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FACSIMILE EQUIPMENT
SERVICE MANUAL

MODELS: **FAX837MC/827/817**
FAX-T106/T104/T102
FAX575

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Preface

This Service Manual is intended for use by service personnel and details the specifications, construction, theory of operation, and maintenance for the Brother machines noted on the front cover. It includes information required for troubleshooting and service--disassembly, reassembly, and lubrication--so that service personnel will be able to understand equipment function, repair the equipment in a timely manner and order spare parts as necessary.

To perform appropriate maintenance so that the machine is always in the best possible condition for the customer, service personnel must adequately understand and apply this manual.

How this manual is organized

This manual is made up of nine chapters and appendices.

CHAPTER 1   PARTS NAMES AND FUNCTIONS

Contains external views and names of components and describes their functions. Information about the keys on the control panel is included to help you check operation or make adjustments.

CHAPTER 2   SPECIFICATIONS

Lists the specifications of each model, which enables you to make a comparison of different models.

CHAPTER 3   THEORY OF OPERATION

Gives an overview of the scanning and printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operation as well as locating defects for troubleshooting.

CHAPTER 4   TRANSFER OF DATA LEFT IN THE MACHINE TO BE SENT FOR REPAIR

Describes how to transfer data left in the machine to be sent for repair. The service personnel should instruct end users to follow the transfer procedure given in this chapter if the machine at the user site cannot print received data due to the printing mechanism defective. End users can transfer received data to another machine to prevent data loss.

CHAPTER 5   DISASSEMBLY/REASSEMBLY AND LUBRICATION

Details procedures for disassembling and reassembling the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to component(s) involved.

At the start of a disassembly job, you check a disassembly order flow that guides you through a shortcut to the object components.

This chapter also covers screw tightening torques and lubrication points to which the specified lubricants should be applied during reassembly jobs.

CHAPTER 6   ADJUSTMENTS AND UPDATING OF SETTINGS REQUIRED AFTER PARTS REPLACEMENT

Details adjustments and updating of settings, which are required if the main PCB has been replaced.

CHAPTER 7   CLEANING

Not applicable.

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CHAPTER 8   MAINTENANCE MODE

Describes the maintenance mode which is exclusively designed for the purpose of checks, settings and adjustments using the keys on the control panel.

In the maintenance mode, you can customize the memory (EEPROM: electrically erasable programmable read-only memory) contents according to the shipment destination of the machine concerned. In addition, you can perform operational checks of the LCD, control panel PCB or sensors, perform a print test, display the log information or error codes, and modify firmware switches (WSW).

CHAPTER 9   ERROR INDICATION AND TROUBLESHOOTING

Details error messages and codes that the incorporated self-diagnostic functions display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which components should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures. This will help service personnel pinpoint and repair defective components.

Appendix 1   Serial Numbering System

Shows the location of serial number labels put on some parts and lists the coding information pertaining to the serial numbers.

Appendix 2   Firmware Installation

Not applicable.

Appendix 3   Customizing Codes According to Shipping Destination

Provides instructions on how to set up the customizing codes for the various preferences exclusively designed for each destination (e.g. language). Those codes are stored in the memory (EEPROM) mounted on the main PCB. If the main PCB is replaced, therefore, you will need to set up the proper customizing code with the machine in the maintenance mode.

Customizing codes come with the firmware data provided by Brother Industries.

Appendix 4   Firmware Switches (WSW)

Describes the functions of the firmware switches, which can be divided into two groups: one is for customizing preferences designed for the shipping destination (as described in Appendix 3) and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

Appendix 5   Wiring Diagram

Provides the wiring diagram that helps you understand the connections between PCBs.

Appendix 6   Circuit Diagrams

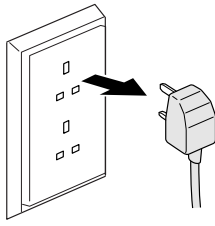Provides the circuit diagrams of the NCU PCB and power supply PCB.
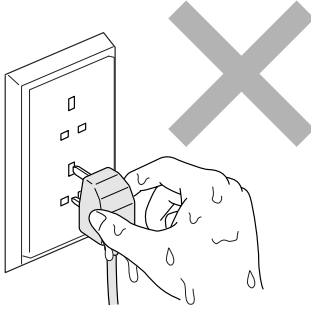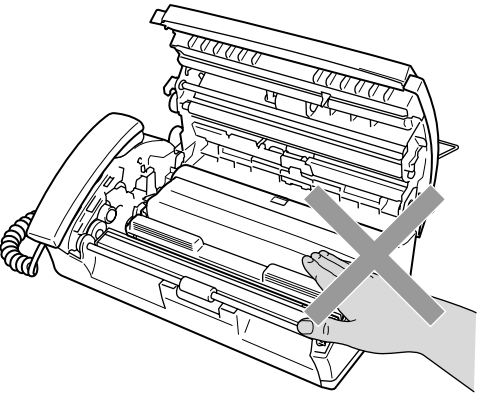
This manual describes the models and their versions destined for major countries. The specifications and functions are subject to change depending upon each destination.

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SAFETY PRECAUTIONS

To use the fax machine safely

Please refer to these instructions for later reference and before attempting any maintenance.

⚠ WARNING

⚡	There are high voltage electrodes inside the fax machine. Before you clean the fax machine, make sure you have unplugged the telephone line cord first and then the power cord from the electrical socket.
⚡	Do not handle the plug with wet hands. Doing this might cause an electrical shock.
⚠	After you have just used the fax machine, some internal parts are extremely **HOT**! Please be careful.

⚠ WARNING

■ Use caution when installing or modifying telephone lines. Never touch telephone wires or terminals that are not insulated unless the telephone line has been disconnected at the wall socket. Never install telephone wiring during a lightning storm. Never install a telephone socket in a wet location.

■ This product must be installed near an electrical socket that is easily accessible. In case of emergencies, you must disconnect the power cord from the electrical socket in order to shut off power completely.

⚠ **IMPORTANT SAFETY INSTRUCTION**

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or washing machine, in a wet basement or near a swimming pool.

2. Avoid using this product (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

3. Do not use this product to report a gas leak in the vicinity of the leak.

4. Use only the power cord provided with the fax machine.

SAVE THESE INSTRUCTIONS

Choosing a location

Place the fax machine on a flat, stable surface that is free of vibration and shocks, such as a desk. Put the fax machine near a telephone socket and a standard, grounded electrical socket. Choose a location where the temperature remains between 10°C-35°C.

⚠ Caution

■ Avoid placing the fax machine in a high-traffic area.

■ Do not place near heaters, air conditioners, water, chemicals, or refrigerators.

■ Do not expose the fax machine to direct sunlight, excessive heat, moisture, or dust.

■ Do not connect the fax machine to electrical sockets controlled by wall switches or automatic timers.

■ Disruption of power can wipe out information in the fax machine's memory.

■ Do not connect the fax machine to electrical sockets on the same circuit as large appliances or other equipment that might disrupt the power supply.

■ Avoid interference sources, such as speakers or the base units of cordless phones.

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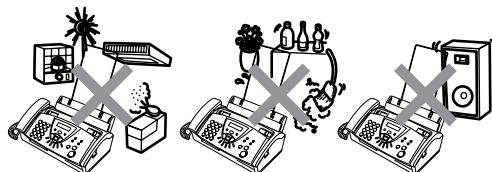
CHAPTER 1

PARTS NAMES & FUNCTIONS

CHAPTER 1 PARTS NAMES & FUNCTIONS

This chapter contains external views and names of components and describes their functions. Information about the keys on the control panel is included to help you check operation or make adjustments.

CONTENTS

1.1 OUTLINE

Front view

(1) Power cord

(2) Telephone line cord

(3) Telephone handset

(4) Handset curled cord

(5) Paper wire extension

(6) Document wire

(7) Paper tray

(8) Paper guides

(9) Control panel

(10) Cover open lever

Rear view

(11) AC power connector

(12) External telephone line socket (not for UK)

(13) Telephone line socket

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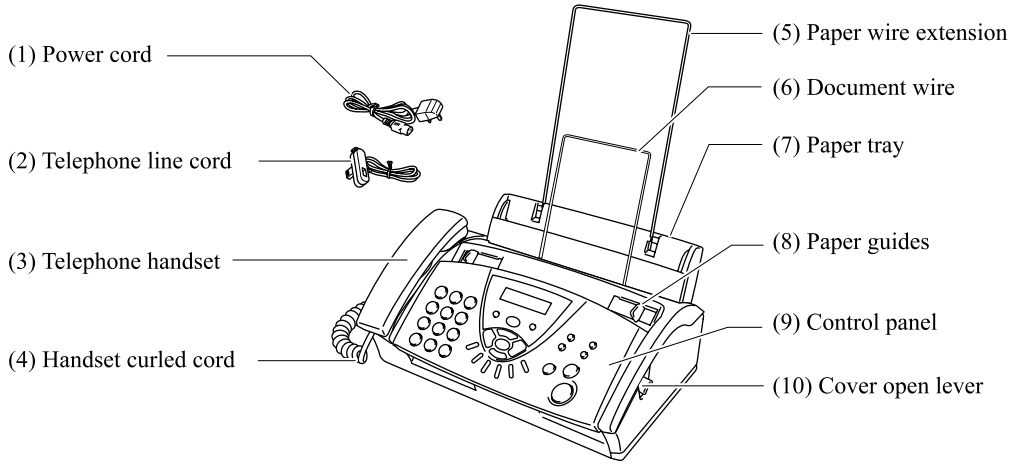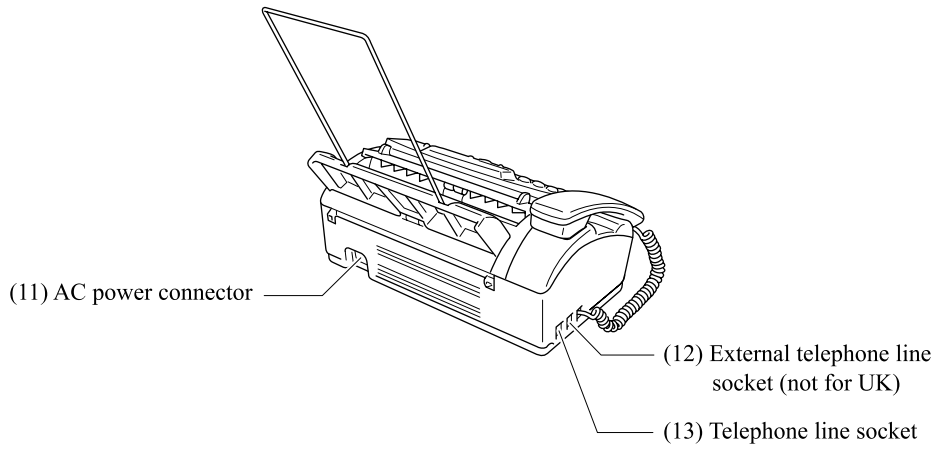
No.	Name	Description
(1)	Power cord	Use to connect the fax machine to the electrical socket.
(2)	Telephone line cord	Connect the fax machine to a telephone wall socket.
(3)	Telephone handset	Use when receiving or making voice calls.
(4)	Handset curled cord	Use to connect the handset to the fax machine.
(5)	Paper wire extension	Supports the paper in the paper tray.
(6)	Document wire	Supports documents in the ADF.
(7)	Paper tray	Load paper here.
(8)	Paper guides	Press and slide to fit the document width.
(9)	Control panel	Use the keys and display to control the fax machine.
(10)	Cover open lever	To open the top cover, lift this lever.
(11)	AC power connector	Plug in the power cord here.
(12)	External telephone line socket (EXT.) (not for UK)	Plug in the telephone line of an external telephone here.
(13)	Telephone line socket (LINE)	Plug in the telephone line here.

1.2 CONTROL PANEL

■ **FAX-T106/FAX837MC**

The model of Fax-T106 is represented to indicate the illustration and description

1. LCD (Liquid Crystal Display)	4. R
Displays messages on the screen to help you set up and operate your fax machine.	Use this key to gain access to an outside line and/or to recall the operator or transfer a call to another extension when it is connected to a PABX.
2. Play/Record	**5. Speaker Phone**
Lets you listen to voice messages and print fax messages stored in memory. This also lets you record telephone calls.	Lets you speak to another party without lifting the handset.
3. Dial Pad	**6. Redial/Pause**
Use these keys to dial telephone and fax numbers and as a keyboard for entering information into the fax machine. # key lets you switch the dialing type during a telephone call from "PULSE" to "TONE".	Redials the last number you called. It also inserts a pause in Quick-Dial numbers.

7. Search/Mute	**14. Erase**
Lets you look up numbers stored in the dialing memory, lets you put calls on hold and lets you dial stored numbers by pressing # and a two-digit number.	Lets you delete voice messages, all fax messages or all messages.

8. Receive Mode	**15. 🎤 (Microphone)**
Use to select how your fax machine will handle incoming calls.	Picks up your voice when you speak to another party using Speaker Phone.

9. Resolution	**16. Digital TAD**
Adjusts the resolution when you send a fax or make a copy.	Lets you activate Message Manager. Also, notifies you that you have voice or fax messages in the memory.

10. Stop/Exit	**17. Navigation Keys**
Stops a fax, cancels an operation or exits from the menu.	**Menu/Set** The same key is used for menu and set operation. Lets you access the menu to program and store your settings in the fax machine.

11. Fax Start	
Starts an operation, such as sending a fax.	◁) ◀ or ▶ ◁)) Press to scroll forward or backward to see a menu selection. - OR - You can press these keys to adjust ring or speaker volume.

12. Copy/Reports	
With a document in the ADF: Makes a copy. Without a document in the ADF: Lets you access the Reports menu.	⌄ or ⌄ Press to scroll through the menus and options. You can also use these keys to do a numerical search for stored numbers.

13. One-Touch Dial Keys	
These keys give you instant access to previously stored Quick-Dial numbers.	

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■ FAX-T102/FAX-T104/FAX575/FAX827/FAX817

The model of Fax-T104 is represented to indicate the illustration and description

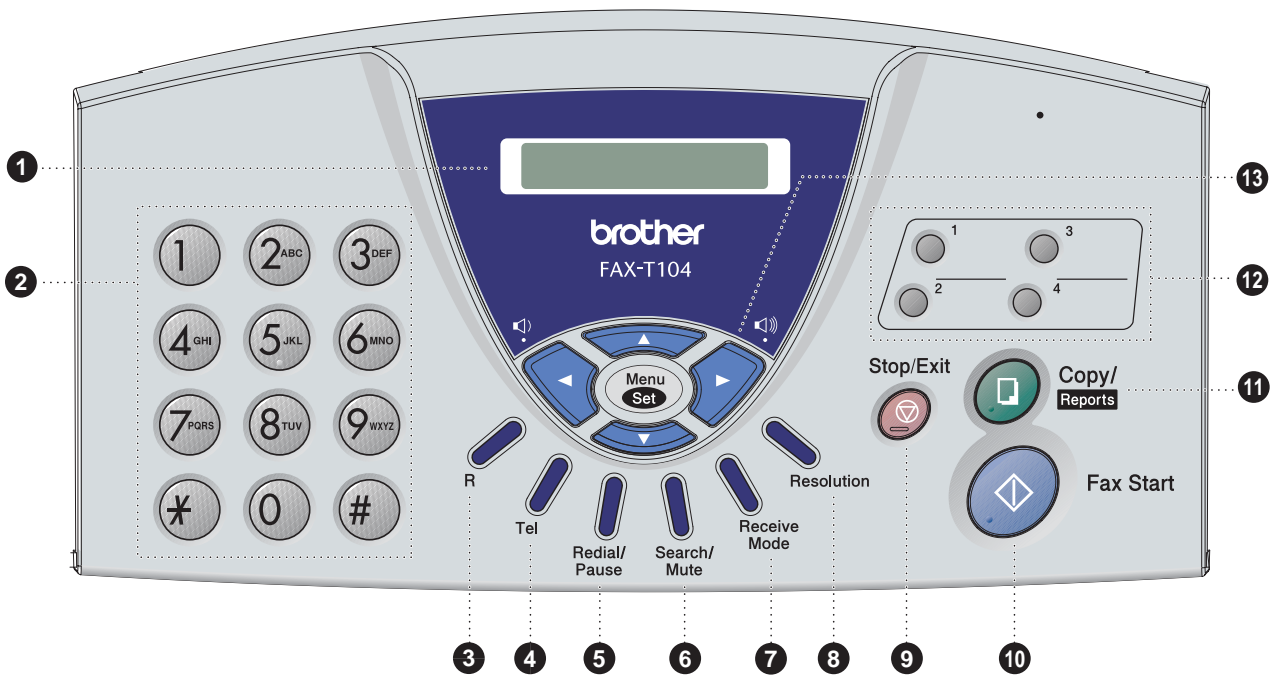| 1. LCD (Liquid Crystal Display)	4. Tel
Displays messages on the screen to help you set up and use your fax machine.	Use to toggle the line between handset and monitor speaker.
2. Dial Pad	**5. Redial/Pause**
Use these keys to dial telephone and fax numbers and as a keyboard for entering information into the fax machine. The # key lets you temporarily switch the dialing type during a telephone call from "PULSE" to "TONE".	Redials the last number you called. It also inserts a pause in Quick-Dial numbers.
3. R	**6. Search/Mute**
Use this key to gain access to an outside line and/or to recall the operator or transfer a call to another extension when it is connected to a PABX.	Lets you look up numbers stored in the dialing memory, lets you put calls on hold and lets you dial stored numbers by pressing # and a two-digit number.

7. Receive Mode

Use to select how your fax machine will handle incoming calls.

8. Resolution

Adjusts the resolution when you send a fax or make a copy.

9. Stop/Exit

Stops a fax, cancels an operation or exits from the menu.

10. Fax Start

Starts an operation, such as sending a fax.

11. Copy/Reports

With document in the ADF: Makes a copy.

Without document in the ADF: Lets you access the Reports menu.

12. One-Touch Keys

These keys give you instant access to previously stored Quick-Dial numbers.

13. Navigation Keys

Menu/Set

The same key is used for menu and set operations. Lets you access the menu to program and store your settings in the fax machine.

◄») ◄ **or** ► ◄»))
Press to scroll forward or backward to see a menu selection.

- OR -

You can press these keys to adjust the beeper, ring or speaker volume.

⌄ **or** ⌄

Press to scroll through the menus and options.

You can also use these keys to do a numerical search for stored numbers.

1.3 COMPONENTS

The machine consists of the following major components:
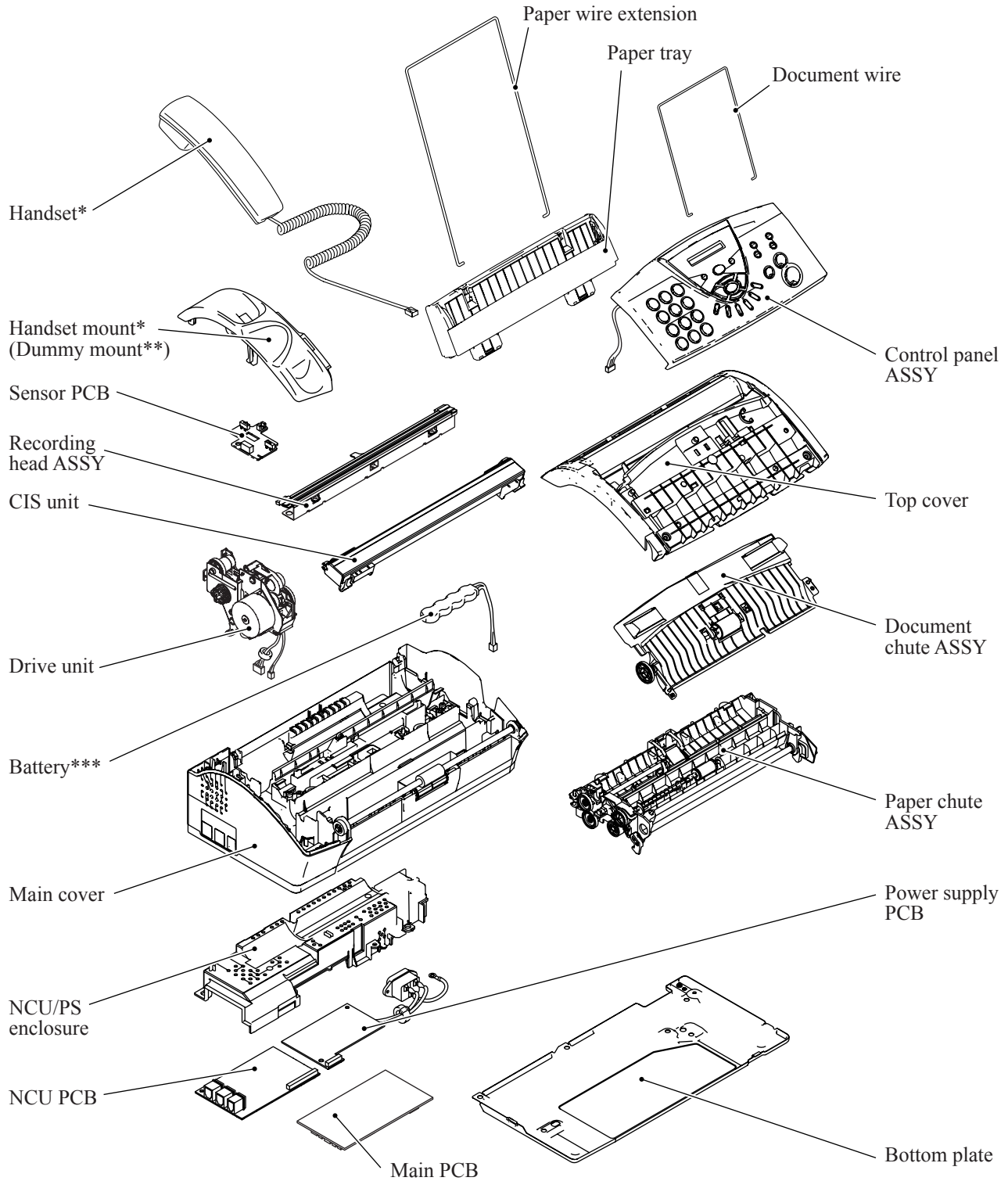
* Not provided on the FAX-T102.
** FAX-T102
*** FAX837MC/FAX-T106

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CHAPTER 2

SPECIFICATIONS

CHAPTER 2 SPECIFICATIONS

This chapter lists the specifications of each model, which enables you to make a comparison of different models.

CONTENTS

2.1 GENERAL

2.1.1 General Specifications

Type	Desktop facsimile transceiver
Memory Capacity	512 KB
Paper Tray	64 g/m^2 – 90 g/m^2: Up to 30 sheets
Paper Output	64 g/m^2 – 90 g/m^2: Up to 20 sheets
Printer Type	Line Thermal with Ribbon
LCD (Liquid Crystal Display)	16 characters x 1 Line
Operating Environment	Temperature: 10 - 35°C
	Humidity: 20 - 80%
Best Print Quality	20 - 30°C
Power Source	220 - 240 VAC 50/60 Hz
Power Consumption	Standby: FAX-T106 under 4.8 watts
	FAX-T104 under 4.4 watts
	Operating: under 160 watts
Dimensions (W x D x H)	11.9 x 7.4 x 5.4 inches (302 x 188 x 138 mm)
(with paper tray and paper wire extension)	11.9 x 10.5 x 13.4 inches (302 x 267 x 340 mm)
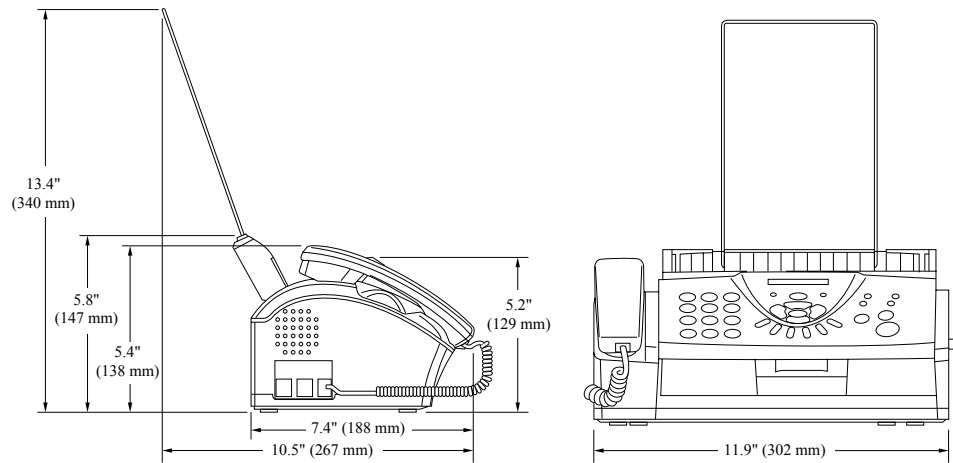
Weight	FAX-T106: 2.8 kg (with components)
	FAX-T104: 2.7 kg (with components)

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2.1.2 Paper Specifications for the Paper Tray

Size: Letter/Legal

Paper capacity of paper tray

Paper weight	Number of sheets
17 lb to 20 lb	Up to 50* sheet
24 lb	Up to 30 sheet

* Temperature: 23°C, Humidity: 50%

Paper specifications for the paper tray

Weight	17 to 24 lb (64 to 90 g/m^2)
Thickness	0.003 to 0.0047 in. (0.08 to 0.12 mm)

Recommended paper: Xerox 4200DP 20lb

The fax machine can only scan an image 208 mm wide, regardless of how wide the paper is.

🚫 Do not use cardboard, newspaper, or fabric.

Do not use paper:

■ that is extremely shiny or highly textured

■ that was previously printed by a printer

■ that cannot be arranged uniformly when stacked

■ that is made with a short grain

■ that is curled, wrinkled, folded, ripped, stapled, paper-clipped, pasted, or taped

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2.2 SPECIFICATIONS LIST

Model Name	FAX575	FAX-T102 (w/o HS) FAX-T104	FAX-T106	FAX817 FAX827	FAX837MC
GENERAL					
Print Engine	Thermal Transfer	Thermal Transfer	Thermal Transfer	Thermal Transfer	Thermal Transfer
Back Up Clock	N/A	9 hours	15 hours	48 hours	48 hours
Operating Environment Temperature	10-35 degree centigrade	10-35 degree centigrade	10-35 degree centigrade	10-35 degree centigrade	10-35 degree centigrade
On Off Switch	N/A	N/A	N/A	N/A	N/A
Demo Model	Yes	N/A	N/A (Demo Melody: Yes)	N/A	N/A (Demo Melody: Yes)
Key for Demo Sheet (US)/ Demo Melody (ASA only)	Demo Print Press <Right> + <Down>	N/A	Demo Melody Press <Right> + <Down>	N/A	Demo Melody Press <Right> + <Down>
Starter Ribbon	Yes (10 m: 30 pages)	Yes (10 m: 30 pages)	Yes (10 m: 30 pages)	Yes (10 m: 30 pages)	Yes (10 m: 30 pages)
Input/Output Length					
ADF	Up to 10 sheets	Up to 10 sheets	Up to 10 sheets	Up to 10 sheets	Up to 10 sheets
Paper Capacity	Up to 50 sheets (see 'Paper' sheet for detail)	Up to 30 sheets	Up to 30 sheets	Up to 30 sheets	Up to 30 sheets
LCD Back Light	N/A	N/A	N/A	N/A	N/A
On-Screen Programming	Yes	Yes	Yes	Yes	Yes
Memory Backup	N/A	N/A	6 hours	N/A	15 hours
Optional Memory	N/A	N/A	N/A	N/A	N/A
Transmission Lock	N/A	TX Lock	TX Lock	TX Lock	TX Lock
Dimensions w/o Carton <W x D x H> (with paper tray, paper wire extension)	302 x 267 x 340 (mm)	302 x 265 x 340 (T102)	302 x 267 x 340 (T106)	302 x 267 x 340 (mm)	302 x 267 x 340 (mm)
Weight w/o Carton (with paper tray, paper wire extension)	2.5 kg	2.6 kg (T102) 2.7 kg (T104)	2.8 kg	2.6 kg (FAX) 2.7 kg (FAX)	2.8 kg
Carton Dimensions <W x D x H>	15.0 x 10.7 x 7.5 (inch) 380 x 271 x 191 (mm)	380 x 271 x 191 (mm)	380 x 271 x 191(mm)	380 x 271 x 191 (mm)	380 x 271 x 191 (mm)
Weight with Carton	3.2 kg	3.3 kg (T102) 3.4 kg (T104) 3.7 kg (T104 PN)	3.5 kg 3.7 kg (T106PN)	3.3 kg (FAX817) 3.4 kg (FAX827)	3.7 kg
Color (see Color sheet)	Upper: Grey1737 Lower: Grey1581	Upper: Grey1581 Lower: Grey1581	Upper: Grey1581 Lower: Grey1581	Upper: Grey1581 Lower: Grey1581	Upper: Grey1581 Lower: Grey1581
Power Source	120VAC 50/60Hz (USA&CAN)	220-240VAC 50/60 Hz	220-240VAC 50/60 Hz	220-240VAC 50/60 Hz	220-240VAC 50/60 Hz
Power Save	N/A	N/A	N/A	N/A	N/A
Sleep Mode	N/A	N/A	N/A	N/A	N/A
Energy Star Compliant (USA only)	Yes	N/A	N/A	N/A	N/A
Melody Alarm (ASIA: MC/TAD only)	N/A	N/A	N/A	N/A	Yes
Remote Maintenance	N/A	N/A	N/A	N/A	N/A
TELEPHONE					
Handset	Yes	Yes (T104) No (T102)	Yes	Yes	Yes
Off Hook Alarm	N/A	N/A	N/A	N/A	N/A
Chain Dialing	Yes	N/A	N/A	N/A	N/A
Automatic Redial	Yes (1 time/5 min.)	Yes (3 times/5 min.)	Yes (3 times/5 min.)	Yes (3 times/5 min.)	Yes (3 times/5 min.)
PBX Feature		Yes	Yes	Yes	Yes
Speaker Phone	Yes (Monitor)	Yes (Monitor)	Yes (Duplex)	Yes (Monitor)	Yes (Duplex)
Handset Volume	Yes (2 steps + AMPLIFY)	Not adjustable	Not adjustable	Not adjustable	Not adjustable
Speaker Volume	Yes (3 steps + off)	Yes (3 steps + off)	Yes (4 steps + off)	Yes (3 steps + off)	Yes (4 steps + off)
Ring Volume	Yes (3 steps + off)	Yes (3 steps + off)	Yes (4 steps + off)	Yes (3 steps + off)	Yes (4 steps + off)
Hold/Mute Key	Yes-Hold key	Yes-Mute key	Yes-Mute key	Yes-Mute key	Yes-Mute key
Music On Hold	N/A	Yes	4 Melody	Yes	4 Melody
Monitoring the Line with Music	N/A	N/A	Yes	N/A	Yes
Ring Pattern with Music (MC/TAD only)	N/A	N/A	4 Melody + Signal	N/A	4 Melody + Signal
One-Touch Dial	4 stations	4 stations	4 stations	4 stations	4 stations
Speed Dial	100 stations	100 stations	100 stations	100 stations	100 stations
Figures of One-Touch & Speed Dial	20 digits	20 digits	20 digits	20 digits	20 digits
Registerable Number of Characters	15 characters	15 characters	15 characters	15 characters	15 characters
Group Dial	Yes (up to 4)	Yes (up to 4)	Yes (up to 4)	Yes (up to 4)	Yes (up to 4)
Telephone Index	Search/Speed Dial key	Search/Mute key	Search/Mute key	Search/Mute key	Search/Mute key
Pre-registered FAX BACK SYSTEM (USA)	N/A	N/A	N/A	N/A	N/A
Caller ID	Yes	T102: FRA/GER/AUS T104: HOL/UK/IRE/FRA BEL/DEN/SPA/GER/ AUS/POR/ITA/PN-NOR/ PN-DEN/PN-SWE	T96: HOL/UK/IRE/FRA BEL/DEN/SPA/GER/ AUS/POR/ITA/PN-NOR PN-DEN/PN-SWE	Yes	Yes
Call Waiting Ready (only for USA)	Yes	N/A	N/A	N/A	N/A
Call Waiting Caller ID (only for USA)	Yes	N/A	N/A	N/A	N/A
Distinctive Ringing	Yes	Yes: UK, DEN, PN-DEN	Yes: UK, DEN, PN-DEN	Yes	Yes

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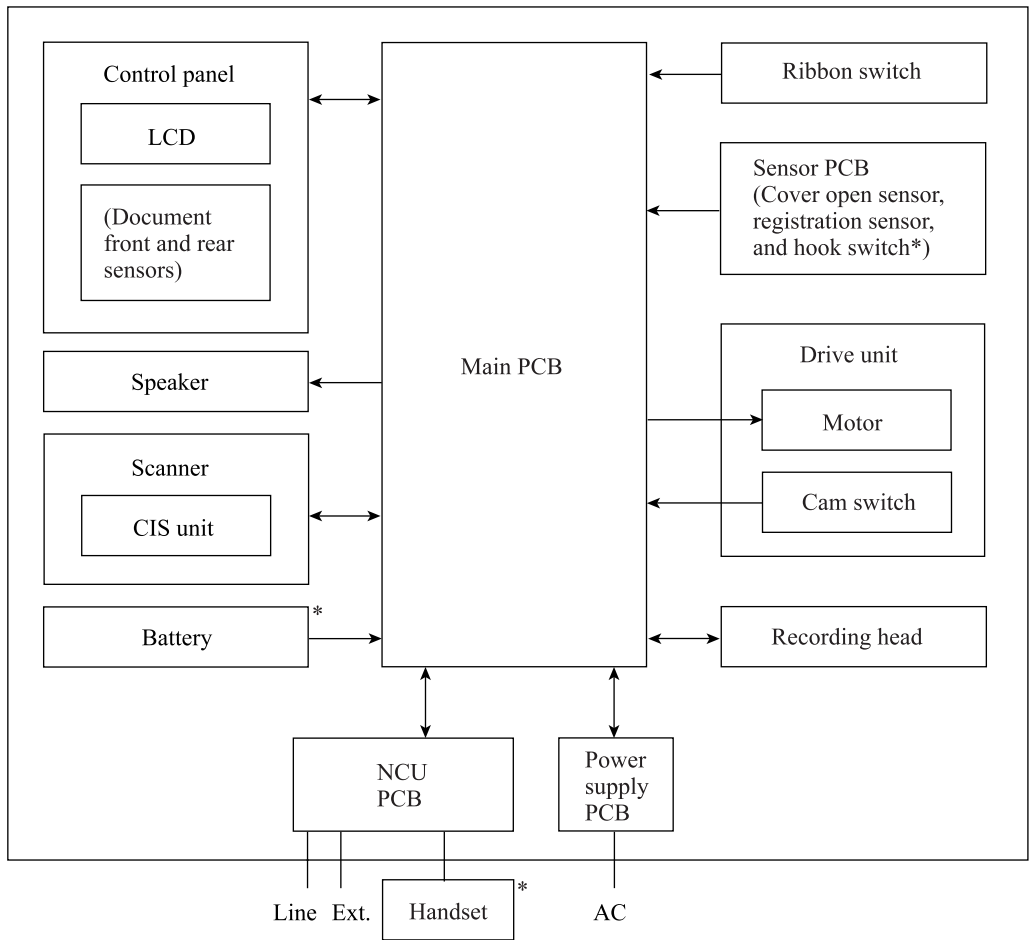| Model Name	FAX575	FAX-T102 (w/o HS) FAX-T104	FAX-T106	FAX817 FAX827	FAX837MC
FAX					
Modem Speed	9600	9600	14400	9600	14400
Transmission Speed	Approx. 15 sec.	Approx. 15 sec.	Approx. 9 sec.	Approx. 15 sec.	Approx. 9 sec.
ITU-T Group	G3	G3	G3	G3	G3
Coding Method	MH	MH	MH	MH	MH
Fax/Tel Switch	Yes	Yes	Yes	Yes	Yes
Super Fine	Yes	Yes	Yes	Yes	Yes
Gray Scale	64 levels	64 levels	64 levels	64 levels	64 levels
Contrast	Auto/Light/Dark	Auto/Light/Dark	Auto/Light/Dark	Auto/Light/Dark	Auto/Light/Dark
Smoothing	Yes	Yes	Yes	Yes	Yes
Dual Access	N/A	N/A	N/A	N/A	N/A
Enhanced Remote Activate	Yes	Yes	Yes	Yes	Yes
Station ID	Yes	Yes	Yes	Yes	Yes
RX Mode Indication	LCD	LCD	LCD	LCD	LCD
Delayed Timer	Yes (up to 3)	Yes (up to 3)	Yes (up to 3)	Yes (up to 3)	Yes (up to 3)
Polled Sending	Yes	Sta/Sec	Sta/Sec	Sta/Sec	Sta/Sec
Multi Transmission	N/A	N/A	N/A	N/A	N/A
Multi Resolution Transmission	Yes	Yes	Yes	Yes	Yes
Next-Fax Reservation	Yes	Yes	Yes	Yes	Yes
Batch Transmission	N/A	N/A	N/A	N/A	N/A
Call Reservation Over Auto TX	Yes	Yes	Yes	Yes	Yes
Call Reservation Over Manual TX	N/A	N/A	N/A	N/A	N/A
Quick Scan (Memory Transmission)	Yes	Yes	Yes	Yes	Yes
Memory Transmission (ITU-T Chart)	Yes (up to 20 pages)	Yes (up to 20 pages)	Yes (up to 20 pages)	Yes (up to 20 pages)	Yes (up to 20 pages)
ECM (Error Correction Mode)	Yes	Yes	Yes	Yes	Yes
Error Re-Transmission	N/A	N/A	N/A	N/A	N/A
Broadcasting	Yes (104 locations)	Yes (104 locations)	Yes (104 locations)	Yes (104 locations)	Yes (104 locations)
Manual Broadcasting	N/A	N/A	N/A	N/A	N/A
Easy Receive/Fax Detect	Yes	Yes	Yes	Yes	Yes
Polling Receiving	Sta/Seq	Sta/Sec/Timer/Seq	Sta/Sec/Timer/Seq	Sta/Sec/Timer/Seq	Sta/Sec/Timer/Seq
Auto Reduction	Yes	Yes	Yes	Yes	Yes
Out of Paper Reception (ITU-T Chart)	25 pages	25 pages	25 pages	25 pages	25 pages
Anti-Junk Fax (for Asia)	N/A	N/A	N/A	Yes (ASA/GULF/HK)	Yes (ASA/GULF/HK)
LIST/REPORT					
Activity Report/Journal Report	Yes (Up to 30) in Report key	Yes (Up to 30) in Report key	Yes (Up to 30) in Report key	Yes (Up to 30) in Report key	Yes (Up to 30) in Report key
Transmission Verification Report	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
Cover Page	Yes	Yes	Yes	Yes	Yes
Help List	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
Call Back Message	Yes	Yes	Yes	Yes	Yes
Caller ID List	Yes (Caller ID key)	Yes	Yes	Yes	Yes
Quick-Dial List	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
Tel-Index List	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
Memory Status List	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
System Setup (User Setting) List	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)	Yes (in Report key)
Order Form	N/A	N/A	N/A	N/A	N/A
INTERFACE					
External TAD Interface	Yes	Yes	Yes	Yes	Yes
COPY					
Multi Copy (Stack)	Yes (up to 99)	Yes (up to 99)	Yes (up to 99)	Yes (up to 99)	Yes (up to 99)
Multi Copy (Sort)	Yes	Yes	Yes	Yes	Yes
Reduction/Enlargement Ratio	50-150 %	50-150 %	50-150 %	50-150 %	50-150 %
MESSAGE CENTER/MESSAGE MANAGER					
TAD Type	N/A	N/A	Yes	N/A	Yes
ICM Recording Time	N/A	N/A	20-60 sec.	N/A	20-60 sec.
OGM	N/A	N/A	Yes	N/A	Yes
Memo/Recording Conservation	N/A	N/A	Yes	N/A	Yes
Toll Saver	N/A	N/A	Yes	N/A	Yes
Remote Access	Yes	Yes	Yes	Yes	Yes
Fax Retrieval	Yes	Yes	Yes	Yes	Yes
Fax Forwarding	Yes	Yes	Yes	Yes	Yes
Paging	Yes	N/A	N/A	N/A	N/A
ACCESSORY					
Ribbon Cartridge (US: Letter size, EU/ASA: A4 size)	PC-501: 47 m (150 pgs)	PC-75: (incl. 144 page	PC-75: (incl. 144 page	PC-501: 47 m (150 pgs)	PC-501: 47 m (150 pgs)

CHAPTER 3

THEORY OF OPERATION

CHAPTER 3 THEORY OF OPERATION

This chapter gives an overview of the scanning and printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operation as well as locating defects for troubleshooting.

