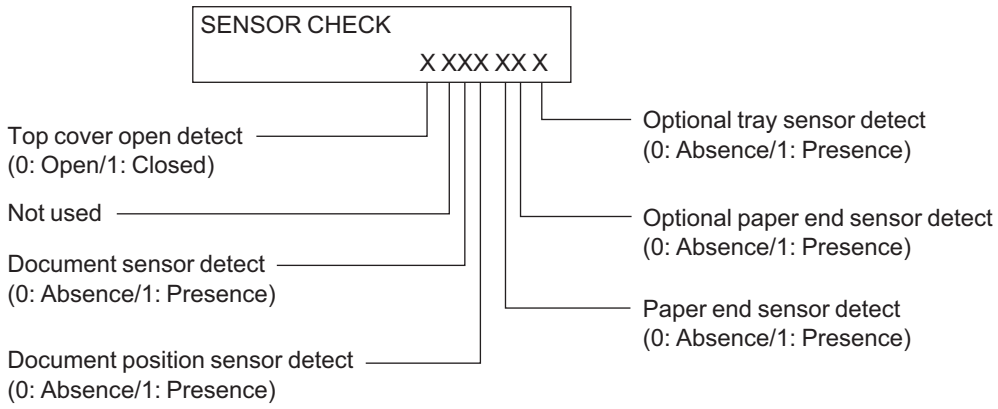
[5] SENSOR TEST [MENU], [9], [4], [05]

This test checks the actions of various sensors. The results are displayed on the LCD in the form of binary data. The displayed data will be changed by changing the state or status of the applicable sensor.

1) Use the [↑] or [↓] key to select “05. SENSOR TEST”, and then press the [ENTER] key.

Remark:

The binary data on the LCD display means and its set contents the following.



2) When you complete the check, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the applicable sensor, Operation panel assembly, etc. referring to 📖 P.8-1 "8. Removal/Replacement/Adjustment".

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[6] MODEM TEST [MENU], [9], [4], [06]

This test is used to check the MODEM signal outputs at different transmission speeds and different frequencies. By measuring the difference in signal strength at different frequencies, it is possible to plot the phone line's bandpass.
This test is performed at the factory for inspection and not required in the field.

1) Use the [↑] or [↓] key to select “06. MODEM TEST”, and then press the [ENTER] key.

MODEM TEST
G34 (V34)

2) Select the frequency by pressing the [START] key.

Remark:

The frequencies are displayed as in the following order.
CML ON ‡ G3(V34) → G3(V17) → G3(V29) → G3(V27) → 2400BPS → 300BPS → 1100Hz → 2100Hz → 1300Hz → ANSam → CM → CI → Repeats

3) When you complete the test, press the [STOP] key to return to the standby mode screen.

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[7] DIAL TEST [MENU], [9], [4], [07]

This test checks the dial type programmed in the user function settings.
This test is performed at the factory for inspection and not required in the field.

Notes:

Do not perform the DIAL TEST under the following conditions.

- During a transmission or polling
- After pressing the [MONITOR] key, or when the handset is off-hook.

If the test is performed in any of these conditions, the facsimile will automatically be restarted. (Power OFF and then ON.)

1) Use the [↑] or [↓] key to select the "07.DIAL TEST", and then press the [ENTER] key.

```
DIAL TEST
DIAL TYPE =MF
```

2) Press any key on the dial keypad. The dialer is started and a pulse/tone matching the dial type is sent.

```
DIAL TEST
DIAL TYPE = MF                8   <—— Sending dial number (When [8] key pressed)
```

3) When you complete the test, press the [STOP] key to return to the standby mode screen.

Remark:

The displayed dial type is the type that was selected in the Installation Menu.

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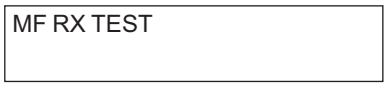
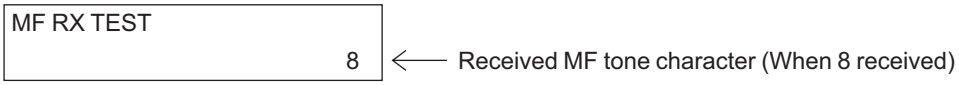
[8] MF RX TEST [MENU], [9], [4], [08]

This test checks the action of the MF-tone receiving.
This test is performed at the factory for inspection and not required in the field.

1) Use the [↑] or [↓] key to select the "08.MF RX TEST", and then press the [ENTER] key.



2) When an MF tone is received from another facsimile, the corresponding character is displayed. The character is updated and overwritten by a new tone received. To stop the test (at any time), press the [STOP] key and return to the standby mode screen.

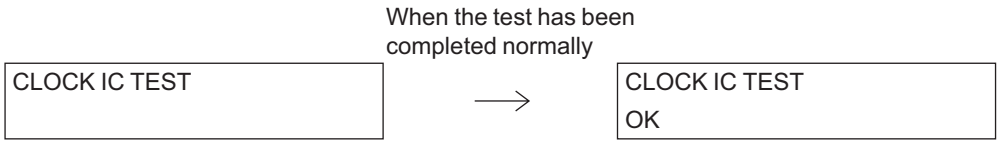


3) When you complete the test, press the [STOP] key to return to the standby mode screen.

[9] CLOCK TEST [MENU], [9], [4], [09]

This test checks whether the RTC (IC52) operates normally. After setting the fixed time and date in the RTC, it reads the time to check the RTC operation.

1) Use the [↑] or [↓] key to select “09. CLOCK TEST”, and then press the [ENTER] key.



2) When you complete the test, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the Main PBA by referring to 📖 P.8-12 "[2] Main PBA".

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[10] SCANNER TEST [MENU], [9], [4], [10]

This test conducts a read/write test on all the areas of the memory contained in the DSC (IC27).
It also turns on and off the LED contained in the CIS and reads its data to check if the CIS operates normally.

1) Use the [↑] or [↓] key to select “10. SCANNER TEST”, and then press the [ENTER] key.

When the test has been completed normally

SCANNER TEST	→	SCANNER TEST OK

2) When you complete the test, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the Main PBA or CIS by referring to 🕮 P.8-12 "[2] Main PBA" 🕮 P.8-18 "[3] CIS".

[11] CODEC TEST [MENU], [9], [4], [11]

This test codes 10 lines of data in MH or JBIG format and decodes the data. Then it compares the decoded result with the original data to check if the CODEC (IC16) operates normally.

1) Use the [↑] or [↓] key to select “11. CODEC TEST”, and then press the [ENTER] key.

When the test has been completed normally

CODEC TEST	→	CODEC TEST OK

2) When you complete the test, press the [STOP] key to return to the standby mode screen.

3) Depending on the result of the test, replace the Main PBA by referring to 🕮 P.8-12 "[2] Main PBA".

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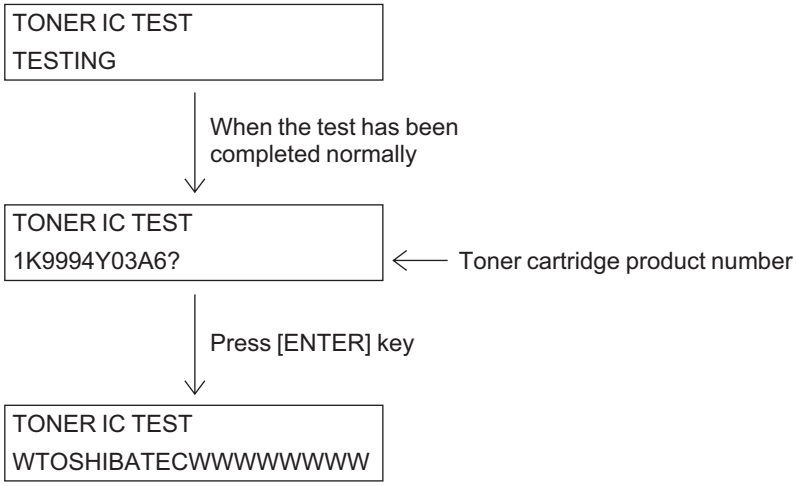
[12] TONER IC TEST [MENU], [9], [4], [12]

This test checks if the manufacturing code of the Toner IC chip is displayed correctly.

1) Use the [↑] or [↓] key to select the "12. TONER IC TEST", and then press the [ENTER] key.



2) When you complete the test, press the [STOP] key to return to the standby mode screen.

Remark:

If the other errors occur, the following screen is displayed and it returns to the standby mode screen after 2 seconds.

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11.1.6 MAINTENANCE (In SERVICE MODE only) [MENU], [9], [5]

The MAINTENANCE mode is used to perform memory initialize/write, and special setting of this machine.

MAINTENANCE 01 . MEMORY CLEAR	Ch.11.1.6 [1]
02 . SET FUNCTION	Ch.11.1.6 [2]
03 . MEMORY WRITE	Ch.11.1.6 [3]
04 . SET CONT. LEVEL	Ch.11.1.6 [4]
05 . ERR COUNTER SHIFT	Ch.11.1.6 [5]
06 . EDGE REGISTRATION	Ch.11.1.6 [6]
07 . DOC. TRANSMISSION	Ch.11.1.6 [7]

[1] MEMORY CLEAR [MENU], [9], [5], [01]

This function is used to initialize data in memory. This procedure must be performed when the Main PBA is replaced or installed. Data cannot be recovered after the memory clear; therefore, be sure to print the appropriate lists beforehand.

1) Use the [↑] or [↓] key to select "01.MEMORY CLEAR", and then press the [ENTER] key.

2) Use the [↑] or [↓] key to select desired item, and then press the [ENTER] key.

MEMORY CLEAR
1 . PIX MEMORY
2 . EXCEPT USER AREA
3 . ALL
4 . USER AREA

3) When initialization is complete, the display returns to the standby mode screen.

PIX MEMORY
Initializes only the image memory (PIX memory.) The memory chips to be initialized are the DRAM chips on the Main PBA.

EXCEPT USER AREA
Initializes the memory portion except the data registered by the user. The memory chips to be initialized are DRAM's and SRAM's.

ALL
Initializes all the data.

Remark:
Following a shortcut operation is prepared for memory clear of ALL.
- Turn the power ON while Depressing the [1], [3] and [*] keys at the same time.

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USER AREA

Initializes only that data registered by the user. The memory chips to be initialized are SRAM's.

Remarks:

- Following two shortcut operations are prepared for memory clear.
  - Turn the power ON while Depressing the [1], [3] and [#] keys at the same time.
  - Turn the power ON while Depressing the [*] and [#] keys at the same time.
- When the country/region setting operation is completed, the data in memory is cleared.
- Relations between memory clear options and data to be cleared:

Item	Job	PIX data	Function parame-ter	Communi-cation journal	Error log-ging	Termi-nal ID and Name	Phone -book	Number of total scanned pages	Number of total printed pages
PIX MEMORY	○	○	X	X	X	X	X	X	X
EXCEPT USER AREA	○	○	○	○	○	X	X	X	X
ALL	○	○	○	○	○	○	○	X	X
USER AREA	○	○	X	X	X	○	○	X	X
[1], [3], [*]	○	○	○	○	○	○	○	X	X
[1], [3], [#]	X	X	X	X	X	X	X	○	○
[*], [#]	○	○	X	○	○	X	X	X	X
[0], [2] (Country/ Region setting)	○	○	○	○	○	○	○	X	X

○: To be cleared X: Not to be cleared

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[2] SET FUNCTION [MENU], [9], [5], [02]

This sets parameters of the general functions, telephone functions (for each country/region), dialing functions, access digits functions, and PC functions. Each table lists the applicable functions in 8 bits. Entering 1 or 0 in each bit performs parameter setting.
The following shows the functions that can be set. For further details, refer to 📖 P.4-42 "4.2 Service Settings in Test Mode".

The setting functions are as follows.

- FUNC 0 to 39
  Parameters of general functions. (Refer to 📖 P.4-44 "4.2.1 FUNC 0-39".)

- TELFUNC 0 to 8
  Parameters of general telephone functions. (Refer to 📖 P.4-85 "4.2.2 TEL FUNC 0-8".)

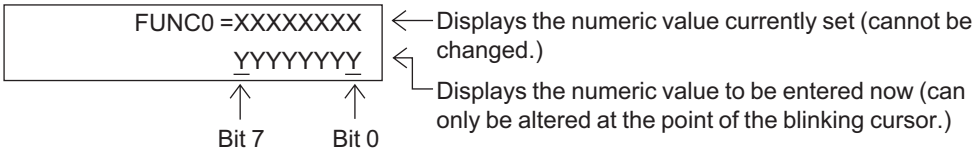
- UAD 0 to 19
  Parameters of special functions used to adjust the unit to the telephone specifications of each country/region. (Refer to 📖 P.4-94 "4.2.3 UAD 0-19".)

- EX TYPE 1
  Parameters related to telephone exchange functions. (Refer to 📖 P.4-118 "4.2.4 EX TYPE".)

- ACC DGT 1 to 2
  Parameters related to access digits functions. (Refer to 📖 P.4-119 "4.2.5 ACC DGT 1-2".)

- PCFUNC 0 to 7
  Parameters related to PC interface functions. (Refer to 📖 P.4-121 "4.2.6 PC FUNC 0-7".)

1) Use the [↑] or [↓] key to select “02. SET FUNCTION”, and then press [ENTER] key.



2) Using the following keys, select the function to be set.
   - Press the [ENTER] key to set the parameter and display the next function’s parameter.
   - Press the [→] key to move the cursor to the next bit.
   - Press the [←] key to move the cursor to the previous bit. If already at bit 7 (left digit), the [←] key will display the previous function’s parameter.
   - Press the [0] key to set the selected bit to “0”.
   - Press the [1] key to set the selected bit to “1”.

3) After setting, press the [STOP] key to return to the stand by mode screen.

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[3] MEMORY WRITE [MENU], [9], [5], [03]

This function is used to change the contents of a specific backup RAM address (using a 6-digit HEX code.) Enter the desired address from the dial keypad, and then press the [ENTER] key.
The address is incremented by pressing the [ENTER] key.

Remark:

Under normal circumstances it is not necessary to make changes to the memory write addresses. It is recommended that changes to these settings be made only in response to a specific instruction from a Toshiba service representative, service bulletin, or other publication.

1) Use the [↑] or [↓] key to select "03.MEMORY WRITE", and then press the [ENTER] key.

MEMORY WRITE
ADDRESS = XXXXXX

2) Enter the desired 6-digit address for inputting data, and then press the [ENTER] key.

MEMORY WRITE
DATA = YY

Remarks:

- To enter the value, use the following keys.
  0 to 9: Dial keys
  A to F: One touch key 01 to 06
- Be sure to enter the address in the range from 000000 to FFFFFF in HEX code.

3) Enter the data, and then press the [ENTER] key.

MEMORY WRITE
DATA = ZZ

4) The screen then increments to the next address. After setting, press the [STOP] key to return to the standby mode screen.

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[4] SET CONT. LEVEL [MENU], [9], [5], [04]

This setting adjusts the normal and halftone scanning contrast (slice level) to one of five levels.

1) Use the [↑] or [↓] key to select the "04.SET CONT. LEVEL", and then press the [ENTER] key.

```
SET CONT. LEVEL
1 . NORMAL MODE
2 . GRAY MODE
```

NORMAL MODE
Adjusts the slice level for normal scanning.

GRAY MODE
Adjust the slice level for halftone scanning.

2) Use the [↑] or [↓] key to select the desired mode, and then press the [ENTER] key.

3) Enter the desired contrast level, using the [1] to [5] keys on the dial keypad, and then press the [ENTER] key.

```
CONTRAST LEVEL
(1-5)                    [3]
```
← 1 (Light) to 5 (Dark)

4) After setting, the display returns to the standby mode screen.

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[5] ERR COUNTER SHIFT [MENU], [9], [5], [05]

This setting is used to shift error count data (on the Error count list) from ACTUAL to HISTORY.
This function can be used to track communication activity to confirm the effectiveness of an adjustment, and so on.

1) Use the [↑] or [↓] key to select "05.ERR COUNTER SHIFT", and then press the [ENTER] key.

```
ERROR COUNTER SHIFT
1 . YES
```

2 . NO

YES
Shifts the error counter data from ACTUAL to HISTORY. Selecting YES shifts the data on the ACTUAL side to the HISTORY side, and initializes the ACTUAL side.

NO
Count shift is not performed until the counter reaches 1000 communications.

2) Use the [↑] or [↓] key to select "1.YES" or "2.NO", and then press the [ENTER] key.

3) When YES is selected, the display shows the following screen then returns to the standby mode screen. When NO is selected, the display directly returns to the standby mode screen without showing the screen below.

```
ACCEPTED
```

Remark:
After 1000 communications, the error counter data is automatically shifted from ACTUAL to HISTORY.

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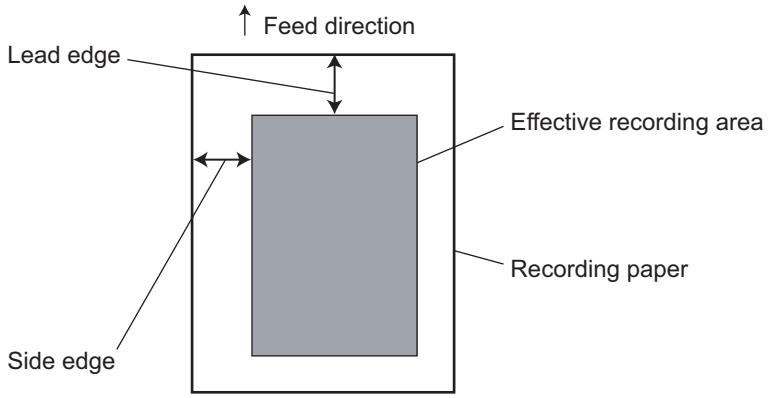
[6] EDGE REGISTRATION [MENU], [9], [5], [06]

This setting adjusts the recording start position (lead edge and side edge) if incorrect due to mechanical dispersion. Do this adjustment when the Main PBA is replaced or when MEMORY CLEAR is performed. Do it also when the LSU is replaced if necessary.



Remark:
For the adjustment value of edge registration, refer to 📖 P.8-56 "8.3.1 Edge Registration".

1) Use the [↑] or [↓] key to select "06.EDGE REGISTRATION", and then press the [ENTER] key.

LEAD EDGE ↑↓
19 . +1.5MM

2) Use the [↑] or [,] key to set the LEAD EDGE (upper side), and then press the [ENTER] key.

Remarks:
- Pressing the [↑] key will move the image up 0.5 mm per step.
  Pressing the [↓] key will move the image down 0.5 mm per step.
- The setting range is -7.5 mm to +7.5 mm.

3) Use the [↑] or [↓] key to set the SIDE EDGE (left side), and then press the [ENTER] key.

SIDE EDGE ↑↓
15 . +1.0MM

Remarks:
- Pressing the [↑] key will move the image left 0.5 mm per step.
  Pressing the [↓] key will move the image right 0.5 mm per step.
- The setting range is -6.0 mm (Left) to +8.0 mm (Right.)

4) The display shows the screen below, and then returns to the standby mode screen.

COMPLETED

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[7] DOC. TRANSMISSION [MENU], [9], [5], [07]

This function is used to send the contents stored in the PIX memory to the designated remote address when some printer problem disables printing of the received document.

1) Use the [↑] or [↓] key to select the "07.DOC. TRANSMISSION", and then press the [ENTER] key.

DOC. TRANSMISSION
ENTER TEL NUMBER

2) Enter on the dial keys the number of the destination to which you want to send the memory contents, and then press the [ENTER] key.

   Remark:

   You can also dial the destination by abbreviated dialing, alphabet dialing or one touch key dialing.

3) The transfer is started, and then the display returns to the standby mode screen.

   Note:

   All of the memory contents will be sent to the designated number. This function does not allow you to select which memory contents to be remotely printed.

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11.1.7 SERVICE LIST (In SERVICE MODE only) [MENU], [9], [6]

Service list can be printed by service technicians as part of maintenance operations to confirm machine settings or communication management records (protocol, total errors, function, and so on.) The contents can be printed by selecting a menu item. Any of the items listed below can be selected by scrolling the highlighted item using the [↑] or [↓] key, or by performing the keystrokes indicated for each list.

SERVICE LIST 01 . PROTOCOL TRACE	Ch.11.1.7 [1]
02 . TOTAL ERRORS	Ch.11.1.7 [2]
03 . FUNCTION	Ch.11.1.7 [3]
04 . DRUM HISTORY	Ch.11.1.7 [4]
05 . MEMORY DUMP	Ch.11.1.7 [5]

[1] PROTOCOL TRACE [MENU], [9], [6], [01]

This list is output to confirm communication protocol. In the output list, the result of the most recent (last) facsimile communication is recorded. The following items are to be recorded.

Signal send/Receive time (TIME)
The time to start sending or receiving the signal is indicated as “MM: SS”.

Signal send/Receive (S/R)
Signals sent by this machine are indicated as “S” and signals received by this machine are indicated as “R”. The high-speed training signal is indicated as “TCF” and high-speed image signal is indicated as “PIX”.

Facsimile Control Field (FCF DATA)
The first and second FCF commands are printed.

Facsimile Information Field (FIF DATA)
If there is an information field, its contents are printed in either HEX, BIN or TEL format. In “TEL” format, LSB and MSB in “HEX” format are reversed.

Convert FIF to ASCII (ASCII)
FIF is converted to ASCII code before being printed.

1) Use the [↑] or [↓] key to select the "01.PROTOCOL TRACE", and then press the [ENTER] key.

2) Use the [↑] or [↓] key to select the line, and then press the [ENTER] key.

3) After completing the list output, the display returns to the standby mode screen. For a sample list, refer to 📖 P.12-1 "12.1.1 Protocol Trace List".

   Note:
   The firmware version (installed in this machine) is listed in the upper right corner of the Protocol Trace List.

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[2] TOTAL ERRORS [MENU], [9], [6], [02]

This list outputs a history of communication errors that have occurred so that frequently occurring errors can be analyzed. The following items are recorded.

TRANSMISSION/RECEPTION
Indicates whether the errors occurred during transmissions or receptions.

STATUS
Indicates the error codes in ascending order.

HISTORY
Indicates the previous history of errors transferred from the ACTUAL side by “number of errors occurred/number of communications”. The time display field (on the top row) indicates the time when counting started.

ACTUAL
Indicates errors which have occurred during the current recording period by “number of errors occurred/number of communications”. When the number of communications on the ACTUAL side reaches 1000, the number of errors is automatically transferred to the HISTORY side, replacing the previous HISTORY, and clearing the error data on the ACTUAL side.

Remark:
You can move error counter data from ACTUAL to HISTORY in manual mode. For the operational procedure, refer to 📖 P.11-30 "[5] ERR COUNTER SHIFT [MENU], [9], [5], [05]".

1) Use the [↑] or [↓] key to select the "02.TOTAL ERRORS", and then press the [ENTER] key.

2) Use the [↑] or [↓] key to select the line, and then press the [ENTER] key.

3) After completing the list output, the display returns to the standby mode screen. For a sample list, refer to 📖 P.12-2 "12.1.2 Error Count List".

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[3] FUNCTION [MENU], [9], [6], [03]

This list outputs the status of the service technician settings. The following are the items to be recorded. The contents currently set are output in binary format.

- FUN 0 to 39
  Tables of general machine functions.

- TELFUNC 0 to 8
  Tables of general machine functions.

- PCFUNC 0 to 7
  Activate and select PC interface functions.

- HOME 0 to 2
  Tables of data on scanning system.

- UAD 0 to 19
  Tables of special functions used to adjust the unit to the telephone specifications of each country/region.

- EX TYPE 1
  Tables relating to telephone exchange functions.

- ACC DGT 1 to 2
  Tables of functions relating to access digits.

1) Use the [↑] or [↓] key to select the "03.FUNCTION", and then press the [ENTER] key.

2) After completion of the list output, the display returns to the standby mode screen. For a sample list, refer to 📖 P.12-3 "12.1.3 Function List for Maintenance".

[4] DRUM HISTORY [MENU], [9], [6], [04]

This list is output to confirm information relative to the drum currently in the machine as well as previous drum units. The following are the items to be recorded.

ACTUAL
TOTAL PRINT: Total number of recorded pages (on this machine) up to this moment.
DRUM COUNTER: Total number of recorded pages (no this drum) up to this moment.
A4/LT, LG: The number of recorded pages by paper sizes.

HISTORY
Data obtained before drum replacement/drum counter clear.

1) Use the [↑] or [↓] key to select the "04.DRUM HISTORY", and then press the [ENTER] key.

2) After completion of the list output, the display returns to the standby mode screen. For a sample list, refer to 📖 P.12-4 "12.1.4 Drum Unit".

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[5] MEMORY DUMP [MENU], [9], [6], [05]

This list outputs a listing of RAM contents organized. The following are the items to be recorded.

ADDRESS
Memory start address. Even if the number other than 0 (zero) is entered as the lowest digit, it is outputted as “0” on the list.

HEX DATA
Actual memory contents.

ASCII
Data obtained by converting the memory contents into ASCII codes.

1) Use the [↑] or [↓] key to select the "05.MEMORY DUMP", and then press the [ENTER] key.

MEMORY DUMP LIST
ADDRESS = XXXXXX

Remark:
To enter the value, use the following keys.
0 to 9: Dial keys
A to F: One touch key 01 to 06

MEMORY DUMP LIST
SIZE = YYYY

2) Enter the 6-digit address, and then press the [ENTER] key.

3) Enter the size of the 4-digit address to be printed, and then press the [ENTER] key. To stop the operation at any time, press the [STOP] key.

Remark:
Address + Size = Memory dump address
000100 + 1FFF = 20F0

4) After completion of the list output, the display returns to the standby mode screen. For a sample list, refer to📖 P.12-5 "12.1.5 Memory Dump List".

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11.2 Telephone Screening

11.2.1 Inquiry from a user

Most problems end user inquiries are a result of the following. Therefore, first ask the nature of the trouble (in detail) to seek the cause. These questions can lead to a speedy resolution of the trouble without the need for a service technician.

- Simple misoperation
  A trouble caused by a simple misoperation can be solved by the user alone with an appropriate instruction through the telephone.

- A failure with the telephone line
  The machine's condition can be checked by the user's operating sending/receiving documents to/from another facsimile unit.

- A failure with the other party's machine
  The other party's machine's condition can be checked by the user's operating sending/receiving documents from/to the user's machine.

Also, by verifying the error code in the LCD display or on the Journal with the user, the nature of the trouble can be confirmed. This information is important in finding the cause of trouble. Whenever it can be obtained from the user, respond on the telephone by tracing the 📖 P.11-39 "11.2.4 Flow chart recommended for telephone screening". This will help the service technician to be prepared for the necessary service requirements.

11.2.2 Indication of an error

The user can confirm of the error contents by the following display indications.

- Display indication on the LCD display (Refer to 📖 P.11-43 "[1] Error messages".)
- Error code display on the journal (Refer to 📖 P.11-46 "[4] Communication error codes".)