CONTENTS

3.1 OVERVIEW

```
┌─────────────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────┐            ┌──────────────┐      ┌──────────────┐   │
│  │ Control panel        │            │              │ ◄──  │ Ribbon switch│   │
│  │  ┌────────────────┐  │ ◄────────► │              │      └──────────────┘   │
│  │  │     LCD        │  │            │              │                         │
│  │  └────────────────┘  │            │              │      ┌──────────────┐   │
│  │                      │            │              │      │ Sensor PCB   │   │
│  │  ┌────────────────┐  │            │              │ ◄──  │ (Cover open  │   │
│  │  │ (Document      │  │            │              │      │ sensor,      │   │
│  │  │ front and rear │  │            │              │      │ registration │   │
│  │  │ sensors)       │  │            │              │      │ sensor, and  │   │
│  │  └────────────────┘  │            │              │      │ hook switch*)│   │
│  └──────────────────────┘            │              │      └──────────────┘   │
│  ┌──────────────────────┐            │  Main PCB    │      ┌──────────────┐   │
│  │     Speaker          │ ◄───────   │              │      │ Drive unit   │   │
│  └──────────────────────┘            │              │      │ ┌──────────┐ │   │
│  ┌──────────────────────┐            │              │ ───► │ │  Motor   │ │   │
│  │     Scanner          │            │              │      │ └──────────┘ │   │
│  │  ┌────────────────┐  │ ◄────────► │              │      │ ┌──────────┐ │   │
│  │  │    CIS unit    │  │            │              │ ◄──  │ │Cam switch│ │   │
│  │  └────────────────┘  │            │              │      │ └──────────┘ │   │
│  └──────────────────────┘            │              │      └──────────────┘   │
│  ┌──────────────────────┐ *          │              │      ┌──────────────┐   │
│  │     Battery          │ ───►       │              │ ◄──► │Recording head│   │
│  └──────────────────────┘            └──────────────┘      └──────────────┘   │
│                                       ▲        ▲                               │
│              ┌──────────┐         ┌────────┐                                   │
│              │  NCU     │         │ Power  │                                   │
│              │  PCB     │         │ supply │                                   │
│              │          │         │ PCB    │                                   │
│              └──────────┘         └────────┘                                   │
└─────────────────────────────────────────────────────────────────────────────┘
      Line  Ext. ┌──────────┐*      AC
                 │ Handset  │
                 └──────────┘
```

*Not provided on the FAX-T102.

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# 3.2 MECHANICAL COMPONENTS

This machine consists of the following mechanisms and uses a single motor and various sensors.

- ■ Scanning Mechanism
  - Document feeding & ejecting mechanism
  - Document scanning mechanism

- ■ Printing Mechanism
  - Paper feeding and registration mechanism
  - Printing and paper ejecting mechanism

- ■ Power Transmission Switching Mechanism

- ■ Sensors and Actuators
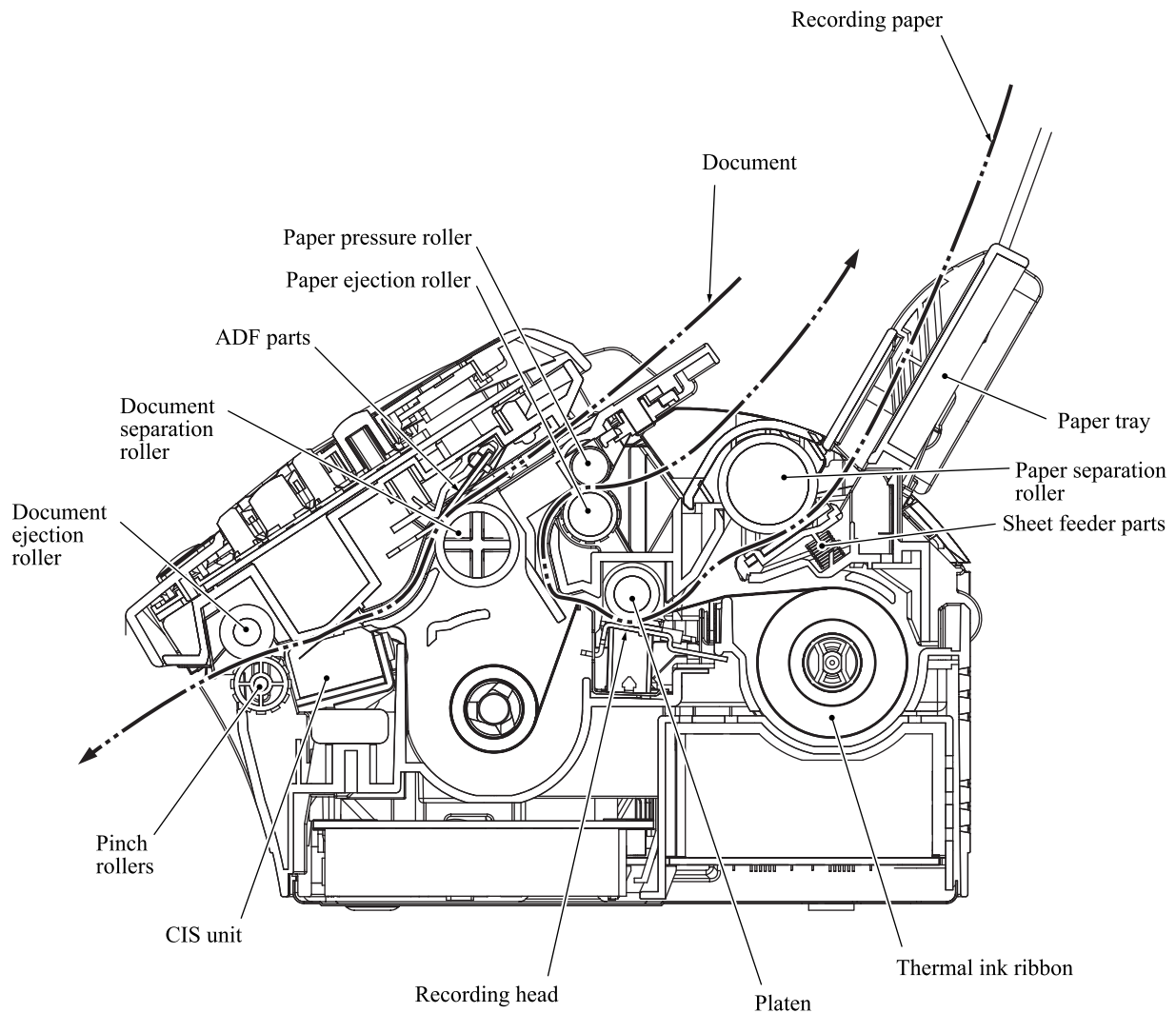
3.2.1 Scanning Mechanism

The scanning mechanism consists of the automatic document feeder (ADF), document separation roller, CIS unit (scanner), document ejection roller, and document sensors. (For details about the sensors, refer to Section 3.2.4.)

Document feeding and ejecting mechanism

Placing documents *face down* in the ADF and starting the scanning operation activate the drive motor so that the ADF (consisting of the document separation roller and ADF parts) feeds the documents into the machine, *starting from the bottom* (first page), page by page. Each document advances with the document separation roller to the scanner, and then it is fed out of the machine with the document ejection roller.

Document scanning mechanism

The scanner uses a contact image sensor (CIS) unit which consists of the document illumination LED array, the self-focus lens array gathering the light reflected from the scanned image, the CIS PCB converting the light input to picture element data output, and CIS glass on which a document advances. When the document passes between the white-level reference film (attached to the top cover) and the CIS glass, it is scanned.

3.2.2 Printing Mechanism

The printing mechanism consists of the paper tray, sheet feeder (SF), paper separation roller, platen, thermal recording head, paper ejection roller, and sensors. (For details about the sensors, refer to Section 3.2.4.)

Paper feeding and registration mechanism

Place the recording paper *face down* in the paper tray. When receiving operation starts, the SF (paper separation roller and SF parts) feeds paper into the machine, a sheet at a time. After the leading edge of paper passes through the registration sensor actuator, the paper is further fed for the specified time length. Accordingly, the leading edge will reach the platen where the paper skew will be eliminated.

Printing and paper ejecting mechanism

The platen feeds the paper to the printing position where the thermal recording head prints while the thermal ink ribbon advances. Then the paper is fed out of the machine with the paper ejection roller.

3.2.3 Power Transmission Switching Mechanism

This machine has a single drive motor whose power transmission route can be switched by the planetary gear system and by changing the motor rotation direction. This switching allows the machine to function in five operation modes—scanning, paper feeding, recording, paper ejecting, and copying modes.

To switch to a particular mode, the motor rotates in the reverse direction. If the switching cam of the planet gear ASSY turns on the cam switch, the motor further rotates by the specified number of pulses to locate the planet gear ASSY in the particular mode position. Then the motor rotates in the forward direction to enter the particular mode.
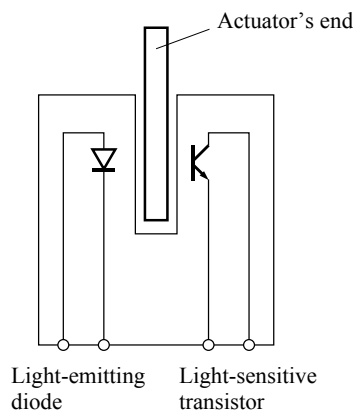
3.2.4 Sensors and Actuators

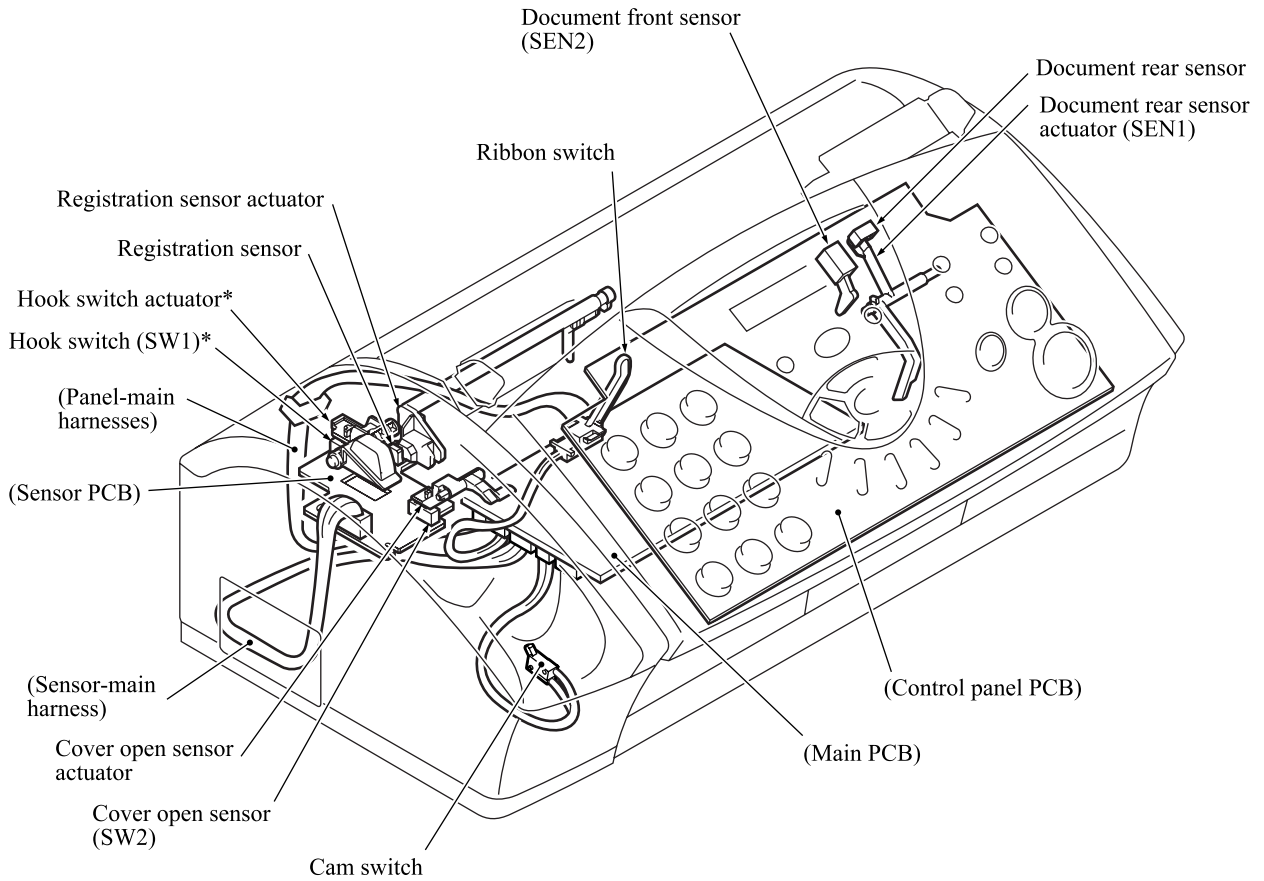This machine uses the following photosensors and microswitches.

Sensor Name	Sensor Type	Location
Document front sensor	Microswitch (SEN2)	On the control panel PCB
Document rear sensor	Photosensor (SEN1)	
Cover open sensor	Microswitch (SW2)	On the sensor PCB
Hook switch*	Microswitch (SW1)	
Registration sensor	Photosensor	
Ribbon switch	Microswitch	In the main cover
Cam switch	Microswitch	On the drive unit

*Not provided on the FAX-T102.

- The document front sensor detects whether there is a document in the ADF.

- The document rear sensor detects the leading and trailing edges of document pages, indicating to the control circuitry the point at which to start reading and when page scanning is complete.

- The cover open sensor detects whether the top cover is properly closed.

- The hook switch* sensor detects whether the handset is placed on the handset mount.

- The registration sensor detects the leading and trailing edges of paper for use in determining registration timing and detecting paper jams.

- The ribbon switch detects whether the print cartridge (ink ribbon) is loaded.

- The cam switch detects the drive positions of the switching cam in the drive unit.

The document rear sensor and registration sensor are a photointerrupter consisting of a light-emitting diode and a light-sensitive transistor. Each of them has an actuator separately arranged (see the next page). When an actuator is not activated, its black end lies in the path of light issued from the light-emitting diode and interrupts its light so that the emitted light does not enter the light-sensitive transistor. If paper or ribbon comes in so as to activate the actuator, the actuator's black end goes out of the light path and the emitted light enters the light-sensitive transistor. This way, the sensor detects the presence of document or print cartridge.

Actuator's end

Light-emitting diode   Light-sensitive transistor

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Document front sensor
(SEN2)

Document rear sensor

Document rear sensor
actuator (SEN1)

Ribbon switch

Registration sensor actuator

Registration sensor

Hook switch actuator*

Hook switch (SW1)*

(Panel-main
harnesses)

(Sensor PCB)

(Sensor-main
harness)

Cover open sensor
actuator

Cover open sensor
(SW2)

Cam switch

(Control panel PCB)

(Main PCB)

*Not provided on the FAX-T102.

Sensors and Actuators Locations

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3.3 CONTROL ELECTRONICS

3.3.1 Components

The following illustration shows the hardware components for this machine. The corresponding connection diagram appears in Appendix 5.
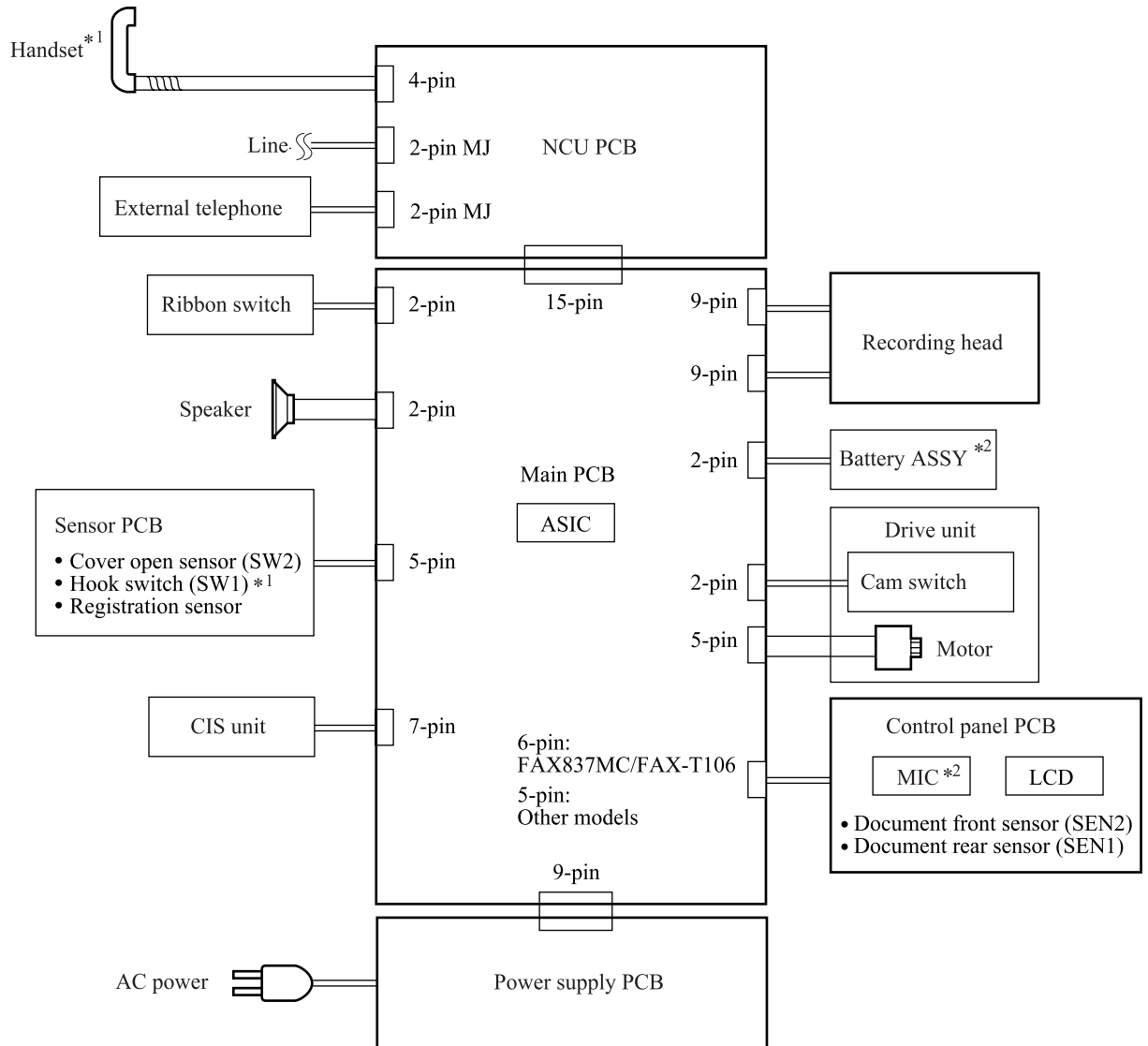
*1 Not provided on the FAX-T102.
*2 FAX837MC/FAX-T106

Machine Components

CHAPTER 4

TRANSFER OF DATA LEFT IN THE MACHINE TO BE SENT FOR REPAIR

CHAPTER 4 TRANSFER OF DATA LEFT IN THE MACHINE TO BE SENT FOR REPAIR

This chapter describes how to transfer data left in the machine to be sent for repair. The service personnel should instruct end users to follow the transfer procedure given in this chapter if the machine at the user site cannot print received data due to the printing mechanism defective. End users can transfer received data to another machine to prevent data loss.

CONTENTS

4.1 TRANSFERRING RECEIVED FAX DATA

When the machine at the user site requires to be repaired, unplugging the power cord from the wall socket for sending the machine for repair will lose received FAX data if unprinted and left in the machine.

To prevent such data loss, the service personnel should instruct end users (e.g., by telephone) to transfer data to another facsimile machine using the procedure below.

NOTE: The number of files that can be transferred <u>at a time</u> is 99. To transfer 100 files or more, carry out the following procedure more than one time.

TIP: If there are both color and monochrome data in a file to be transferred, the monochrome data will be transferred first. If the receiver machine does not support the color function, the sender machine cannot transfer color data, resulting in an error.

■ **Operating Procedure**

(1) Connect the machine to be repaired (that has received data in the memory) to the telephone line.

(2) Switch the machine on.

(3) Press the **Menu/Set**, **Fax Start**, **Menu/Set**, **5** and **3** keys in this order to access user-accessible functions of the maintenance mode.

The "FAX TRANSFER" appears on the LCD.

(4) <u>To transfer received files</u>, press the **1** key.

The "1.FAX TRANSFER" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.

(5) <u>To transfer the activity report only</u>, press the **2** key.

The "2.REPORT TRANS" appears.

(6) <u>To check the number of received files</u>, press the **3** key.

The "**3**.NO. OF JOBS" appears on the LCD.

Press the **Menu/Set** key, and the number of received files appears, just as "NO. OF. JOBS: 10."

(7) With the "1.FAX TRANSFER" or "2.REPORT TRANS" being displayed, press the **Menu/Set** key.

The "ENTER&SET" appears.

(8) Enter the telephone number of the receiver machine and press the **Menu/Set** key again.

NOTE: Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.

The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.

No station ID is attached.

CHAPTER 5

DISASSEMBLY/REASSEMBLY AND LUBRICATION

CHAPTER 5 DISASSEMBLY/REASSEMBLY AND LUBRICATION

This chapter details procedures for disassembling and reassembling the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to component(s) involved.

At the start of a disassembly job, you check the disassembly order flow that guides you through a shortcut to the object components.

This chapter also covers screw tightening torques and lubrication points to which the specified lubricants should be applied during reassembly jobs.

CONTENTS

5.1 DISASSEMBLY/REASSEMBLY

■ Safety Precautions

To prevent the creation of secondary problems by mishandling, observe the following precautions during maintenance work.

(1) Before starting disassembly/reassembly jobs, <u>unplug the power cord and telephone line</u>.

   In particular, when having access to the power supply inside the machine, make sure that the power cord is unplugged from the electrical outlet; when having access to the main PCB or NCU PCB, make sure that both the power cord and telephone line are unplugged from the machine.

(2) Be careful not to lose screws, washers, or other parts removed for parts replacement.

(3) When using soldering irons and other heat-generating tools, take care not to damage the resin parts such as wires, PCBs, and covers.

(4) Static electricity charged in your body may damage electronic parts.

   Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body. When transporting PCBs, be sure to wrap them in conductive sheets such as aluminum foil.

   When replacing the head/carriage unit, put on a grounding wrist band and perform the job on a static mat. Also take care not to touch the conductor sections on the flat cables.

(5) Be sure to reinsert self-tapping screws correctly, if removed.

(6) Tighten screws to the torque values listed on the next page.

(7) When connecting or disconnecting cable connectors, hold the connector bodies not the wires. If the connector has a lock, always slide the connector lock to unlock it.

(8) After repairs, check not only the repaired portion but also that the connectors and other related portions function properly before operation checks.

■ **Tightening Torque**

Location of screw	Screw type	Q'ty	Tightening torque N•m (kgf•cm)
Cover stopper link	Taptite, pan B M4x6D10	1	0.69 ±0.2 (7 ±2)
Paper chute ASSY	Taptite, cup B M3x8	3	0.39 ±0.2 (4 ±2)
Document chute ASSY	Taptite, cup B M3x8	2	0.39 ±0.2 (4 ±2)
ADF parts	Taptite, pan B M3x6	1	0.39 ±0.2 (4 ±2)
Top cover	Taptite, cup B M3x8	1	0.39 ±0.2 (4 ±2)
Sensor PCB	Taptite, cup B M3x10	1	0.49 ±0.2 (5 ±2)
Bottom plate	Taptite, cup B M3x10	4	0.5 ±0.2 (5 ±2)
	Taptite, cup S M3x6	1	0.7 ±0.2 (7 ±2)
Grounding wire	Screw, pan (washer) M4x7DB	1	0.7 ±0.1 (7 ±1)
Drive unit	Taptite, cup B M3x10	2	0.5 ±0.2 (5 ±2)
Motor chassis	Taptite, cup B M3x8	2	0.7 ±0.1 (7 ±1)
Drive motor	Taptite, cup S M3x6	1	0.7 ±0.1 (7 ±1)
CIS holder	Taptite, bind B M3x8	2	0.39 ±0.2 (4 ±2)
NCU/PS enclosure	Taptite, cup B M3x10	1	0.49 ±0.2 (5 ±2)
Power inlet	Taptite, cup B M3x10	2	0.49 ±0.2 (5 ±2)
Grounding plate	Taptite, cup S M3x6	1	0.49 ±0.1 (5 ±1)
Recorder frame	Taptite, cup B M3x8	2	0.49 ±0.2 (5 ±2)

■ Preparation

Prior to proceeding with the disassembly procedure,

(1) Unplug
- the power cord from the electrical outlet and the machine,
- the modular jack of the telephone line from the machine,
- the modular jack of the curled cord* (and remove the handset*), and
- the modular jack of the external telephone set if connected (not shown below).

(2) Remove
- the document wire,
- the paper tray and paper wire extension, and
- the print cartridge.

*Not provided on the FAX-T102.

Print cartridge

Paper wire extension

Document wire

Handset*

Telephone line cord

Power cord

Paper tray
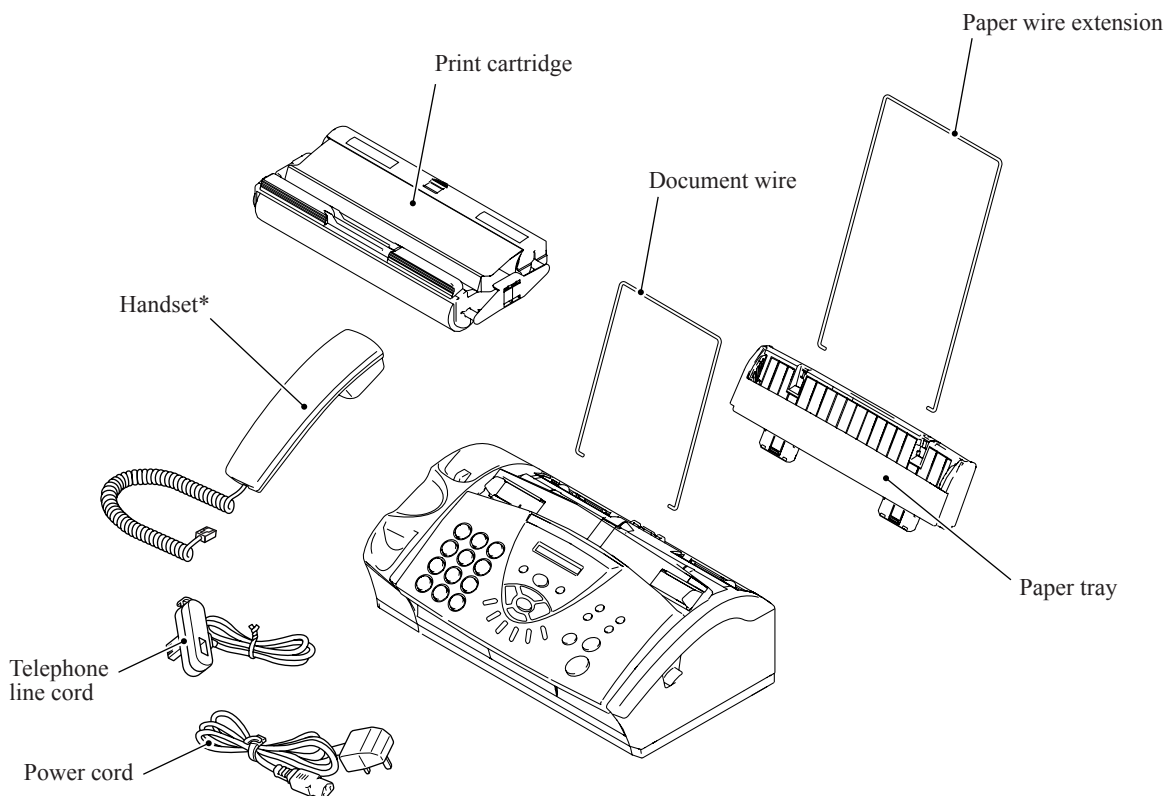
■ How to Access the Object Component

- On the next page is a disassembly flowchart which helps you access the object components. To remove the drive unit, for example, first find it on the flowchart and note its number (5.1.10) in this case). To access it, you need to remove all the parts above the drive unit on the flowchart (5.1.1), 5.1.2), 5.1.7) and 5.1.9) in this case) before the drive unit itself can be removed.

- Unless otherwise specified, all parts should be replaced in the reverse order to which they were removed to reassemble the machine.

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■ Disassembly Flowchart

(5.1.1) Handset mount
- Cover open sensor actuator
- Hook switch actuator

Dummy mount
- Cover open sensor actuator

*

**

(5.1.2) Cover stopper link

* For models except FAX-T102
** For FAX-T102

(5.1.2) Top cover ASSY

(5.1.3) Separation roller gear 29

(5.1.3) Paper chute ASSY

(5.1.4) Chute film

(5.1.4) Sheet feeder parts

(5.1.4) Paper ejection roller ASSY

(5.1.4) Registration sensor actuator

(5.1.4) Lock bar and levers

(5.1.4) Platen

(5.1.3) Top cover sub ASSY

(5.1.5) Paper feed roller

(5.1.5) Document chute ASSY

(5.1.5) Top cover

(5.1.5) Document separation roller

(5.1.5) ADF parts

(5.1.5) White-level reference film

(5.1.5) Control panel ASSY

(5.1.6) Control panel PCB -Document front and rear sensors

(5.1.6) Microphone (FAX837MC/ FAX-T106)

(5.1.6) Rubber keypad

(5.1.6) LCD

(5.1.5) Document rear sensor actuator

(5.1.9) Bottom plate

(5.1.8) Recording head ASSY

(5.1.7) Sensor PCB
- Cover open sensor
- Registration sensor
- Hook switch
  (Not provided on FAX-T102)

(5.1.12) CIS unit

(5.1.13) NCU/PS enclosure

(5.1.12) CIS holders

(5.1.12) Battery ASSY (FAX837MC/ FAX-T106)

(5.1.13) NCU PCB

(5.1.13) Power supply PCB

(5.1.13) Power inlet

(5.1.10) Drive unit
- Drive motor
- Arm HP switch

(5.1.15) Speaker

(5.1.13) Main PCB

(5.1.14) Ribbon switch

(5.1.11) Document ejection roller

(5.1.14) Grounding plate

(5.1.11) Pinch rollers

(5.1.16) Recorder frame

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5.1.1 Handset Mount* (Dummy Mount**), Hook Switch Actuator, and Cover Open Sensor Actuator

*For models except FAX-T102, **For FAX-T102

(1) Open the top cover by lifting the cover open lever.

(2) Press the inside of the handset mount* (or dummy mount**) to unlatch and twist it in the direction of the arrow shown below.

Cover open lever

Top cover

Handset mount*
(Dummy mount**)

Latch

Main cover

Hooks

①

②

Handset mount*
(Dummy mount**)

Main cover

Setting the handset mount* (dummy mount **)
back into place

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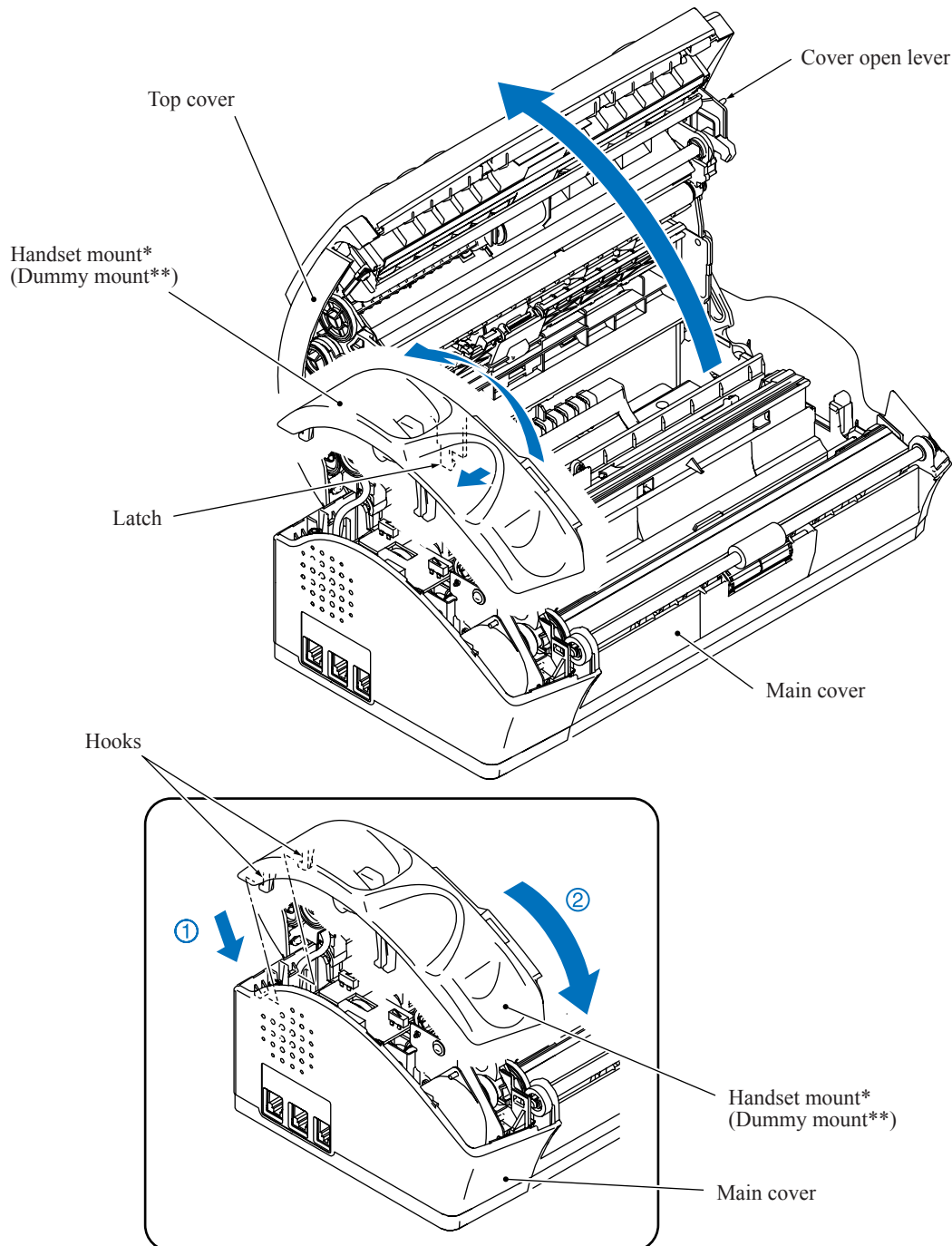
(3) To remove the hook switch actuator* or cover open sensor actuator from the handset mount*, pull the corresponding actuator support outwards and lift up the actuator. The corresponding actuator spring also comes off.

Cover open sensor actuator

Hook switch actuator*

Actuator spring*

Actuator spring

Actuator support

Handset mount*

Actuator support
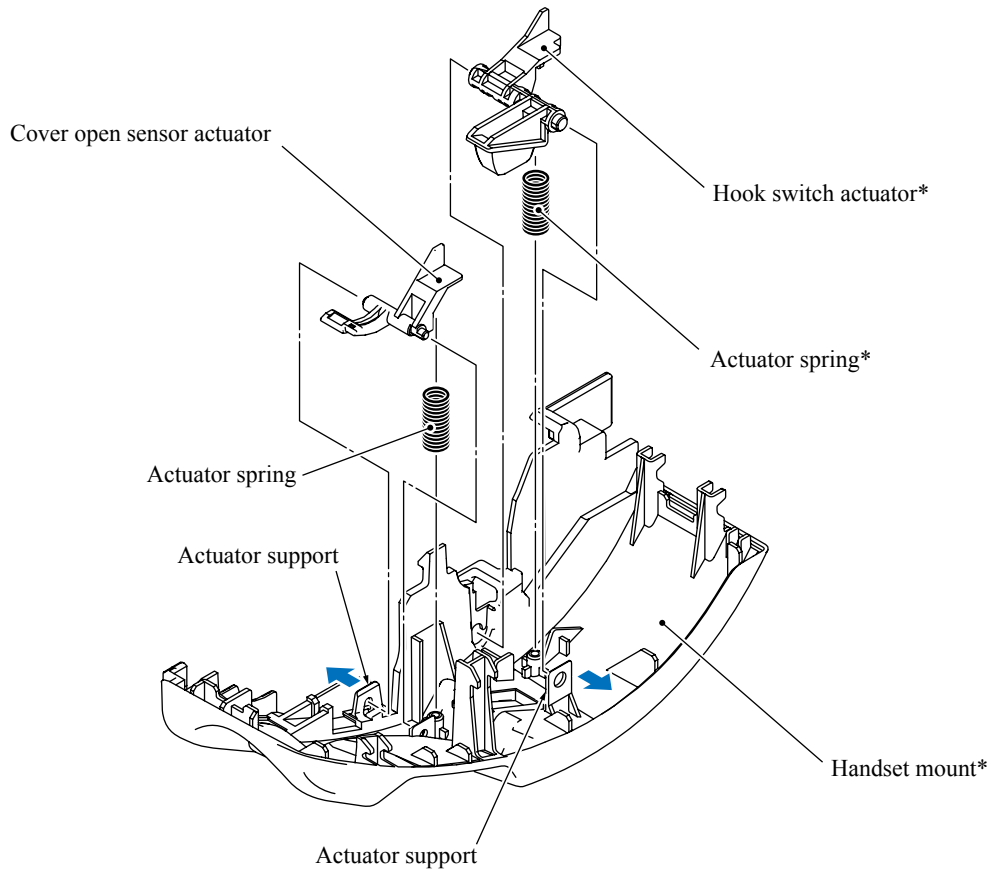
■ **Reassembling Notes**

• When setting the handset mount (dummy mount) back into place, first fit the two hooks provided on the rear end of the handset mount (dummy mount) in the main cover (arrow ①) and then push down the handset mount (dummy mount) (arrow ②) until it snaps into place. See the previous page.

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5.1.2 Cover Stopper Link and Top Cover ASSY

(1) Remove the screw from the cover stopper link. Pull the link outwards to release it from the top cover ASSY and then turn it to the front and release it from the boss on the main cover.

Taptite, pan B
M4x6D10

Top cover ASSY

Boss

Cover stopper link

Main cover

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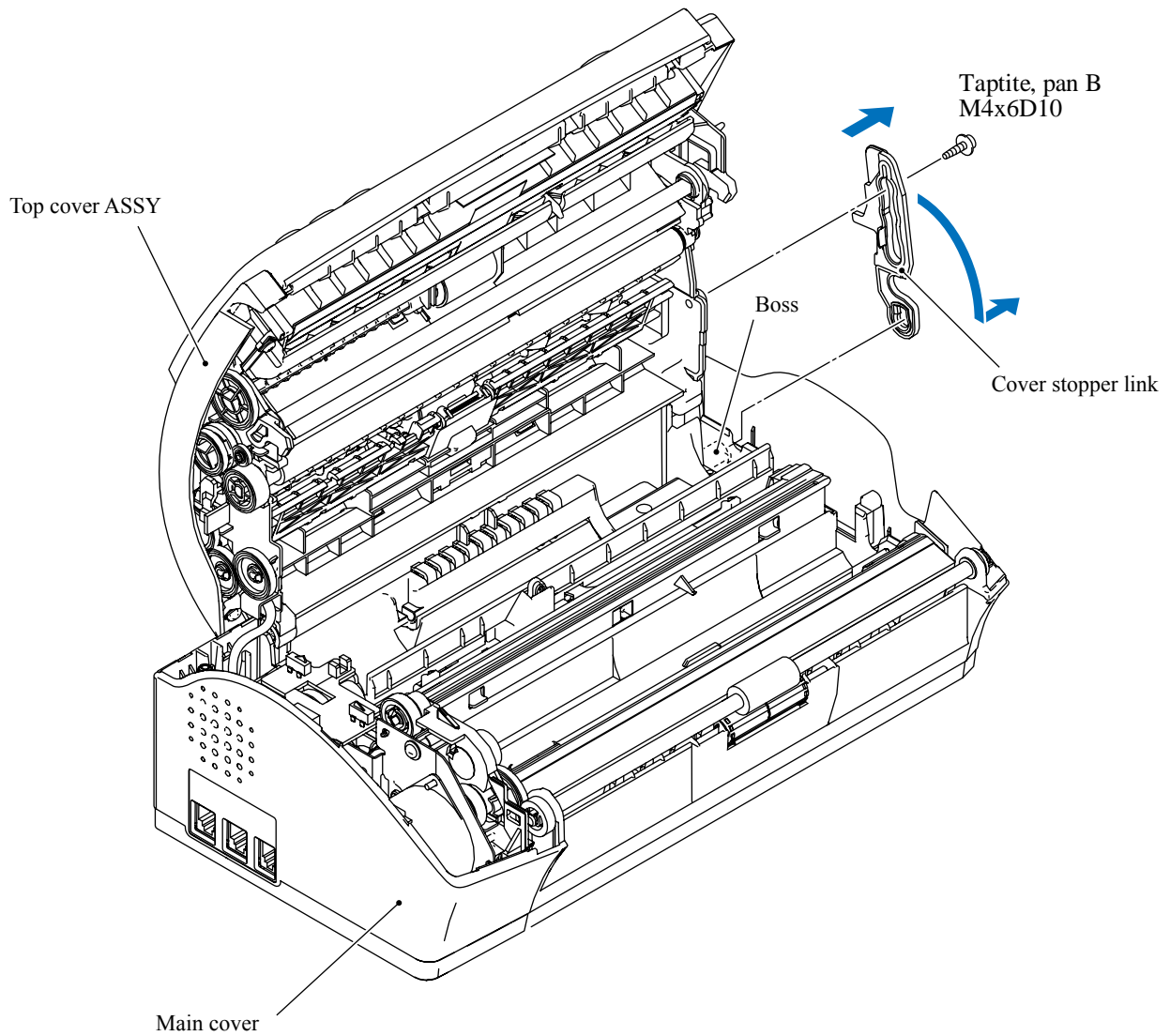
(2) Disconnect the relay connector of the panel-main harnesses while supporting the top cover ASSY by hand.

(3) Remove the top cover ASSY to the rear.

Routing the panel-main harness (lower)
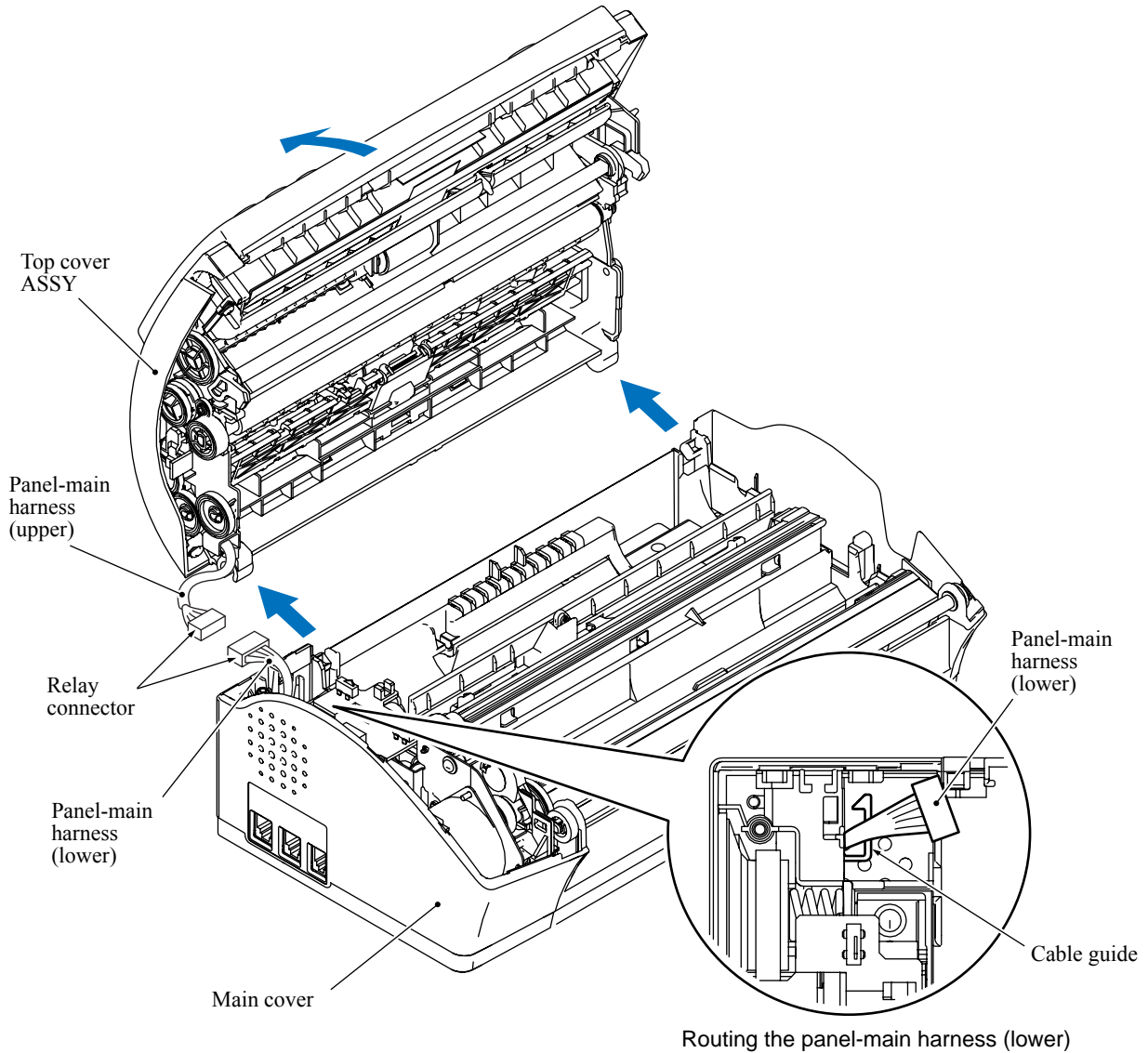
■ **Reassembling Notes**

- Be sure to route the panel-main harness (lower) through the cable guide provided on the main cover as shown above.

- When mounting the cover stopper link, support the top cover ASSY with your left hand and secure the link with the screw.

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5.1.3 Disassembly of the Top Cover ASSY
(Separation roller gear 29, paper chute ASSY, and top cover sub ASSY)

(1) Place the top cover ASSY upside down.

(2) Lightly press the lock arm and pull out the separation roller gear.

(3) Remove the three screws from the paper chute ASSY.

(4) Lift the rear end of the paper chute ASSY to release the tab from the top cover and take the panel-main harness (upper) out of the paper chute ASSY. Then remove the ASSY.

Taking the panel-main harness (upper)

out of the paper chute ASSY

Taptite, cup B M3x8

Paper chute ASSY

Panel-main harness (upper)

Separation roller gear 29

Panel-main harness (upper)

Tab

Lock arm

(Front)

Top cover sub ASSY
(placed upside down)

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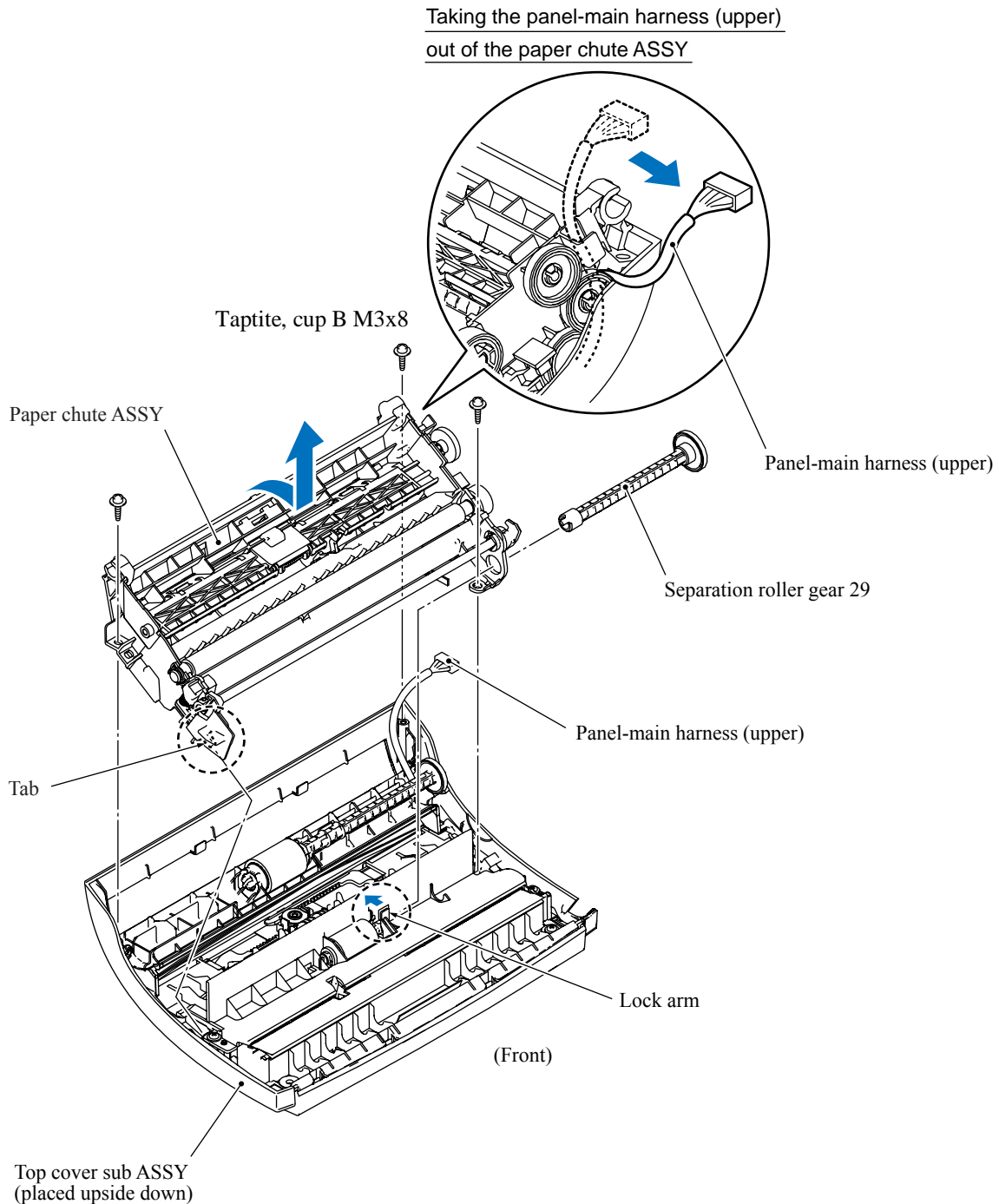
■ Reassembling Notes

- When mounting the paper chute ASSY on the top cover sub ASSY, follow the steps below.

  1) Lightly press the lock arm and pull out the separation roller gear 29 (①) that should be <u>temporarily</u> mounted for correct positioning of the document separation roller when the document chute ASSY has been mounted in Section 5.1.5.

  2) Mount the paper chute ASSY to the top cover (②) so that its tab becomes inserted in the top cover and the two square opening provided in the rear end of the ASSY become fitted over the paper chute supports on the top cover.

  3) Secure the paper chute ASSY with three screws in the order of ③, ④, and ⑤.

  4) Make sure that the document separation roller is correctly positioned; that is, its shorter shaft faces to the left and its left end is in contact with the rib on the document chute ASSY.

  5) Lightly press the lock arm, insert the separation roller gear 29 (⑥), and fit it over the right end of the document separation roller shaft.

Panel-main harness (upper)

Routing the panel-main harness (upper) through the cable guide provided on the paper chute ASSY

Cable guide on the paper chute ASSY

Paper chute ASSY

③

②

⑤

Taptite, cup B M3x8

④

⑥

Separation roller gear 29

Panel-main harness (upper)

①

Tab

Paper chute ASSY

Document separation roller

Fitting the square openings over the paper chute supports

Lock arm

Separation roller gear 29

(Front)

Paper chute support

Top cover sub ASSY (placed upside down)

Document separation roller

The document separation roller shaft should be in contact with this rib on the document chute ASSY.

Document chute ASSY

5.1.4 Disassembly of the Paper Chute ASSY
(Chute film, sheet feeder parts, paper ejection roller ASSY, registration sensor actuator, lock bar & levers, and platen)

Chute film

(1) Remove the chute film from the paper chute ASSY only when it should be replaced.
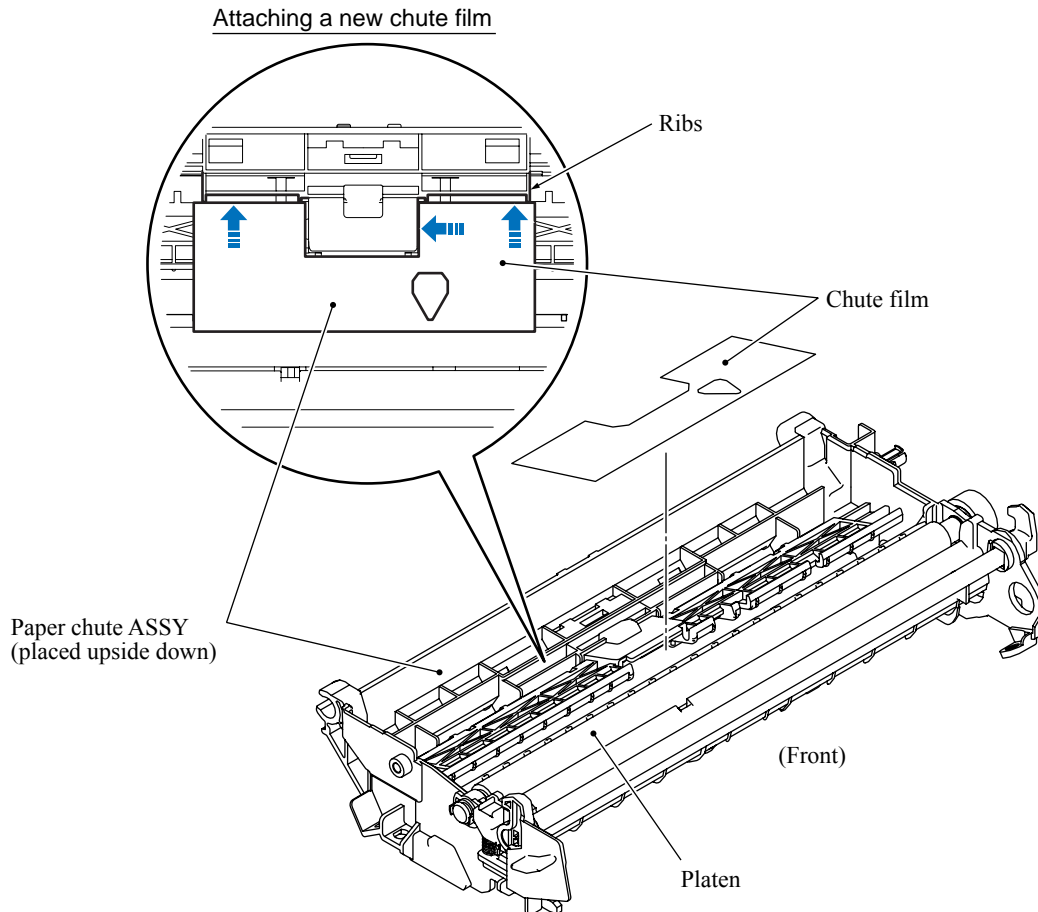
Reassembling Note: Once removed, the chute film will become unusable and a new one will have to be put back in.

Reassembling Note: When attaching a new chute film to the chute cover ASSY, bring its rear edge into contact with the ribs as shown below.

Sheet feeder parts (SF leaf spring, separation pad, film, support, plate, and coil spring) and paper ejection roller ASSY

(2) Turn the paper chute ASSY rightside up.

(3) Lightly pull the lock arm to the rear and push up the SF leaf spring with a flat screwdriver, taking care not to deform it.
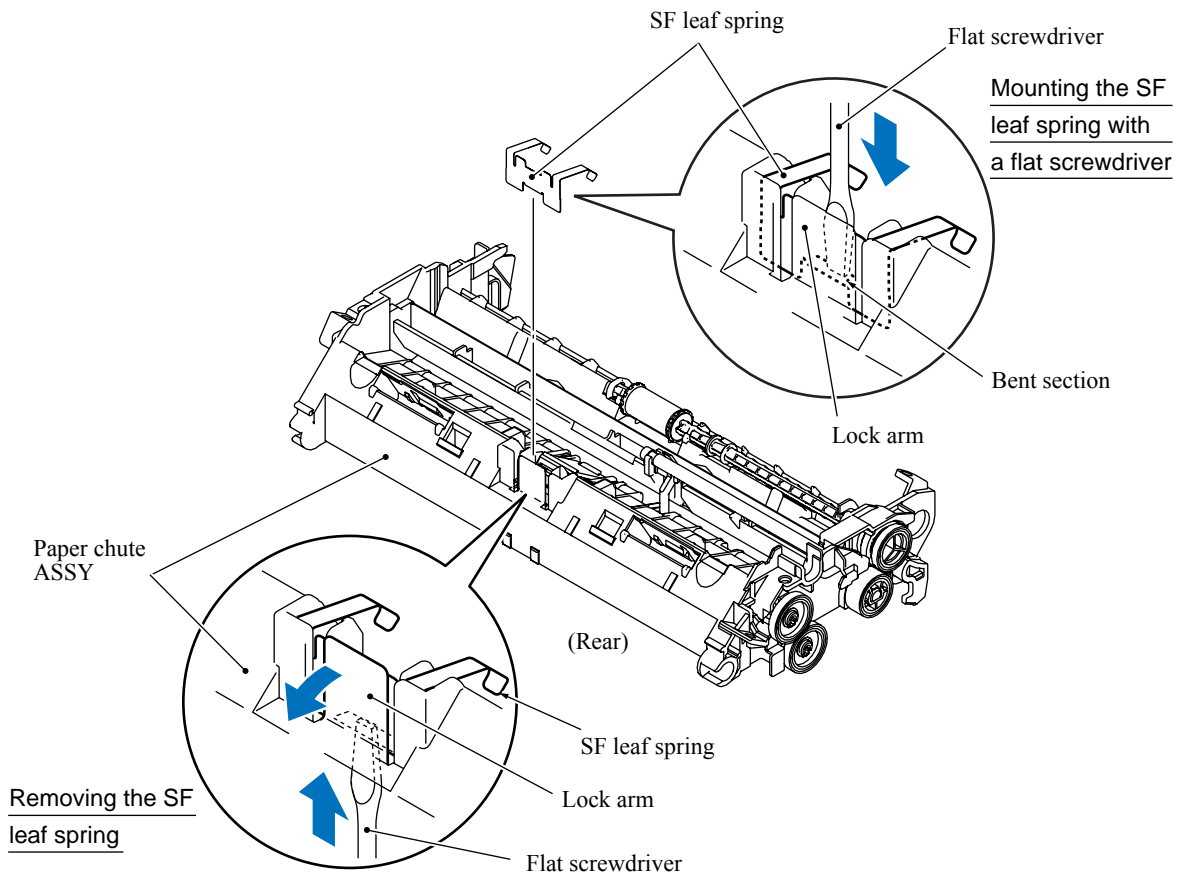
Reassembling Note: When mounting the SF leaf spring, be sure to push down its bent section with a flat screwdriver until the lock arm catches the upper end of the SF leaf spring.

(4) Press the both ends of the SF separation pad support inwards and take it out of the paper chute ASSY. The SF coil spring also comes off.

(5) Remove the SF separation pad and film from its support.

(6) Lightly press the lock arm and pull out the paper ejection roller ASSY. Also remove gear 10.

NOTE: Take care not to lose gear 10.

SF separation pad

SF separation film

SF separation pad support

SF coil spring

SF plate

Lock arm

Paper ejection roller ASSY

(Rear)

Paper chute ASSY

Gear 10
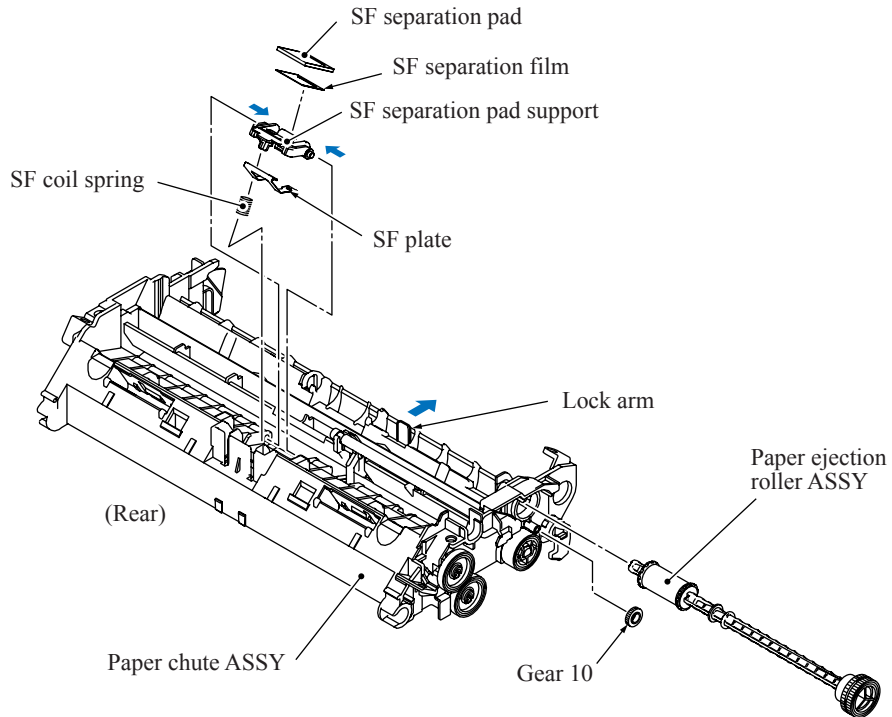
(7) Remove the gear 22 and clutch spring from the paper ejection roller ASSY.

Fitting the end of the clutch spring into the slit between flanges

End of the clutch spring

Gear 22

Flanges

Clutch spring

Paper ejection roller

Confidential
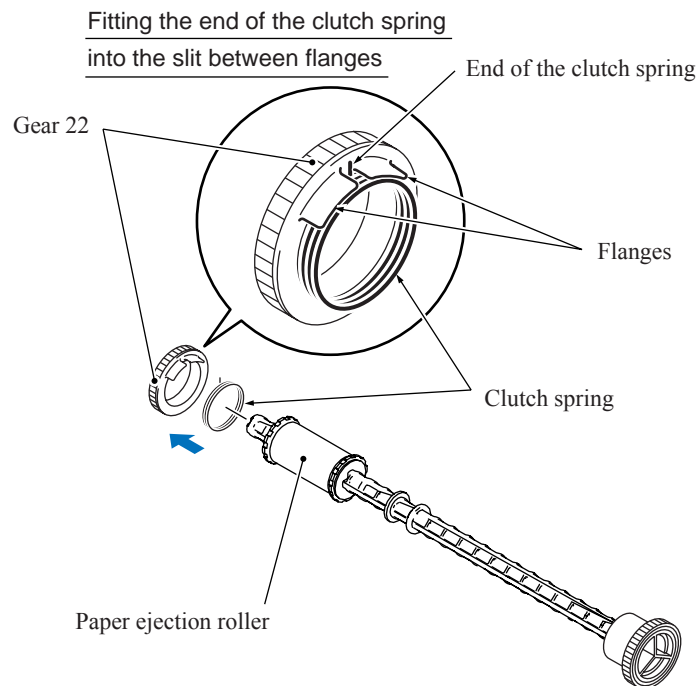
Registration sensor actuator and gears 24

(8) Lightly press the lock arm, lift up the left end of the registration sensor actuator and take it out to the right.

(9) Remove gears 24 by releasing their latches.

Registration sensor actuator

Paper chute ASSY

(Rear)

Lock arm

Registration sensor actuator

Latches

Gears 24
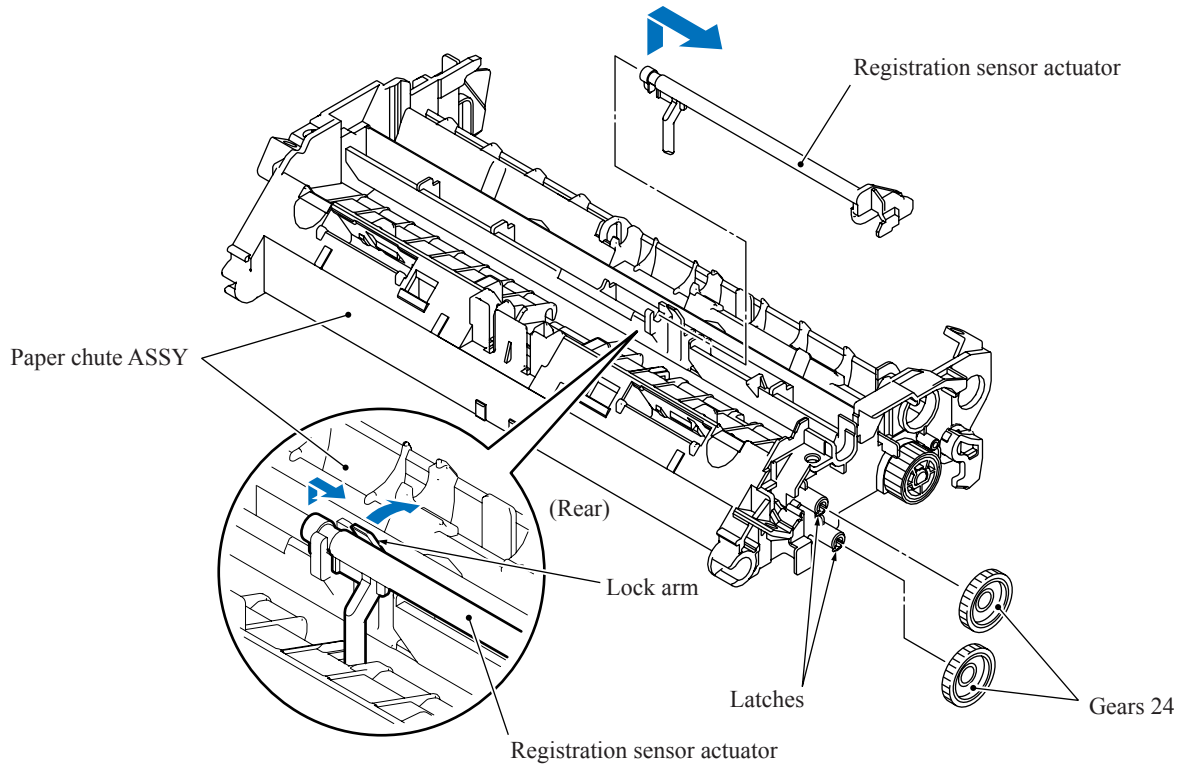
Lock bar and levers

(10) Release the latch of the lock lever R (dark gray) and pull it out. The lock spring also comes off.

(11) Pull out the lock bar.

(12) Release the latch of the lock lever L (white) and pull it out.

Setting the lock spring

Paper chute ASSY

Lock lever R (dark gray)

Paper chute ASSY (placed upside down)

Lock lever L (white)

Latch

Lock spring

Platen

(Front)

Lock bar

Lock spring

Lock lever R (dark gray)
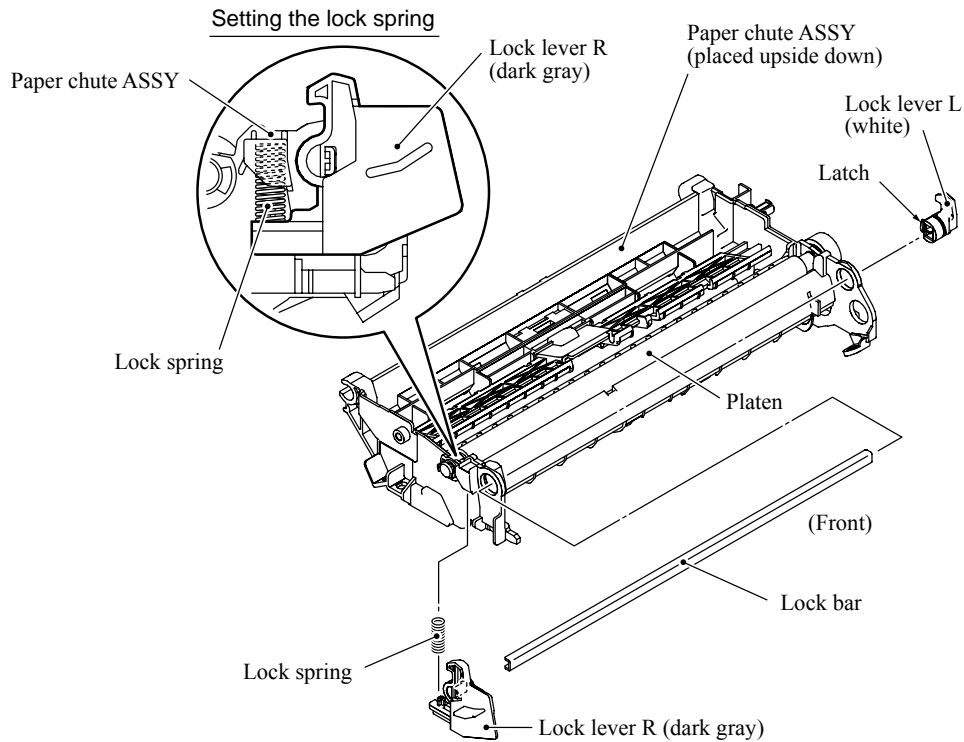
Reassembling Note: When mounting the lock lever R, set the lock spring as shown above.

Platen

(13) Release the latch of the platen gear and remove the gear and bushing L.

(14) Remove pawl bushing R and take the platen out of the paper chute ASSY.

Platen

Platen gear

Bushing L

Paper chute ASSY (placed upside down)

(Front)

Pawl bushing R

5-15

Confidential
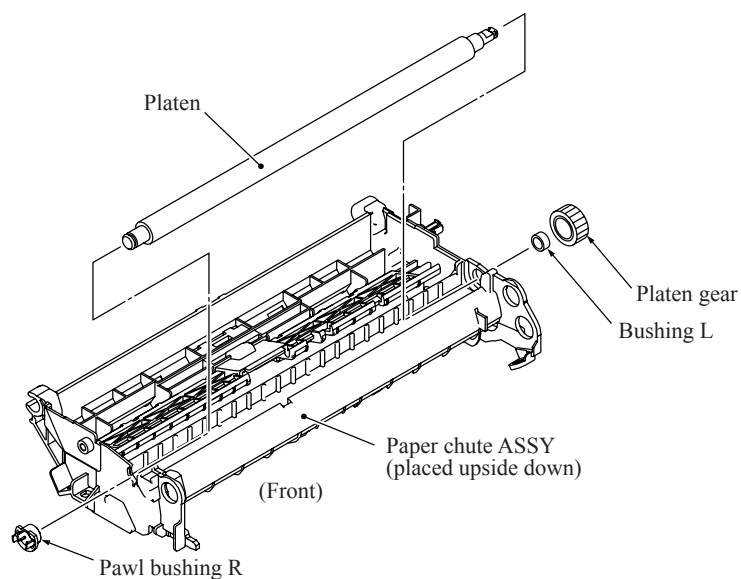
5.1.5 Disassembly of the Top Cover Sub ASSY
(Paper separation roller, document chute ASSY, document separation roller, ADF parts, white-level reference film, control panel ASSY, and document rear sensor actuator)

Paper separation roller

(1) Lightly press the lock arm, slide the paper separation roller to the left and lift it up.

Paper separation roller

Lock arm

(Front)

Top cover sub ASSY
(placed upside down)
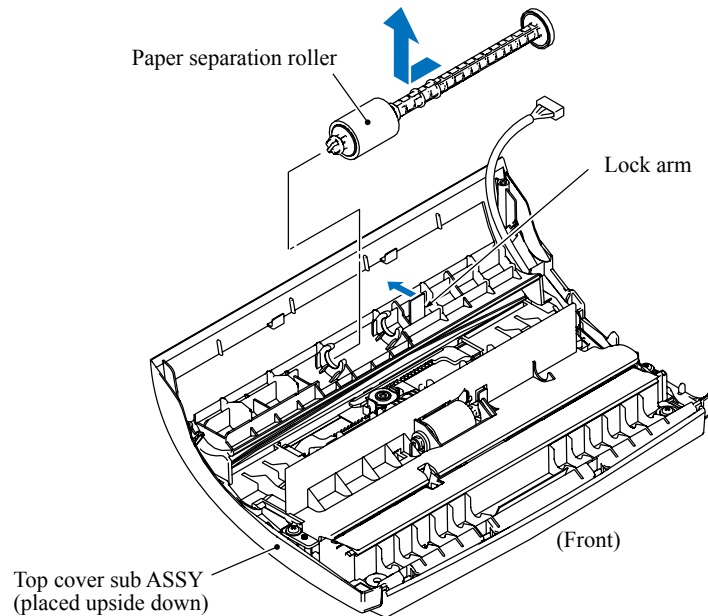
Reassembling Note: When mounting the paper separation roller, make sure that the panel-main harness (upper) has been routed on the top cover as shown .

Document chute ASSY

(2) Remove the two screws and take the document chute ASSY out of the top cover.
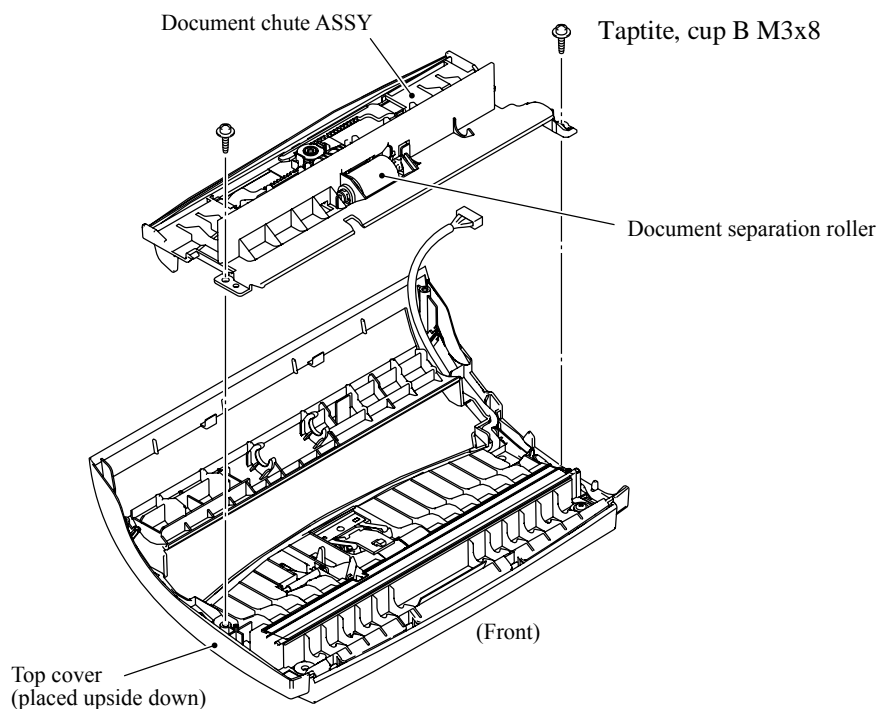
Document chute ASSY

Taptite, cup B M3x8

Document separation roller

(Front)

Top cover
(placed upside down)

Confidential

Reassembling Note 1: Before mounting the document chute ASSY, be sure to slide the paper guides outwards to the A4 size position.

Reassembling Note 2: Before mounting the document chute ASSY, temporarily engage the separation roller gear 29 with the right end of the document separation roller shaft for correct positioning of the document separation roller. The left end of the document separation roller shaft should be in contact with the rib provided on the document chute ASSY.

Reassembling Note 1

Before mounting the document chute ASSY, be sure to slide the paper guides outwards to the A4 size position.

Paper guides

Separation roller gear 29

Taptite, cup B M3x8

Reassembling Note 2

Before mounting the document chute ASSY, temporarily engage the separation roller gear 29 with the right end of the document separation roller shaft for correct positioning of the document separation roller.

Document separation roller

Document chute ASSY

Separation roller gear 29

The document separation roller shaft should be in contact with this rib on the document chute ASSY.

Document chute ASSY

(Front)

Top cover (placed upside down)

5-17

Confidential

Document separation roller

(3) Remove the document separation roller.