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11.2.3 Flow chart recommended for field service

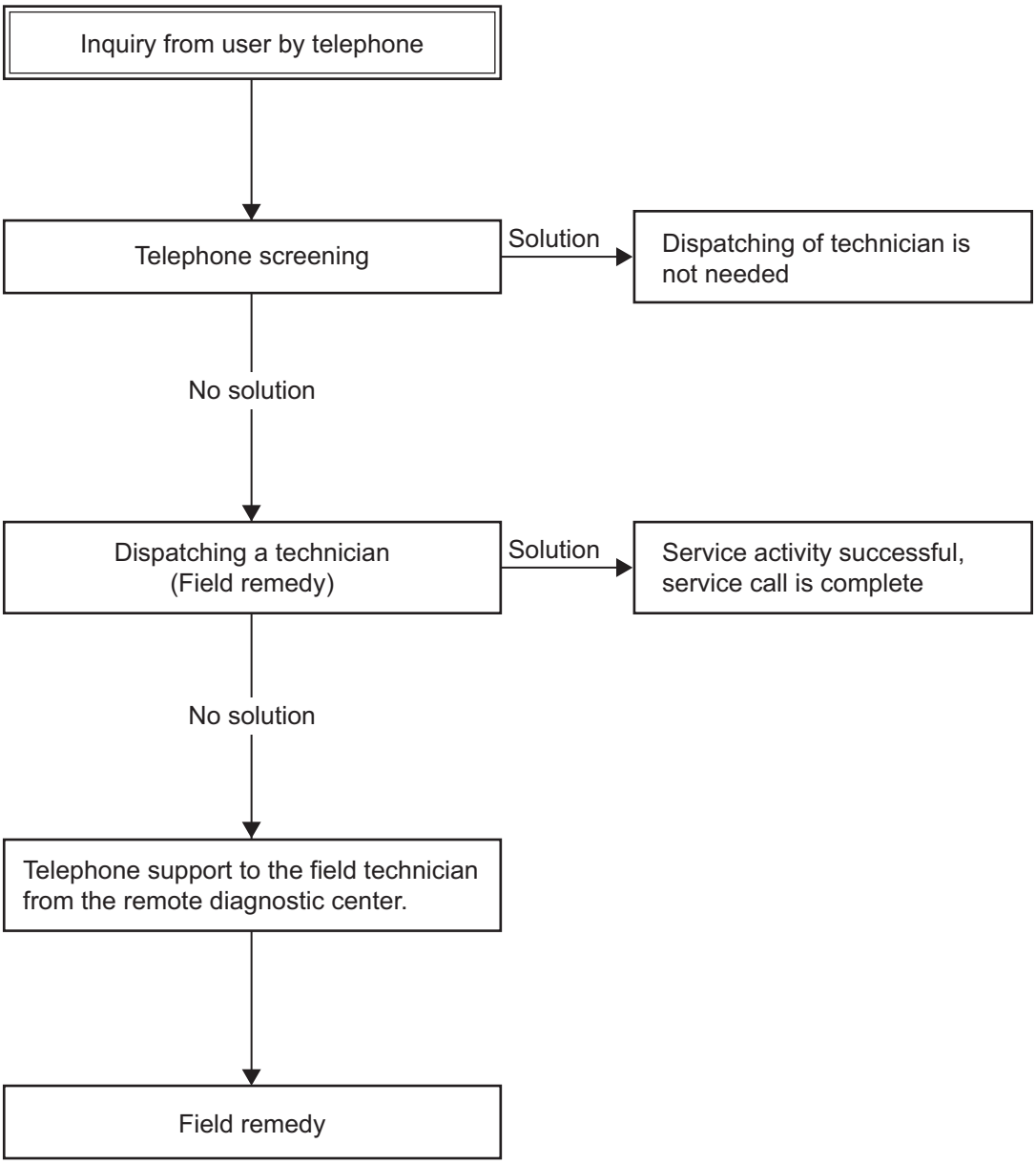

Fig. 11-1

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11.2.4 Flow chart recommended for telephone screening

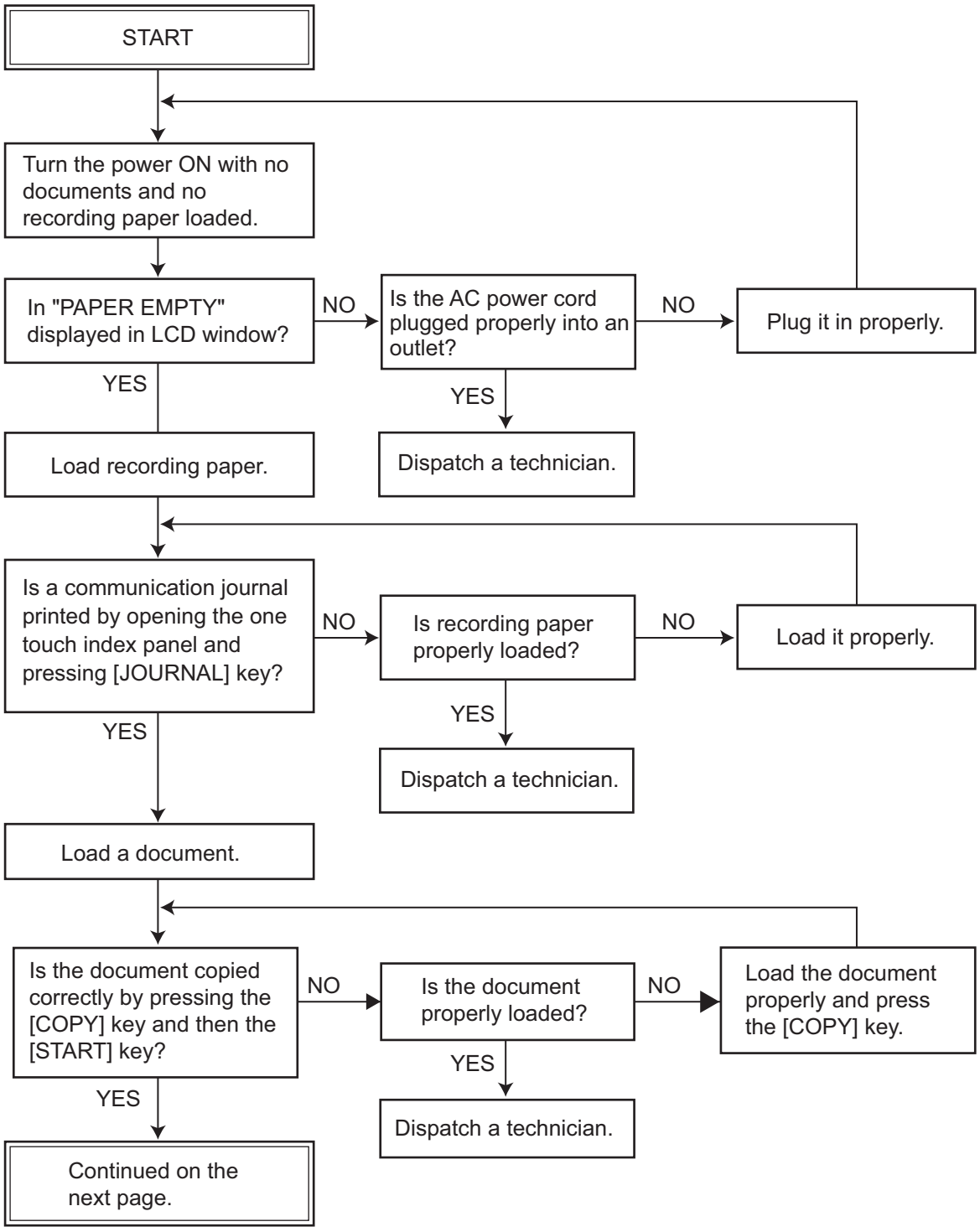

Fig. 11-2

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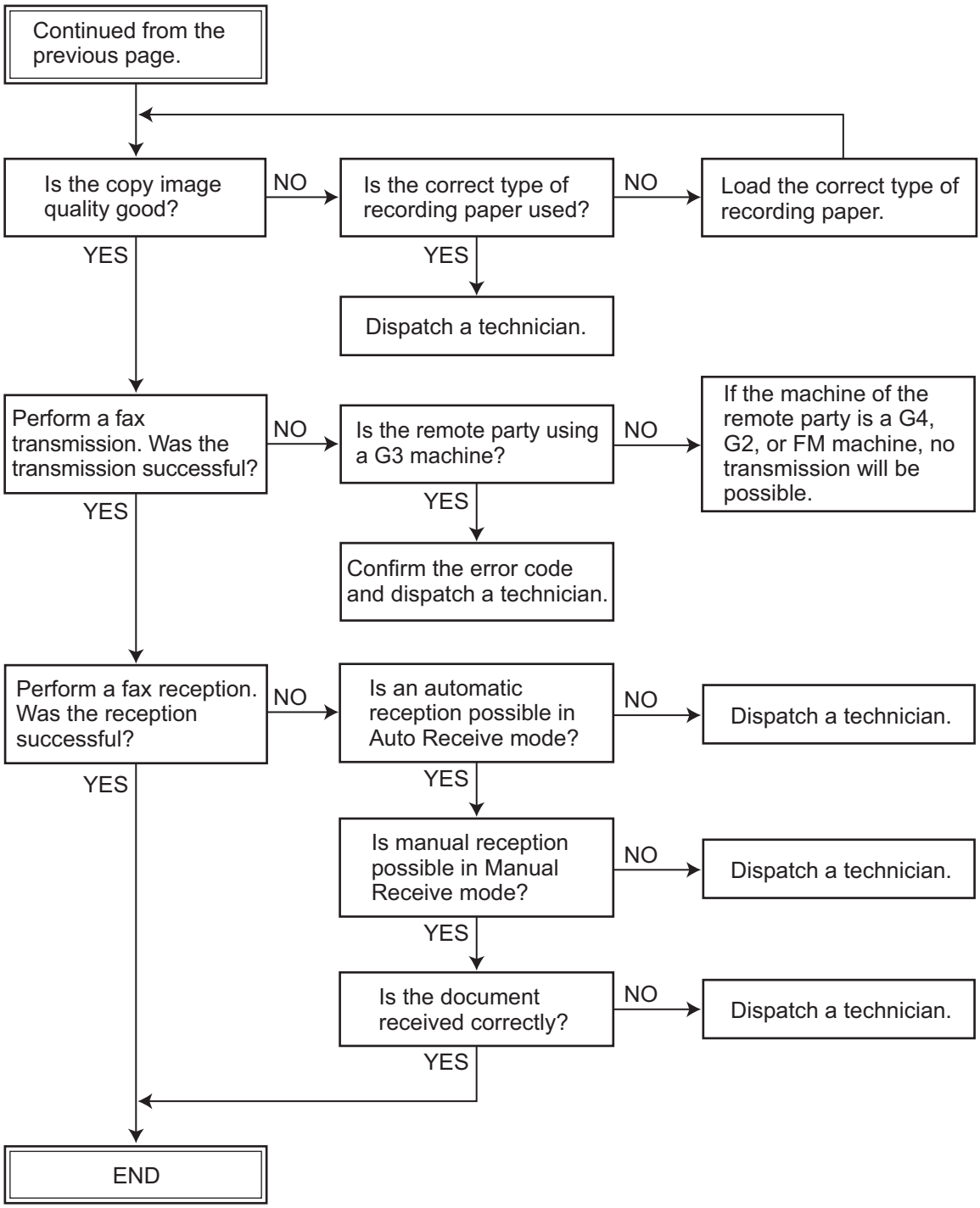

Fig. 11-3

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11.3 Initial Checks

When a problem occurs, be sure to perform the following initial checks.

11.3.1 Checking the environmental conditions for installation

Check if the environmental conditions match the following for proper operation the machine.

- Is the power cord plugged into an outlet satisfying the specifications? (Refer to 🕮 P.2-9 "2.12 Power Source/Size/Weight/Noise Level".)
- Is the machine placed on a flat and level surface?
- Is the environment for operation appropriate? (Refer to 🕮 P.2-8 "2.10 Operating Environmental Condition".)
- Is the location not subject to ammonia gas, high temperature and high humidity (near a water supply tap, boiler, steam maker, and so on), fire, or dust?
- Is the location not subject to direct sunlight? If it cannot be helped, attach a curtain, and so on to shade the unit from direct sunlight.
- Is the location well ventilated?
- Is the location not subject to vibration?
- Is the location not magnetized? (near a television, radio or any other electric appliances, and so on.)

11.3.2 Checking the document

Check if the document matches the following standards.

- Does the size match the specifications? (Refer to 🕮 P.2-1 "2.1 Scanning System".)
- Does the number of document pages to be fed automatically match the specifications? (Refer to 🕮 P.2-1 "2.1 Scanning System".)
- Are there any inappropriate paper conditions described below being used?
  Fiber-reinforced paper, paper with holes, paper with wet ink or white-out, folded paper, torn paper, paper patched together with tape, and so on.

11.3.3 Checking the recording paper

Check if the recording paper matches the following standards.

- Does the recording paper match the specifications? (Refer to 🕮 P.2-3 "2.2 Recording System".)
- Has the recording paper maximum capacity of 250 (A4/Letter/Legal) sheets been exceeded?
- Are any inappropriate paper conditions described below being used?
  Wet paper, curled paper, waved paper, torn paper, used paper (with one side printed), and so on.

11.3.4 Checking the consumables

Check the condition of the consumable items. Replace consumable as required. (Refer to 🕮 P.10-2 "10.2.1 Replacement of Consumables".)

11.3.5 Cleaning

To maintain the print quality, perform routine cleaning. (Refer to 🕮 P.10-3 "10.2.3 How to Check, How to Clean".)