(4) Unlatch the document support and push it down.

Latches on the document support

Document support

Document chute

Document support

Document separation roller
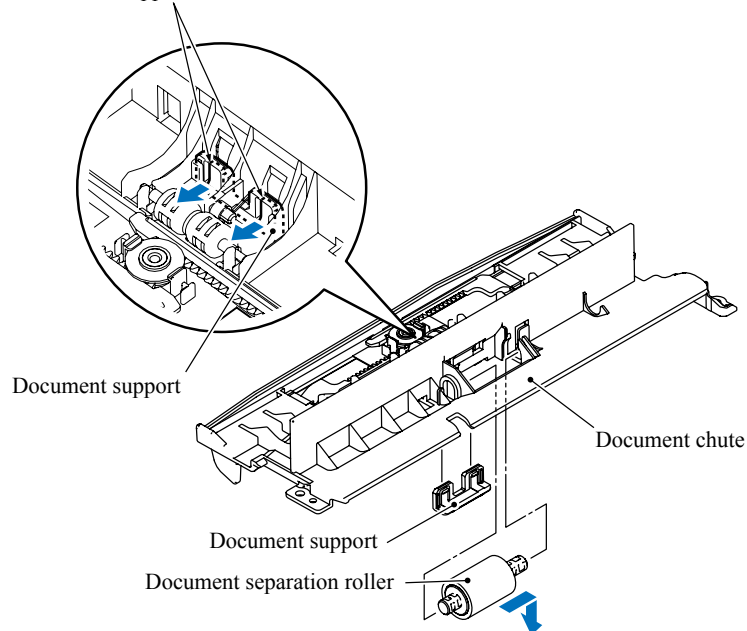
ADF parts

(5) Remove the screw and disassemble the ADF parts as shown below.

Taptite, pan B M3x6

Correct   Wrong

Separation rubber

Setting the separation rubber into place

ADF leaf spring

Separation rubber

ADF parts

ADF holder

ADF spring

Top cover
(placed upside down)

(Front)
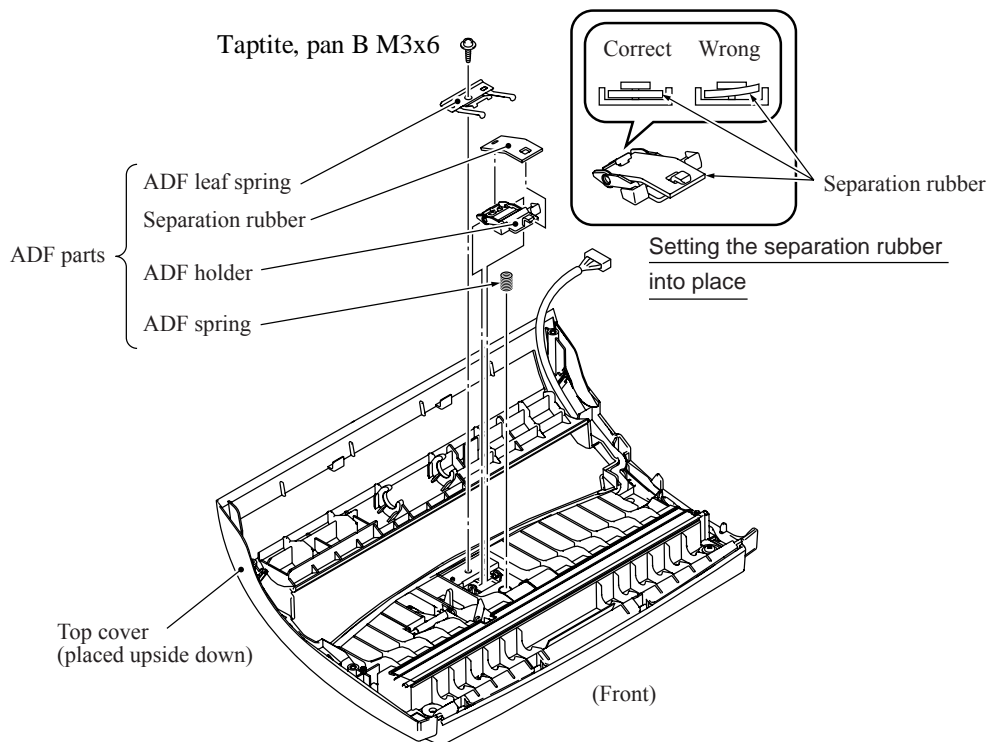
Reassembling Note: Make sure that the separation rubber is fitted over the ADF holder correctly.

Confidential

White-level reference film

(6) Remove the white-level reference film from the top cover only when it should be replaced.

Attaching a new white-level reference film

Align the left and rear edges of the white-level reference film with this rib.

Top cover

White-level reference film

(Front)

(Front)

Top cover
(placed upside down)
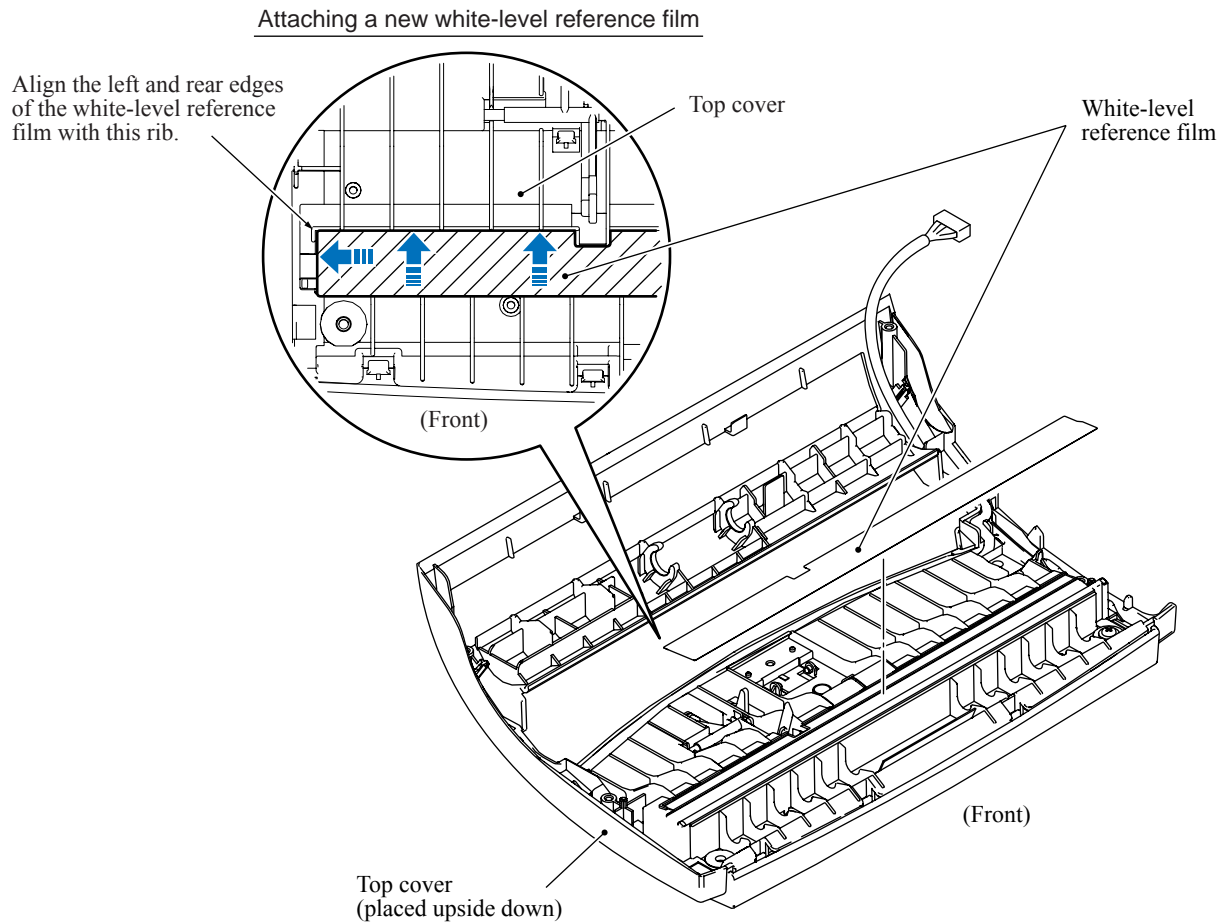
Reassembling Note: Once removed, the white-level reference film will become unusable and a new one will have to be put back in.

Reassembling Note: When attaching a new white-level reference film, align the left and rear edges with the rib provided on the top cover.

Control panel ASSY and document rear sensor actuator

(7) Remove the screw from the top cover.

(8) Unhook the top cover from the five latches provided on the control panel ASSY.

(9) Turn the document rear sensor actuator to the rear, slide it to the left, and take it out of the top cover.

Routing the panel-main harness
(upper) on the top cover

Top cover

Cable guides

Square opening

Fitting the actuator's tab in
the slot between the ribs

Document rear
sensor actuator

Ribs

Actuator's tab

Panel-main harness (upper)

Taptite, cup B M3x8

Top cover
(placed upside down)

Square opening

2 tabs

Control panel ASSY

2 corner ribs

5 latches
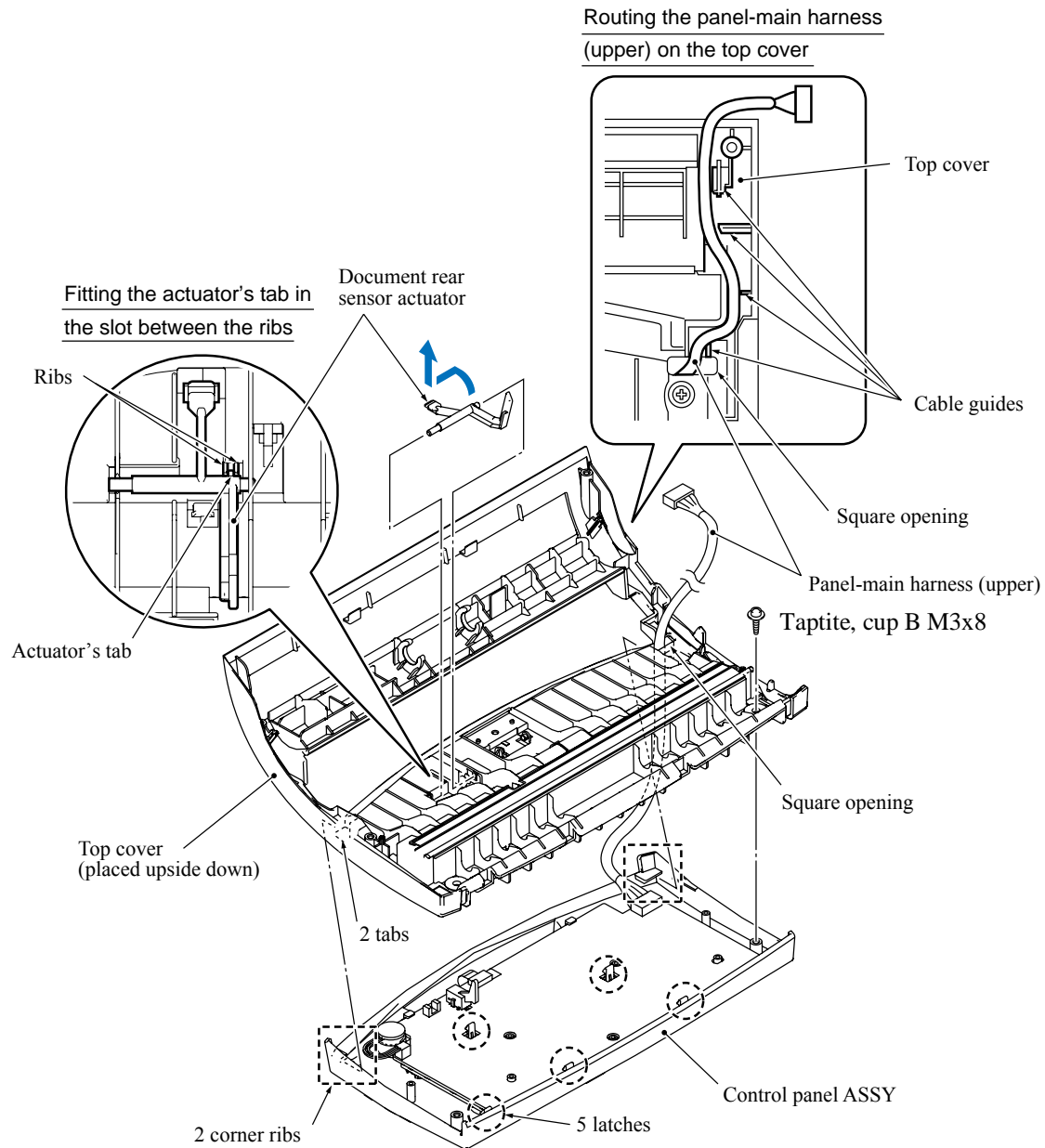
Reassembling Note: When setting the document rear sensor actuator back into place, be sure to fit the actuator's tab in the slot between the ribs.

Reassembling Note: When assembling the top cover and the control panel ASSY, pass the panel-main harness (upper) through the square opening provided in the top cover and fit the two tabs on the top cover under the corresponding corner ribs.

Reassembling Note: Route the panel-main harness (upper) on the top cover as shown above before setting the paper separation roller back into place.

5.1.6 Disassembly of the Control Panel ASSY
(Control panel PCB, microphone*, rubber keypad, control panel, and LCD)

*FAX837MC/FAX-T106

(1) Disconnect the panel-main harness (upper) from the control panel PCB.

(2) Unlock the LCD connector and disconnect the LCD flat cable.

(3) FAX837MC/FAX-T106: Take the microphone from the control panel.

(4) Unlatch the control panel PCB and remove the PCB.

Confidential
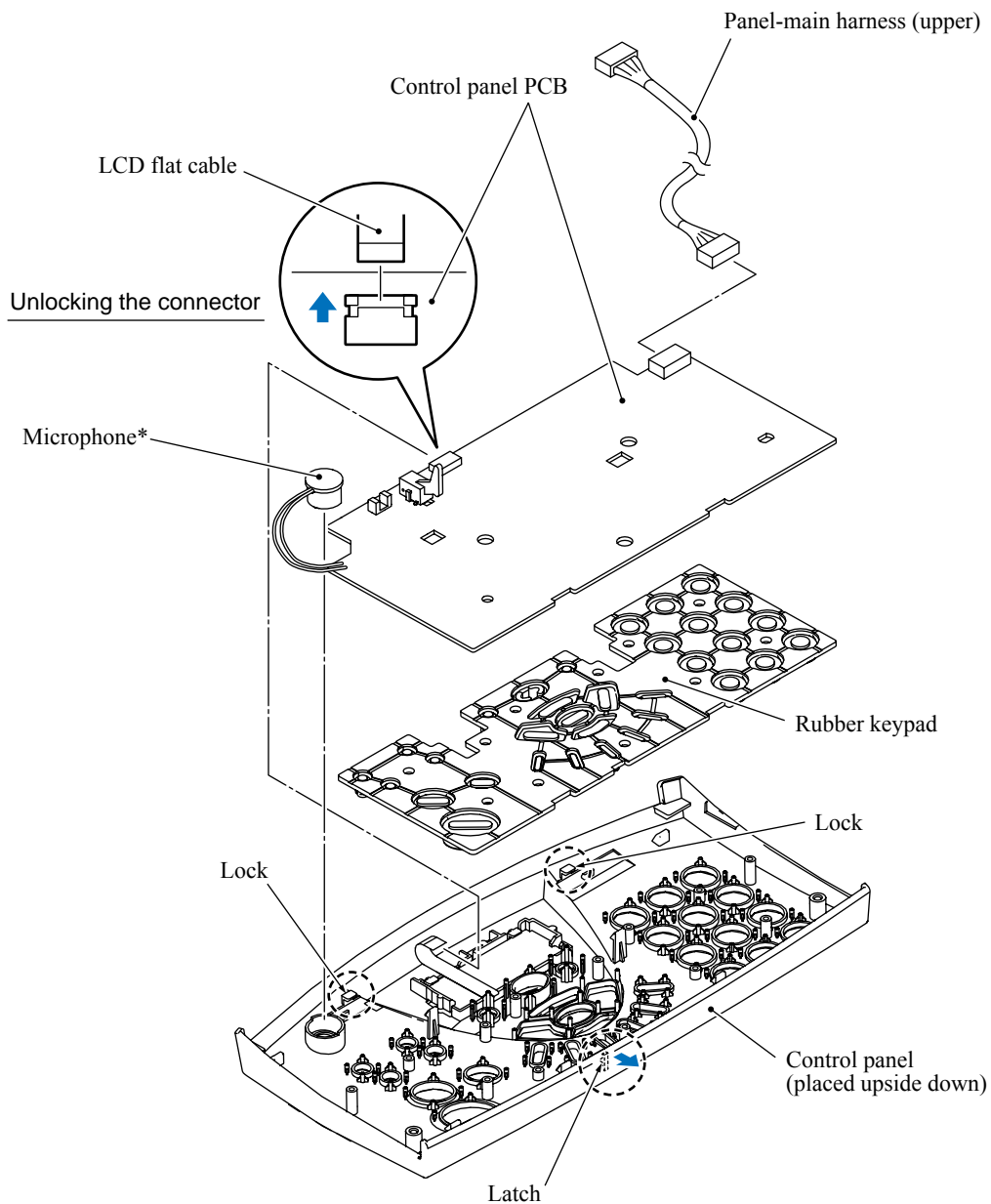
(5) Pull the lock arms outwards and take out the LCD while pulling the LCD flat cable gently.

LCD

Lock arm

LCD flat cable

Lock arm
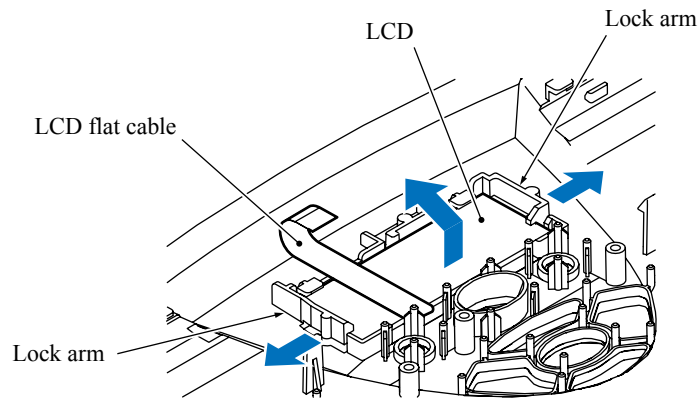
■ **Reassembling Notes**

- Before setting the LCD back to the control panel, wipe fingerprints or dust off the LCD surface and control panel window with a soft cloth.

- A new LCD is covered with a protection sheet. Before setting it, remove the protection sheet.

- A new LCD is covered with a protection sheet. Before setting it, remove the protection sheet.

5.1.7 Sensor PCB

(1) Remove the screw from the sensor PCB.

(2) Disconnect the sensor-main harness from the sensor PCB.

(3) Unlatch the sensor PCB from the main cover.
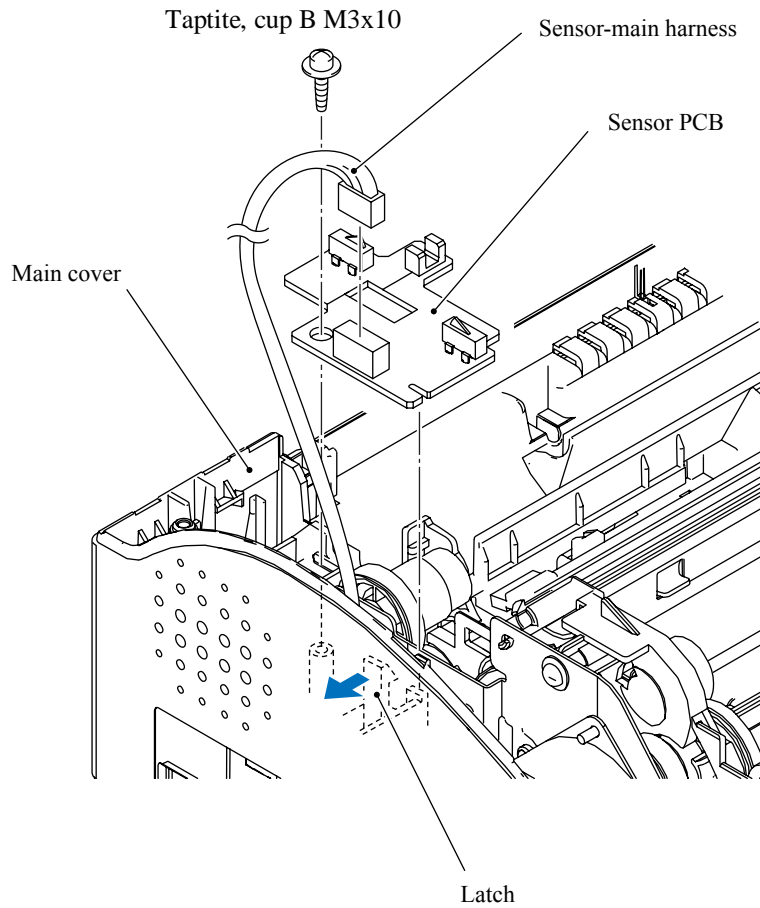
5.1.8 Recording Head ASSY

(1) While pressing the lock arms on the main cover, push down <u>both ends of the recording head ASSY</u> and move it to the rear to release the tabs from the cutouts provided in the recorder frame.

    NOTE: Do not press the center of the recording head ASSY.

(2) Disconnect the two head-main harnesses (red and white) from the recording head ASSY and lift up the ASSY.

(3) Remove the three head springs.
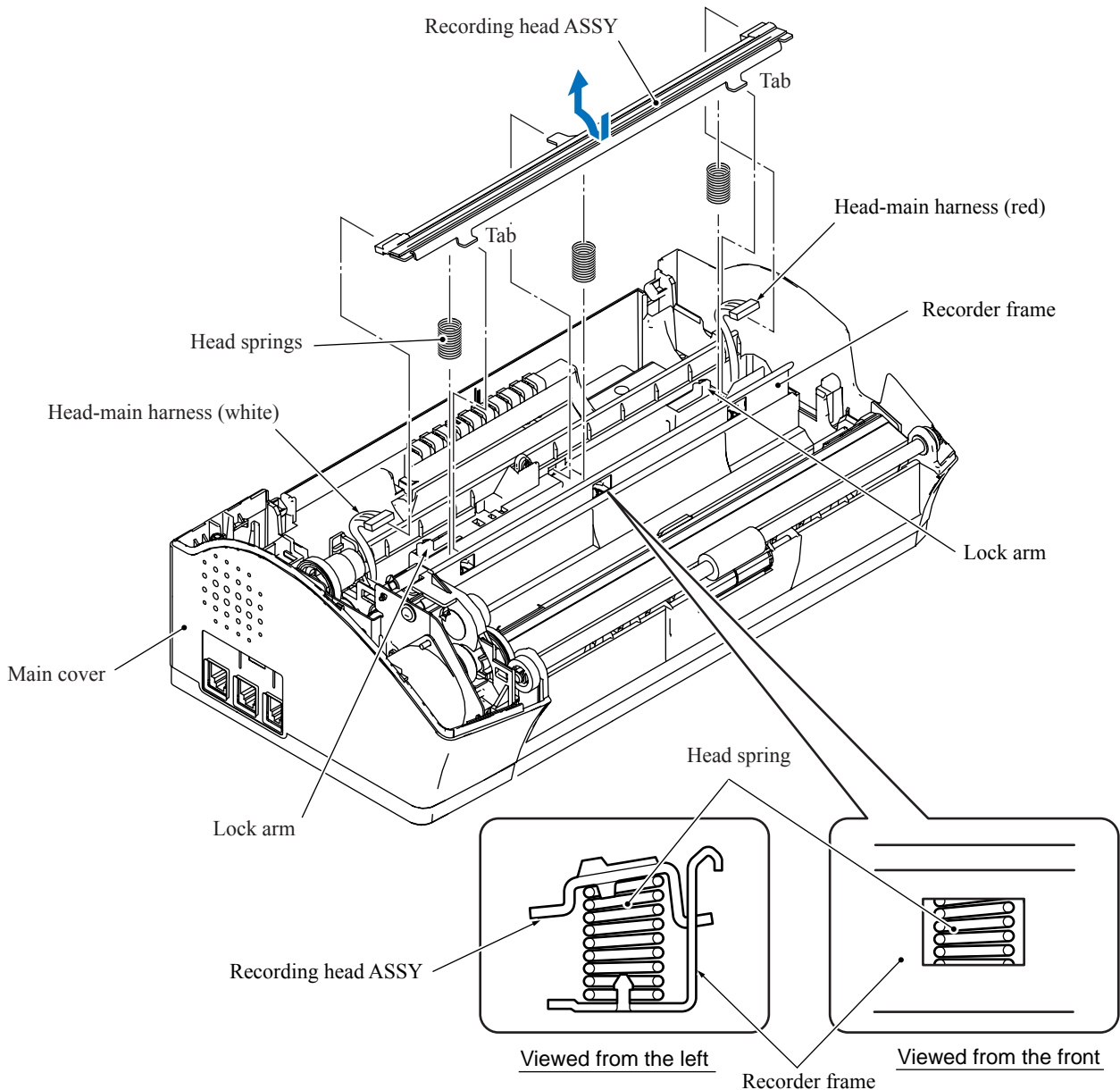
■ **Reassembling Notes**

    • After mounting the recording head ASSY, check through the square openings in the recorder frame that the three head springs are set into place

5.1.9 Bottom Plate

(1) Turn the main cover upside down.

(2) Remove the five screws (four "a" screws and one "b" screw) from the bottom plate.

(3) Slightly lift up the bottom plate and release the grounding wire (screw "c").

Bottom plate

"a"

"b"

"a"

"a"

"a"

"a"

Securing the grounding wire

(Rear)

Inside of the
bottom plate

"c"

Grounding wire

(Front)

Main cover
(placed upside down)

Routing the grounding wire
through this cutout.
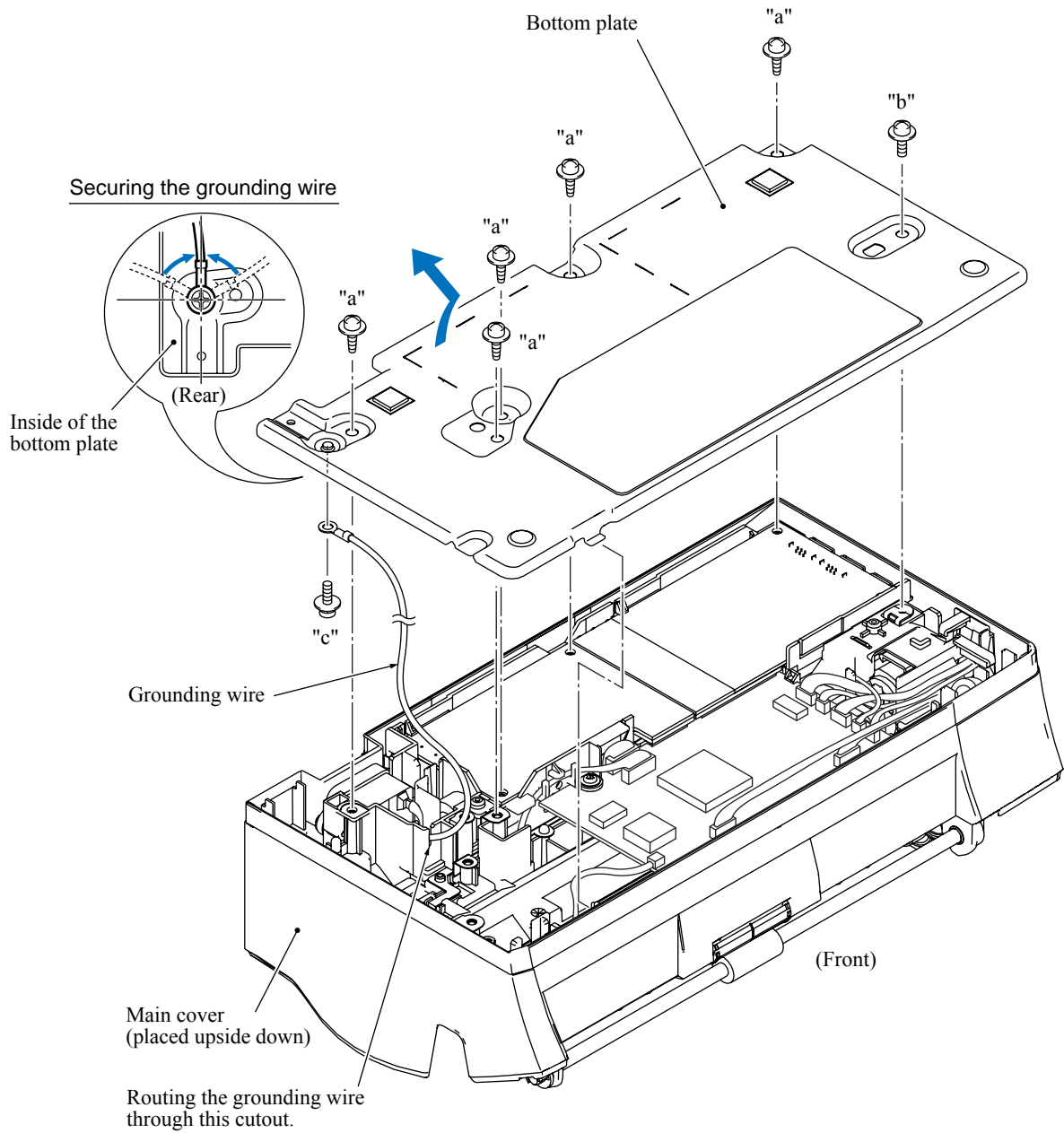
"a": Taptite, cup B M3x10
"b": Taptite, cup S M3x6
"c": Screw, pan (washer) M4x7DB

■ Reassembling Notes

• Secure the grounding wire to the bottom plate at the angle shown above.

Confidential

5.1.10 Drive Unit and Motor

(1) Disconnect the motor harness and cam switch harness from the main PCB.

(2) Turn the main cover rightside up.

(3) Remove the two screws and lift the drive unit up and out of the main cover.

Drive unit

Taptite, cup B M3x10

Cam switch harness

Motor harness

Opening provided in the main cover

Motor harness

Cam switch harness

Main cover

Main PCB

Viewed from the bottom
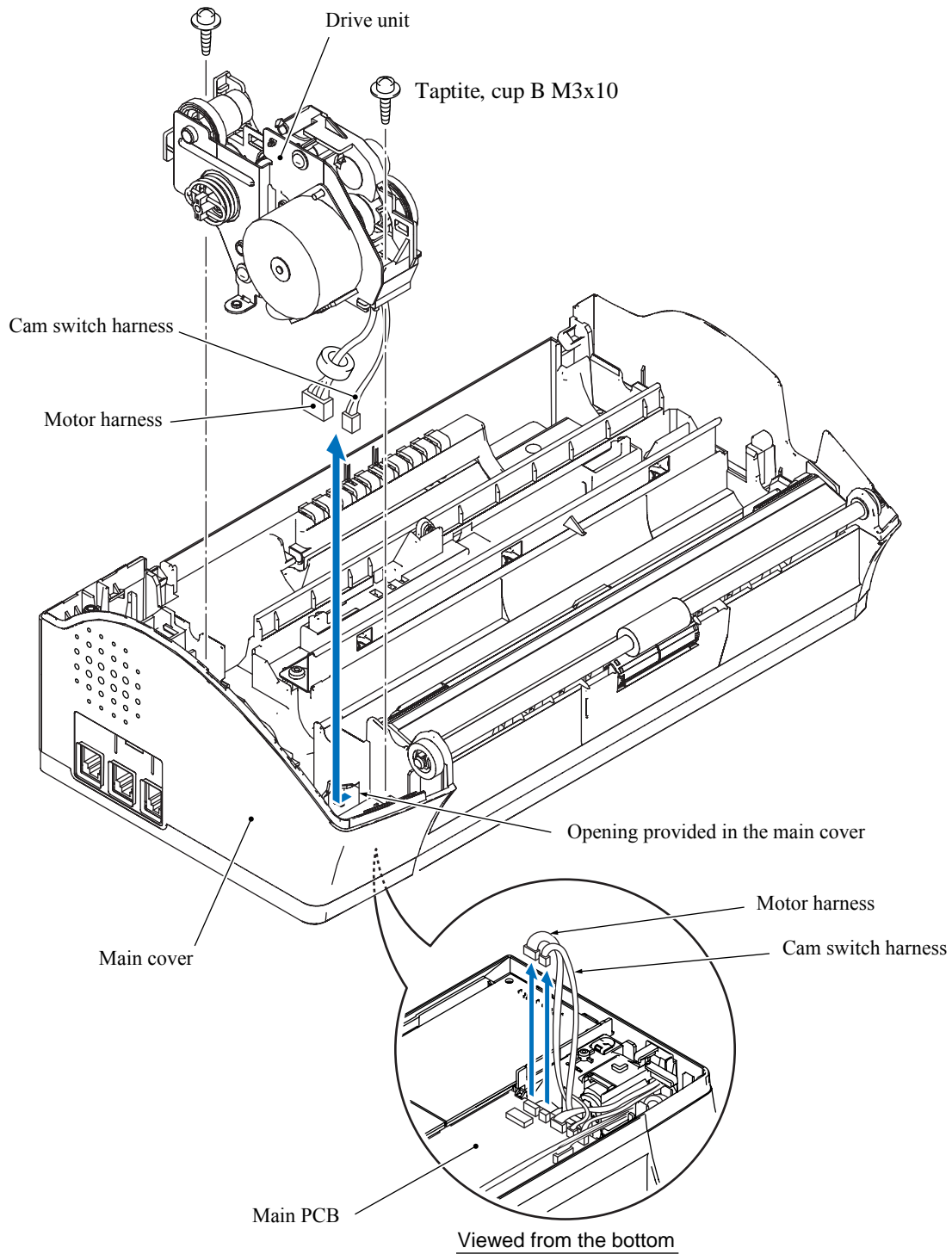
(4) Remove two screws "d" to release the motor chassis.

(5) Remove screw "e" to release the drive motor from the motor chassis.

(6) Unlatch the cam switch.

Drive gear frame

"e"

"d"

Latches

Cam switch

"d"

Motor chassis

Drive motor

Bosses on the drive gear frame

Drive motor

Motor
chassis

Bosses on the drive gear frame
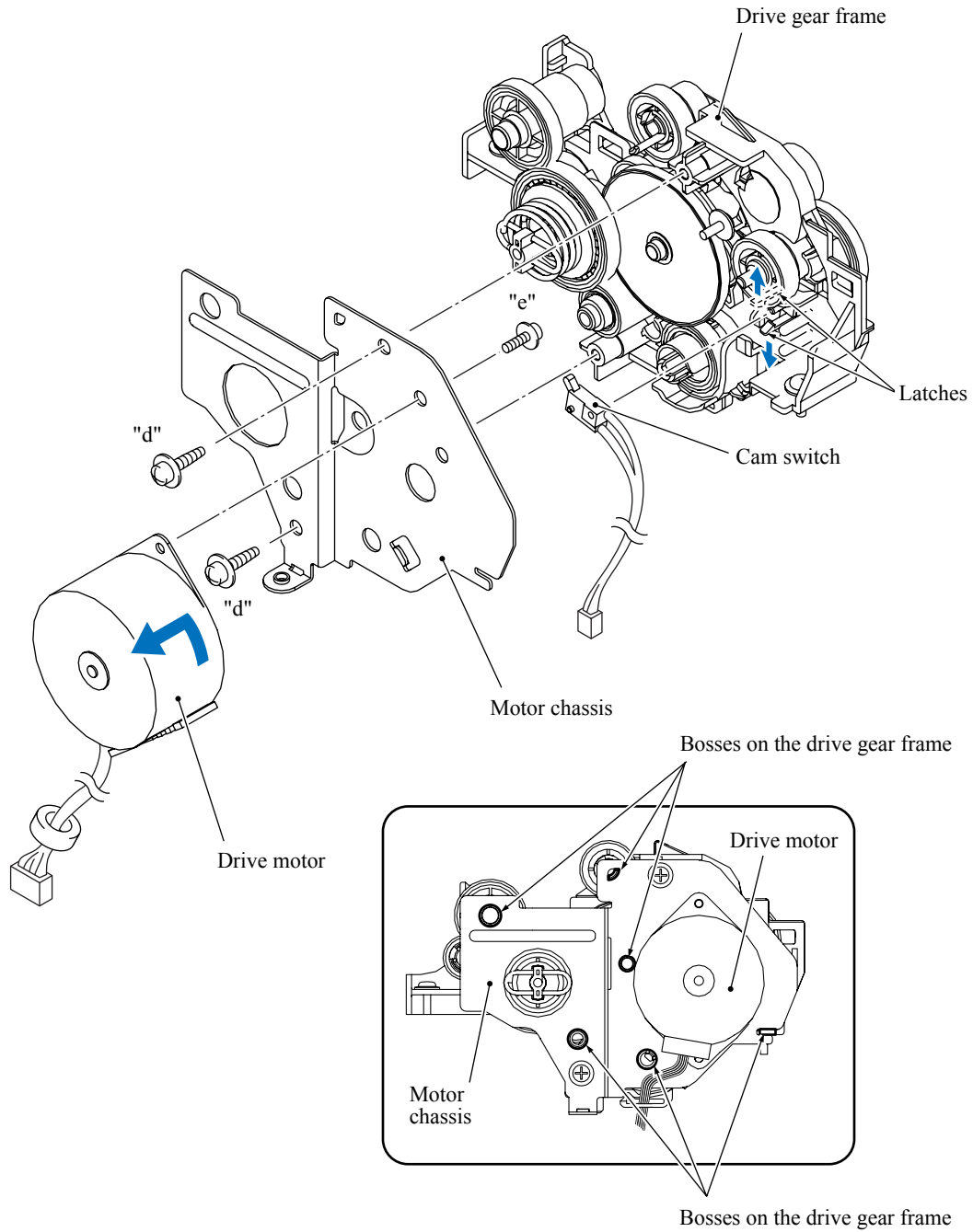
"d": Taptite, cup B M3x8
"e": Taptite, cup S M3x6

Confidential

■ **Reassembling Notes**

- As shown below, route the cam switch harness on the drive gear frame. After that, check that its lead wires lie below the top of the guide bosses.

- When mounting the drive motor to the motor chassis, face the harness side as shown on the previous page.

- After mounting the motor chassis, route the motor harness as shown below.
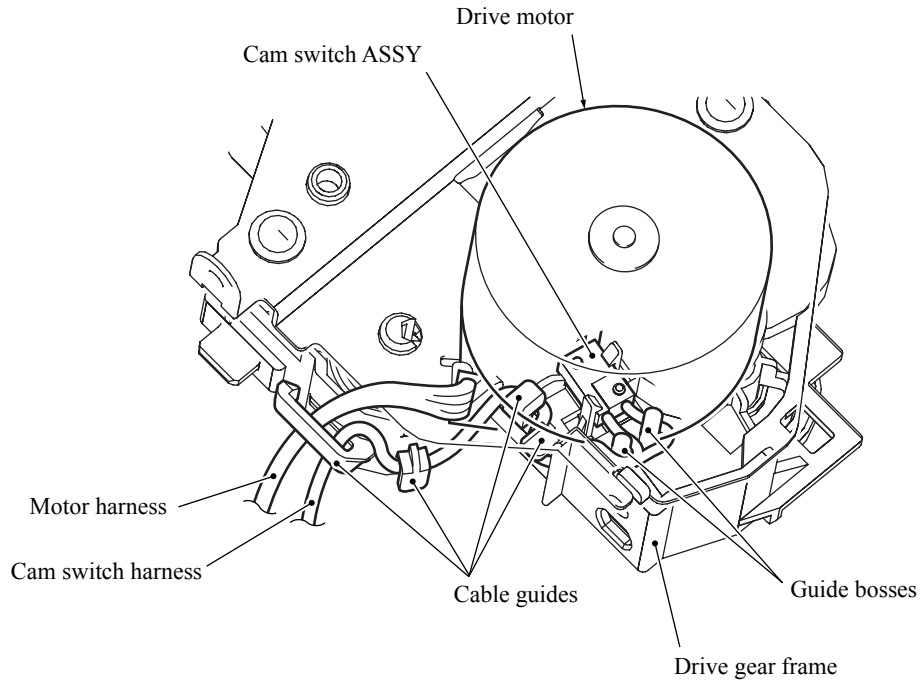
- When assembling the motor chassis and drive gear frame together does not mesh gears smoothly, rotate the planet gear ASSY clockwise and counterclockwise as shown below.
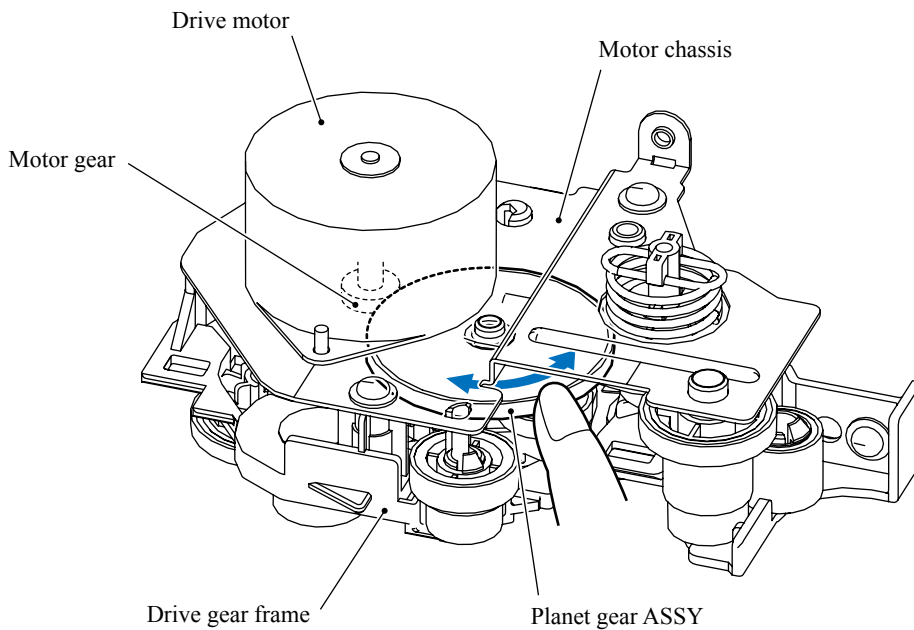
5.1.11 Document Ejection Roller and Pinch Rollers

(1) While pulling the pawls on the pawl bushing outwards, shift the document ejection roller to the left and off the bushing.

(2) Remove the ejection roller gear from the left end of the document ejection roller and then take the roller out of the main cover.

(3) Remove the pinch rollers and their shaft.

(4) Remove the pinch roller springs.
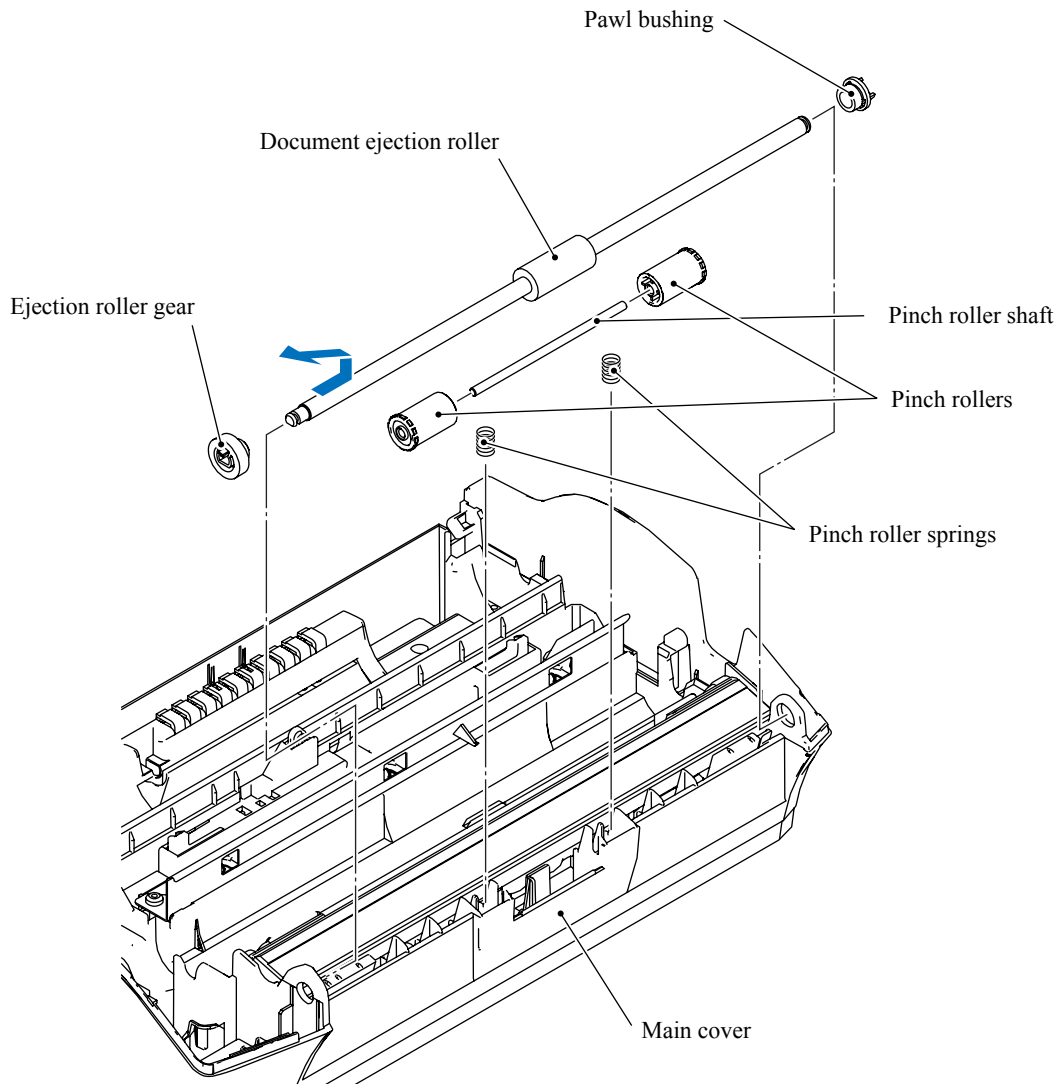
■ **Reassembling Notes**

• When mounting the pinch rollers, be sure to face the flange sides outwards.

5.1.12 CIS Unit and Battery ASSY*

(1) Turn the main cover upside down.

(2) Disconnect the CIS-main harness from the main PCB.

NOTE: The CIS-main harness passes through a ferrite core (one turn). Take care not to lose the ferrite core. When replacing the CIS-main harness, it is necessary to remove the ferrite core and attach it to a new harness.

(3) Disconnect the battery harness from the main PCB.

Battery harness* (2-pin)

CIS-main harness (7-pin)
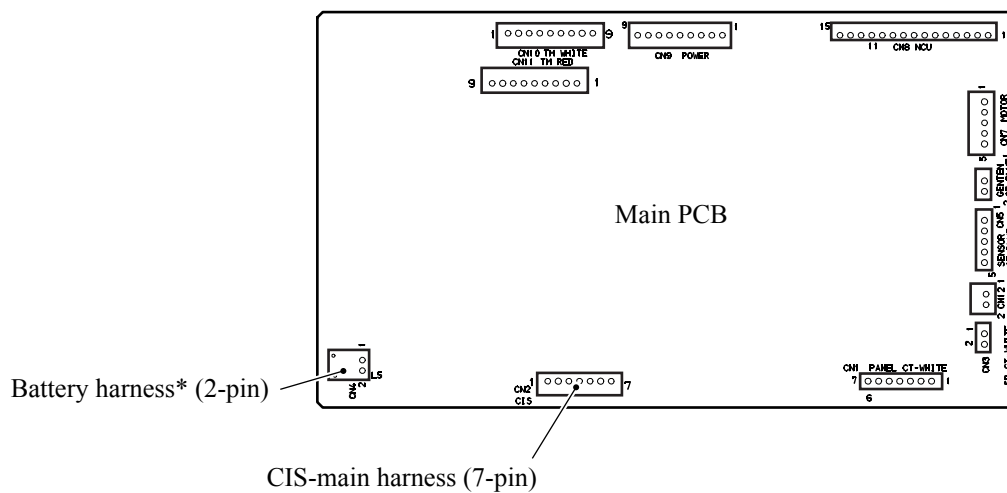
(4) Turn the machine rightside up.

(5) Press the right and left lock levers to the rear, lift up the front end of the CIS unit, and take it to the front.

(6) Disconnect the CIS-main harness from the CIS unit.

(7) Remove the CIS springs.

(8) Remove the battery ASSY*.

CIS unit

Battery ASSY*

Lock lever

CIS spring

Lock lever

CIS spring

CIS-main harness

Ferrite core
(FAX827/817/575 and FAX-T104/T102)
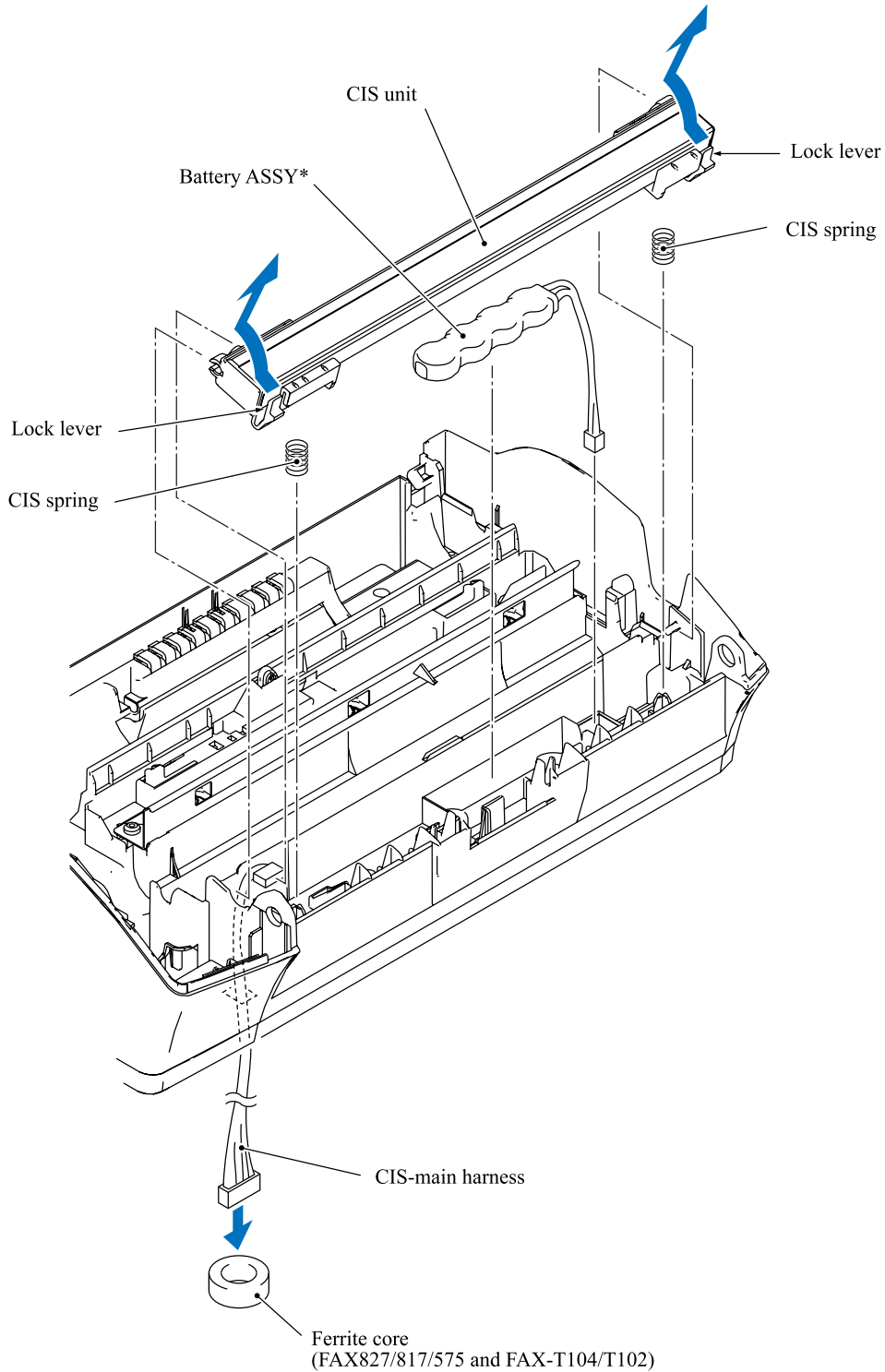
(9) Take the CIS holders off the CIS unit by removing the screws.

CIS unit

Taptite, bind B M3x8

CIS holder

CIS holder

Confidential
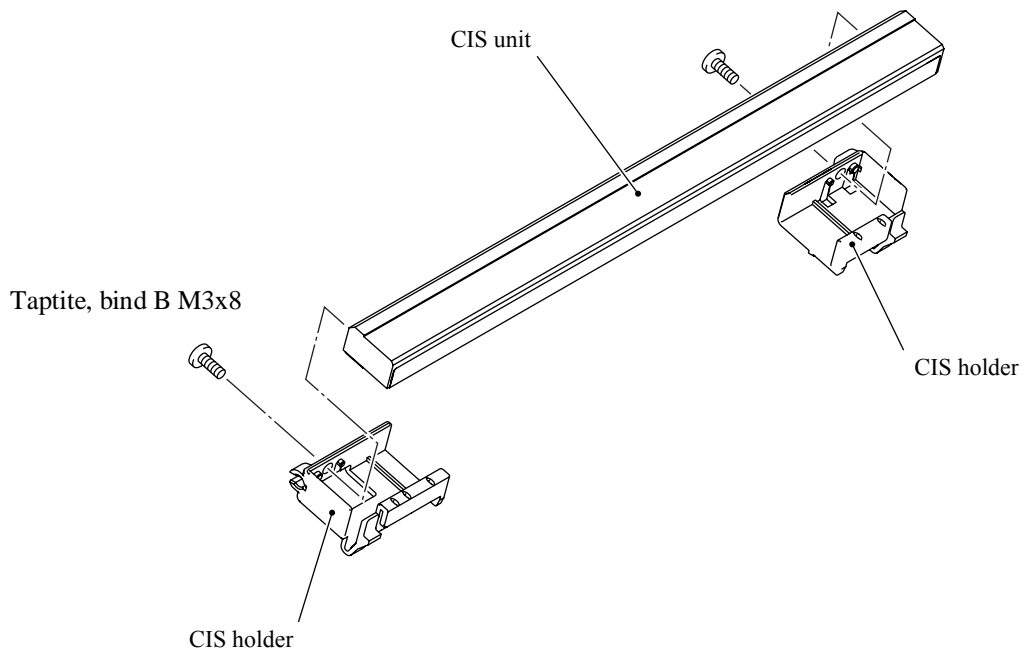
5.1.13 NCU/PS Enclosure, NCU PCB, Power Supply PCB, and Main PCB

(1) Turn the main cover upside down.

(2) Disconnect the head-main harness (red) from the main PCB and take it from the cable guides on the NCU/PS enclosure.

(3) Remove the screw from the NCU/PS enclosure.

(4) Lightly pull up the power supply PCB and NCU PCB to disconnect them from the main PCB.

(5) Lift the NCU/PS enclosure up and out of the main cover.

Confidential
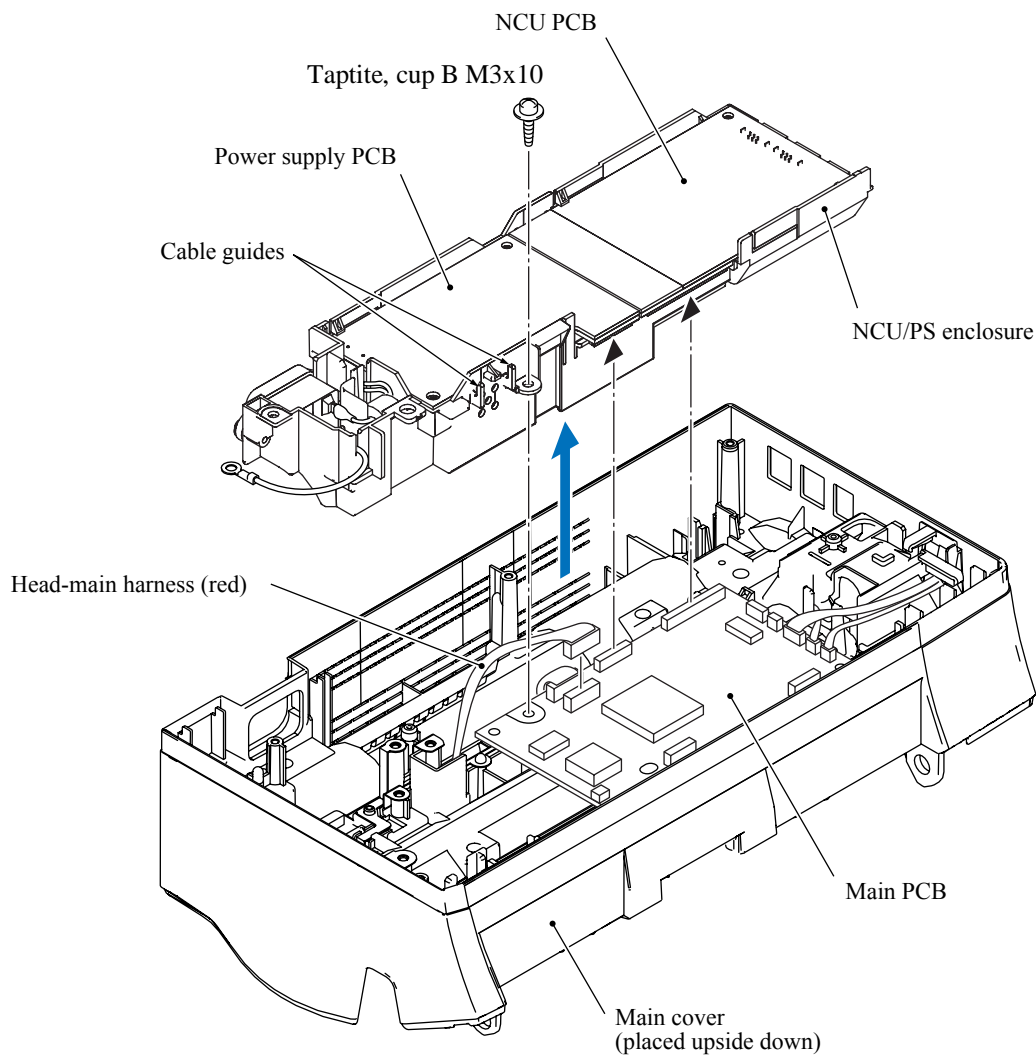
(6) Unlatch the NCU PCB.

(7) Remove the two screws from the power inlet and unlatch the power supply PCB.

NCU PCB

Power supply PCB

Power inlet

Taptite, cup B M3x10

Grounding wire

Latch

Latch

NCU/PS enclosure
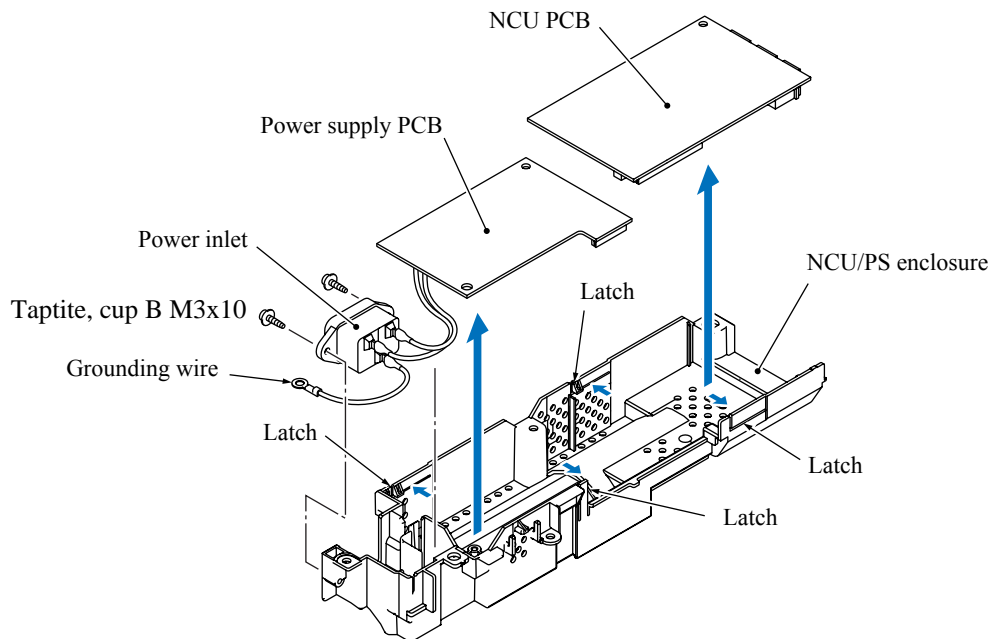
Latch

Latch

(8) Disconnect the following harnesses from the main PCB.

- Head-main harness (white)
- Sensor-main harness
- Ribbon switch harness
- Speaker harness

(9) Release the main PCB from the three latches on the main cover.

Main PCB

Ribbon switch harness

Sensor-main harness

Head-main harness (white)

(Head-main harness (red))

Speaker harness

3 latches

Main cover
(placed upside down)

FAX837MC/FAX-T106

Head-main harness, white
(9-pin)

(Head-main harness, red
(9-pin))

Connect to
power supply PCB
(9-pin)

Connect to NCU PCB
(15-pin)

(Motor harness
(5-pin))

(Cam switch harness
(2-pin))

Sensor-main harness
(5-pin)

Ribbon switch harness
(2-pin)

Speaker harness
(2-pin)

Main PCB

Battery harness
(2-pin)

(CIS-main harness
(7-pin))

Panel-main harness (lower)
(6-pin)

Other models

Head-main harness, white
(9-pin)

(Head-main harness, red
(9-pin))

Connect to
power supply PCB
(9-pin)

Connect to NCU PCB
(15-pin for European/Asian version)
(11-pin for U.S.A/Canadian version)

(Motor harness
(5-pin))

(Cam switch harness
(2-pin))

Sensor-main harness
(5-pin)

Ribbon switch harness
(2-pin)

Speaker harness
(2-pin)

Main PCB

(CIS-main harness
(7-pin))

Panel-main harness (lower)
(5-pin)

■ **Reassembling Notes**

- When mounting the power inlet to the NCU/PS enclosure, face the grounding wire side down. See the previous page illustration.

- After mounting the NCU/PS enclosure, route the head-main harness (red) through the cable guides on the NCU/PS enclosure. Refer to Section 5.1.17.

Confidential

5.1.14 Ribbon Switch and Grounding Plate

(1) Turn the main cover rightside up.

(2) Insert the spring hook or tweezers into the smallest hole (there are three square holes) to unhook the ribbon switch.

(3) Turn the main cover upside down.

(4) Remove the screw and lift up the grounding plate.

Grounding plate

Taptite, cup S M3x6

Ribbon switch

Main cover (rightside up)

Main cover
(placed upside down)

Spring hook

Ribbon switch

Smallest square hole

Confidential
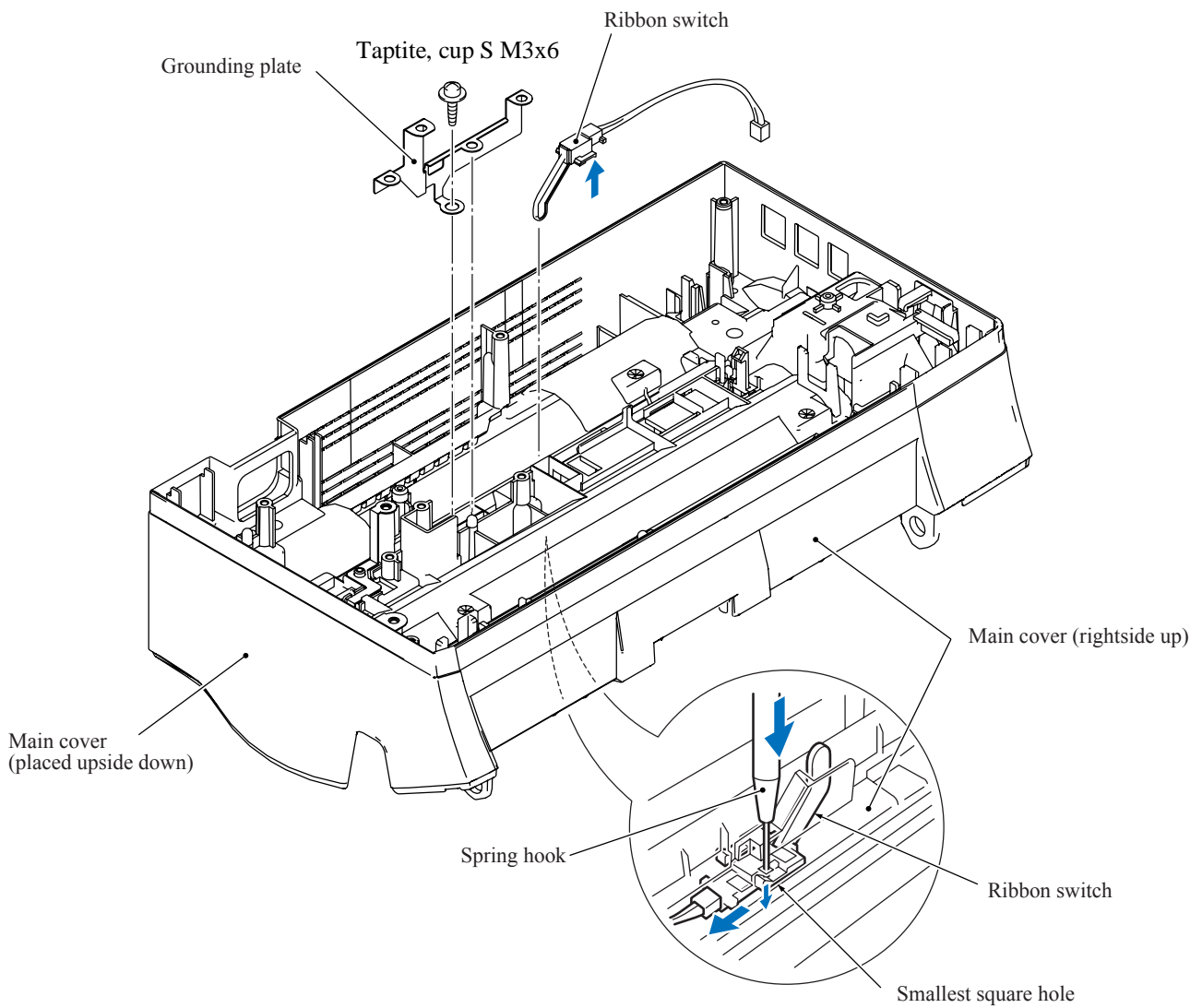
5.1.15 Speaker

(1) Turn the main cover rightside up.

(2) Pull the speaker and its spring up and out of the main cover.

Orienting the speaker and its harness
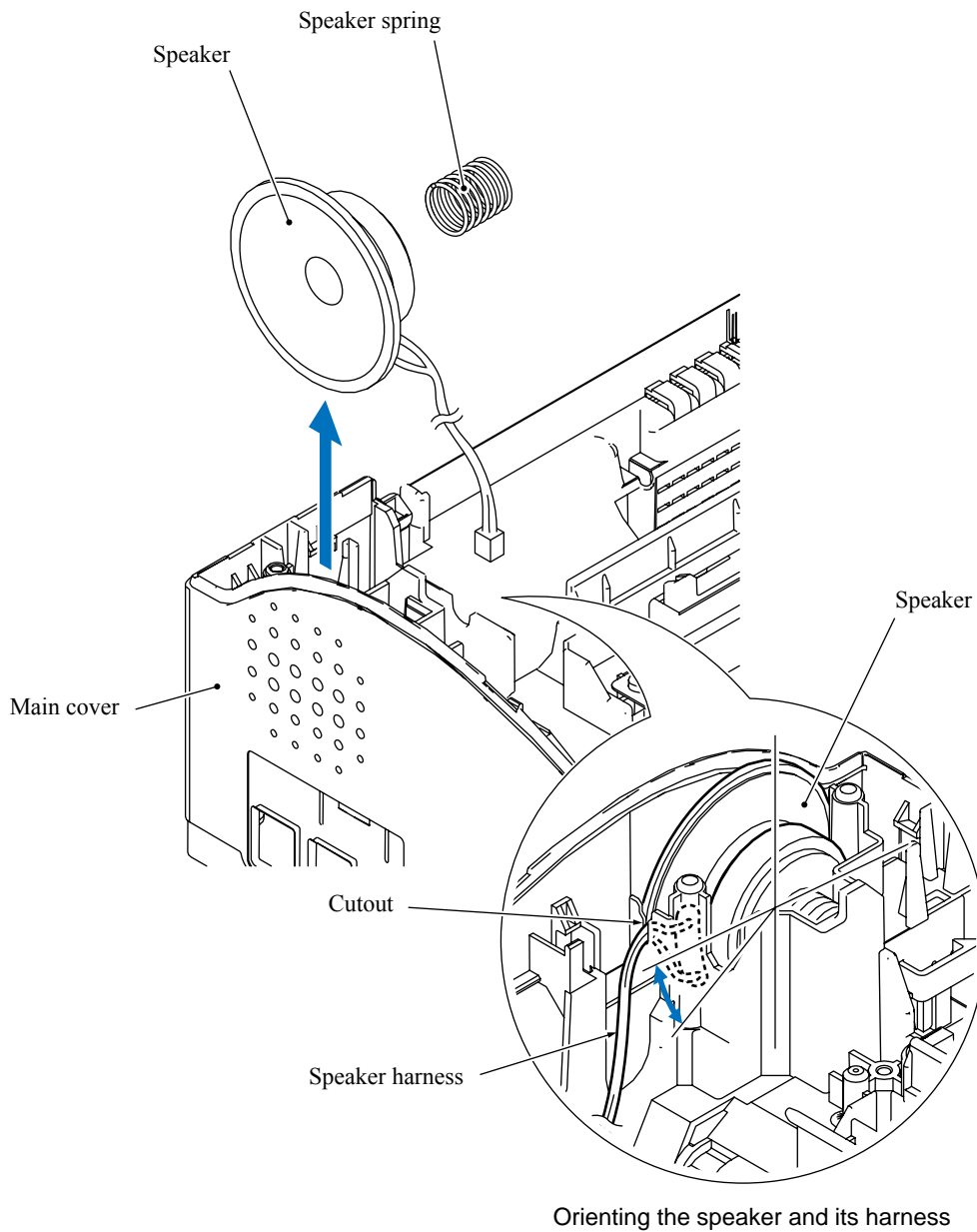
■ **Reassembling Notes**

• When mounting the speaker to the main cover, orient the speaker and its harness as shown above.

Confidential

5.1.16 Recorder Frame

(1) Remove the two screws from the recorder frame and lift it up and out of the main cover.

(2) Remove the head-main harnesses (red and white).

Recorder frame

Check that the top of the recorder frame is free from scratches or burrs.

Taptite, cup B M3x8

Main cover

Head-main harness (white)

Cable guides

Head-main harness (red)
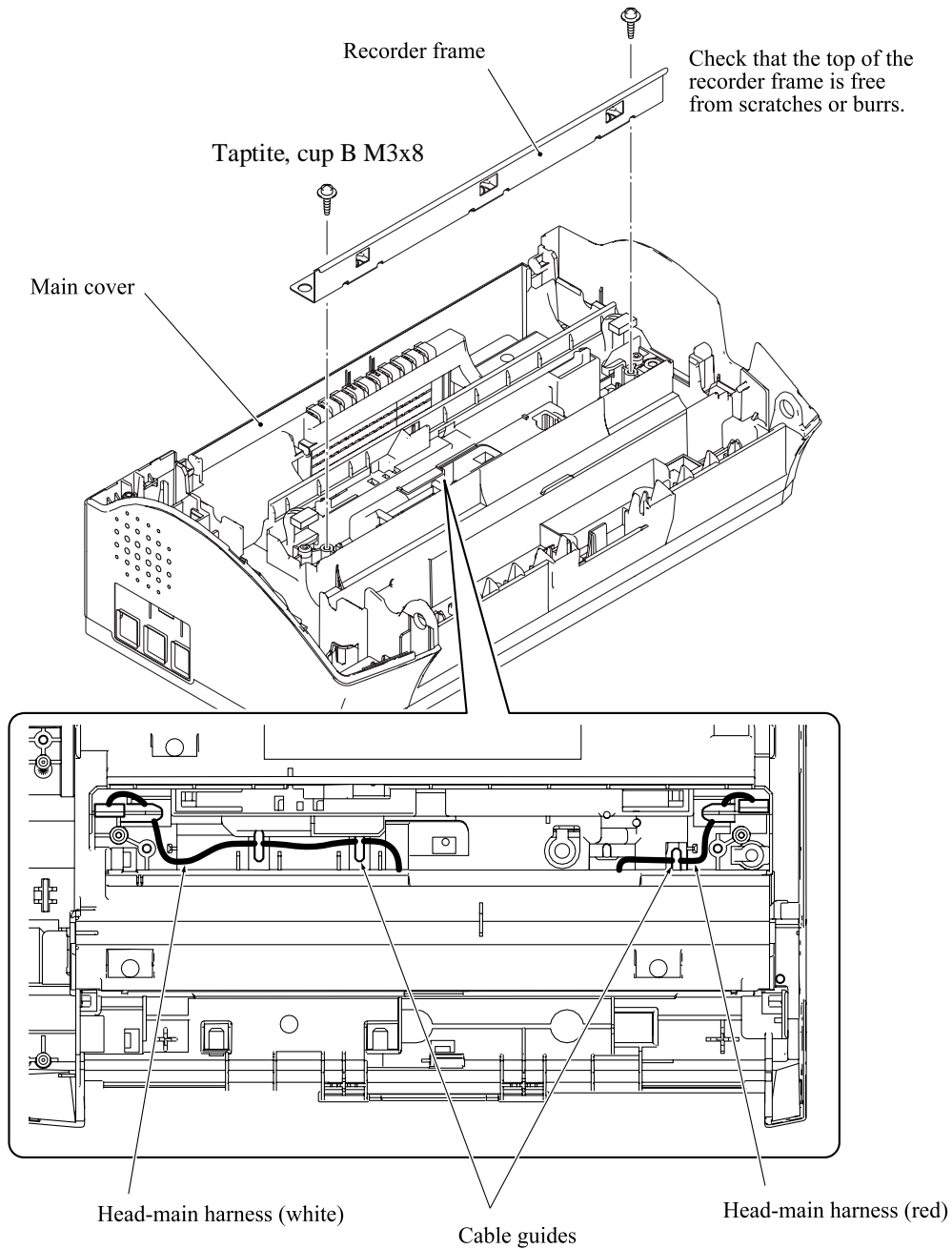
■ Reassembling Notes

• Before mounting the recorder frame, check that the top is free from scratches or burrs. Those on the top will affect the quality of printed images.

Confidential

5.1.17 Routing of the Harnesses

(Power supply PCB)

(NCU PCB)

Head-main harness, white (9-pin)
(NCU/PS enclosure)

Ribbon switch harness (2-pin)

Motor harness (5-pin)

(Power inlet)

Battery harness (2-pin)
(FAX837MC/FAX-T106)

Head-main harness, red (9-pin)

(Main PCB)

CIS-main harness (7-pin)

Cam switch harness (2-pin)

Panel-main harness (lower)
(6-pin for FAX837MC/FAX-T106,
5-pin for other models)

Sensor-main harness (5-pin)

Speaker harness (2-pin)

Confidential

5.2 LUBRICATION

Apply the specified lubricants to the lubrication points as shown below.

Lubricant type (Manufacturer)	Lubrication points	Lubricant amount
ZZG-206 (Sankei kagaku co. Ltd.)	Paper chute ASSY	2 mm dia. ball

■ Paper chute ASSY

Apply a 2 mm dia. ball of grease (ZZG-206) to each of the following lubrication points.

(Rear)

Gears 24

2 mm dia. ball of grease (ZZG-206)

Confidential
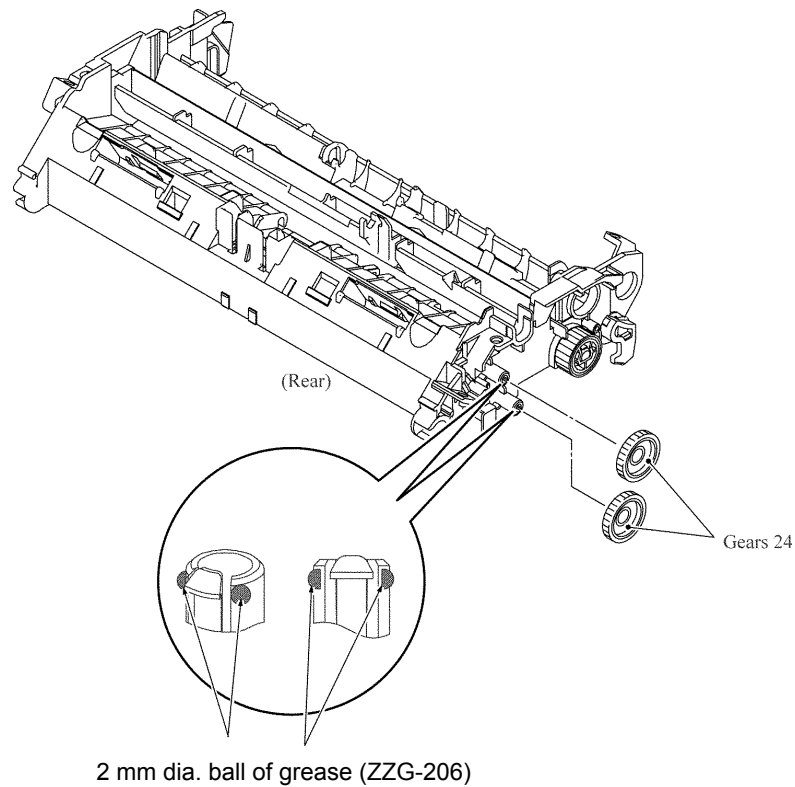
CHAPTER 6

ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

CHAPTER 6 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

This chapter details adjustments and updating of settings, which are required if the main PCB has been replaced.