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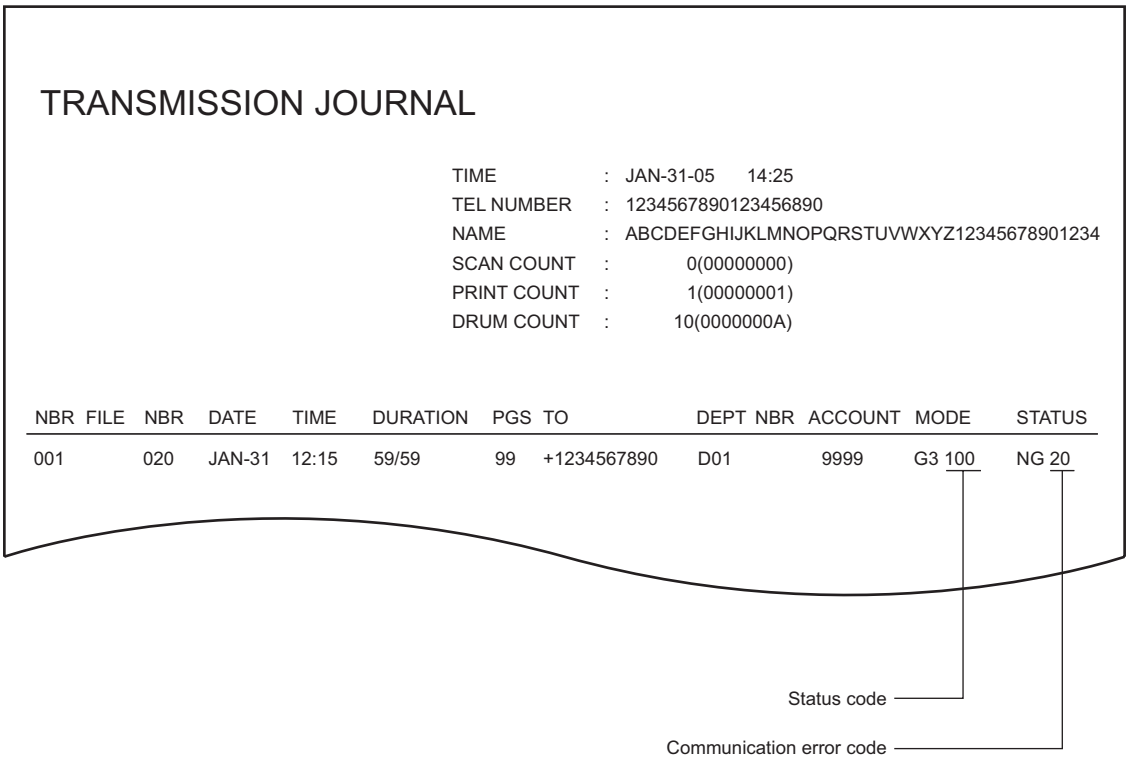
11.3.6 Checking by self-diagnostic functions

The operator and service technician can check an error condition by using the error code on the LCD display and the communication error code and status code printed on communication journal.



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[1] Error messages

When an error occurs, the applicable LED illuminates or blinks with an error message indicated on the LCD display.

Display	Cause	Remedy
DEVICE ERROR XX	Hardware device error occurred. "XX" is an error code, which identify the cause of error. This error shows that the terminal dose not work any more.	Turn the power off and then on. If the message is displayed repeatedly, check the error code displayed on the LCD and refer to 📖 P.11-45 "[2] Device error codes".
BROKEN REGISTRATION	The phonebook data (one touch dialing, abbreviated dialing, group number) are lost.	Press the [STOP] key, and then perform settings again. When this message is displayed repeatedly, refer to 📖 P.11-50 "[1] BROKEN REGISTRATION".
LINE BUSY	The communication did not end normally.	Attempt the transmission again.
POWER FAILURE	A power failure occurred during a communication or a memory reception.	Confirm the contents using the power failure list.
COVER OPEN	The RX cover or front cover is open.	Close the RX cover or front cover securely. If the message is displayed repeatedly, refer to 📖 P.11-51 "[2] COVER OPEN".
TONER NOT RECOGNIZED	The toner cartridge and drum unit have not been installed.	Install the toner cartridge and drum unit. This error message appears also when the toner cartridge other than the recommended one is installed. If the toner cartridge other than the recommended one is used by the request of customers, contact your service center because the setting needs to be changed. If the message is displayed repeatedly, refer to 📖 P.11-51 "[3] TONER NOT RECOGNIZED".
MEMORY FULL	The memory set aside for speed dial numbers (i.e. one touch keys and abbreviated dial numbers) has been exhausted.	Delete unneed number, alternate numbers, and unnecessary pauses. Use shorter names for the dialing address.
JOB MEMORY FULL	The maximum number of manually input phone numbers (100) has been reach.	Split your transmission into two or more jobs.
MEMORY OVERFLOW	The image memory has overflowed.	Press the [STOP] key to clear the message. In memory transmission mode, transmit the document divided into several transmit sequences, or transmit the document again from the beginning when enough memory is available. In memory reception operation, correct the condition which lead to the memory reception. Then receive the document again.
DOCUMENT JAM	After loading the document (the document sensor is ON), the document is not fed to the scan position within the specified time. Or the document position sensor stays ON over the specified time indicating that the document has not ejected.	Open the operation panel and remove the jammed document. If documents get jammed again or the same error message is displayed again, refer to 📖 P.11-54 "11.4.4 Document feed error".

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Display	Cause	Remedy
PAPER SIZE ERROR OR PAPER JAM XX	During printing, the recording paper dose not feed turned ON/OFF the sensor within the specified time. “XX” specify the cause of paper jam.	Check the error code displayed on the LCD and refer to 🕮 P.11-45 "[3] Paper jam error codes". And then remove the jammed recording paper.
UPPER PAPER EMPTY (Displayed only when optional recording paper tray is installed)	The paper end sensor in the recording paper tray has turned OFF.	Supply recording paper to the recording paper tray. If the same error message is displayed again after supplying recording paper, refer to 🕮 P.11-52 "[5] UPPER PAPER EMPTY".
LOWER PAPER EMPTY (Displayed only when optional recording paper tray is installed)	The optional paper end sensor in the optional recording paper tray has turned OFF. Or the optional tray sensors turned OFF.	Supply recording paper to the optional recording paper tray. Or insert recording paper tray firmly. If the same error message is displayed again after supplying recording paper and inserting recording paper tray firmly, refer to 🕮 P.11-52 "[6] LOWER PAPER EMPTY".
PAPER EMPTY	When the optional recording paper trays are not installed: The paper end sensor have turned OFF. When the optional recording paper trays are installed: The paper end sensor and optional paper end sensor have turned OFF. Or the optional tray sensors have turned OFF.	Supply recording paper to recording paper trays. Or insert recording paper trays firmly. If the same error message is displayed again after supplying recording paper and inserting recording paper tray firmly, refer to 🕮 P.11-51 "[4] PAPER EMPTY".
TONER LOW	The remaining toner will go out soon.	Replace the toner cartridge with a new one.
TONER EMPTY	After displaying “TONER LOW”, the number of print pages has reached the specified value.	Replace the toner cartridge with a new one.
DRUM UNIT WARNING	The rest of the drum unit life is 4000 prints or less.	Replace the drum unit with a new one.
REPLACE DRUM UNIT	The drum counter has reached 20,000 pages.	Replace the drum unit with a new one.
CHECK TELEPHONE LINE	Telephone line is not connected to the telephone line.	Correctly connect a modular phone cord between the telephone line jack and the LINE connector on the right side of the machine.

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[2] Device error codes

Device error code indicates the cause of a device error by a 2-digit number.

Error Code	Cause	Remedy
22 to 24	The fuser failed to operate normally.	Refer to 🕮 P.11-52 "[7] DEVICE ERROR 22 to 24".
41	The polygon motor in the LSU failed to operate.	Refer to 🕮 P.11-53 "[8] DEVICE ERROR 41 and 42".
42	The laser beam was not controlled correctly.	Refer to 🕮 P.11-53 "[8] DEVICE ERROR 41 and 42".
43	The HVPS failed to operate normally.	Replace the HVPS.
51	The FAN motor failed to operate normally.	Refer to 🕮 P.11-53 "[9] DEVICE ERROR 51".
60	Communication error between the main-CPU (IC22) and the engine-CPU (IC37).	Replace the main PBA.
80	The DSC (IC59) failed to operate normally.	Replace the main PBA.
81	The RTC (IC23) failed to operate normally.	Replace the main PBA.
82	The MODEM (IC5) for Line-1 failed to operate normally.	Replace the main PBA.

[3] Paper jam error codes

Paper jam error codes indicate where (within the machine) a recording paper jam has occurred using a 2-digit number.

Error Code	Cause	Remedy
10	A paper jam has occurred within the paper feed section of the recording paper tray.	Draw out the recording paper tray (Upper) and remove any jammed recording paper. If the same error code is displayed again, refer to 🕮 P.11-55 "11.4.5 Recording paper feed error".
20	A paper jam has occurred within the paper feed section of the optional recording paper tray.	Draw out the recording paper tray (Lower) and remove any jammed recording paper. If the same error code is displayed again, refer to 🕮 P.11-55 "11.4.5 Recording paper feed error".
80	A paper jam has occurred within the drum/developer section of the paper transport path.	Open the front cover, remove the toner cartridge and drum unit, and remove any jammed recording paper. If the same error code is displayed again, refer to 🕮 P.11-55 "11.4.5 Recording paper feed error".
90	A paper jam has occurred within the paper exit section of the paper transport path.	Open the RX cover, remove the toner cartridge and drum unit, and remove any jammed recording paper. If the same error code is displayed again, refer to 🕮 P.11-55 "11.4.5 Recording paper feed error".

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[4] Communication error codes

By referring to the communication error code printed on the communication journal, you can confirm the contents of the error that occurred during each communication.

Error Code	Cause	Remedy
10	There was no recording paper or the recording paper tray was not installed during the reception.	Supply recording paper and insert the recording paper tray firmly.
11	A recording paper jam occurred during the reception.	Open the RX cover or front cover and remove the jammed recording paper.
12	A document jam occurred.	Open the operation panel, and remove the jammed document, then try the transmission again.
13	During the transmission, the RX cover or front cover was opened and the transmission stopped.	Attempt the transmission again.
20	A power failure occurred during the transmission or reception, and the transmission/reception document data was lost.	Attempt the transmission or reception again.
22	A file error occurred due to a directory error.	Perform a full memory clear. If the error recurs, replace the main PBA.
30	The [STOP] key was pressed during the communication, and the communication was stopped.	Attempt the transmission or reception again.
32	The set number of document pages did not match the actual pages transmitted.	Check the actual document count.
33	The polling password did not match, or no polling document existed.	Check the polling password or check if there is a polling document on the remote party's side, and attempt the polling reception again.
42	During a memory transmission or a memory reception, the machine ran out of image memory. The machine's image memory was exhausted.	Divide the documents into several trans missions for a memory transmission. For a memory reception, remove the cause of the error, then ask the remote party to transmit the document again.
50	Dialing and redialing was attempted as many as the specified count but the line was busy.	Confirm the phone numbers of the remote party.
53	The password did not match in a relay or mailbox transmission, and the transmission ended in failure.	Confirm that both parties are using the same system password and the both units are compatible. Then, ask the remote party to transmit again.
87	There was no residual memory in the remote party's fax unit during a relay/mailbox transmission.	Attempt the transmission again.
B0	DIS (GI) could not detected.	This may happen in some cases of bad line condition. Attempt the transmission again.
B1	DIS/NSF that cannot be handled by the sender is received. The receiver received NSS/DCS other than those declared by DIS/NSF.	This may happen in some cases of bad line condition. Attempt the transmission again or ask the remote party to attempt the transmission again.
B2	DCN is received.	This may happen in some cases of bad line condition. Attempt the transmission again.
B3	DCS/DTC was not detected.	This may happen in some cases of bad line condition. Attempt the transmission again.
B4	The sender performed fall-back but the transmission was not enabled. The receiver performed time-out after sending FTT. Or DCN is received.	This may happen in some cases of bad line condition. Attempt the transmission again. Or ask the remote party to attempt the transmission again.

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Error Code	Cause	Remedy
B5	CFR (FTT) was not detected.	This may happen in some cases of bad line condition. Attempt the transmission again.
C0	Image signal carrier was not detected.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
C1	High-speed signal was not detected on the receiving side.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
C2	After detecting the image signal, carrier off was detected for more than 1 second.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
C3	After detecting a high-speed signal, EOL was not detected for 15 seconds.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
C4	The EOL timer has timed out.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
D0	Post response signal was not detected on the sending side. Post signal was not detected on the receiving side.	This may happen in some cases of bad line condition. Attempt the transmission again. Or ask the remote party to attempt the transmission again.
D1	DCN is received.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
D2	RTN/PIN is received on the sending side. RTN/PIN is received on the receiving side.	This may happen in some cases of bad line condition. Ask the remote party to transmit again.
E0	A printer error occurred during a reception, and the machine is shifted into memory reception mode. However, there was not enough residual memory.	Remove the cause of the printer error, then ask the remote party to transmit again.
E6	An error relating to the printer has occurred.	Confirm details of the error using the error code and correct the error. Then ask the remote party to transmit again.
F0	The communication ended because of a WDT due to an overrun of the software.	Attempt the communication again. If the error occurs frequently, perform a memory clear (except user area.)
F1	The communication ended because of an over-run of the software due to hard-ware noises.	Attempt the communication again. If the error occurs frequently, perform a memory clear (except user area.)

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[5] Status codes

Using the 3-digit status code printed in the mode column of the communication journal, the communication mode of each job can be confirmed.
Each of the 3 digits of the status code has an individual meaning. These digits represent the following.

- 1st digit

Mode	TX Speed (bps)
0	2400
1	4800
2	7200
3	9600
4	12000
5	14400
6	V.34

- 2nd digit

Mode	Line density
0	8 x 3.85
1	8 x 7.7
2	8 x 15.4
3	-
4	16 x 15.4
8	300 dpi

- 3rd digit

Mode	Encoding
0	MH
1	MR
2	MMR
3	JBIG

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11.4 Trouble Analysis

Before starting any repair work, strictly obey the following instructions.

Caution

- If you attempt to operate this machine with the RX cover and the front cover opened and the cover interlock safety switch bypassed, there is danger of laser radiation, and of your clothes or fingers becoming caught in the drive gears and rollers, and of coming into contact with the heated surfaces of the fuser. You should never attempt to operate this machine with the RX cover and front cover safety interlock bypassed.
- When replacing parts, be sure to turn the power switch OFF and unplug the AC power cord from the outlet.

Notes:

- Be sure to output a dial list and a system function list and keep them until the trouble analysis is completed so that if the user's set data is lost it can be re-entered.
- Before turning the power switch OFF, be sure to confirm that the residual memory is 100% and no memory reception documents exist.
- Cover the drum unit with a cloth, and so on, whenever it is removed from the machine to protect the photosensitive material from deterioration by exposure to light.

- Dial list output procedure
  1) Press the [MENU] key.
  2) Use the [↑] or [↓] keys to select "2. LISTS", and then press the [ENTER] key.
  3) Use the [↑] or [↓] keys to select "5. TELEPHONE NBRS", and then press the [ENTER] key.
  4) Use the [↑] or [↓] keys to select "01. ALL OF LISTS", and then press the [ENTER] key.

- System function list output procedure
  1) Press the [MENU] key.
  2) Use the [↑] or [↓] keys to select "2.LISTS", and then press the [ENTER] key.
  3) Use the [↑] or [↓] keys to select "1.FUNCTION", and then press the [ENTER] key.

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11.4.1 Power-ON is not possible

Step	Check points	Solutions
1	Is the power cord plugged in an appropriate outlet (of the correct voltage)?	Plug the power cord in an appropriate outlet.
2	Are the connections secure between the LVPS (CN1) and the main PBA (CN17)?	Connect each PC board firmly.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	Are the rated voltages being output from the LVPS?	Measure the voltages between the following pins of the LVPS (CN1) When the rated voltage is not measured, replace the LVPS. Measuring points — Rated voltage Pin 2 - Pin 4 — DC +12V +10% / -10% Pin 3 - Pin 4 — DC -12V +10% / -10% Pin 6 - Pin 5 — DC +5.2V +0.25V / -0.25V Pin 7 - Pin 5 — DC +5V +5% / -5% Pin 14 - Pin 15 — DC +24V +5% / -5%
5	If no problem is found in the steps above, the main PBA may be defective.	Replace the main PBA.

11.4.2 Nothing is indicated on the LCD display

Step	Check points	Solutions
1	Is the cable firmly connected between the operation panel (CN1) and the main PBA (CN4)?	Insert the cable or connector to the connectors firmly.
2	Does the connector pin come off or is the cable broken?	Replace the cable.
3	If no problem is found in the steps above, the operation panel or main PBA may be defective.	Replace the operation panel and then the main PBA.

11.4.3 Error message is re-displayed

[1] BROKEN REGISTRATION

Step	Check points	Solutions
1	Has this machine been used in an environment satisfying the specifications? Or has its power switch been turned OFF for a long period of time.	Charge the battery by leaving the unit plugged in for 24 hours then check it again. Replace the lithium battery on the main PBA (BAT101) if it is more than 5 years old.
2	Did anyone remove or attach an electronic component with the power ON?	RAM data has been lost/corrupted. A full memory clear is required, then the contents must be reset using memory write, and all drum history data erased.
3	If no problem is found in the steps above, the main PBA may be defective.	Replace the main PBA.

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[2] COVER OPEN

Step	Check points	Solutions
1	Is the hook of the RX cover or front cover, which turns ON the cover open switch, damaged?	Replace the RX cover or front cover.
2	Is the RX cover open switch or the front cover open switch damaged?	Replace the RX cover open switch or front cover open switch.
3	Is the cable firmly connected with the following paths? • RX cover open switch - Main PBA (CN23) • Front cover open switch - LVPS (CN3) • LVPS (CN1) - Main PBA (CN17)	Insert the cable to the connector firmly.
4	Does the connector pin come off or is the cable broken?	Replace the cable.
5	If no problem is found in the steps above, the RX cover open switch, front cover open switch or main PBA may be defective.	Replace the cover open switch and then the main PBA.

[3] TONER NOT RECOGNIZED

Step	Check points	Solutions
1	Is the toner cartridge contact connected with the CSIC PBA in the toner cartridge damaged?	Replace the toner cartridge contact.
2	If no problem is found in the steps above, the CSIC PBA or main PBA may be defective.	Replace the toner cartridge and then the main PBA.

[4] PAPER EMPTY

There are three different error messages on the presence of recording paper. The trouble analysis changes depending on the type of message.

- When the optional recording paper tray is not installed:
  The paper end sensor has turned OFF.
  → “PAPER EMPTY”
  Refer to 🕮 P.11-52 "[5] UPPER PAPER EMPTY".

- When the optional recording paper tray is installed:
  The paper end sensor has turned OFF.
  → “UPPER PAPER EMPTY”
  Refer to 🕮 P.11-52 "[5] UPPER PAPER EMPTY".

  The optional paper end sensor or optional tray sensor has turned OFF.
  → “LOWER PAPER EMPTY”
  Refer to 🕮 P.11-52 "[6] LOWER PAPER EMPTY".

  The paper end sensor, optional paper end sensor and optional tray sensor have turned OFF.
  → “PAPER EMPTY”
  Refer to 🕮 P.11-52 "[5] UPPER PAPER EMPTY" and 🕮 P.11-52 "[6] LOWER PAPER EMPTY".

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[5] UPPER PAPER EMPTY

Step	Check points	Solutions
1	Is the actuator of the paper end sensor damaged?	Replace the paper end sensor.
2	Select SENSOR TEST in the test mode. (Refer to 🕮 P.11-19 "[5] SENSOR TEST [MENU], [9], [4], [05]".) When the recording paper is inserted in the recording paper tray does Bit 2 change?	When the bit changes, go to step 4.
3	Is the cable firmly connected between the paper end sensor and the main PBA (CN1)?	Insert the cable firmly to the connector.
4	Does the connector pin come off or is the cable broken?	Replace the cable.
5	If no problem is found in the steps above, the main PBA may be defective.	Replace the main PBA.

[6] LOWER PAPER EMPTY

Step	Check points	Solutions
1	Is the actuator of the optional paper end sensor damaged?	Replace the actuator.
2	Is the actuator of the optional tray sensors damaged?	Replace the optional tray sensor.
3	Select SENSOR TEST in the test mode. (Refer to 🕮 P.11-19 "[5] SENSOR TEST [MENU], [9], [4], [05]".) When the optional recording paper tray loaded with paper is inserted into the machine, does Bit 1 change?	When the bit changes, go to step 5.
4	Is the cable firmly connected with the following paths? • Optional tray sensor - Optional tray PBA (CN23) • Optional tray PBA (CN21) - Main PBA (CN19)	Insert the cable to the connector firmly.
5	Does the connector pin come off or is the cable broken?	Replace the cable.
6	If no problem is found in the steps above, the PBA's may be defective.	Replace the optional tray PBA and then the main PBA.

[7] DEVICE ERROR 22 to 24

Step	Check points	Solutions
1	Is the cable firmly connected with the following paths? • Fuser - LVPS (CN2) • LVPS (CN1) - Main PBA (CN17)	Insert the cable firmly.
2	Is the cable from the fuser firmly connected to the main PBA (CN18, 20)?	Insert the cable firmly.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	If no problem is found in the steps above, the fuser, LVPS, or main PBA may be defective.	Replace the fuser, the LVPS and then the main PBA.

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[8] DEVICE ERROR 41 and 42

Step	Check points	Solutions
1	Is the cables firmly connected between the LSU and the main PBA (CN3, 8)?	Insert the cables firmly.
2	Does the connector pin come off or is the cable broken?	Replace the cable.
3	When no problem is found in the steps above, the LSU or main PBA may be defective.	Replace the LSU and then the main PBA.

[9] DEVICE ERROR 51

Step	Check points	Solutions
1	Is the cable firmly connected between the FAN motor and the main PBA (CN7)?	Insert the cable firmly.
2	Does the connector pin come off or is the cable broken?	Replace the cable.
3	If no problem is found in the steps above, the FAN motor or main PBA may be defective.	Replace the FAN motor and then the main PBA.

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11.4.4 Document feed error

[1] Documents do not feed

Step	Check points	Solutions
1	Is the actuator of the document sensor damaged?	Replace the operation panel.
2	Select SENSOR TEST in the test mode. (Refer to 🕮 P.11-19 "[5] SENSOR TEST [MENU], [9], [4], [05]".) Open the operation panel. When the document sensor is turned ON, is the Bit 4 changed?	When the bit changes correctly, go to step 4.
3	Is the cable firmly connected between the operation panel and the main PBA (CN4)?	Insert the cable to the connector firmly.
4	Is the cable of the TX motor firmly connected to the main PBA (CN6)?	Insert the cable to the connector firmly.
5	Does the connector pin come off or is the cable broken?	Replace the cable.
6	Open the operation panel. Turn ON the document sensor to see if the ADF roller and TX drive roller operate properly.	Check the gear of each roller and the gear of the TX motor gear assembly. Replace those which are damaged.
7	If no problem is found in the steps above, the TX motor or main PBA may be defective.	Replace the TX motor and then the main PBA.

[2] Double-sheet feeding of document

Step	Check points	Solutions
1	Were the documents pressed into the ADF too strongly when loaded?	Load documents correctly.
2	Are the document sheets curled?	Use appropriate paper for documents.
3	Are the document sheets hard to separate due to static electricity?	Use appropriate paper for documents.
4	Does the document paper thickness satisfy the specifications (60 to 105 g/m^2)?	Use appropriate paper for documents.
5	Does the number of document pages loaded for automatic feeding exceed the limit (30 pages)? (Refer to 🕮 P.2-1 "2.1 Scanning System".)	Decrease the number of pages to the limit.
6	Is the machine located in an area with extreme temperature and humidity? (Refer to 🕮 P.2-8 "2.10 Operating Environmental Condition".)	Use the machine under good environmental conditions.
7	Is any surface of the ADF pad, ADF roller, TX drive rollers, pinch roller dirty or worn out?	Wipe it off with soft dry cloth. If very dirty, soak the cloth with water and squeeze it well, then use it for wiping the dirt off. If worn out, replace the part.

[3] Document skew

Step	Check points	Solutions
1	Is the document guide properly adjusted to the document width?	Adjust the document guide to the document width.
2	Are there any foreign objects (such as glue) on the document feed path?	Clean the document feed path.
3	Is any surface of the ADF pad, ADF roller, TX drive rollers, pinch roller dirty or worn out?	Wipe it off with soft dry cloth. If very dirty, soak the cloth with water and squeeze it well, then use it for wiping the dirt off. If worn out, replace the part.

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11.4.5 Recording paper feed error

[1] RX motor does not rotate

Step	Check points	Solutions
1	Is the cable of the RX motor firmly connected to the main PBA (CN12)?	Insert the cable firmly to the connector.
2	Does the connector pin come off or is the cable broken?	Replace the cable.
3	If no problem is found in the steps above, the RX motor or main PBA may be defective.	Replace the RX motor and then the main PBA.

[2] Recording paper feed error

1) Recording paper does not feed

Step	Check points	Solutions
1	Does the paper pickup solenoid and optional paper pickup solenoid drives normally.	When it drives normally, go to step 3.
2	Is the cable firmly connected with the following paths? • Paper pickup solenoid - Main PBA (CN14) • Optional paper pickup solenoid - Optional tray PBA (CN22) • Optional tray PBA (CN21) - Main PBA (CN19)	Insert the cable firmly to the connector.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	Are any of the gears of the pickup roller or feed roller damaged?	If any is damaged, replace it.
5	Are any of the gears in the feed gear assembly damaged?	If any is damaged, replace it.
6	If no problem is found in the steps above, the paper pickup solenoid or main PBA may be defective.	Replace the pickup solenoid, the optional paper pickup solenoid, the main PBA and then the optional tray PBA.

2) Paper jam at the paper feed section

Step	Check points	Solutions
1	Is the actuator of the paper position sensor damaged?	Replace the paper position sensor.
2	Is the cable firmly connected between the paper position sensor and the main PBA (CN21)?	Insert the cable firmly to the connector.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	Are any gears in the feed gear assembly damaged?	If any is damaged, replace it.
5	Is the paper feed roller dirty, damaged or worn?	Clean or replace the paper feed roller as needed.
6	If no problem is found in the steps above, the drum unit or main PBA may be defective.	Replace the drum unit and then the main PBA.

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3) Paper jam at the paper exit section

Step	Check points	Solutions
1	Is the actuator of the paper exit sensor damaged?	Replace the paper exit sensor.
2	Is the cable firmly connected between the paper exit sensor and the main PBA (CN20)?	Insert the cable firmly to the connector.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	If no problem is found in the steps above, the paper exit sensor or main PBA may be defective.	Replace the paper exit sensor and then the main PBA.

[3] Multiple sheets of recording paper are fed at the same time

Step	Check points	Solutions
1	Is the paper already used (once printed) and hard to be separated from each other due to static electricity?	Use appropriate paper.
2	Is the machine exposed to extreme temperature or humidity? (Refer to 🕮 P.2-8 "2.10 Operating Environmental Condition".)	Choose an environment appropriate for operating the machine.
3	Is the paper pickup roller or separation pad unit dirty or worn out?	Wipe the dirt off with a soft dry cloth. If very dirty, soak the cloth with water and squeeze it tightly before wiping the dirt off.
4	Are the separation fingers (in the optional recording paper tray) bent or damaged?	Insure that the separation fingers are clean and undamaged. The fingers should be parallel with one another and perpendicular with the recording paper tray.