CONTENTS

6.1 IF YOU REPLACE THE MAIN PCB

The main PCB should be replaced not only when it is defective but also when the program requires updating. This is because in same machines, the ROM is mounted on the main PCB directly, not via a ROM socket.

[1]   EEPROM customizing

For the PAN NORDIC (Norway, Sweden, Finland, and Denmark), OCEANIA (Australia and New Zealand), and EAST EUROPE (Czech, Hungary, Poland, Bulgaria, Romania, and others) versions *and* replacement with a new main PCB

- In case that the customer is not specified or the setting is uncertain and EEPROM customizing needs to be done by customers.

(1) Turn the machine on.
   The "SET COUNTRY" and "PRESS SET KEY" appear alternately on the LCD.

(2) Press the 1 and 3 key at the same time.
   It skips EEPROM customizing.

NOTE: In this case, the machine will ask EEPROM customizing again when the power is on next time.

- In case that customer's specification is obvious and EEPROM customizing is set in advance as a service.

(1) Turn the machine on.
   The "SET COUNTRY" and "PRESS SET KEY" appear alternately on the LCD.

(2) Press the **Menu/Set** key.

   PAN NORDIC version: The "NORWAY" and "SELECT ↑↓ & SET" appear alternately.

   OCEANIA version: The "AUSTRALIA" and "SELECT ↑↓ & SET" appear alternately.

   EAST EUROPE version: The "CZECHO" and "SELECT ↑↓ & SET" appear alternately.

(3) Use the ▲ and ▼ keys to select the target country and press the **Menu/Set** key.

   The machine displays the "ACCEPTED" on the LCD and switches back to standby.

(4) Before proceeding to "[2] EEPROM parameter initialization," press the **Menu/Set**, *****, **2**, **8**, **6** and **4** keys in this sequence to enter the maintenance mode.

For other versions *or* replacement with a used main PCB

(1) Press the **Menu/Set**, *****, **2**, **8**, **6** and **4** keys in this sequence to make the machine enter the maintenance mode.

(2) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

   The current customizing code (e.g., 2004 in the case of FAX-T106 U.K. model) appears.

(3) Enter the desired customizing code (e.g., 2003 in the case of FAX-T106 German model).

   The newly entered code appears.

   NOTE: *If a wrong 4-digit code is entered, the machine will malfunction.*

(4) Press the **Fax Start** key.

The machine saves the setting and returns to the initial stage of the maintenance mode.

If you press the **Stop/Exit** key or no keys are pressed for one minute in the above procedure, the machine stops the procedure and returns to the initial stage of the maintenance mode.

[2] EEPROM parameter initialization

(1) Press the **0** and **1** keys (or the **9** and **1** keys according to your need) in this order in the initial stage of the maintenance mode.

The "PARAMETER INIT" appears on the LCD.

(2) Upon completion of parameter initialization, the machine returns to the initial stage of the maintenance mode.

[3] ID code entry to the EEPROM

(1) Press the **8** and **0** keys in this order in the initial stage of the maintenance mode.

An unspecified code appears on the LCD.

(2) Press the **9**, **4**, **7**, and **5** keys in this order.

The LCD switches to the edit mode, showing a cursor.

(3) Enter the serial number given on the bottom plate using the ◄ and ► keys.

Alphabets and numerals are assigned to the keys as listed below.

0 key	0
1 key	1
2 key	2, A, B, C
3 key	3, D, E, F
4 key	4, G, H, I
5 key	5, J, K, L
6 key	6, M, N, O
7 key	7, P, Q, R, S
8 key	8, T, U, V
9 key	9, W, X, Y, Z
* key	--
# key	--

(4) Press the **Menu/Set** key.

The machine displays the newly entered ID code on the LCD for 0.5 second and then returns to the initial stage of the maintenance mode.

To cancel the ID code entry, press the **Stop/Exit** key instead of the **Menu/Set** key. The machine beeps for one second and returns to the initial stage of the maintenance mode.

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[4] CIS scanner area setting

(1) Press the **5** key twice in the initial stage of the maintenance mode.

The "SCANNER AREA SET" and "WHITE LEVEL INIT" appear on the LCD in this order.

The machine checks and sets the area to be scanned.

If no error is noted, the machine returns to the initial stage of the maintenance mode.

If any error is noted, the "SCANNER ERROR" appears on the LCD. To return the machine to the initial stage of the maintenance mode, press the **Stop/Exit** key.

[5] Document draw adjustment

(1) In the initial stage of the maintenance mode, place the TC-027 Ver. 2 chart *face down* in the document stacker.

The message "DOC. READY" appears on the LCD.

(2) Press the **Menu/Set** key.

The machine beeps and draws in the TC-027 chart to the scanning start position. While drawing it in, the machine counts patterns on the chart to determine the amount of draw.

Upon completion of normal counting, the machine shows the message "COPY   P.01 SUP" on the LCD and begins copying the TC-027 chart. The message "REAR SENSOR IS ADJUSTED." and the copied image will be printed out on recording paper as shown below.

If any error occurs during counting, the message "MACHINE ERROR AB" appears on the LCD, with no copying of the TC-027 chart onto the recording paper. However, only the message "REAR SENSOR IS ADJUSTED." will be printed out.

(3) To exit the maintenance mode, press the **9** key twice in the initial stage of the maintenance mode.
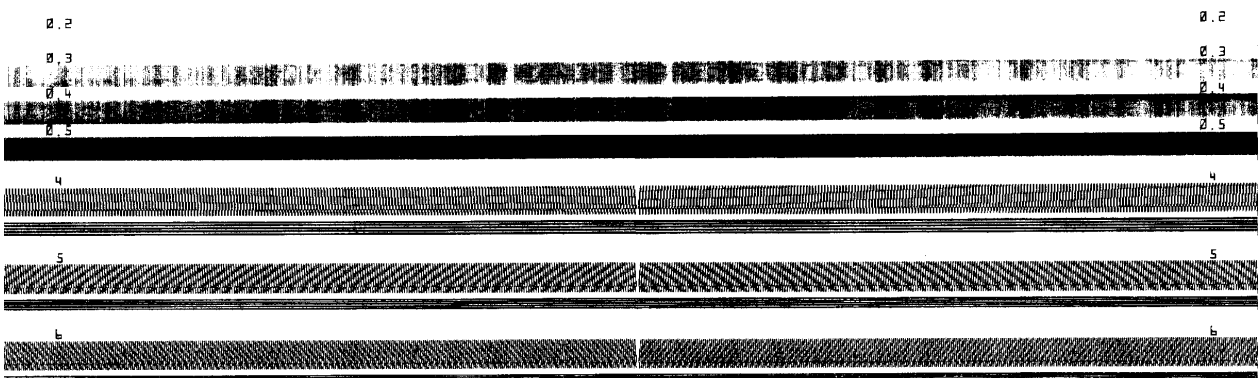
Printout after Normal Completion of Document Draw Adjustment

[6] If the setup is done so that the customer runs the EEPROM customizing

Even EEPROM customizing is set already, the customer can change the setting when the machine is turned on. The procedures are below.

NOTE: This function is available only for the PAN NORDIC, OCEANIA, EAST EUROPE versions.

(1) Press the **Menu/Set**, *****, **2**, **8**, **6** and **4** keys in this sequence to make the machine enter the maintenance mode.

(2) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

The current customizing code appears.

(3) Enter the desired customizing code.

PAN NORDIC version: 2057.

OCEANIA version: 2056.

EAST EUROPE version: 2087.

The newly entered code appears.

NOTE: If a wrong 4-digit code is entered, the machine will malfunction.

(4) Press the **Fax Start** key.

The machine saves the setting and returns to the initial stage of the maintenance mode.

CHAPTER 7

CLEANING

This chapter is not applicable to FAX models covered by this manual.

CHAPTER 8

MAINTENANCE MODE

CHAPTER 8 MAINTENANCE MODE

This chapter describes the maintenance mode which is exclusively designed for the purpose of checks, settings and adjustments using the keys on the control panel.

In the maintenance mode, you can customize the memory (EEPROM: electrically erasable programmable read-only memory) contents according to the shipment destination of the machine concerned. In addition, you can perform operational checks of the LCD, control panel PCB or sensors, perform a print test, display the log information or error codes, and modify firmware switches (WSW).

CONTENTS

8.1 ENTRY INTO THE MAINTENANCE MODE

<u>European models:</u>

Press the **Menu/Set**, *****, **2**, **8**, **6**, and **4** keys in this sequence to make the machine enter the maintenance mode. $\longmapsto$ Within 2 seconds $\longrightarrow$|

<u>Other models:</u>

Press the **Menu/Set** and **Fax Start** keys. Next press the ▲ key four times to make the machine enter the maintenance mode. **(TIP:** Models equipped with numerical keypads can enter the maintenance mode in the same way as conventional models; that is, by pressing the **Menu/Set**, *****, **2**, **8**, **6** and **4** keys in this sequence.)

The machine beeps for approx. one second and displays " ▮▮ MAINTENANCE ▮▮▮ " on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the keys.

To select one of the maintenance-mode functions listed in Section 8.2, enter the corresponding 2-digit function code with the numerical keys on the control panel. (The details of each maintenance-mode function are described in Section 8.4.)

NOTES • To exit from the maintenance mode and switch to standby, press the **9** key twice in the initial stage of the maintenance mode.

   • Pressing the **Stop/Exit** key after entering only one digit restores the machine to the initial stage of the maintenance mode.

   • If an invalid function code is entered, the machine resumes the initial stage of the maintenance mode.

8.2 LIST OF MAINTENANCE-MODE FUNCTIONS

Maintenance-mode Functions

Function Code	Function	Reference Section (Page)
01	EEPROM Parameter Initialization	8.4.1 (8-5)
05	Printout of Scanning Compensation Data	8.4.2 (8-6)
08	ADF Performance Test	8.4.3 (8-8)
09	Test Pattern	8.4.4 (8-9)
10	Firmware Switch Setting	8.4.5 (8-10)
11	Printout of Firmware Switch Data	8.4.5 (8-12)
12	Operational Check of LCD	8.4.6 (8-13)
13	Operational Check of Control Panel PCB (Check of Keys)	8.4.7 (8-14)
32	Sensor Operational Check	8.4.8 (8-16)
45	Handset Transmitter Volume Control	8.4.9 (8-17)
53	Transfer of Received FAX Data and/or Equipment's Log	8.4.10 (8-18)
54	Fine Adjustment of Scanning Start/End Position	8.4.11 (8-19)
55	CIS Scanner Area Setting	8.4.12 (8-20)
74	EEPROM Customizing	8.4.13 (8-20)
80	ID Code Entry to the EEPROM	8.4.14 (8-21)
82	Equipment Error Code Indication	8.4.15 (8-22)
87	Output of Transmission Log to the Telephone Line	8.4.16 (8-22)
91	EEPROM Parameter Initialization (except the telephone number storage area)	8.4.1 (8-5)
99	Exit from the Maintenance Mode	----- (8-1)
-----	Document Draw Adjustment	8.4.17 (8-23)

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8.3 USER-ACCESS TO THE MAINTENANCE MODE

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you can allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 10, 11, 12, 45, 53, 80, 82, 87, and 91) are _shaded_ in the table given on the previous page. Function code 10 accesses the firmware switches, each of which has eight selectors. You should not allow end users to access all of those selectors, but you can allow them to access user-accessible selectors which are _shaded_ in the firmware switch tables in Appendix 4.

The service personnel should instruct end users to follow the procedure given below.

European models:

(1) Press the **Menu/Set, Fax Start,** and **Menu/Set** keys in this order.

The "0" appears on the LCD.

(2) Enter the desired function code (10, 11, 12, 45, 53, 80, 82, 87, or 91) with the numerical keys.

For function code 10, access the desired firmware switch according to the operating procedure described in Appendix 4.

(3) To switch the machine back to the standby state, press the **Stop/Exit** key. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

FAX-T102/FAX-T104/FAX-T106
(The below illustration of **Menu/Set, Stop/Exit, Fax Start** keys in the FAX-T106 also applies on FAX-T102 and FAX-T104)

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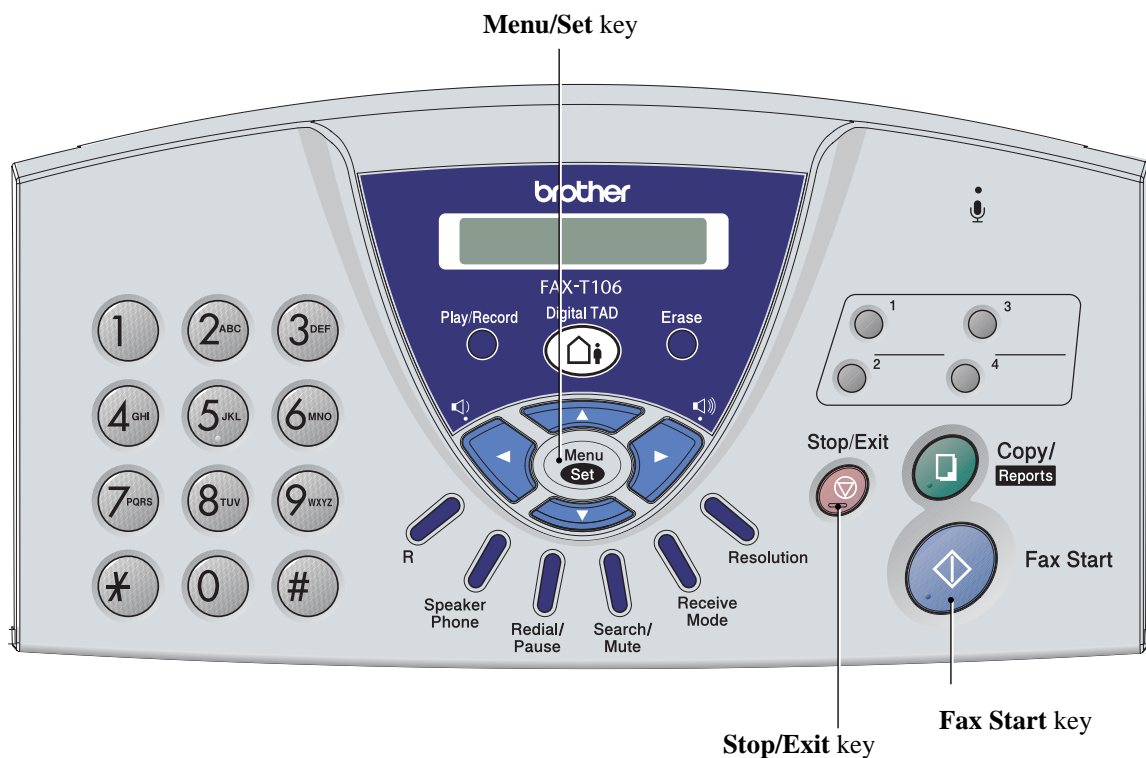
Other models:

(1) Press the **Menu/Set, Fax Start, Menu/Set** and **Fax Start** keys in this order.

The "MAINTENANCE 10" appears on the LCD.

(2) To access function code 10, press the **Menu/Set** key.

To access any other function code, call up the desired code using the ▲ and ▼ keys or numerical keys.

Then press the **Menu/Set** key.

For function code 10, access the desired firmware switch according to the operating procedure described in Appendix 4.

(3) To switch the machine back to the standby state, press the **Stop/Exit** key. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

FAX575/FAX817/FAX827/FAX837MC

(The below illustration of **Menu/Set, ▲, ▼ ,Stop/Exit, Fax Start** keys in the FAX575 also applies on FAX817, FAX827, and FAX837MC)
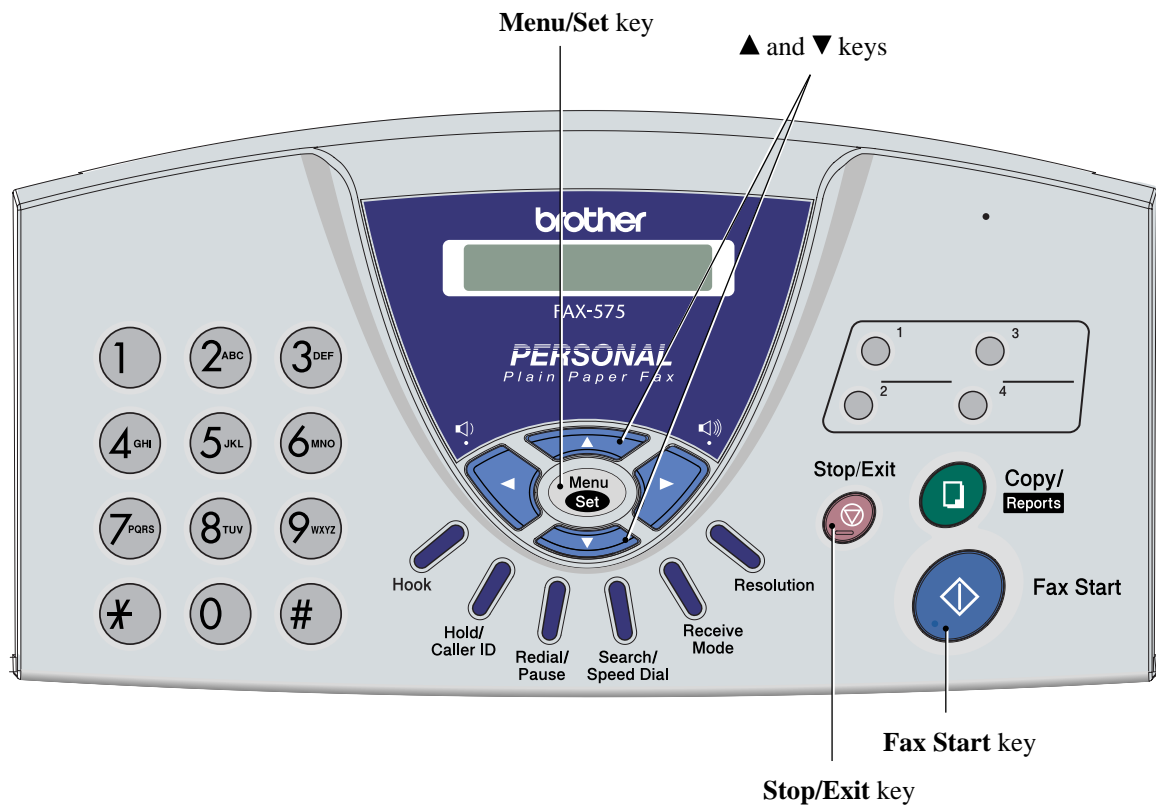
8.4 DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

8.4.1 EEPROM Parameter Initialization (Function code 01, 91)

■ Function

The machine initializes the parameters, user switches, and firmware switches registered in the EEPROM, to the initial values. Entering the function code 01 initializes almost all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

Function code Data item	01	91
Maintenance-mode functions User switches Firmware switches Remote activation code Activity report Distinctive ringing patterns registered	All of these will be initialized.	These will be initialized.
Station ID data Outside line number Cover page custom comments Remote access code FAX forwarding/paging Personal mailbox password Telephone function registration One-touch dialing Speed dialing Group dialing		These will <u>not</u> be initialized.
EEPROM customizing code (4-digit) ID code	This will <u>not</u> be initialized. (Note that the first digit of the 4-digit code will be initialized to "0." If the code is <u>9</u>001, for example, it will be initialized to <u>0</u>001.)	

NOTE: If you replace the main PCB with the one used for any other machine, carry out this procedure and then customize the EEPROM (maintenance-mode function code 74 in Section 8.4.12).

■ Operating Procedure

(1) Press the **0** and **1** keys (or the **9** and **1** keys according to your need) in this order in the initial stage of the maintenance mode.

The "PARAMETER INIT" will appear on the LCD.

(2) Upon completion of parameter initialization, the machine returns to the initial stage of the maintenance mode.

Confidential

8.4.2 Printout of Scanning Compensation Data (Function code 05)

■ **Function**

The machine prints out the white and black level data for scanning compensation.

■ **Operating Procedure**

Do not start this function merely after powering on the machine but start it after carrying out a sequence of scanning operation. Unless the machine has carried out any scanning operation, this function cannot print out correct scanning compensation data. This is because at the start of scanning operation, the machine initializes white and black level data and takes in the scanning compensation reference data.

(1) Press the **0** and **5** keys in this order in the initial stage of the maintenance mode.

The "WHITE LEVEL 1" will appear on the LCD.

(2) The machine prints out the scanning compensation data list containing the following:

 a) White level data (208 bytes)
 b) Black level data (1 byte)
 c) White level data for compensation operation of background color (100 bytes)
 d) Initial clamp PWM value (1 byte)
 e) Clamp PWM value (1 byte)
 f) Compensation data for background color (1 byte)
 g) Upper and lower limit data for the compensation factor of background color (4 bytes)
 h) Initial LED light intensity value (1 byte)
 i) LED light intensity value (1 byte)
 j) LED light intensity value on the white film of the document pressure bar ASSY and documents (2 bytes)
 k) Document rear sensor adjustment value (1 byte)

(3) Upon completion of recording of the compensation data list, the machine returns to the initial stage of the maintenance mode.

NOTE: If any data is abnormal, its code will be printed in inline style, as shown on the next page.

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a)
```
5F00 : 22 24 25 24 25 25 25 27  25 29 29 29 27 29 2B 2B
5F10 : 27 29 25 25 25 2B 2D 2D  2B 29 29 29 2D 2D 2B 2B
5F20 : 29 2D 2B 2B 2B 2D 2E 2D  2B 2B 27 25 25 2B 2B 2B
5F30 : 29 29 29 29 29 27 25 24  25 2B 29 27 29 29 27 29
5F40 : 27 29 25 25 25 2B 2B 2B  2B 29 2B 29 29 2B 2B 29
5F50 : 27 2B 27 29 2B 2B 29 29  27 29 25 25 25 2B 2D 2D
5F60 : 2B 2B 2B 2B 2B 2D 2D 2B  29 2B 2D 2E 2D 2D 2B 2B
5F70 : 2B 2B 29 29 27 2E 2E 2E  2D 2D 2D 2D 2D 2D 2D 2B
5F80 : 2D 32 32 34 32 32 32 32  30 30 2E 2B 29 2E 2E 30
5F90 : 30 2E 2E 2D 2B 2B 2B 2B  2D 30 2E 2E 2E 2D 2D 30
5FA0 : 2D 2E 2D 2B 29 2D 2D 2E  2E 2D 2D 2B 27 29 2B 29
5FB0 : 2D 2E 2D 2D 2E 2D 2D 2E  2D 2D 2D 2B 27 30 30 32
5FC0 : 34 32 32 30 30 30 30 2E  2E 30 32 2E 2E 2E 2E 3F
```

b)
```
5F00 : 00
```

c)
```
5F00 : 09 32 35 37 37 38 32 08  07 07 08 07 05 05 05 08
5F10 : 08 08 37 39 3A 39 3A 3B  09 07 07 0A 36 39 3B 3B
5F20 : 3B 3C 0F 08 08 07 09 3B  3B 3B 3B 39 34 09 08 09
5F30 : 08 1A 39 3B 3C 3C 3C 1D  08 09 09 08 37 3A 3A 3F
5F40 : 3E 3E 0A 09 09 38 3F 3F  3F 3E 3E 3F 00 08 08 00
5F50 : 00 05 3F 3F 3E 3C 33 09  09 09 08 08 08 07 07 07
5F60 : 07 08 07 09
```

d)
```
5F00 : AF
```

e)
```
5F00 : AF
```

f)
```
5F00 : 79
```

g)
```
5F00 : 3A 80 70 80
```

h)
```
5F00 : 81
```

i)
```
5F00 : 81
```

j)
```
5F00 : 77 7A
```

k)
```
5F00 : AD
```

Scanning Compensation Data List

8.4.3 ADF Performance Test (Function code 08)

■ **Function**

The machine counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

■ **Operating Procedure**

(1) Set documents (Allowable up to the ADF capacity) in the initial stage of the maintenance mode.

The "DOC. READY" will appear on the LCD.

(2) Press the **0** and **8** keys in this order.

The machine

i)   copies the 1st document and displays "COPY P.01 STD" on the LCD.

ii) feeds in and out the 2nd through 4th documents while counting without copying them as the LCD shows the corresponding count,

iii) copies the 5th document and displays "COPY P.05 STD" on the LCD,

iv) feeds in and out the 6th through 9th documents while counting without copying them as the LCD shows the corresponding count, and

v)   copies the 10th document and displays "COPY P.10 STD" on the LCD.

(3) Upon completion of feeding in and out all of the documents, the final count appears on the LCD.

(4) Press the **Stop/Exit** key to return the machine to the initial maintenance mode.

Confidential

8.4.4 Test Pattern 1 (Function code 09)

■ **Function**

This function, much like the copying function, prints out test pattern 1 to allow the service personnel to check for record data missing or print quality.

■ **Operating Procedure**

Press the **0** and **9** keys in this order in the initial stage of the maintenance mode.

The figure below shows test pattern 1.
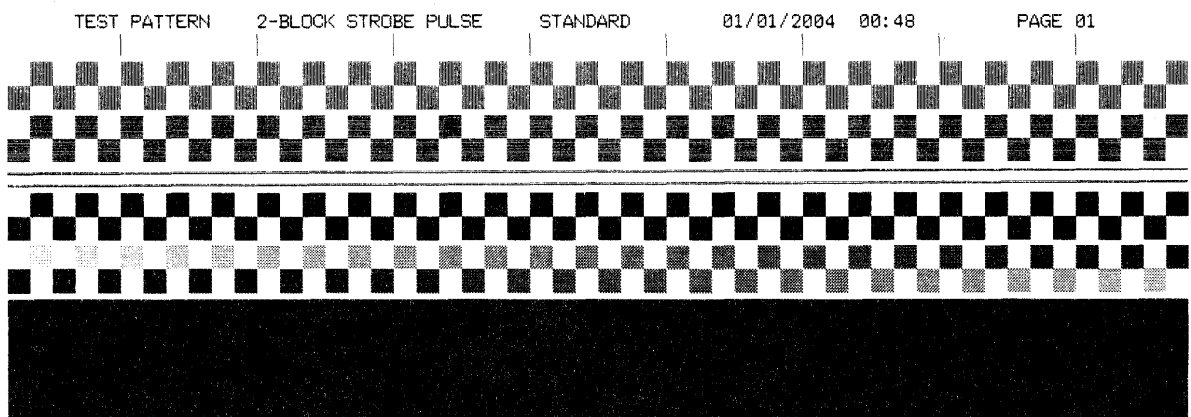
Test Pattern

8.4.5 Firmware Switch Setting and Printout (Function codes 10 and 11)

[A] Firmware switch setting

■ Function

The machine incorporates the following firmware switch functions which can be activated with the procedures using the control panel keys.

The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

Firmware Switches (WSW01 through WSW37)

WSW No.	Function
WSW01	Dial pulse setting
WSW02	Tone signal setting
WSW03	PABX mode setting
WSW04	TRANSFER facility setting
WSW05	1st dial tone and busy tone detection
WSW06	**Pause** key setting and 2nd dial tone detection
WSW07	Dial tone setting 1
WSW08	Dial tone setting 2
WSW09	Protocol definition 1
WSW10	Protocol definition 2
WSW11	Busy tone setting
WSW12	Signal detection condition setting
WSW13	Modem setting
WSW14	AUTO ANS facility setting
WSW15	REDIAL facility setting
WSW16	Function setting 1
WSW17	Function setting 2
WSW18	Function setting 3
WSW19	Transmission speed setting
WSW20	Overseas communications mode setting
WSW21	TAD setting 1
WSW22	ECM and call waiting caller ID
WSW23	Communications setting
WSW24	TAD setting 2
WSW25	TAD setting 3
WSW26	Function setting 4
WSW27	Function setting 5
WSW28	Function setting 6
WSW29	Function setting 7
WSW30	Function setting 8
WSW31	Function setting 9
WSW32	Function setting 10
WSW33	Function setting 11

WSW No.	Function
WSW34	Function setting 12
WSW35	Function setting 13
WSW36	Function setting 14
WSW37	Function setting 15

■ **Operating Procedure**

(1) Press the **1** and **0** keys in this order in the initial stage of the maintenance mode.

The machine displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.

(2) Enter the desired number from the firmware switch numbers (01 through 37).

The following appears on the LCD:

Selector 1   Selector 8
↓   ↓
WSWXX = 0 0 0 0 0 0 0 0

(3) Use the right and left arrow keys to move the cursor to the selector position to be modified.

(4) Enter the desired number using the **0** and **1** keys.

(5) Press the **Menu/Set** key. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.

(6) Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.

(7) Press the **Menu/Set** or **Stop/Exit** key to return the machine to the initial stage of the maintenance mode.

NOTES: • To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the **Stop/Exit** key.

• If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the machine will automatically return to the initial stage of the maintenance mode.

■ **Details of Firmware Switches**

The details of the firmware switches are described in in which the user-accessible selectors of the firmware switches are *shaded*.

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[B] Printout of firmware switch data

■ Function

The machine prints out the setting items and contents specified by the firmware switches.

■ Operating Procedure

(1) Press the **1** key twice in the initial stage of the maintenance mode.
The "PRINTING" will appear on the LCD.

(2) The machine prints out the configuration list as shown in the figure below.

(3) Upon completion of printing, the machine returns to the initial stage of the maintenance mode.

```
                        ┌─────────────────────┐
                        │ CONFIGURATION LIST  │
                        └─────────────────────┘

                                              MODEL: 8X4-604
                                              TIME : 01/01/2004 00:59
                                              REV. : LZ0396001  VER.T
                                              SUM  : E54F

              WSW25 = 00011010
                1-8. NOT USED
              WSW26 = 00110100
                1-3. NOT USED
                4-5. EXT. CNG DETECTION                 : C
                6-7. NOT USED
                8.   CNG DETECTION AFTER F/T TIME        : YES
              WSW27 = 00101001
                1.   NOT USED
                2.   RINGER OFF SELECT                   : YES
                3.   PLAYING OGM                         : ON
                4.   D/R TIMES ONLY                      : OFF
                5-7. NOT USED
                8.   RX HEAT CONTROL                     : ON
              WSW28 = 00000000
                1-3. DTMF HIGH FREQ. LEVEL ADJUST        : 0 DB
                4-6. DTMF LOW FREQ. LEVEL ADJUST         : 0 DB
                7-8. NOT USED
              WSW29 = 01101001
                1-3. SILENT REDUCTION LEVEL (LINE)       : D
                4-6. SILENT REDUCTION LEVEL (H/S)        : C
                7-8. NOT USED
              WSW30 = 10000001
                1-3. TONE DETECT LEVEL (ICM)             : E
                4-6. NOT USED
                7-8. PRINT ENERGY                        : B
              WSW31 = 10100101
                1.   NOT USED
                2.   REDUCTION LIMIT                     : ON
                3-4. NOT USED
                5.   D/R CHATTERING                      : 130 MS
                6-8. NOT USED
              WSW32 = 01010000
                1-4. NOT USED
                5-6. RESOLUTION HOME POSITION            : STD
                7-8. CONTRAST HOME POSITION              : AUTO
              WSW33 = 10000010
                1-3. SOUND DETECT LEVEL (LINE)           : E
                4-5. NOT USED
                6.   POLLED REPORT                       : ON
                7-8. COMFORTABLE NOISE LEVEL             : B
              WSW34 = 00010000
                1-3. CUT ADDRESS WHEN DETECT TONE        : 0 SEC
                4-5. INT. CNG DETECTION                  : C
                6-7. DTMF DIGIT FOR CNG DETECTION        : 3
                8.   NOT USED
              WSW35 = 01000000
                1-4. D.T. DETECT TIME IN ICM             : 4 SEC
                5-8. NOT USED
              WSW36 = 00000000
                1-5. NOT USED
                6-8. IGNORE CI COUNT                     : 0
              WSW37 = 10000101
                1-8. NOT USED

          WSW22 = 00000000
            1.   ECM TX                                  : ON
            2.   ECM RX                                  : ON
            3-8. NOT USED
          WSW23 = 00001111
            1.   FIX TCF CHECK                           : TOP
            2-3. TCF ERROR LIMIT                         : 0%
            4-5. RTN CRITERION                           : 14%
            6.   RTN ON UNSYNC. RECEIVE                  : NO
            7.   NOT USED
            8.   ATTENUATOR LIMIT                        : OFF
          WSW24 = 01000100
            1-2. OGM MAX TIME                            : 20 SEC
            3-4. DELAY OF CML ON-OGM                     : 4 SEC
            5-8. LINE PLAY ATTENUATOR                    : 4 DB

      WSW12 = 01001011
        1-2. OFF DETECTION TIME                          : 500 MS
        3-4. AUTO ANS OFF DETECTION TIME                 : 6 SEC
        5-6. ON DETECTION TIME                           : 250 MS
        7.   DELAY                                       : OFF
        8.   NOT USED
```

Configuration List

Confidential

8.4.6 Operational Check of LCD (Function code 12)

■ **Function**

This function allows you to check whether the LCD on the control panel works normally.

■ **Operating Procedure**

Checking the display state of the LCD:

(1) Press the **1** and **2** keys in this order in the initial stage of the maintenance mode.

   The LCD shows the screen given at right.

(2) Press the **Fax Start** key.

   Each time you press the **Fax Start** key, the LCD cycles through the displays shown at right.

Fax Start key

■■■■■■■■■■■■■■■■

Fax Start key

□□□□□□□□□□□□□□□□
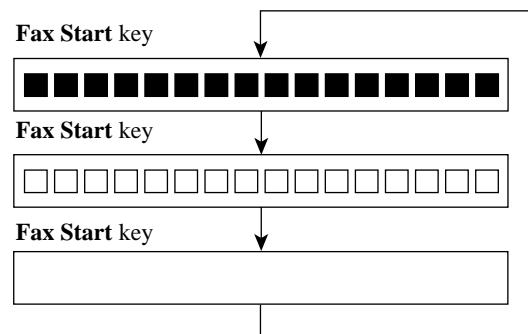
Fax Start key

(3) Press the **Stop/Exit** key (or no keys for one minute).

   The "OK:START NG:*KEY" appears on the LCD.

(4) Press the **Fax Start** key.

   The machine returns to the initial stage of the maintenance mode.

8.4.7 Operational Check of Control Panel PCB (Function code 13)

■ **Function**

    This function allows you to check the control panel PCB for normal operation.

■ **Operating Procedure**

(1) Press the **1** and **3** keys in this order in the initial stage of the maintenance mode.

    The "00   " appears on the LCD.

(2) Press the keys in the order designated in the illustration shown below.

    The LCD shows the corresponding number in decimal notation each time a key is pressed. Check that the displayed number is correct by referring to the illustration below.

    If a key is pressed out of order, the machine beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key entry for operational check, press the **Stop/Exit** key.

(3) After the last number key is pressed, the machine beeps and returns to the initial stage of the maintenance mode.

    To terminate this operation, press the **Stop/Exit** key. The machine returns to the initial stage of the maintenance mode.

FAX-T106/FAX837MC

(The illustration below is FAX-T106. Some of the keys' names in the FAX837MC are different from the FAX-T106, but the layout of the keys is the same. Please follow the instruction below to operate.)

Key Entry Order (1)

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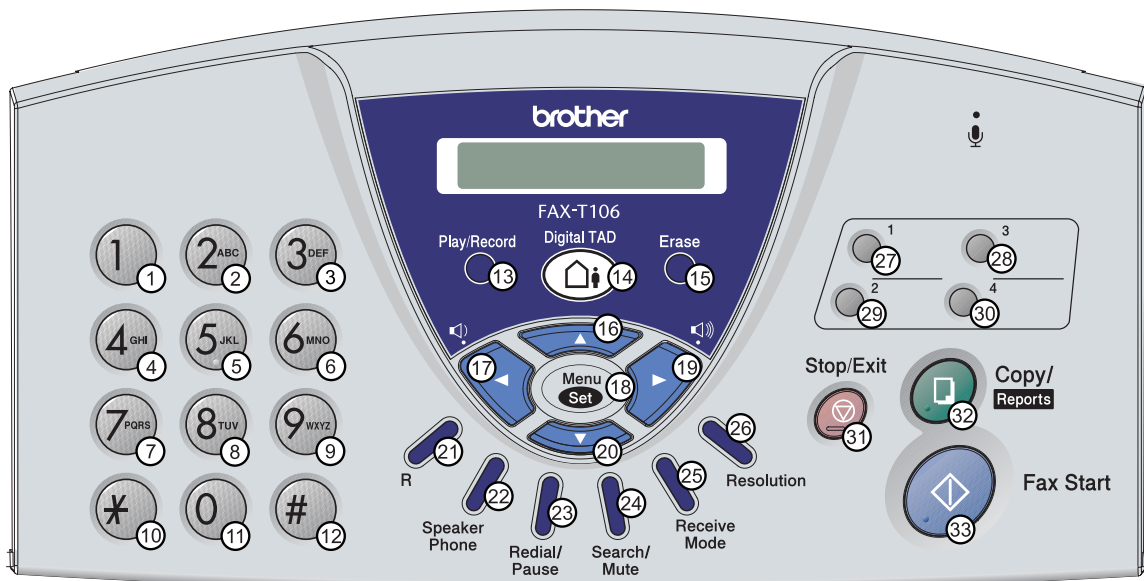
FAX-T102/ FAX-T104/ FAX575/ FAX827/ FAX817

(The illustration below is FAX-T104. Some of the keys' names in the FAX-T102/ FAX575/ FAX827/ FAX817 are different from the FAX-T104, but the layout of the keys is the same. Please follow the instruction below to operate.)

Key Entry Order (2)

8.4.8 Sensor Operational Check (Function code 32)

■ **Function**

This function allows you to check that the seven sensors (document front sensor, document rear sensor, cover sensor, hook switch*, registration sensor, ribbon sensor, and cam switch) operate correctly.

* Not provided on the FAX-T102.

■ **Operating Procedure**

(1) Press the **3** and **2** keys in this order in the initial stage of the maintenance mode.

The machine sounds 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker:

```
                    ┌─────────────────────────┐
              ┌────→│      1100 Hz            │────┐
              │     │ Low → Medium → High     │    │
         OFF  │     └─────────────────────────┘   OFF
              │     ┌─────────────────────────┐    │
              └─────│      400 Hz             │←───┘
                    │ High ← Medium ← Low     │
                    └─────────────────────────┘
```
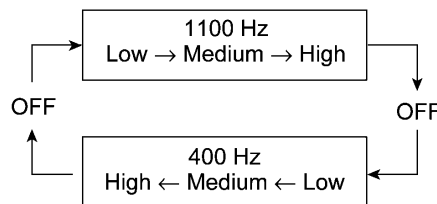
To disable the speaker, press the **Menu/Set** key. With the key, you may toggle the speaker on and off.

If the sensing status are as listed below, the LCD shows the following:

"FRERCPHRXCHHK 0"

In this area a numeral appears, indicating the number of communications records printed out at the factory for testing.

Given below is the relationship between the LCD indication, sensor name and sensing status.

LCD	Sensors	Sensing status
FRE	Document front and rear sensors	No document detected
RC	Cover sensor	Control panel ASSY closed
PH	Registration sensor	Recording paper loaded
RX	Ribbon sensor	Ribbon cartridge loaded
CH	Cam switch (in the drive unit)	Switching cam switch ON
HK	Hook switch*	On-hook state

* The FAX-T102 has no hook switch, but it displays the HK.

(2) Change the detecting conditions and check that the displayed letters disappear. For example, insert a document through the document front (or rear) sensor and check that the "F" (or "E") of the FRE disappears.

(3) Press the **Stop/Exit** key.

The "OK:START NG:*KEY" appears on the LCD.

(4) Press the **Fax Start** key.

The machine returns to the initial stage of the maintenance mode.

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8.4.9 Handset Transmitter Volume Control (Function code 45)

■ **Function**

The handset of this machine is smaller than that of conventional machines so that the microphone is far from the user's mouth. To compensate for the distance, the sound volume of the transmitter is set to High by default. This function turns the attenuator for the transmitter on (Low volume) or off (High volume).

■ **Operating Procedure**

(1) Press the **4** and **5** keys in this order in the initial stage of the maintenance mode.

The "HANDSET LEV:OFF" and "SELECT ↑↓ & SET" appear alternately on the LCD, indicating that the attenuator is off and the transmitter volume is High.

(2) Use the ▲ or ▼ key to display the "HANDSET LEV:ON" and "SELECT ↑↓ & SET" alternately, indicating that the attenuator is on and the transmitter volume is Low.

(3) Press the **Menu/Set** key.

The machine displays the "ACCEPTED" and returns to the initial stage of the maintenance mode.

8.4.10 Transfer of Received FAX Data and/or Equipment's Log (Function code 53)

■ **Function**

This function transfers received FAX data to another machine. It is useful when the machine cannot print received data due to the printing mechanism defective.

NOTE: The number of files that can be transferred <u>at a time</u> is 99. To transfer 100 files or more, carry out the following procedure more than one time.

TIP: If there are both color and monochrome data in a file to be transferred, the monochrome data will be transferred first. If the receiver machine does not support the color function, the sender machine cannot transfer color data, resulting in an error.

■ **Operating Procedure**

(1) Press the **5** and **3** keys in this order in the initial stage of the maintenance mode.

The "FAX TRANSFER" appears on the LCD.

(2) <u>To transfer received files</u>, press the **1** key.

The "1.FAX_TRANSFER" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.

(3) <u>To transfer the activity report only</u>, press the **2** key.

The "2.REPORT_TRANS" appears.

(4) <u>To check the number of received files</u>, press the **3** key.

The "**3**.NO. OF JOBS" appears on the LCD.

Press the **Menu/Set** key, and the number of received files appears, just as "NO. OF. JOBS: 10."

(5) With the "1.FAX TRANSFER" or "2.REPORT TRANS" being displayed, press the **Menu/Set** key.

The "ENTER&SET" appears.

(6) Enter the telephone number of the receiver machine and press the **Menu/Set** key again.

NOTE: Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.

The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.

No station ID is attached.

8.4.11 Fine Adjustment of Scanning Start/End Position (Function code 54)

■ **Function**

This function allows you to adjust the scanning start/end position.

■ **Operating Procedure**

(1) Press the **5** and **4** keys in this order in the initial stage of the maintenance mode.

The LCD shows the current scanning position correction value as shown at right.

(2) Press the **Fax Start** key.

Each time you press the **Fax Start** key, the LCD cycles through the displays shown at right.

That is, pressing this key cycles through the correction values (mm) as shown below.

$$0 \rightarrow -1 \rightarrow -2 \rightarrow +1$$

```
┌─────────────────────────┐ ◄──┐
│   SCAN EDGE ADJ  0      │    │
└─────────────────────────┘    │
           │ Fax Start key     │
           ▼                   │
┌─────────────────────────┐    │
│   SCAN EDGE ADJ  -1     │    │
└─────────────────────────┘    │
           │ Fax Start key     │
           ▼                   │
┌─────────────────────────┐    │
│   SCAN EDGE ADJ  -2     │    │
└─────────────────────────┘    │
           │ Fax Start key     │
           ▼                   │
┌─────────────────────────┐    │
│   SCAN EDGE ADJ  +1     │    │
└─────────────────────────┘    │
           │ Fax Start key     │
           └───────────────────┘
```
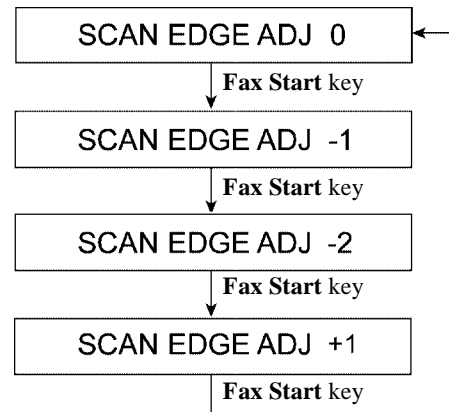
(3) To stop this operation, press the **Stop/Exit** key. The machine beeps for one second and returns to the initial stage of the maintenance mode.

NOTE: The relationship between the scanning start/end positions and their correction values is shown below.

```
┌─────────────────────────────────┐
│  Leading edge of document       │
│  -2                             │
│  -1                             │
│  0                              │
│  +1                             │
│                                 │
│  -2                             │
│  -1                             │
│  0                              │
│  +1                             │
│  Trailing edge of document      │
└─────────────────────────────────┘
```
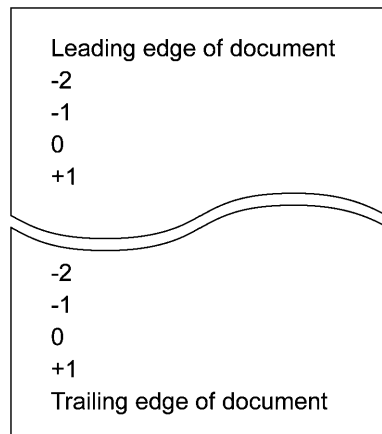
8.4.12 CIS Scanner Area Setting (Function code 55)

■ **Function**

The machine sets the CIS scanner area and stores it into the EEPROM.

■ **Operating Procedure**

(1) Press the **5** key twice in the initial stage of the maintenance mode.

The "SCANNER AREA SET" and "WHITE LEVEL INIT" will appear on the LCD in this order.

The machine checks and sets the area to be scanned.

If no error is noted, the machine returns to the initial stage of the maintenance mode.

If any error is noted, the "SCANNER ERROR" will appear on the LCD. To return the machine to the initial stage of the maintenance mode, press the **Stop/Exit** key.

8.4.13 EEPROM Customizing (Function code 74)

■ **Function**

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings. Customizing codes come with the firmware data provided by Brother Industries. (See Appendix 3.)

NOTE: If you replace the main PCB, be sure to carry out this procedure.

■ **Operating Procedure**

(1) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

The current customizing code (e.g., 2004 in the case of FAX-T106 U.K. model) appears.

(2) Enter the desired customizing code (e.g., 2003 in the case of FAX-T106 German model).

The newly entered code appears.

NOTE: If a wrong 4-digit code is entered, the machine will malfunction.

(3) Press the **Fax Start** key.

The machine saves the setting and returns to the initial stage of the maintenance mode.

If you press the **Stop/Exit** key or no keys are pressed for one minute in the above procedure, the machine stops the procedure and returns to the initial stage of the maintenance mode.

8.4.14 ID Code Entry to the EEPROM (Function code 80)

■ **Function**

This function allows you to enter the ID code to the EEPROM on the main PCB. Use this procedure if the main PCB is replaced.

■ **Operating Procedure**

(1) Press the **8** and **0** keys in this order in the initial stage of the maintenance mode.

An unspecified code appears on the LCD.

(2) Press the **9**, **4**, **7**, and **5** keys in this order.

The LCD switches to the edit mode, showing a cursor.

(3) Enter the serial number given on the bottom plate using the ◄ and ► keys.

Alphabets and numerals are assigned to the keys as listed below.

0 key	0
1 key	1
2 key	2, A, B, C
3 key	3, D, E, F
4 key	4, G, H, I
5 key	5, J, K, L
6 key	6, M, N, O
7 key	7, P, Q, R, S
8 key	8, T, U, V
9 key	9, W, X, Y, Z
* key	--
# key	--

(4) Press the **Menu/Set** key.

The machine displays the newly entered ID code on the LCD for 0.5 second and then returns to the initial stage of the maintenance mode.

To cancel the ID code entry, press the **Stop/Exit** key instead of the **Menu/Set** key. The machine beeps for one second and returns to the initial stage of the maintenance mode.

To confirm the entered ID code, repeat step(1) and the entered ID code appears on the LCD.
Confirm the ID code. If it is correct, press the Stop/Exit key.
If it is wrong, start from the beginning.

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8.4.15 Equipment Error Code Indication((Function code 82))

■ Function

This function displays an error code of the last error on the LCD.

■ Operating Procedure

(1) Press the **8** and **2** keys in this order in the initial stage of the maintenance mode.

The LCD shows the "MACHINE ERROR X X Y Y."

(2) To stop this operation and return the machine to the initial stage of the maintenance mode, press the **Stop/Exit** key.

8.4.16 Output of Transmission Log to the Telephone Line(Function code 87)

■ Function

This function outputs the transmission log (that the machine has stored about the latest transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's machine at a remote location and use it for analyzing problems arising in the user's machine.

■ Operating Procedure

(1) If the user's machine has a transmission-related problem, call the user's machine at a remote location from your machine.

(2) If the line is connected, have the user perform the following:

1) Press the **Menu/Set**, **Fax/Start**, and **0** keys in this order.

2) Press the **8** and **7** keys in this order.

The above operation makes the user's machine send CNG to your machine for sending the transmission log.

(3) If you hear the CNG sent from the user's machine, press the **Fax Start** key of your machine.

Your machine will start to receive the transmission log from the user's machine.

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8.4.17 Document Draw Adjustment

■ Function

After replacement of the main PCB or CIS, or if data stored in the EEPROM is damaged, you need to carry out this procedure <u>by using the TC-027 Ver. 2 chart</u>.

■ Operating Procedure

(1) In the initial stage of the maintenance mode, set the TC-027 chart on the document stacker.

The message "DOC. READY" appears on the LCD.

(2) Press the **Menu/Set** key.

The machine beeps and draws in the TC-027 chart to the scanning start position. While drawing it in, the machine counts patterns on the chart to determine the amount of draw.

Upon completion of normal counting, the machine shows the message "COPY   P.01 SUP" on the LCD and begins copying the TC-027 chart. The message "REAR SENSOR IS ADJUSTED." and the copied image will be printed out on recording paper as shown below.

If any error occurs during counting, the message "MACHINE ERROR AB" appears on the LCD, with no copying of the TC-027 chart onto the recording paper. However, only the message "REAR SENSOR IS ADJUSTED." will be printed out.

Printout after Normal Completion of Document Draw Adjustment

CHAPTER 9

ERROR INDICATION AND TROUBLESHOOTING

CHAPTER 9 ERROR INDICATION AND TROUBLESHOOTING

This chapter details error messages and codes that the incorporated self-diagnostic functions display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which components should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures. This will help service personnel pinpoint and repair defective components.

CONTENTS

9.1 ERROR INDICATION

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.

For the communications errors, the equipment also prints out the transmission verification report and the communications list.

9.1.1 Equipment Errors

If an equipment error occurs, the facsimile equipment emits an audible alarm (continuous beeping) for approximately 4 seconds and shows the error message on the LCD. For the error messages, see [1] below. As one of the error messages, "MACHINE ERROR _ _" includes an error code which indicates the detailed error causes listed in [2].

To display an error code for the other latest error message or detailed message, make the equipment enter the maintenance mode and press **8** and **2** keys (for details, refer to Chapter 8, Section 8.4.15).

[1] Error messages appearing on the LCD

ERROR MESSAGES	
ERROR MESSAGE	**CAUSE**
BT CALL SIGN ON	The fax machine is set BT Call Sign to ON. You cannot change the Receive Mode from Manual to another mode.
CHECK PAPER RELOAD PAPER PRESS STOP KEY	The fax machine is out of paper or paper is not properly loaded in the paper tray.
	The paper is jammed in the fax machine.
COVER IS OPEN CLOSE COVER	The cover is not closed completely.
DOCUMENT JAM REMOVE JAM PRESS STOP KEY	The documents were not inserted or fed properly, or were too long.
	The document is jammed in the fax machine.
LINE DISCONNECT	The other person or other person's fax machine stopped the call.
MEMORY NEAR ZERO CLEAR MEMORY	The fax machine is almost out of memory.

ERROR MESSAGES	
ERROR MESSAGE	**CAUSE**
NOT REGISTERED	You tried to access a One-Touch or Speed-Dial number that is not programmed.
OUT OF MEMORY CLEAR MEMORY	The data is too large for the fax machine's memory.
PAPER JAM PLS OPEN COVER REMOVE JAM	The paper is jammed in the fax machine.
PHONE LINE BUSY	The number you dialled does not answer or is busy.
POLLING FAILED	You tried to poll a fax machine that is not in Polled Waiting mode.
PRINTHEAD OVERHEATED WAIT TO COOL	The print head has overheated.
RECEIVE FAILED	Poor phone line quality caused a communication error.
RIBBON EMPTY RESET OR REPLACE	Your fax machine is out of ribbon or the print cartridge is not properly installed.
MEMORY DISABLED (Fax-T106) TAD FAILURE UNABLE TO INIT UNABLE TO PRINT UNABLE TO SCAN	The fax machine has a mechanical problem. —**OR**— A foreign obstacle, such as a clip or ripped paper, is in the fax machine.

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[2] **Error codes contained in "MACHINE ERROR X X" messages**

If the LCD shows the "UNABLE TO PRINT" message, you can display the detailed error code following the MACHINE ERROR by using maintenance-mode function code 82 described in Chapter 8, Section 8.4.15.

NOTE: When checking a PCB as instructed in the "Check:" column, also check its harness.

NOTE: To check sensors, use maintenance-mode function code 32 described in Chapter 8, Section 8.4.8 (that is, press the **3** and **2** keys in the maintenance mode).

Error Code (Hex)	Symptom	Probable Cause	Solution
25-80	Not used.		
81	Recording paper jam.	Foreign materials in the paper path	Remove foreign materials.
		The paper ejection roller does not rotate correctly	Replace the paper ejection roller.
		Cam switch defective	Replace the cam switch.
		Motor defective	Replace the motor.
		Main PCB defective	Replace the main PCB.
82-84	Not used.		
85	Ink ribbon empty.	Out of ink ribbon	Load the print cartridge.
86	Not used.		
87	Cannot exit the recording mode.	Abnormal load applied to the paper separation roller	Check the paper separation roller gear and its related gears.
		Motor broken	Replace the motor.
		Main PCB defective	Replace the main PCB.
88-89	Not used.		
8A	Abnormal print	Head-main harnesses (red and white) not properly connected to the recording head	Fix the connection.
		Recording head defective	Replace the recording head ASSY.
8B	Recording head overheated.	Recording head defective	Replace the recording head ASSY.
		Main PCB defective	Replace the main PCB.

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Error Code (Hex)	Symptom	Probable Cause	Solution
8C	Not used.		
8D	Communications line disconnected forcedly due to too large volume of data. (This error code can appear only in the maintenance mode.)	_	_
8E-A0	Not used.		
A1	Top cover opened.	Cover open sensor actuator not in place	Set the cover open sensor actuator into place.
		Cover open sensor broken	Replace the sensor PCB.
A2	Document length exceeding the scan limitation.	Document jam	Remove the jammed document.
		Document rear sensor actuator caught on the surrounding parts	Correct the surrounding parts on which the actuator caught.
		Document rear sensor broken	Replace the control panel PCB.
A3	The document rear sensor does not come ON during document pull-in operation.	Document jam	Remove the jammed document.
		Document rear sensor actuator caught on the surrounding parts	Correct the surrounding parts on which the actuator caught.
		Document rear sensor broken	Replace the control panel PCB.
A4	50% or more faulty of white level data. (Not used.)	CIS flat cable not connected properly	Correct the connection.
		CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
A5	FAX scanning failure (1st time)	CIS defective	Replace the CIS unit.

Error Code (Hex)	Symptom	Probable Cause	Solution
A6	FAX scanning failure (retry)	White-level reference film on the top cover stained	Replace the white-level reference film.
		Main PCB defective	Replace the main PCB.
A7	Timeout for one-line feed	Main PCB defective	Replace the main PCB.
A8	Timeout for one-line scan	Main PCB defective	Replace the main PCB.
A9-AA	Not used.		
AB	"AB" displayed on the LCD in scanning test with test chart 029 (This error code can appear only in the maintenance mode.)	Cannot read black level data on test chart 029 even after the specified amount of document feeding after the registration sensor goes ON.	–
AC	Less than 50% faulty of white level data.	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
AD	The document front sensor remains OFF during document pull-in operation.	Document front sensor defective	Replace the control panel PCB.
AE-B0	Not used.		
B1	Dark level offset data level error for scanning. (Not used.)	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
B2	Gain control data level error for scanning. (Not used.)	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
B3	Scan area left edge detection error. (Not used.)	CIS defective	Replace the CIS unit.
		White-level reference film on the top cover stained	Replace the white-level reference film.
B4	Scan area right edge detection error. (Not used.)	CIS defective	Replace the CIS unit.
		White-level reference film on the top cover stained	Replace the white-level reference film.

Error Code (Hex)	Symptom	Probable Cause	Solution
B5	Horizontal scanning edge reduction detection error in scanning area setting (Not used.)	–	–
B6	Horizontal scanning edge enlargement detection error in scanning area setting (Not used.)	–	–
B7	A/D converter reference voltage error (at High level). (Not used.)	Main PCB defective	Replace the main PCB.
B8	A/D converter reference voltage error (at Low level). (Not used.)	Main PCB defective	Replace the main PCB.
B9	Light emission intensity error of the LED array (Exceeding the upper limit).	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
BA	Not used.		
BB	White level data error. (Not used.)	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
BC	Not used.		
BD	Black level data error. (Not used.)	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
BE	Scan starting edge detection error.	White-level reference film on the top cover stained	Replace the white-level reference film.
		CIS defective	Replace the CIS unit.
		CIS flat cable broken or not connected	Correct the cable connection. Replace the CIS unit.
		Main PCB defective	Replace the main PCB.

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Error Code (Hex)	Symptom	Probable Cause	Solution
BF	Abnormal light intensity in the LED array.	CIS defective	Replace the CIS unit.
C0-CF	Not used.		
D*	Modem error.	Main PCB defective	Replace the main PCB.
E0	Non-input of serial number/Customized code.	Serial number or customized code is not input	Input the serial number (function code 80) or customized code (function code 74)
E1-E3	Not used.		
E4	Out of recording paper. (Not used.)	The paper tray cannot feed paper	Replace the paper tray.
		Registration sensor actuator not in place	Set the registration sensor actuator into place.
		Main PCB defective	Replace the main PCB.
E5	Not used.		
E6	Write error in EEPROM.	Main PCB defective	Replace the main PCB.
E7	Not used.		
E8	Data scanning error during transmission.	CIS defective	Replace the CIS unit.
		Main PCB defective	Replace the main PCB.
E9	Not used.		
EA	Document removed at phase B.	Document front sensor actuator caught on the surrounding parts	Correct the surrounding parts on which the actuator caught.
		Main PCB defective	Replace the main PCB.
EB-ED	Not used.		
EE	Voice device error. (Not used.)	Main PCB defective	Replace the main PCB.
EE-F2	Not used.		
F3, F5	Internal software error.	Main PCB defective	Replace the main PCB.
F4	Not used.		
F6	PC interface error. (Not used.)	Main PCB defective	Replace the main PCB.

Error Code (Hex)	Symptom	Probable Cause	Solution
F7	Media module connection error. (Not used.)	Main PCB defective	Replace the main PCB.
		The media module cover is deformed or warped.	Replace the media module cover.
F8	Battery harness connection failure (Not used.)	Battery harness not inserted correctly.	Correct the connection.
F9-FE	Not used.		
FF	Memory management error.	Main PCB defective	Replace the main PCB.

9.1.2 Communications Errors

If a communications error occurs, the facsimile equipment

① emits an audible alarm (intermittent beeping) for approximately 4 seconds,

② displays the corresponding error message, and

③ prints out the transmission verification report if the equipment is in sending operation.

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■ Definition of Error Codes on the Communications List

(1) Calling

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected.*
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	No tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available in Germany and Austria only.

(2) Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Undefined command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

(3)   Compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mail box function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broadcasting instruction.

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(4) Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not coincident.
40	11	Unregistered group code entered for relay broadcasting function, or the specified number of broadcasting subscribers exceeding the limit.
40	12	Retrieval attempted when not ready for retrieval.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.

(5) Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not coincident.
63	02	Password not coincident.
63	03	Polling ID not coincident.
63	04	Entered confidential mail box ID uncoincident with the mail box ID.
63	05	Relay broadcasting ID not coincident.
63	06	Entered retrieval ID uncoincident with that of the mail box ID.

(7) DCN reception

Code 1	Code 2	Causes
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

(10) Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines.
A0	14	Decoding error continued for 10 seconds.
A0	15	Time-out: 5 seconds or more for one-line transmission.
A0	16	RTC not found and carrier OFF signal detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds.
A0	18	Receive buffer full during receiving into memory.
A8	01	RTN, PIN, or ERR received at the calling terminal.*
A9	01	RTN, PIN, or ERR received at the called terminal.*

* Available in Germany and Austria only

(11) General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.

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(12) Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

(13) Equipment error

Code 1	Code 2	Causes
FF	X X	Equipment error (For X X, refer to Section 9.1.1 [2].)

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9.2 TROUBLESHOOTING

9.2.1 Introduction

This section gives the service personnel some of the troubleshooting procedures to be followed if an error or malfunction occurs with the facsimile equipment. It is impossible to anticipate all of the possible problems which may occur in future and determine the troubleshooting procedures, so this section covers some sample problems. However, those samples will help service personnel pinpoint and repair other defective elements if he/she analyzes and examines them well.

9.2.2 Precautions

Be sure to observe the following to prevent the secondary troubles from happening:

(1) Always unplug the AC power cord from the electrical outlet when removing the covers and PCBs, adjusting the mechanisms, or conducting continuity testing with a circuit tester.

(2) When disconnecting the connectors, do not pull the lead wires but hold the connector housings.

(3) • Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body.

• When repairing the PCBs, handle them with extra care.

After repairing the defective section, be sure to check again if the repaired section works correctly. Also record the troubleshooting procedure so that it would be of use for future trouble occurrence.

9.2.3 Checking prior to Troubleshooting

Prior to proceeding to the troubleshooting procedures given in Section 9.2.4, check that:

(1) Each voltage level on AC input lines and DC lines is correct.

(2) All cables and harnesses are firmly connected.

(3) None of the fuses are blown.

9.2.4 Troubleshooting Procedures

[1] Control panel related

Trouble	Check:
(1) LCD shows nothing.	• Panel-main harness between the main PCB and the control PCB • Interfaces between the main PCB and power supply PCB • LCD • Control panel PCB • Power supply PCB • Main PCB • NCU PCB
(2) Control panel inoperative.	• Panel-main harness between the main PCB and the control PCB • Interfaces between the main PCB, and power supply PCB • Control panel PCB • Rubber keypad • Main PCB

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[2]   Telephone related

Trouble	Check:
(1) No phone call can be made.	• Rubber keypad • Control panel PCB by using the maintenance-mode function code 13. If any defective keys are found, replace them. (Refer to Chapter 8, Section 8.4.7, "Operational Check of Control Panel PCB.") • NCU PCB • Main PCB
(2) Speed dialing or one-touch dialing will not work.	• Ordinary dialing function (other than the speed and one-touch dialing) If it works normally, check the main PCB; if not, refer to item (1) above.
(3) Speaker silent during on-hook dialing.	• Ordinary dialing function (Pick up the handset and press the numerical keys.) If it works normally, proceed to the following checks; if not, refer to item (1) above.
(4) Dial does not switch between tone and pulse.	• Main PCB (Not supported by the U.S.A. versions.)
(5) Telephone does not ring.	• Speaker • NCU PCB • Main PCB

[3]   Communications related

Trouble	Check:
(1) No tone is transmitted.	• Main PCB • NCU PCB

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[4] Paper/document feeding related

Trouble	Check:
(1) Neither "COPY: PRESS COPY" nor "FAX: NO. & START" message appears although documents are set.	• Sensors by using the maintenance-mode function code 32. (Refer to Chapter 8, Section 8.4.8, "Sensor Operational Check.") • Document front sensor actuator • Control panel PCB and its harness • Main PCB
(2) Document not fed.	• ADF and its related sections • Drive motor and its harness • Document ejection roller and its related gears • Cam switch and planetary gear train • Main PCB
(3) Recording paper not fed.	• Sheet feeder (SF) and its related sections • Drive motor and its harness • Platen and its related gears • Cam switch and planetary gear train • Sensor PCB and its harness • Main PCB
(4) Document double feeding	• ADF parts

[5] Print-image related

If the received or sent image has any problem, first make a copy with the facsimile equipment.

If the copied image is normal, the problem may be due to the remote terminal; if it is abnormal, proceed to the following checks:

Trouble	Check:
(1) Completely blank At the scanner At the recorder	 • CIS-main harness • CIS unit • Main PCB • Head-main harnesses (red and white) • Compression springs beneath the recording head • Recording head • Main PCB
(2) White vertical streaks At the scanner At the recorder	 • White-level reference film stained • CIS unit • Recording head
(3) All black At the scanner At the recorder	 • CIS-main harness • CIS unit • Main PCB • Head-main harnesses (red and white) • Recording head • Main PCB
(4) Black vertical streaks At the scanner At the recorder	 • CIS unit • Recording head
(5) Light or dark At the scanner At the recorder	 • CIS unit • Main PCB • Compression springs beneath the recording head

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Trouble	Check:
(6) Faulty image registration	
<u>At the scanner</u>	• CIS-main harness
	• CIS unit
	• Main PCB
<u>At the recorder</u>	• Head-main harnesses (red and white)
	• Main PCB
	• Recording head
(7) Image distortion	
<u>In communications</u>	• Error code displayed (Refer to Section 9.1, "ERROR INDICATION" in this chapter.)
	• NCU PCB
	• Main PCB
<u>At the scanner</u>	• Separation roller and its related sections
	• Document ejection roller and its related gears
	• Cam switch and planetary gear train
	• Drive motor and its harness
	• Main PCB
<u>At the recorder</u>	• Compression springs beneath the recording head
	• Platen and its related gears
	• Cam switch and planetary gear train
	• Drive motor and its harness
	• Main PCB

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[6]   Others

Trouble	Check:
(1) When you turn the power ON, the beeper sounds.	• Main PCB **TIP:** The beeper sounds with one of the following three beep codes: | Beep code	In approx. 2-second cycle of	Defective device
---	---	---
Beep code 1	LHLHLHLHm	RAM
Beep code 2	HLHLLHLHm	EEPROM
Beep code 3	HLHLHLHLm	Program ROM	 H: Beeps at 1.5 kHz for 0.1 second L: Beeps at 1.2 kHz for 0.1 second m: 0.5-second mute Between L and H, H and L, or L and L is a 0.1-second pause each.

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FAX-T106/T104/T102
FAX575

Appendix 1. Serial Numbering System

This appendix shows the location of serial number labels put on some parts and lists the coding information pertaining to the serial numbers.

SERIAL NUMBERING SYSTEM

Individual machines have a serial number label for the machine itself.

This section provides the coding information for the serial numbers.

Serial number label for the machine itself

Product item code

Serial number ⟶ ✳✳✳✳✳F 4 F 1 1 1 1 0 1

Barcode

Serial number (6-digit)

Factory

```
Machine SN
```

Production year
(Example) 4 : 2004
          5 : 2005

Production month
A : January   G : July
B : February   H : August
C : March   J : September
D : April   K : October
E : May   L : November
F : June   M : December

Location

Serial number label
(on the bottom plate)

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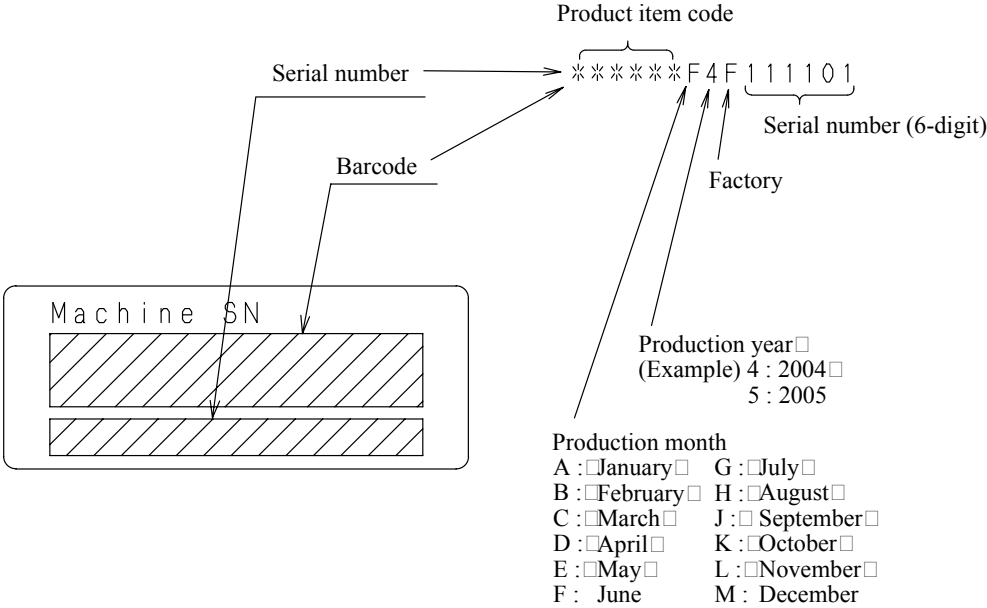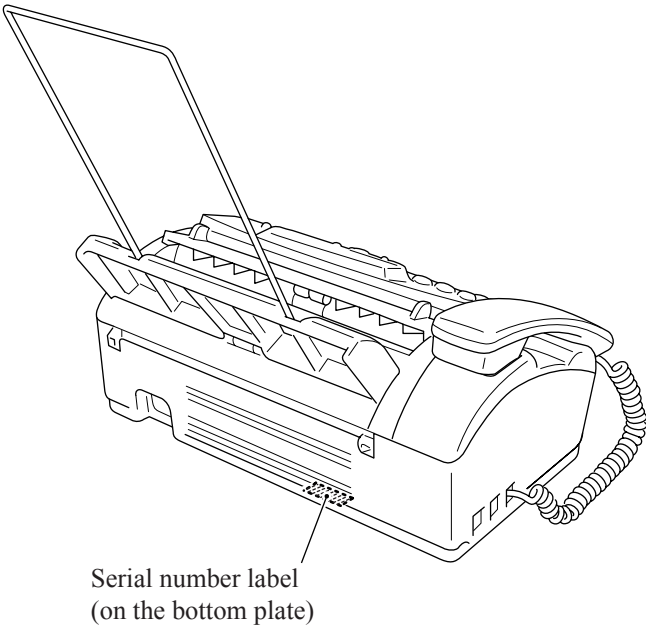
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Appendix 2. Firmware Installation

This chapter is not applicable to FAX models covered by this manual.

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Appendix 3. Customizing Codes According to Shipping Destination

This appendix provides instructions on how to set up the customizing codes for the various preferences exclusively designed for each destination (e.g. language). Those codes are stored in the memory (EEPROM) mounted on the main PCB. If the main PCB is replaced, therefore, you will need to set up the proper customizing code with the machine in the maintenance mode.

Customizing codes come with the ROM release note provided by Brother Industries.

EEPROM CUSTOMIZING CODES

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings.

■ **Operating Procedure**

(1) European models:
   Press the **Menu/Set**, *****, **2**, **8**, **6**, and **4** keys in this sequence to make the machine enter the maintenance mode.

   Other models:
   Press the **Menu/Set** and **Fax Start** keys. Next press the ▲ key four times to make the machine enter the maintenance mode. **(TIP:** Models equipped with numerical keypads can enter the maintenance mode in the same way as conventional models; that is, by pressing the **Menu/Set**, *****, **2**, **8**, **6** and **4** keys in this sequence.)

   The machine beeps for approx. one second and displays " ▌▌ MAINTENANCE ▌▌▌ " on the LCD.

(2) Press the **7** and **4** keys in this order in the initial stage of the maintenance mode.

   The current customizing code appears (e.g., 2004 in the case of FAX-T106 U.K. model).

(3) Enter the desired customizing code (e.g., 2003 in the case of FAX-T106 German model).

   The newly entered code appears.

   NOTE: If a wrong 4-digit code is entered, the machine will malfunction.

(4) Press the **Fax Start** key.

   The machine saves the setting and returns to the initial stage of the maintenance mode.

   If you press the **Stop/Exit** key or no keys are pressed for one minute in the above procedure, the machine stops the procedure and returns to the initial stage of the maintenance mode.

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Appendix 4. Firmware Switches (WSW)

This appendix describes the functions of the firmware switches, which can be divided into two groups: one is for customizing preferences designed for the shipping destination (as described in Appendix 3) and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 4-2
WSW02	Tone signal setting	App. 4-3
WSW03	PABX mode setting	App. 4-4
WSW04	TRANSFER facility setting	App. 4-6
WSW05	1st dial tone and busy tone detection	App. 4-7
WSW06	**Pause** key setting and 2nd dial tone detection	App. 4-9
WSW07	Dial tone setting 1	App. 4-11
WSW08	Dial tone setting 2	App. 4-12
WSW09	Protocol definition 1	App. 4-13
WSW10	Protocol definition 2	App. 4-14
WSW11	Busy tone setting	App. 4-15
WSW12	Signal detection condition setting	App. 4-16
WSW13	Modem setting	App. 4-17
WSW14	AUTO ANS facility setting	App. 4-18
WSW15	REDIAL facility setting	App. 4-19
WSW16	Function setting 1	App. 4-20
WSW17	Function setting 2	App. 4-21
WSW18	Function setting 3	App. 4-22
WSW19	Transmission speed setting	App. 4-23
WSW20	Overseas communications mode setting	App. 4-24
WSW21	TAD setting 1	App. 4-25
WSW22	ECM and call waiting caller ID	App. 4-26
WSW23	Communications setting	App. 4-27
WSW24	TAD setting 2	App. 4-28
WSW25	TAD setting 3	App. 4-29
WSW26	Function setting 4	App. 4-30
WSW27	Function setting 5	App. 4-31
WSW28	Function setting 6	App. 4-32
WSW29	Function setting 7	App. 4-33
WSW30	Function setting 8	App. 4-34
WSW31	Function setting 9	App. 4-35
WSW32	Function setting 10	App. 4-36
WSW33	Function setting 11	App. 4-37
WSW34	Function setting 12	App. 4-38
WSW35	Function setting 13	App. 4-39
WSW36	Function setting 14	App. 4-40
WSW37	Function setting 15	App. 4-40

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WSW01 (Dial pulse setting)

Selector No.	Function	Setting and Specifications

1
 	
2
	Dial pulse generation mode	No. 1 2
		    0 0 : N
		    0 1 : N+1
		    1 0 : 10-N
		    1 1 : N

3
 	
4
	Break time length in pulse dialing	No. 3 4
		    0 0 : 60 ms
		    0 1 : 67 ms
		    1 0 : 40 ms (for 16 PPS)
		    1 1 : 64 ms (at 106-ms intervals)

5
 	
6
	Inter-digit pause	No. 5 6
		    0 0 : 800 ms
		    0 1 : 850 ms
		    1 0 : 950 ms
		    1 1 : 600 ms

7	Switching between pulse (DP) and tone (PB) dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

NOTE: The WSW01 is not applicable to those models supporting no pulse dialing, e.g., U.S.A. and German models.

- **Selectors 1 and 2: Dial pulse generation mode**

  These selectors set the number of pulses to be generated in pulse dialing.

  N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)
  N + 1: Dialing "N" generates "N + 1" pulses.
  10 - N: Dialing "N" generates "10 - N" pulses.

- **Selectors 3 and 4: Break time length in pulse dialing**

  These selectors set the break time length in pulse dialing.
  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)
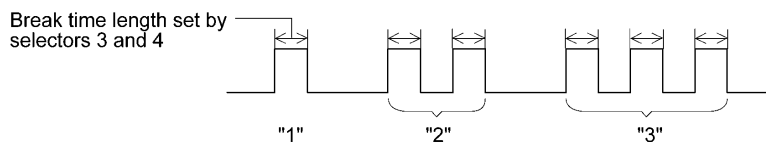
- **Selectors 5 and 6: Inter-digit pause**

  These selectors set the inter-digit pause in pulse dialing.
  (Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)
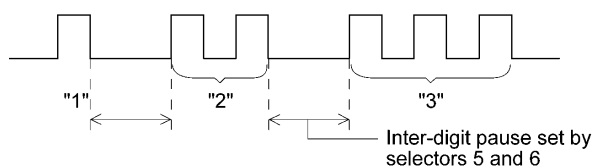
● **Selector 7: Switching between pulse (DP) and tone (PB) dialing, by the function switch**

This selector determines whether or not the dialing mode can be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

● **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

WSW02 (Tone signal setting)

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	No. 1 2 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	No. 3 4 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 | 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB, in 1 dB increments)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

● **Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing**

These selectors set the tone signal transmission time length and minimum pause in tone dialing. (Example: If "1," "2," "3," "4," and "5" are dialed.)
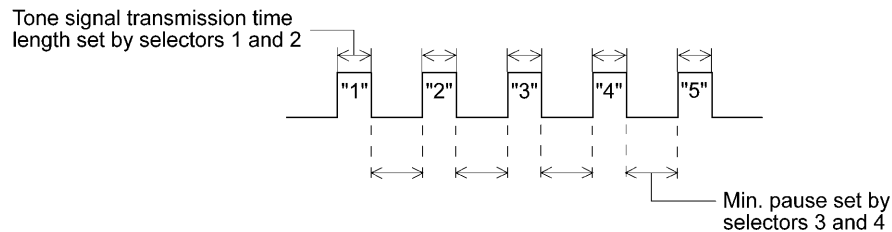
● **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

These selectors are used to adjust the sound volume of a ring backtone in the F/T mode, an on-hold sound, or a beep generated as a signal during remote control operation or at the start of ICM recording.

Setting two or more selectors to "1" produces addition of attenuation assigned to each selector. This setting will be limited if selector 8 of WSW23 is set to "0."

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WSW03 (PABX* mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B

2 | 4	Detection time length of PABX* dial tone, required for starting dialing (Not used.)	No. 2 3 4
		      0 0 0 : 50 ms
		      0 0 1 : 210 ms
		      0 1 0 : 500 ms
		      0 1 1 : 800 ms
		      1 0 0 : 900 ms
		      1 0 1 : 1.5 sec.
		      1 1 0 : 2.0 sec.
		      1 1 1 : 2.5 sec.