[4] The recording paper feeds in slant direction, gets wrinkled or damaged

Step	Check points	Solutions
1	Does the recording paper being used satisfy the specifications?	Use appropriate recording paper.
2	Is there any foreign material stuck in the path of the recording paper?	Clean the feeding course.
3	Is there any foreign material stuck on the bottom of toner cartridge and drum unit?	Clean the bottom of toner cartridge and drum unit. **Note:** When cleaning, do not touch the drum surface. Also note that the drum surface cannot be cleaned.
4	Does the actuator of the paper feed sensors move smoothly?	If it does not move smoothly, replace it.
5	Is there any foreign material stuck on the fuser or pressure roller?	Clean the roller.

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11.4.6 Copying error

Select the PRINT TEST in the test mode. (Refer to 📖 P.11-16 "[2] PRINT TEST [MENU], [9], [4], [02]".)
First perform a test print to check that there is no printing defect. If any, refer to 📖 P.11-58 "11.4.7 Poor print quality".

Step	Check points	Solutions
1	Is the document loaded with its face down?	Load the document correctly.
2	Select SCANNER TEST in the test mode. (Refer to 📖 P.11-23 "[10] SCANNER TEST [MENU], [9], [4], [10]".) Is the LED of the CIS illuminated?	If illuminated, go to Step 4. **Note:** The SCANNER TEST is not terminated when the operation panel is opened, but the CIS is turned OFF.
3	Is the cable firmly connected between the CIS and the main PBA (CN11)?	Insert the cable firmly to the connector.
4	Does the connector pin come off or is the cable broken?	Replace the cable.
5	Is the glass of the CIS clean and undamaged?	Clean the CIS glass of all foreign material or replace the CIS if damaged.
6	If no problem is found in the steps above, the CIS or main PBA may be defective.	Replace the CIS and then the main PBA.

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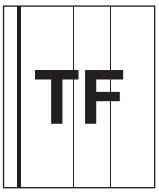
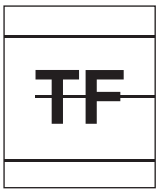
11.4.7 Poor print quality

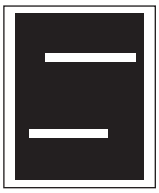
First, find the print sample chart close to your printing problem and start troubleshooting.



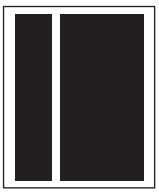
Vertical black line(s)
[1]



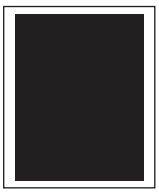
Horizontal black line(s)
[2]



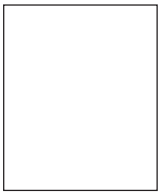
Horizontal white line(s)
[2]



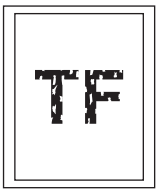
Vertical white line(s)
[3]



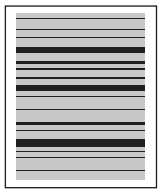
Completely black
[4]



Completely white
[5]

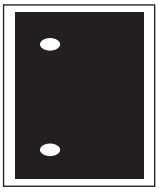


Low image density,
Faint or blurred print
[6]

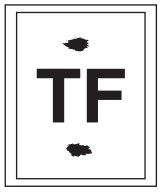


Uneven or
Foggy background print
[7]

Black dots
[8]



White dots
[8]



Stained
[9]

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[1] Vertical black line(s)

Step	Check points	Solutions
1	Is the light (sunlight, and so on) coming in from an opening of the machine?	Move the machine to another place or use a curtain to shut out the light.
2	Are the paper transport mechanism and/or feed rollers (pickup roller, paper feed roller or exit roller) dirty?	Clean the paper transport section and rollers.
3	Is the drum dirty or damaged?	Replace the drum unit.
4	Is the heat roller dirty or damaged?	Clean the heat roller or replace the fuser.
5	If no problem is found in the steps above, the drum unit, LSU, or main PBA may be defective.	Replace the drum unit, the LSU, and then the main PBA.

[2] Horizontal black line(s) / horizontal white line(s)

Step	Check points	Solutions
1	Are the paper transport mechanism and/or feed rollers (pickup roller, paper feed roller or exit roller) dirty?	Clean the paper transport section and rollers.
2	Is the heat roller dirty or damaged?	Clean the heat roller or replace the fuser.
3	Are there any foreign obstacles stuck to the feed gears?	Clean the gears or replace the feed gear assembly.
4	Are there any foreign obstacles stuck to the gears of the drum unit?	Clean the gears or replace the drum unit.
5	Are the black or white lines clearly printed?	Replace the LSU.
6	If no problem is found in the steps above, the drum unit or main PBA may be defective.	Replace the drum unit and then the main PBA.

[3] Vertical white line(s)

Step	Check points	Solutions
1	Is the transfer roller dirty or damaged?	Replace the transfer roller.
2	Is the heat roller dirty or damaged?	Clean the heat roller or replace the fuser.
3	Is there a foreign matter or stain on the glass of the LSU?	Remove the foreign matter or stain.
4	If no problem is found in the steps above, the drum unit, LSU or main PBA may be defective.	Replace the drum unit, the LSU, and then the main PBA.

[4] Completely black

Step	Check points	Solutions
1	Is the charge terminal or the ground terminal of the drum inside the machine dirty or bent?	Clean the terminals using a cotton swab repair them using cutting pliers.
2	Is the cable firmly connected between the HVPS (CN1) and the main PBA (CN15)?	Insert the cable to the connector firmly.
3	Does the connector pin come off or is the cable broken?	Replace the cable.
4	If no problem is found in the steps above, the drum unit, LSU or main PBA may be defective.	Replace the drum unit, the LSU, and then the main PBA.

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[5] Completely white

Step	Check points	Solutions
1	Is the drum unit or toner cartridge improperly mounted?	Mount the drum unit and the toner cartridge properly.
2	Are the terminals of the toner cartridge and the drum unit dirty or bent?	Clean the terminals using a dry cloth or repair them using cutting pliers.
3	Is the development voltage terminal inside the machine dirty or bent?	Clean the terminals using a cotton swab repair them using cutting pliers.
4	Is the cable firmly connected with the following paths? • LSU - Main PBA (CN3, 8) • HVPS (CN1) - Main PBA (CN15)	Insert the cable to the connector firmly.
5	Does the connector pin come off or is the cable broken?	Replace the cable.
6	If no problem is found in the steps above, the toner cartridge, LSU or PBA's may be defective.	Replace the toner cartridge, the LSU, the HVPS, and then the main PBA.

[6] Low image density, faint or blurred print

Step	Check points	Solutions
1	Is the toner low?	Replace the toner cartridge.
2	Is the recording paper moistened?	Replace the recording paper and advise the customer of correct recording paper storage.
3	Is the transfer roller dirty or damaged?	Clean or replace the transfer roller.
4	Is the machine placed on a slanted surface?	Place the machine on a flat surface.
5	Is the development voltage terminal inside the machine dirty or bent?	Clean the terminals using a cotton swab repair them using cutting pliers.
6	If no problem is found in the steps above, the drum unit, toner cartridge or PBA's may be defective.	Replace the drum unit, the toner cartridge, the HVPS, and then the main PBA.

[7] Uneven or foggy background print

Step	Check points	Solutions
1	Is the machine placed on a slanted surface?	Place the machine on a flat surface.
2	Is there any foreign material stuck to the feed gears?	Clean the gears or replace the feed gear assembly.
3	Is the development voltage terminal inside the machine dirty or bent?	Clean or correct the terminals.
4	If no problem is found in the steps above, the drum unit, LSU or PBA's may be defective.	Replace the drum unit, the LSU, the HVPS, and then the main PBA.

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[8] Black dots / white dots

Step	Check points	Solutions
1	Is the recording paper moistened.	Replace the recording paper and advice the customer of correct recording paper storage.
2	Are the paper transport mechanism and/or feed rollers (pickup roller, paper feed roller or exit roller) dirty?	Clean the paper transport section and rollers.
3	Do the black or white dots repeat at 94.2 mm intervals?	Replace the drum unit because the drum is dirty or damaged, or replace the fuser because the heat roller is dirty or damaged.
4	Do the black or white dots repeat at 51.8 mm intervals?	Replace the toner cartridge because the sleeve roller is dirty or damaged.
5	Do the black or white dots repeat at 50.6 mm intervals?	Replace the transfer roller because it is dirty or damaged.
6	Are black or white dots repeat at 75.3 mm intervals?	Replace the pressure roller because it is dirty or damaged.

[9] Stained (print side or back side)

Step	Check points	Solutions
1	Is the heat roller dirty or damaged?	Clean or replace the fuser.
2	Is the pressure roller dirty or damaged?	Clean or replace the pressure roller.
3	Is the transfer roller dirty or damaged?	Clean or replace the transfer roller.
4	Are the feed rollers (pickup roller, paper feed roller or exit roller) dirty?	Clean the rollers.
5	Is the paper transport mechanism dirty?	Clean the paper transport section using a dry cloth.
6	If no problem is found in the steps above, the drum unit or fuser may be defective.	Replace the drum unit and then the fuser.

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11.5 Updating the Firmware

The firmware stored in this machine can be updated in the following manner when it is to be updated to the latest one or if it fails to operate due to the data damaged.

Remarks:

- Before updating the firmware, it is necessary to print the current function settings so that the unit can be reconfigured to the same setting.
- Before turning off the power switch, be sure to check with the LCD display that no PIX data and received data is stored in memory. Turning off the power switch without such checking may result in the loss of data.

Note:

When the firmware has been updated, clear the memory by performing the following operation before turning on the power for operation. Unless the memory is cleared, the firmware may not operate normally.

- Turn on the power while pressing the [*] and [#] keys.

11.5.1 Using the Recovery ROM PBA

(1) Set the ROM containing the latest firmware on the Recovery ROM PBA.

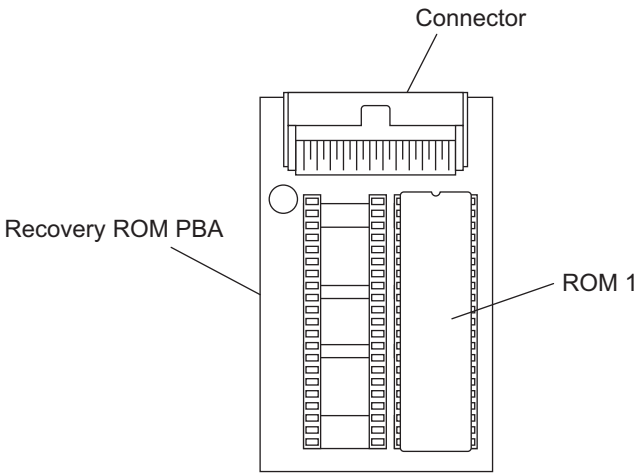

Fig. 11-4

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(2) Turn off the power and open the operation panel assembly, and release the operation panel stopper.

(3) Disconnect the connector from the operation panel assembly, and remove the FG cable terminal.

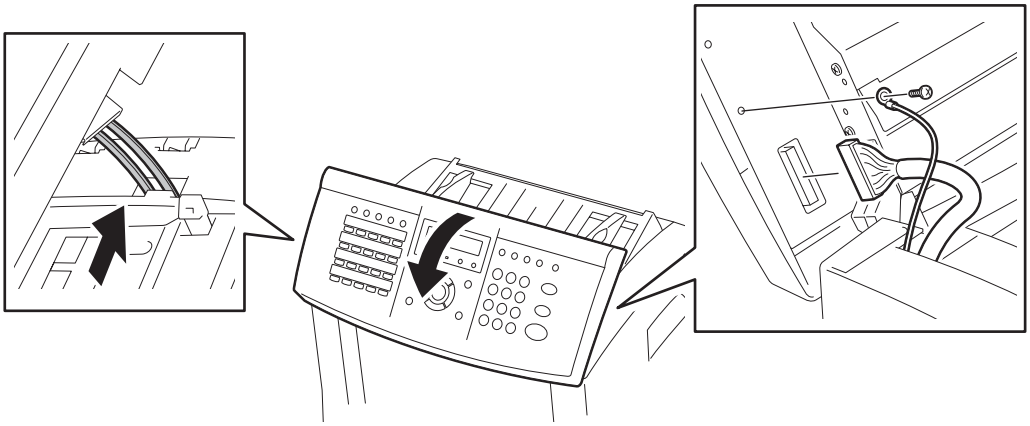

Fig. 11-5

(4) Remove the operation panel assembly.

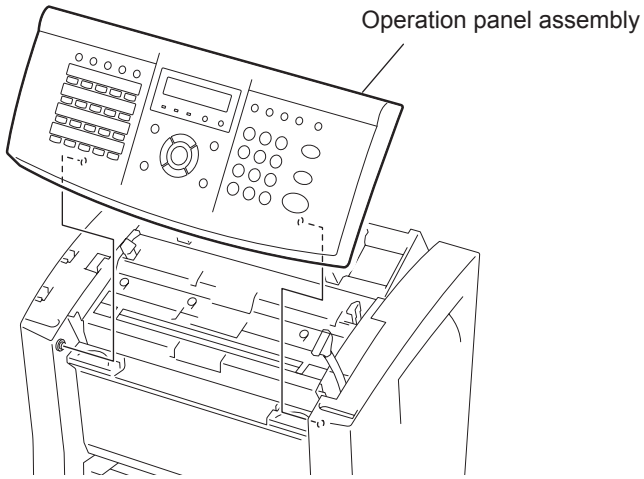

Fig. 11-6

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(5) Remove the Right side cover.

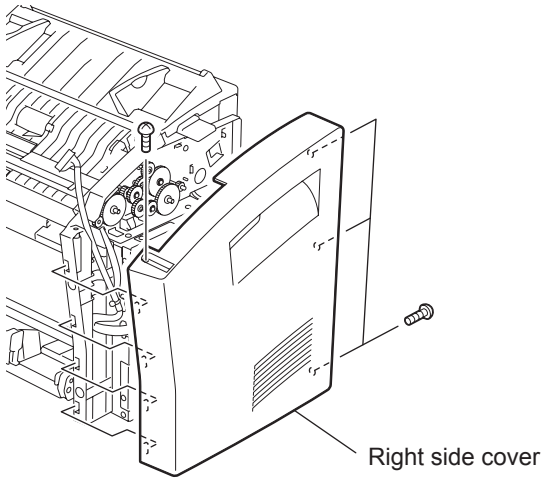

Fig. 11-7

(6) Remove the Main PBA cover.

Note:
A speaker and a battery cell are installed inside of the main PBA cover. Each harness of this speaker and this battery cell is connected to the main PBA. Therefore do not pull the main PBA cover strongly.

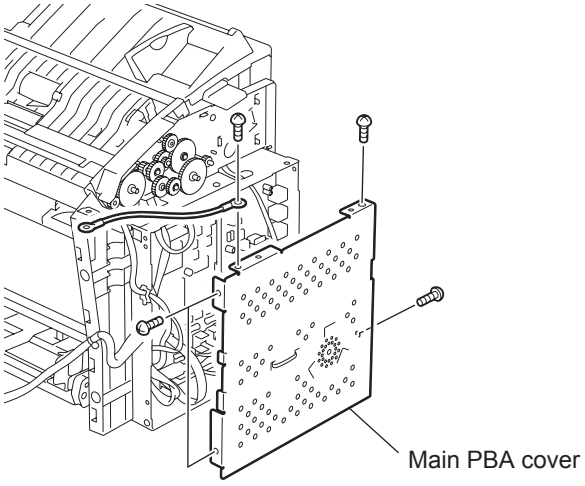

Fig. 11-8

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(7) Install the Operation panel, and connect the FG cable and the connector to the operation panel and connect the FG cable to the frame to the machine.

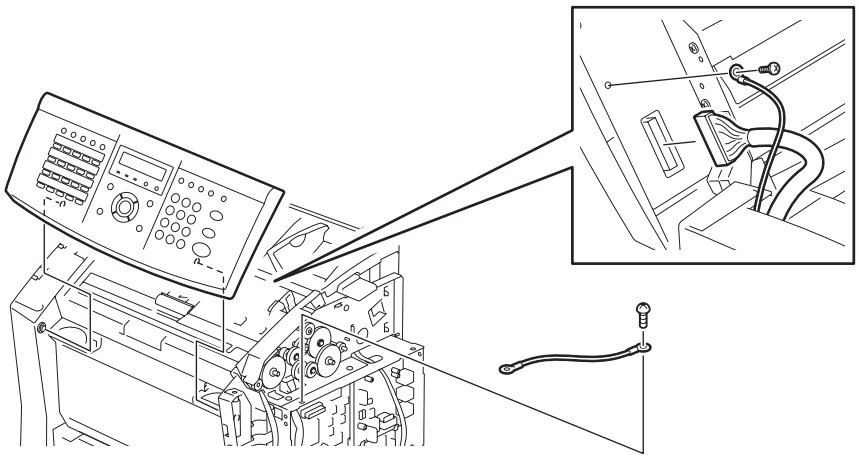

Fig. 11-9

(8) Connect the Recovery ROM PBA.

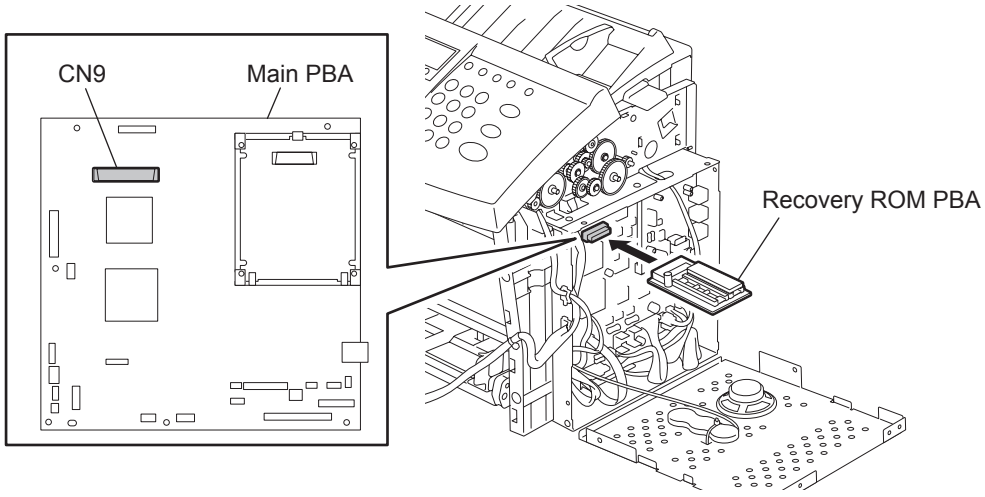

Fig. 11-10

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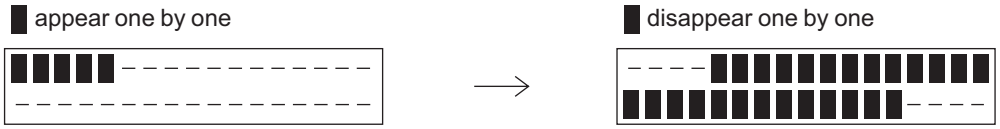
(9) Turn on the power. Updating the firmware should start.
The progressing status is shown on the LCD.



End of updating: All the LEDs except SUPER ENERGY SAVER blink.
All the dots repeat turning on and off

(10) Turn off the power and remove the Recovery ROM PBA.

(11) Reassemble the components in the reverse order of disassembly.

(12) Turn on the power while pressing the [*] and [#] keys., then turn off.

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11.5.2 Download data from the PC

Using the TOSHIBA Viewer, you can download the firmware from the PC to this facsimile for updating.

Remarks:

- Data to be downloaded should be stored in the same drive as the TOSHIBA Viewer program. If the data is stored in a different drive (including a floppy disk or the drive of another PC connected to the network), downloading may not be performed normally.
- Do not turn off the power of the facsimile and the PC while data is being updated. Data may be damaged causing the facsimile not to operate normally.

(1) Start the TOSHIBA Viewer, and then click Setup on the main welcome menu.

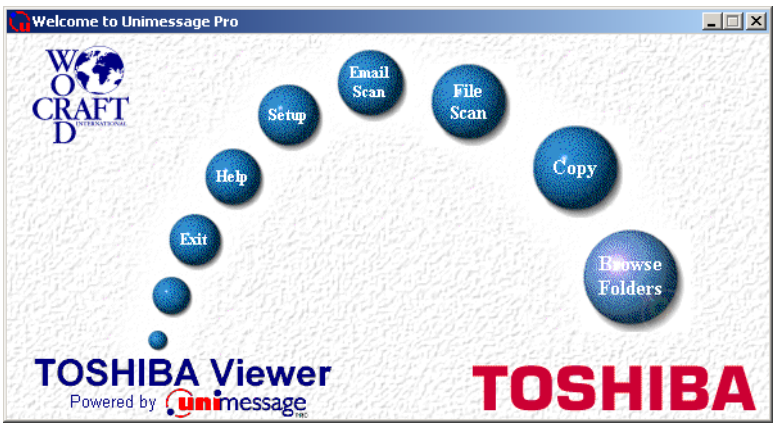

Fig. 11-11

Note:

"Select Device" dialog is displayed only when the device is not logged on (not selected).

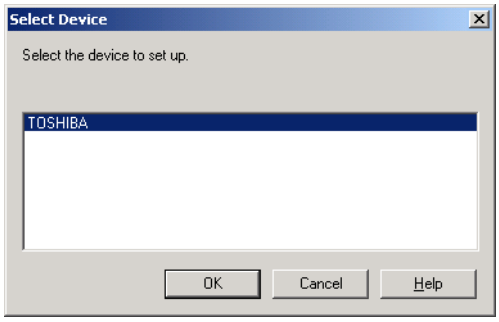

Fig. 11-12

Select the device and click "OK".

The Toshiba Setup screen appears.

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(2) Double click "Download" in Data sources.

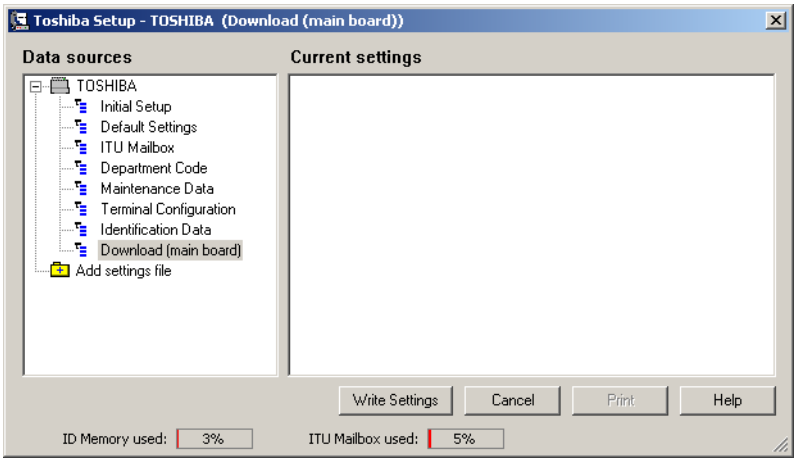

Fig. 11-13

The Service setting dialog box appears.

(3) Enter the password "TSBSERVICE".

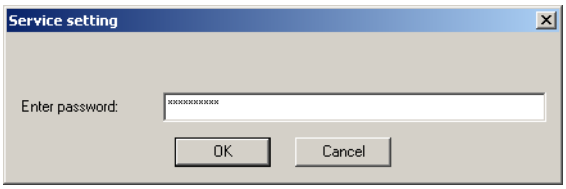

Fig. 11-14

(4) Click "OK".
The Download firmware update dialog box appears.

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(5) Select the file for the download firmware.

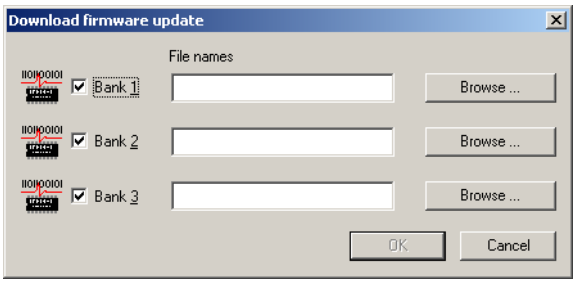

Fig. 11-15

Click "Browse" to select the file to be downloaded.
The selected files are displayed in File.

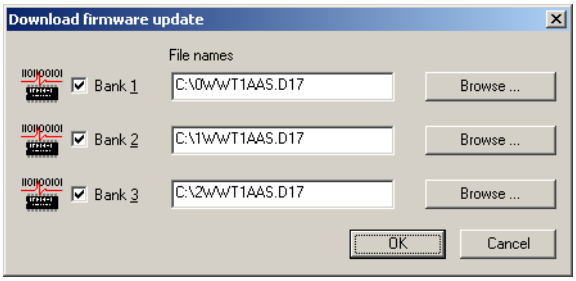

Fig. 11-16

Note:
The files with the checked boxes are downloaded. Up to three files can be downloaded.

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(6) Click "OK".
Downloading starts and the file that is downloaded is displayed.

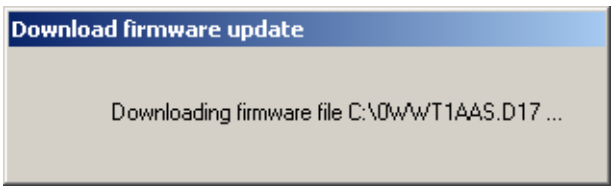

Fig. 11-17

Notes:
- It takes approx. 10 to 15 minutes to download the data.
- The facsimile is automatically reset while downloading.

When the downloading is completed, the following dialog box is displayed.

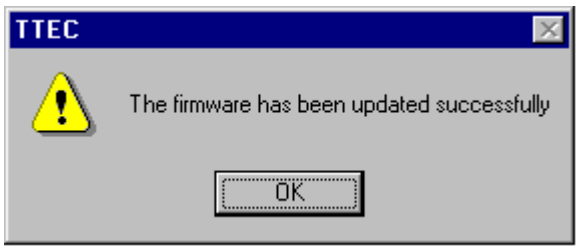

Fig. 11-18

(7) Click "OK".

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12. Appendix

12.1 Sample List

12.1.1 Protocol Trace List

XXXXXXXXXXX

PROTOCOL TRACE LIST

TIME : JAN-31-2005 07:50AM
TEL NUMBER :
NAME :

TIME	S/R	FCF DATA	FIF DATA	ASCII
12:04	S	NSF	0000900010B6FFFFFFFFFFFFFFFFFFFFFFFF8080	
			4050088041800C00000090	@P A
12:04	S	CSI	2020202020202020202020202020202020202020	
12:04	S	DIS	00000000 11110111 10011001 00100011	#
			00000001 11101011 11000000	
12:10	S	NSF	0000900010B6FFFFFFFFFFFFFFFFFFFFFFFF8080	
			4050088041800C00000090	@P A
12:10	S	CSI	2020202020202020202020202020202020202020	
12:10	S	DIS	00000000 11110111 10011001 00100011	#
			00000001 11101011 11000000	

Fig. 12-1

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12.1.2 Error Count List

XXXXXXXXXXX

ERROR COUNT LIST

TIME : JAN-31-2005 07:50AM
TEL NUMBER :
NAME :

TRANSMISSION	STATUS	HISTORY	ACTUAL
		-	-
	00	/	0015/0021
	09	/	0000/0021
	10	/	0000/0021
	11	/	0000/0021
	12	/	0003/0021
	13	/	0000/0021
	20	/	0000/0021
	30	/	0000/0021
	31	/	0000/0021
	32	/	0000/0021
	33	/	0000/0021
	42	/	0000/0021
		/	0000/0021

Fig. 12-2

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12.1.3 Function List for Maintenance

XXXXXXXXXXX

FUNCTION LIST FOR MAINTENANCE

TIME : JAN-31-2005 07:50AM
TEL NUMBER :
NAME :

COUNTRY/REGION 0001

FUNC	0	10101110	AE	PCFUNC	0	10000111	87
FUNC	1	10100011	A3	PCFUNC	1	00100000	20
FUNC	2	10000110	86	PCFUNC	2	00000000	00
FUNC	3	01011000	58	PCFUNC	3	01010010	52
FUNC	4	10101010	AA	PCFUNC	4	00000000	00
FUNC	5	01011011	5B	PCFUNC	5	00000000	00
FUNC	6	00010101	15	PCFUNC	6	00000000	00
FUNC	7	00100111	27	PCFUNC	7	00000000	00
FUNC	8	11100010	E2	HOME	0	00100000	20
FUNC	9	00100100	24	HOME	1	00000000	00
FUNC	10	10110110	B6	HOME	2	00000001	01
FUNC	11	00110000	30	UAD	0	00001111	0F
FUNC	12	00000010	02	UAD	1	11010001	D1
FUNC	13	00111111	3F	UAD	2	00001100	0C
FUNC	14	00101000	28	UAD	3	00010001	11
FUNC	15	01110110	76	UAD	4	01101011	6B
FUNC	16	01010000	50	UAD	5	10100000	A0
FUNC	17	10000011	83	UAD	6	00100101	25
FUNC	18	01011000	58	UAD	7	10000000	80
FUNC	19	10001000	88	UAD	8	11000001	C1
FUNC	20	10001110	8E	UAD	9	00000100	04
FUNC	21	00011000	18	UAD	10	11000011	C3
FUNC	22	11100000	E0	UAD	11	00001111	0F
FUNC	23	11110001	F1	UAD	12	11111111	FF
FUNC	24	00101000	28	UAD	13	11111111	FF
FUNC	25	00000000	00	UAD	14	11111101	FD
FUNC	26	01010001	51	UAD	15	11001100	CC
FUNC	27	11001011	CB	UAD	16	01001000	48
FUNC	28	10101010	AA	UAD	17	00000000	00
FUNC	29	00011111	1F	UAD	18	00000000	00
FUNC	30	01000011	43	UAD	19	00000000	00
				EX TYPE	1	01011000	58
				ACC DGT	1	11111111	FF
						11110000	

Fig. 12-3

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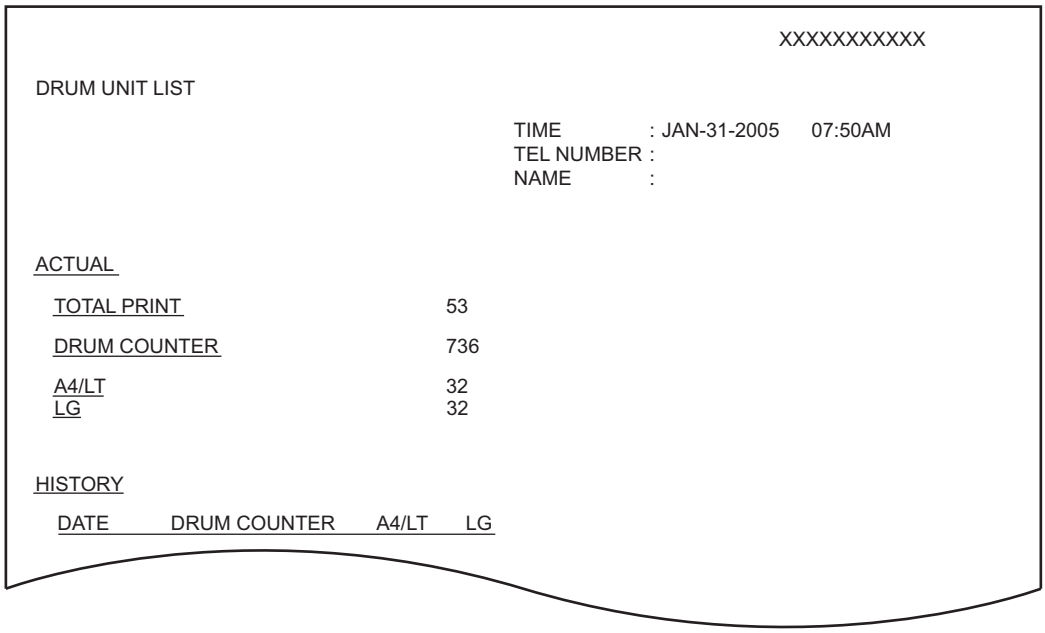
12.1.4 Drum Unit



XXXXXXXXXXX

DRUM UNIT LIST

TIME : JAN-31-2005 07:50AM
TEL NUMBER :
NAME :

ACTUAL

TOTAL PRINT	53
DRUM COUNTER	736
A4/LT	32
LG	32

HISTORY

DATE	DRUM COUNTER	A4/LT	LG

Fig. 12-4

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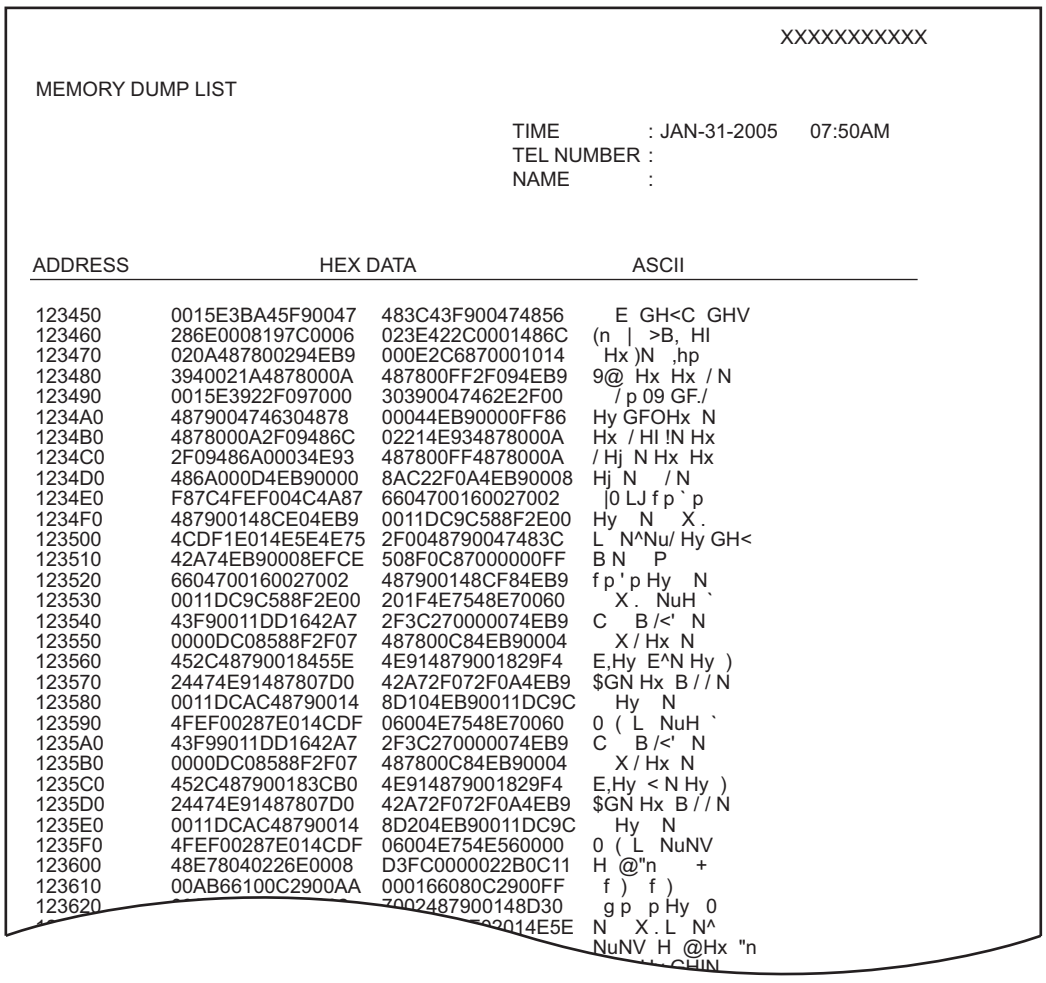
12.1.5 Memory Dump List



XXXXXXXXXXX

MEMORY DUMP LIST

TIME : JAN-31-2005 07:50AM
TEL NUMBER :
NAME :

ADDRESS	HEX DATA		ASCII
123450	0015E3BA45F90047	483C43F900474856	E GH<C GHV
123460	286E0008197C0006	023E422C0001486C	(n | >B, HI
123470	020A487800294EB9	000E2C6870001014	Hx)N ,hp
123480	3940021A4878000A	487800FF2F094EB9	9@ Hx Hx / N
123490	0015E3922F097000	30390047462E2F00	/ p 09 GF./
1234A0	4879004746304878	00044EB90000FF86	Hy GFOHx N
1234B0	4878000A2F09486C	02214E934878000A	Hx / HI !N Hx
1234C0	2F09486A00034E93	487800FF4878000A	/ Hj N Hx Hx
1234D0	486A000D4EB90000	8AC22F0A4EB90008	Hj N / N
1234E0	F87C4FEF004C4A87	6604700160027002	|0 LJ f p ` p
1234F0	487900148CE04EB9	0011DC9C588F2E00	Hy N X .
123500	4CDF1E014E5E4E75	2F00487900047483C	L N^Nu/ Hy GH<
123510	42A74EB90008EFCE	508F0C87000000FF	B N P
123520	6604700160027002	487900148CF84EB9	f p ' p Hy N
123530	0011DC9C588F2E00	201F4E7548E70060	X . NuH `
123540	43F90011DD1642A7	2F3C270000074EB9	C B /<' N
123550	0000DC08588F2F07	487800C84EB90004	X / Hx N
123560	452C48790018455E	4E914879001829F4	E,Hy E^N Hy)
123570	24474E91487807D0	42A72F072F0A4EB9	$GN Hx B / / N
123580	0011DCAC48790014	8D104EB90011DC9C	Hy N
123590	4FEF00287E014CDF	06004E7548E70060	0 (L NuH `
1235A0	43F99011DD1642A7	2F3C270000074EB9	C B /<' N
1235B0	0000DC08588F2F07	487800C84EB90004	X / Hx N
1235C0	452C487900183CB0	4E914879001829F4	E,Hy < N Hy)
1235D0	24474E91487807D0	42A72F072F0A4EB9	$GN Hx B / / N
1235E0	0011DCAC48790014	8D204EB90011DC9C	Hy N
1235F0	4FEF00287E014CDF	06004E754E560000	0 (L NuNV
123600	48E78040226E0008	D3FC0000022B0C11	H @"n +
123610	00AB66100C2900AA	000166080C2900FF	f) f)
123620	[illegible]	7002487900148D30	g p p Hy 0
[illegible]	[illegible]	[illegible]014E5E	N X . L N^
[illegible]	[illegible]	[illegible]	NuNV H @Hx "n
[illegible]	[illegible]	[illegible]	[illegible]CHIN

Fig. 12-5

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12.2 User Function Setting Initial Value List

* The following initial values are based on the US destination.

MACHINE SETTINGS

AUTO RECEIVE MODE	: AUTO
RING DELAY	: 2
DIAL TYPE	: MF
CALL NUMBER	:
REDIAL MODE INTERVAL	: 1MIN
REDIAL MODE COUNTER	: 5
RINGER VOLUME	: 3
ALARM VOLUME	: 3
KEY TOUCH VOLUME	: 3
MONITOR VOLUME	: 3
SUPER ENERGY SAVER	: MANUAL
PRINTER POWER SAVER	: ON
START TIME	: 12:00AM
END TIME	: 12:00AM
ACCOUNT CODE	: OFF
LINE MONITOR	: OFF
RECEIVE INTERVAL	: 3MIN
ECM	: ON
SORT COPY	: OFF
COPY REDUCTION	: OFF
COUNTRY/REGION	: US
LANGUAGE	: ENGLISH

SCANNER & PRINTER

DOCUMENT MODE	
RESOLUTION	: STD
CONTRAST	: NORMAL
DOCUMENT LENGTH	: 1m
PAPER SIZE	
TRAY 1	: LETTER
TRAY 2*	: LETTER
LETTER HEAD PAPER*	: OFF

* When Optional Paper Tray is installed.

TX SETTING

MEMORY TX	: ON
SECURITY TX	: OFF
COVER SHEET	: OFF
RECOVERY TX	: OFF
TTI	: INSIDE
SEND AFTER SCAN	: OFF

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RX SETTING

SECURE RX	: OFF
MEMORY RX	: ON
RX REDUCTION	: ON
DISCARD	: ON
REVERSE ORDER PRINT	: OFF
PRIVILEGED RX	: OFF
RTI	: OFF

LISTS

JOURNAL	
MANUAL	: TX & RX
AUTO	: ON
ERROR CODE	: ON
COMMUNICATION REPORT	
DOCUMENT FEEDER TX	: ALWAYS
MEMORY TX	: ALWAYS(IMAGE)
MULTI ADDRESS TX	: ALWAYS(IMAGE)
MULTI ADDRESS POLL	: ALWAYS
RELAY ORIGINATOR	: ALWAYS(IMAGE)
RECEPTION LIST	
LOCAL MAILBOX	: OFF
REMOTE MAILBOX	: ON

TOTAL PAGES

SCAN	:
PRINT	:
DRUM COUNT	:
ROM VERSION	: XXXXXXXXXXX
	: XXXXXXXXXXX
	: XXXXXXXXXXX

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