5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B

6 7	Dial tone detection in PABX* (Not used.)	No. 6 7
		      0 0 : No detection
		                (3.5 sec. WAIT)
		      0 1 : No detection
		                (5 sec. WAIT)
		      1 0 : No detection
		                (7 sec. WAIT)
		      1 1 : Detection
		                (Frequency only)

8	"R" key function	0: 1st dial tone 1: No 1st dial detection add tone detection

* PABX: Private automatic branch exchange

NOTE: Selectors 2 through 4 and 6 through 8 are not applicable where no PABX is installed.

● **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

These selectors determine whether or not the machine detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the machine. Upon detection of CNG signals by the number of cycles specified by these selectors, the machine interprets CNG as an effective signal and then starts FAX reception.

Selector No. 1 No. 5	Cycle
0 (A) 0 (A)	0.5 cycle
0 (A) 1 (B)	1.0 cycle
1 (B) 0 (A)	1.5 cycles
1 (B) 1 (B)	2.0 cycles

● **Selectors 2 through 4: Detection time length of PABX dial tone, required for starting dialing**
**   (Not used.)**

Upon detection of the PABX dial tone for the time length set by these selectors, the machine starts dialing.

These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).

● **Selectors 6 and 7: Dial tone detection in PABX (Not used.)**

These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

Setting both of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected.

Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

● **Selector 8: "R" key function**

This selector determines whether or not the 1st dial tone detection function (specified by selectors 1 through 3 of WSW05) is added to the R key.

If this selector is set to "0," pressing the R key automatically activates the 1st dial tone detection function when the PABX and the automatic calling are selected by using the function switch. If you press the R key and a dial number in succession, the machine will automatically carry out the 1st dial tone detection function following the original transfer function as shown below.

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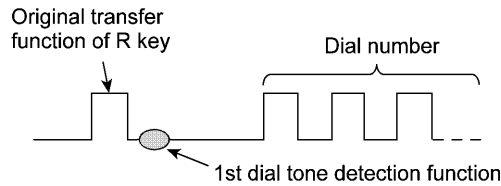
WSW04 (TRANSFER facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility (Not used.)	0: Provided 1: Not provided

2
 	
3
	Dual tone detection frequency in ICM recording	No. 2 3
		    0 0 : 350 and 440 Hz (A)
		    0 1 : 440 and 480 Hz (B)
		    1 X : 480 and 620 Hz (C)

4	Dual tone detection sensitivity in ICM recording	0: Normal 1: High
5	Not used.	

6
|
8
	Break time length for flash function	No. 6 7 8
		    0 0 0 : 80 ms
		    0 0 1 : 100 ms
		    0 1 0 : 110 ms
		    0 1 1 : 120 ms
		    1 0 0 : 200 ms
		    1 0 1 : 250 ms
		    1 1 0 : 500 ms
		    1 1 1 : 700 ms

NOTE: Selectors 1 and 5 through 8 are not applicable in those countries where no transfer facility is supported.

NOTE: Selectors 2 through 4 are applicable to models equipped with built-in TADs.

NOTE: Selectors 2 and 3 are applicable in the U.S.A.

- **Selector 1:   Earth function in transfer facility (Not used.)**

  This selector determines whether or not the earth function is added to the transfer setting menu to be accessed by the function switch.

- **Selectors 2 and 3:   Dual tone detection frequency in ICM recording**

  If the machine detects either of the frequencies set by these selectors in ICM recording, it disconnects the line. For example, if these selectors are set to "0, 0," the machine disconnects the line upon detection of 350 Hz or 440 Hz.

- **Selector 4:   Dual tone detection sensitivity in ICM recording**

  Setting this selector to "1" increases the tone detection sensitivity in ICM recording.

- **Selectors 6 through 8:   Break time length for flash function**

  These selectors set the break time length.

  This setting is effective only when the flash function is selected for the R key by using the function switch.

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WSW05 (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 | 3	1st dial tone detection	No. 1 2 3 　　0 0 0　:　　3.5 sec. WAIT 　　0 0 1　:　　7.0 sec. WAIT 　　0 1 0　:　10.5 sec. WAIT 　　0 1 1　:　14.0 sec. WAIT 　　1 0 0　:　17.5 sec. WAIT 　　1 0 1　:　21.0 sec. WAIT 　　1 1 0　:　24.5 sec. WAIT 　　1 1 1　:　Detection (Without WAIT)
4	Max. pause time allowable for remote ID code detection	0 : 2 seconds　　　1:　1 second
5 6	Busy tone detection in auto-matic sending mode	No. 5 6 　　0 0 :　No detection 　　0 1 :　Detection only after dialing 　　1 0 :　No detection 　　1 1 :　Detection before and after dialing
7	Busy tone detection in auto-matic receiving mode	0 : Yes　　　　　1 : No
8	Not used.	

NOTE: Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported, e.g., U.S.A.

● **Selectors 1 through 3: 1st dial tone detection**

These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

Setting all of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the machine start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.

Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

　　　　　　　　　　　　　　　　　　　　　　　　Confidential

● **Selector 4:   Max. pause time allowable for remote ID code detection**

This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

● **Selectors 5 and 6:   Busy tone detection in automatic sending mode**

These selectors determine whether or not the machine automatically disconnects a line upon detection of a busy tone in automatic sending mode.

Setting selector 6 to "0" ignores a busy tone so that the machine does not disconnect the line.

Setting selectors 5 and 6 to "0" and "1," respectively, makes the machine detect a busy tone only after dialing and disconnect the line.

Setting both of selectors 5 and 6 to "1" makes the machine detect a busy tone before and after dialing and then disconnect the line.

● **Selector 7:   Busy tone detection in automatic receiving mode**

This selector determines whether or not the machine automatically disconnects the line upon detection of a busy tone in automatic receiving mode.

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WSW06 (Pause key setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications

1 | 3	**Pause** key setting and 2nd dial tone detection	No. 1 2 3
		  0 0 0 : No pause
		  0 0 1 : 3.5 sec. WAIT
		  0 1 0 : 7 sec. WAIT
		  0 1 1 : 10.5 sec. WAIT
		  1 0 0 : 14 sec. WAIT
		  1 1 0 : 2nd dial tone detection
		               only in pulse dialing (DP)
		               system
		  1 0 1 : ⎤ 2nd dial tone detection
		  1 1 1 : ⎭ both in DP and push-button
		               (PB) dialing system

4 | 6	Detection of international tone	No. 4 5 6
		  0 0 0 : 50 ms
		  0 0 1 : 210 ms
		  0 1 0 : 500 ms
		  0 1 1 : 800 ms
		  1 0 0 : 900 ms
		  1 0 1 : 1.5 sec.
		  1 1 0 : 2.0 sec.
		  1 1 1 : 2.5 sec.

7	No. of 2nd dial tone detection cycles	0: 1 cycle 1: 2 cycles
8	Allowable instantaneous interrupt during reception of 2nd dial tone	0: 30 ms 1: 50 ms

NOTE: Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

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● **Selectors 1 through 3: Pause key setting and 2nd dial tone detection**

Selectors 1 2 3	
0 0 0	No WAIT is inserted even if the **Pause** key is pressed.
0 0 1 0 1 0 0 1 1 1 0 0	If you press the **Pause** key during dialing, the machine will insert WAIT as defined in the above table. If the **Pause** key is pressed repeatedly, the machine inserts the specified WAIT multiplied by the number of depressions. It applies also in hook-up dialing.
1 0 1 1 1 0 1 1 1	When these selectors are set to "1, 0, 1": Each time you press the **Pause** key in dialing, the machine will wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. When these selectors are set to "1, 1, 0": If you press the **Pause** key in pulse dialing, the machine will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the **Pause** key will cause the machine to insert a WAIT of 3.5 seconds. In tone dialing, the machine will insert a WAIT of 3.5 seconds. When these selectors are set to "1, 1, 1": If you press the **Pause** key, the machine will first wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. After that, pressing the **Pause** key will cause the machine to insert a WAIT of 3.5 seconds. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 0, 1," "1, 1, 0," or "1, 1, 1" inserts a WAIT of 3.5 seconds.)

● **Selectors 4 through 6: Detection of international tone**

Upon detection of the 2nd dial tone for the time length specified by these selectors, the machine starts dialing.

This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).

This function does not apply in those countries where no dial tone detection function is supported.

● **Selector 7:   No. of 2nd dial tone detection cycles**

This selector sets the number of dial tone detection cycles required for starting dialing.

● **Selector 8:   Allowable instantaneous interrupt during reception of 2nd dial tone**

This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 2nd dial tone.

Confidential

WSW07 (Dial tone setting 1)

Selector No.	Function	Setting and Specifications

1
 	
2
	Dial tone frequency band control	No. 1 2
		    0 0 : Narrows by 10 Hz
		    0 1 : Initial value
		    1 X : Widens by 10 Hz

3	Line current detection	0: No 1: Yes

4
|
6
	2nd dial tone detection level
	$(Z = 600 \ \Omega)$
		No. 4 5 6
		    0 0 0 : -21 dBm
		    0 0 1 : -24 dBm
		    0 1 0 : -27 dBm
		    0 1 1 : -30 dBm
		    1 0 0 : -33 dBm
		    1 0 1 : -36 dBm
		    1 1 0 : -39 dBm
		    1 1 1 : -42 dBm

7	Allowable instantaneous interrupt during reception of 1st dial tone	0: 30 ms 1: 50 ms
8	PABX loop current control (Not used.)	0: Disabled 1: Enabled

NOTE: The WSW07 is not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

NOTE: Setting selector 3 to "1" disables manual dialing in those countries where no line current detection is supported.

● **Selectors 1 and 2: Dial tone frequency band control**

These selectors set the frequency band for the 1st dial tone and busy tone (before dialing) to be detected.

This setting is effective only when selectors 1 through 3 of WSW05 are set to "1,1,1."

● **Selector 3: Line current detection (Not used.)**

This selector determines whether or not to detect a line current before starting dialing.

● **Selectors 4 through 6: 2nd dial tone detection level**

These selectors set the detection level of the 2nd dial tone.

● **Selector 7: Allowable instantaneous interrupt during reception of 1st dial tone**

This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 1st dial tone.

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● **Selector 8: PABX loop current control (Not used.)**

This selector determines whether the PABX loop current control will be enabled or disabled. Setting this selector to "1" enables the loop current control that automatically switches the internal resistance inserted in series with the communications line on and off depending upon the loop current amount. Setting this selector to "0" disables the loop current control and keeps the internal resistance on.

For some PABXs that are not compatible with the machine in voltage rating, set this selector to "0."

The setting made by this selector takes effect only when the user selects the PABX. If no PABX is selected, the PABX loop current control will be enabled independent of this setting.

WSW08 (Dial tone setting 2)

Selector No.	Function	Setting and Specifications

1 | 3	1st dial tone detection time length	No. 1 2 3
		    0 0 0 : 50 ms
		    0 0 1 : 210 ms
		    0 1 0 : 500 ms
		    0 1 1 : 800 ms
		    1 0 0 : 900 ms
		    1 0 1 : 1.5 sec.
		    1 1 0 : 2.0 sec.
		    1 1 1 : 2.5 sec.

4
5
	Time-out length for 1st and 2nd dial tone detection	No. 4 5
		    0 0 : 10 sec.
		    0 1 : 20 sec.
		    1 0 : 15 sec.
		    1 1 : 30 sec.

6 | 8	Detection level of 1st dial tone and busy tone before dialing	No. 6 7 8
		    0 0 0 : -21 dBm
		    0 0 1 : -24 dBm
		    0 1 0 : -27 dBm
		    0 1 1 : -30 dBm
		    1 0 0 : -33 dBm
		    1 0 1 : -36 dBm
		    1 1 0 : -39 dBm
		    1 1 1 : -42 dBm

NOTE: The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

● **Selectors 1 through 3: 1st dial tone detection time length**

Upon detection of the 1st dial tone for the time length set by these selectors, the machine starts dialing.

This setting is effective only when selectors 1 through 3 of WSW05 are set to "1,1,1."

● **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**

These selectors set the time-out length for the 1st and 2nd dial tone detection so that the machine waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

WSW09 (Protocol definition 1)

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited

3
 	
4
	No. of retries	No. 3 4
		     0 0 : 4 times
		     0 1 : 3 times
		     1 0 : 2 times
		     1 1 : 1 time

5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.

7
 	
8
	Timeout for response from the called station in automatic sending mode	No. 7 8
		     0 0 : { 55 sec. (in U.S.A. and Canadian models)
		                   60 sec. (in other models)
		     0 1 : 140 sec.
		     1 0 : 90 sec.
		     1 1 : 35 sec.

NOTE: Selectors 1 through 5 are not applicable in those models which do not support ECM.

● **Selector 1: Frame length selection**

Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the machine can divide a message into 64-octet frames.

Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the machine divides a message into frames for transmission so that if any data error occurs on the transmission line, the machine retransmits only those frames containing the error data.

● **Selector 2: Use of non-standard commands**

If this selector is set to "0," the machine can use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the machine will use standard commands only.

● **Selectors 3 and 4: No. of retries**

These selectors set the number of retries in each specified modem transmission speed.

● **Selector 5: T5 timer**

This selector sets the time length for the T5 timer.

- **Selector 6: T1 timer**

  This selector sets the time length for the T1 timer.

- **Selectors 7 and 8: Timeout for response from the called station in automatic sending mode**

  If the machine (calling station) receives no response (no G3 command) from the called terminal in automatic sending mode for the period specified by these selectors, it disconnects the line.

WSW10 (Protocol definition 2)

Selector No.	Function	Setting and Specifications
1	Switching of DPS, following the CML ON/OFF	0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON	0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission	0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)	0: 0.5 sec. 1: 2 sec.

5
6
	No. of training retries	No. 5 6
		    0 0 : 1 time
		    0 1 : 2 times
		    1 0 : 3 times
		    1 1 : 4 times

7 8	Not used.	

- **Selector 1: Switching of DPS, following the CML ON/OFF**

  Setting this selector to "1" automatically switches DPS following the CML ON/OFF operation.

- **Selector 2: Time length from transmission of the last dial digit to CML ON**

  This selector sets the time length from when the machine transmits the last dial digit until the CML relay comes on.

- **Selector 3: Time length from CML ON to CNG transmission**

  This selector sets the time length until the machine transmits a CNG after it turns on the CML relay.

- **Selector 4: Time length from CML ON to CED transmission**

  This selector sets the time length until the machine transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.

- **Selectors 5 and 6: No. of training retries**

  These selectors set the number of training retries to be repeated before automatic fallback.

     Confidential

WSW11 (Busy tone setting)

Selector No.	Function	Setting and Specifications

1
 	
2
	Busy tone frequency band control	No. 1 2
		     0 0 : Narrows by 10 Hz
		     0 1 : Initial value
		     1 x : Widens by 10 Hz

3	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 250-750/250-750 ms
4		1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000 ms/17-660 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

NOTE: WSW11 is not applicable in those countries where no busy tone detection is supported.

NOTE: The setting of WSW11 is effective only when selectors 5 and 6 of WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Busy tone frequency band control**

  These selectors set the frequency band for busy tone to be detected.

- **Selectors 3 through 8: ON/OFF time length ranges for busy tone**

  These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

WSW12 (Signal detection condition setting)

Selector No.	Function	Setting and Specifications		
1 2	Min. detection period required for interpreting incoming calling signal (CI) as OFF	No. 1 2 0 0 : 1500 ms 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms		
3 4	Max. detection period for incoming calling signal (CI) being OFF	No. 3 4 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.		
5 6	Min. detection period required for acknowledging incoming calling signal (CI) as ON	No. 5 6 0 0 : 800 ms (1000 ms*) 0 1 : 200 ms 1 0 : 250 ms 1 1 : 150 ms		
7	Delay	0: Yes 1: No		
8	Not used.			

*1000 ms in Chinese models.

- **Selectors 1 through 4: Min. detection period required for interpreting incoming calling signal (CI) as OFF**
  Max. detection period for incoming calling signal (CI) being OFF

If the machine detects the OFF state of a CI signal for the period greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the CI signal as OFF.

- **Selectors 5 and 6: Min. detection period required for acknowledging incoming calling signal (CI) as ON**

These selectors set the period required to make the machine acknowledge itself to be called. That is, if the machine continuously detects a CI signal with the frequency set by selectors 1 through 4 of WSW14 during the period set by these selectors 5 and 6, then it acknowledges the call.

- **Selector 7: Delay**

Setting this selector to "0" allows the machine to insert a 900 ms WAIT after acknowledgment of the call until the machine turns the CML relay on to start receiving operation.

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WSW13 (Modem setting)

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 　　0　0　:　　　0 km 　　0　1　:　　1.8 km 　　1　0　:　　3.6 km 　　1　1　:　　5.6 km
3 4	Reception level	No. 3 4 　　0　0　:　-43 dBm 　　0　1　:　-47 dBm 　　1　0　:　-49 dBm 　　1　1　:　-51 dBm
5 | 8	Modem attenuator	0: 0 dB　　　　　1: 8 dB 0: 0 dB　　　　　1: 4 dB 0: 0 dB　　　　　1: 2 dB 0: 0 dB　　　　　1: 1 dB

The modem should be adjusted according to the user's line conditions.

- **Selectors 1 and 2: Cable equalizer**

  These selectors are used to improve the pass-band characteristics of analogue signals on a line. (Attenuation in the high-band frequency is greater than in the low-band frequency.)

  Set these selectors according to the distance from the telephone switchboard to the machine.

- **Selectors 3 and 4: Reception level**

  These selectors set the optimum receive signal level.

- **Selectors 5 through 8: Modem attenuator**

  These selectors are used to adjust the transmitting level attenuation of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

  Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

  If selector 8 of WSW23 is set to "0," this setting is so limited that 10 dB (1 dB in France) or higher setting only is effective. Note that in Japan and China, 9 dB or higher and 2 dB or higher settings only are effective, respectively, regardless of whether selector of WSW23 is set to "0."

  This setting will be limited if selector 8 of WSW23 is set to "0."

WSW14 (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (lower limit) for incoming calling signal (CI)	No. 1 2 0 0 : 13 Hz 0 1 : 15 Hz 1 0 : 23 Hz 1 1 : 20 Hz
3 4	Frequency band selection (upper limit) for incoming calling signal (CI)	No. 3 4 0 0 : 30 Hz 0 1 : 55 Hz 1 X : 70 Hz
5 | 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0 : Fixed to once 0 0 0 1 : Fixed to 2 times 0 0 1 0 : Fixed to 3 times 0 0 1 1 : Fixed to 4 times 0 1 0 0 : 1 to 2 times 0 1 0 1 : 1 to 3 times 0 1 1 0 : 1 to 4 times 0 1 1 1 : 1 to 5 times 1 0 0 0 : 2 to 3 times 1 0 0 1 : 2 to 4 times 1 0 1 0 : 2 to 5 times 1 0 1 1 : 2 to 6 times 1 1 0 0 : 1 to 10 times 1 1 0 1 : 2 to 10 times 1 1 1 0 : 3 to 5 times 1 1 1 1 : 4 to 10 times

- **Selectors 1 through 4:   Frequency band selection for incoming calling signal (CI)**

These selectors are used to select the frequency band of CI for activating the AUTO ANS facility.

In the French models, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)

- **Selectors 5 through 8:   No. of rings in AUTO ANS mode**

These selectors set the number of rings to initiate the AUTO ANS facility.

Confidential

WSW15 (REDIAL facility setting)

Selector No.	Function	Setting and Specifications

1
 	
2
	Redial interval	No. 1 2
		   0 0 : 5 minutes
		   0 1 : 1 minute
		   1 0 : 2 minutes
		   1 1 : 3 minutes

3
|
6
	No. of redialings	No. 3 4 5 6
		   0 0 0 0 : 16 times
		   0 0 0 1 : 1 times
		   0 0 1 0 : 2 times
		   0 0 1 1 : 3 times
		      | |
		   1 1 1 1 : 15 times

7	Not used.	
8	CRP option	0: Disable 1: Enable

● **Selectors 1 through 6: Redial interval and No. of redialings**

The machine redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

● **Selector 8: CRP option**

If a command error occurs in the machine (calling station), the machine usually waits for three seconds and then makes a retry three times. This CRP option is a request command that can be sent from the called station for requesting the calling station to retry the failed command immediately.

Confidential

WSW16 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 | 6	Not used.	
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	**Stop** key pressed during reception	0: Not functional 1: Functional

- **Selector 2:   ITU-T (CCITT) superfine recommendation**

  If this selector is set to "1," the machine communicates in ITU-T (CCITT) recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.

- **Selector 7:   Max. document length limitation**

  This selector is used to select the maximum length of a document to be sent.

- **Selector 8:   Stop key pressed during reception**

  If this selector is set to "1," pressing the **Stop** key can stop the current receiving operation. The received data will be lost.

WSW17 (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm	No. 1　2 　 0　0　 :　 No alarm 　 0　1　 :　 Always valid 　 1　X　 :　 Valid except when 'call reservation' is selected.
3	Power failure report output	0:　ON　　　　1:　OFF
4	Calendar clock/prompt alternate display	0:　NO　　　　1:　YES
5	Calendar clock type	0:　U.S.A. type　1:　European type
6	Error indication in activity report	0:　NO　　　　1:　YES
7	Non-ring reception	0:　OFF　　　　1:　ON
8	Not used.	

NOTE: Selector 3 is not applicable to the U.S.A. models.

- **Selectors 1 and 2: Off-hook alarm**

These selectors activate or deactivate the alarm function which sounds an alarm when the communication is completed with the handset being off the hook.

- **Selector 3: Power failure report output**

This selector determines whether or not to output a power failure report when the power comes back on.

- **Selector 4: Calendar clock/prompt alternate display**

If this selector is set to "1," the calendar clock and the prompt "INSERT DOCUMENT" appear alternately on the LCD while the machine is on standby; if it is set to "0," only the calendar clock appears.

- **Selector 5: Calendar clock type**

If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- **Selector 6: Error indication in activity report**

This selector determines whether or not to print a communications error code in the activity report.

- **Selector 7: Non-ring reception**

Setting this selector to "1" makes the machine receive calls without ringer sound if the Ring Delay is set to 0.

WSW18 (Function setting 3)

Selector No.	Function	Setting and Specifications
1	Not used.	

2
3
	Detection enabled time for CNG and no tone	No. 2 3
		   0 0 : 40 sec.
		   0 1 : 0 sec. (No detection)
		   1 0 : 5 sec.
		   1 1 : 80 sec.

4 5	Not used.	
6	Registration of station ID	0: Permitted 1: Prohibited

7
 	
8
	Tone sound monitoring	No. 7 8
		   0 X : No monitoring
		   1 0 : Up to phase B at the calling station only
		   1 1 : All transmission phases both at the calling and called stations

● **Selectors 2 and 3: Detection enabled time for CNG and no tone**

After the line is connected via the external telephone or by picking up the handset of the machine, the machine can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 of WSW20 is set to "1."

● **Selector 6: Registration of station ID**

Setting this selector to "0" permits the registration of station ID for Austrian and Czech models.

● **Selectors 7 and 8: Tone sound monitoring**

These selectors set monitoring specifications of the tone sound inputted from the line.

Confidential

WSW19 (Transmission speed setting)

Selector No.	Function	Setting and Specifications

1
|
3
	First transmission speed choice for fallback	No. 1 2 3
		No. 4 5 6
		   0 0 0 : 2,400 bps
		   0 0 1 : 4,800 bps
		   0 1 0 : 7,200 bps

4
|
6
	Last transmission speed choice for fallback	0 1 1 : 9,600 bps
		   1 0 0 : 12,000 bps
		   1 0 1 : ⎫
		   1 1 0 : ⎬ 14,400 bps*
		   1 1 1 : ⎭

7	Not used.	
8	V.17 mode	0: Permitted 1: Prohibited

* In those models with a maximum of 9,600 bps capability, selecting 12,000 or 14400 bps automatically reduces to 9,600 bps.

● **Selectors 1 through 6:   First and last choices of transmission speed for fallback**

These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the machine attempts to establish the transmission link via the MODEM. If the establishment fails, the machine automatically steps down to the next lowest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

Generally, to save the transmission time, set the last transmission speed choice to a higher one.

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WSW20 (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.

4
 	
5
	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5
		    0 0 : 100 ms
		    0 1 : 200 ms
		    1 0 : 300 ms
		    1 1 : 400 ms

6
 	
7
	At CNG detection, elimination of chattering noise	No. 6 7
		    0 0 : Yes, at both ON/OFF timings
		    0 1 : Yes, at OFF timing
		    1 X : No

8	Limitation on CNG detection	0: OFF 1: ON

* EP: Echo protection

- **Selector 1: EP tone prefix**

Setting this selector to "1" makes the machine transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

Prefixing an EP tone is useful when the machine fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

The setting made by this selector takes effect only when the Overseas Mode is set to ON.

- **Selectors 2 and 3: Overseas communications mode**

These selectors should be used if the machine malfunctions in overseas communications. According to the communications error state, select the signal specifications.

Setting selector 2 to "1" allows the machine to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

Setting selector 3 to "1" allows the machine to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

The setting made by selector 3 takes effect only when the Overseas Communications Mode is set to ON. (The setting made by selector 2 is always effective.)

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- **Selectors 8: Limitation on CNG detection**

    If this selector is set to "1," the machine detects a CNG signal according to the condition preset by selectors 2 and 3 of WSW18 after a line is connected. If it is set to "0," the machine detects a CNG signal as long as the line is connected.

WSW21 (TAD setting 1)

Selector No.	Function	Setting and Specifications

1 | 5	Max. waiting time for voice signal	No. 1 2 3 4 5
		   0 0 0 0 0 : No detection
		   0 0 0 0 1 : 1 sec.
		   0 0 0 1 0 : 2 sec.
		   0 0 0 1 1 : 3 sec.
		        | |
		   0 1 0 0 0 : 8 sec.
		       | |
		   1 1 1 1 1 : 31 sec.

6 7	Two-way recording	No. 6 7
		   0 0 : For U.S.A. (A)
		   0 1 : Except for U.S.A. (B)
		   1 0 : Without beep (C)
		   1 1 : OFF (D)

8	Erasure of message stored in the memory after the message transfer	0: Yes 1: No

NOTE: Selectors 1 through 8 are applicable to models equipped with built-in TADs.

- **Selectors 1 through 5:   Max. waiting time for voice signal**

    In the TAD mode, the machine waits for voice signal for the time length specified by these selectors before it automatically shifts to the facsimile message receive mode or disconnects the line.

- **Selectors 6 and 7: Two-way recording**

    These selectors select the specifications of the two-way recording feature.

- **Selector 8:   Erasure of message stored in the memory after the message transfer**

    Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

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WSW22 (ECM and call waiting caller ID)

Selector No.	Function	Setting and Specifications	
1	ECM* in sending	0: ON	1: OFF
2	ECM* in receiving	0: ON	1: OFF
3	Call Waiting Caller ID	0: ON	1: OFF
4	Not used.		
5 | 8	Acceptable TCF bit error rate (%) (Only at 4800 bps) (Not used.)	0: 0% 0: 0% 0: 0% 0: 0%	1: 8% 1: 4% 1: 2% 1: 1%

* ECM: Error correction mode

NOTE: Selector 3 is applicable to the American models only.

NOTE: Selectors 5 through 8 are applicable to the Chinese, Taiwanese and Asian models only.

- **Selector 3: Call Waiting Caller ID**

  Setting this selector to "0" allows the user to decide whether or not to interrupt the current call when a new call comes in. If Call Waiting Caller ID service is available in the area and the user subscribes to it, he/she can see information about his/her incoming call on the LCD.

- **Selectors 5 through 8: Acceptable TCF bit error rate (%) (Not used.)**

  Setting two or more selectors to "1" produces addition of percent assigned to each selector. If you set selectors 7 and 8 to "1," the acceptable TCF bit error rate will be 3%.

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WSW23 (Communications setting)

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: From the head of a series of zeros 1: From any arbitrary point

2
 	
3
	Allowable training error rate	No. 2 3
		   0 0 : 0%
		   0 1 : 0.5%
		   1 0 : 1%
		   1 1 : 2%

4
 	
5
	Decoding error rate for transmission of RTN	No. 4 5
		   0 0 : 16%
		   0 1 : 14%
		   1 0 : 10%
		   1 1 : 8%

6	Issue of RTN at the occurrence of a pagination error	0: Yes 1: No
7	Not used.	
8	Limitation of attenuation level	0: Yes 1: No

NOTE: Selector 8 is not applicable to the French and Chinese models.

- **Selector 1: Starting point of training check (TCF)**

At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

- **Selectors 2 and 3: Allowable training error rate**

The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

- **Selectors 4 and 5: Decoding error rate for transmission of RTN**

The machine checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

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● **Selector 6:   Issue of RTN at the occurrence of a pagination error**

If this selector is set to "0," the machine transmits an RTN when a pagination error occurs due to recording lag relative to receiving.

● **Selector 8:   Limitation of attenuation level**

Setting this selector to "0" limits the transmitting level of the modem to 10 dB (1 dB in France).

This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

WSW24 (TAD setting 2)

Selector No.	Function	Setting and Specifications						
1 2	Maximum OGM recording time	No.	1	2				
			0	0	:	15 sec.		
			0	1	:	20 sec.		
			1	0	:	30 sec.		
			1	1	:	50 sec.		
3 4	Time length from CML ON to start of pseudo ring backtone transmission	No.	3	4				
			0	0	:	4 sec.		
			0	1	:	3 sec.		
			1	0	:	2 sec.		
			1	1	:	1 sec.		
5 | 8	Attenuator for playback of ICM/OGM to the line (Selectable from the range of 0-15 dB)		0:	0 dB		1:	8 dB	
			0:	0 dB		1:	4 dB	
			0:	0 dB		1:	2 dB	
			0:	0 dB		1:	1 dB	

NOTE: Selectors 1 and 2 are applicable to those models equipped with built-in TADs.

● **Selectors 1 and 2:   Maximum OGM recording time**

These selectors set the allowable maximum recording time for an OGM.

● **Selectors 3 and 4:   Time length from CML ON to start of pseudo ring backtone transmission**

These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.

In models with OGM facilities, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

● **Selectors 5 through 8:   Attenuator for playback of ICM/OGM to the line**

Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

This setting is not limited by selector 8 of WSW23.

WSW25 (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 | 4	Not used.	
5 | 7	Pause between paging number and PIN	No. 5 6 7 0 0 0 : 2 sec. 0 0 1 : 4 sec. 0 1 0 : 6 sec. 0 1 1 : 8 sec. 1 0 0 : 10 sec. 1 0 1 : 12 sec. 1 1 0 : 14 sec. 1 1 1 : 16 sec.
8	Not used.	

NOTE: Selectors 5 through 7 are applicable to the U.S.A. and Canadian models.

● **Selectors 5 through 7:   Pause between paging number and PIN**

These selectors set the pause time between a telephone number being paged and PIN (personal identification number) for the paging feature.

WSW26 (Function setting 4)

Selector No.	Function	Setting and Specifications
1	Application of DC wetting pulse	0: OFF 1: ON
2	Overvoltage limiter at the applying time of a wetting pulse	0: ON 1: OFF
3	Not used.	
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)	No. 4 5 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)	No. 6 7 0 0 : 0.5 (A) 0 1 : 1 (B) 1 0 : 1.5 (C) 1 1 : 2 (D)
8	FAX reception after the time-out of pseudo ring backtones in F/T mode	0: YES 1: NO

NOTE: Selectors 6 and 7 are not applicable to those models equipped with built-in TADs.

● **Selectors 1 and 2: Application of DC wetting pulse and overvoltage limiter**

These selectors take effect only when the UK model of the machine is set up for the British Telecom's caller ID service or its equivalent.

Selector 2 takes effect only when selector 1 is set to "1."

● **Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)**

The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone.

● **Selectors 6 and 7: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)**

The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode.

● **Selector 8: FAX reception after the time-out of pseudo ring backtones in F/T mode**

If this selector is set to "0," the machine starts receiving FAX messages when it receives a CNG signal within 10-second no-tone period provided after the time-out of pseudo ring backtones. If no CNG is received within the period, the machine disconnects the line.

If this selector is set to "1," the machine disconnects the line after issuing pseudo ring backtones.

WSW27 (Function setting 5)

Selector No.	Function	Setting and Specifications	
1	Definition of programmable key	0: TEL key	1: TEL/POLLING key
2	Ringer OFF setting	0: Yes	1: No
3	Automatic playback of OGM when switched to the TAD mode	0: No	1: Yes
4	Detection of distinctive ringing pattern	0: Yes	1: No
5 | 7	Not used.		
8	Suppression of FAX data reception when the recording head is overheated	0: No	1: Yes

NOTE: Selector 1 is not applicable to the U.S.A. models.
NOTE: Selector 3 is applicable to those models equipped with built-in TADs.

● **Selector 1:   Definition of programmable key**

This selector defines a programmable key as a TEL key or TEL/POLLING key.

Setting this selector to "1" allows the programmable key to function as either a TEL or POLLING key if pressed when the handset is off or on the hook, respectively.

This setting is effective only for those models having a programmable key.

● **Selector 2:   Ringer OFF setting**

This selector determines whether or not the ringer can be set to OFF.

● **Selector 3:   Automatic playback of OGM when switched to the TAD mode**

This selector determines whether or not to automatically play back an OGM the moment the machine switches to the TAD mode.

● **Selectors 4: Detection of distinctive ringing pattern**

If this selector is set to "1," the machine detects only the number of rings; if it is set to "0," the machine detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

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WSW28 (Function setting 6)

Selector No.	Function	Setting and Specifications
1 | 3	Transmission level of DTMF high-band frequency signal	No. 1 2 3 　0 0 0　:　　0 dB 　0 0 1　:　+1 dB 　0 1 0　:　+2 dB 　0 1 1　:　+3 dB 　1 0 0　:　　0 dB 　1 0 1　:　-1 dB 　1 1 0　:　-2 dB 　1 1 1　:　-3 dB
4 | 6	Transmission level of DTMF low-band frequency signal	No. 4 5 6 　0 0 0　:　　0 dB 　0 0 1　:　+1 dB 　0 1 0　:　+2 dB 　0 1 1　:　+3 dB 　1 0 0　:　　0 dB 　1 0 1　:　-1 dB 　1 1 0　:　-2 dB 　1 1 1　:　-3 dB
7 8	Not used.	

● **Selectors 1 through 6:　Transmission level of DTMF high-/low-band frequency signal**

These selectors are intended for the manufacturer who tests the machine for the Standard. Never access them.

WSW29 (Function setting 7)

Selector No.	Function	Setting and Specifications

1 | 3	Compression threshold level for voice signals inputted via the telephone line in the built-in TAD operation	No. 1 2 3
		   0 0 0 : -47.0 dBm (A)
		   0 0 1 : -48.5 dBm (B)
		   0 1 0 : -50.0 dBm (C)
		   0 1 1 : -51.5 dBm (D)
		   1 0 0 : -53.0 dBm (E)
		   1 0 1 : -54.5 dBm (F)
		   1 1 0 : -56.0 dBm (G)
		   1 1 1 : OFF (H)

4 | 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation	No. 4 5 6
		   0 0 0 : -44.0 dBm (A)
		   0 0 1 : -45.5 dBm (B)
		   0 1 0 : -47.0 dBm (C)
		   0 1 1 : -48.5 dBm (D)
		   1 0 0 : -50.0 dBm (E)
		   1 0 1 : -51.5 dBm (F)
		   1 1 0 : -53.0 dBm (G)
		   1 1 1 : OFF (H)

7	Not used.	
8	Prompt beep when the memory area for the activity report becomes full (Not used.)	0: No 1: Yes

NOTE: Selectors 1 through 6 are applicable to models equipped with built-in TADs.

● **Selectors 1 through 6: Compression threshold level for voice signals inputted via the telephone line in the built-in TAD operation**

If voice signals inputted via the telephone line are below the level specified by these selectors, the TAD interprets those received voice signals as no signal, compressing the recording time.

● **Selector 8: Prompt beep when the memory area for the activity report becomes full (Not used.)**

This selector determines whether or not to beep if the memory area for the activity report becomes full, for prompting you to print out the report. (Printing it out will clear the memory area.)

WSW30 (Function setting 8)

Selector No.	Function	Setting and Specifications
1 | 3	Dial tone/busy tone detection level during recording of ICM	No. 1 2 3 0 0 0 : -38.0 dBm (A) 0 0 1 : -39.5 dBm (B) 0 1 0 : -41.0 dBm (C) 0 1 1 : -42.5 dBm (D) 1 0 0 : -44.0 dBm (E) 1 0 1 : -45.5 dBm (F) 1 1 0 : -47.0 dBm (G) 1 1 1 : -48.5 dBm (H)
4 | 6	Not used.	
7 8	Recording density control	No. 7 8 0 0 : A 0 1 : B 1 0 : C 1 1 : D

NOTE: Selectors 1 through 3 are applicable to models equipped with built-in TADs.

- **Selectors 1 through 3: Dial tone/busy tone detection level during recording of ICM**

  If the machine (called station) detects dial tone (400 Hz continuously) or busy tone (400 Hz intermittently) exceeding the detection level specified by these selectors for the period specified by selectors 1 through 4 of WSW35, then it interprets the calling station as being disconnected. The machine stops TAD recording and disconnects the line.

- **Selectors 7 and 8   Recording density control**

  Density level   A   B   C   D

  Low   High
(light)   (dark)
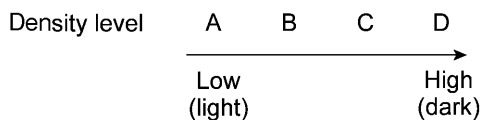
WSW31 (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: 100%　　1: 50%
3	Not used.	
4	(Do not disturb this selector.)	
5	Minimum ON and OFF duration of ringer signals effective in distinctive ringing	0: 130 ms　　1: 90 ms
6 | 8	Not used.	

NOTE: Selector 5 is applicable in those areas where the distinctive ringing is supported.

● **Selector 2: Default reduction rate for failure of automatic reduction during recording**

This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.

If it is set to "0," the machine records one-page data at full size (100%) without reduction; if it is set to "1," the machine records it at 50% size.

● **Selector 5: Minimum ON and OFF duration of ringer signals effective in distinctive ringing**

The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum ON and OFF duration of ringer signals that are required for the machine to interpret ringer signals as being ON or OFF. This is to prevent components of a ringer pattern from being misinterpreted due to chattering in distinctive ringing.

The machine monitors ringer signals at 10-ms intervals. If the signal is ON, the machine counts +1; if it is OFF, it counts -1. If the counter increments up to +5 or +13 when this selector is set to "1" (50 ms) or "0" (130 ms), respectively, the machine interprets the current signal as being ON.

If the counter returns to zero, the machine interprets the signal as being OFF.

If the Distinctive Ring is set to OFF, this selector is not effective.

WSW32 (Function setting 10)

Selector No.	Function	Setting and Specifications
1 | 4	Not used.	

5 6	Default resolution	No. 5 6
		   0 0 : Standard
		   0 1 : Fine
		   1 0 : Super fine
		   1 1 : Photo

7 8	Default contrast	No. 7 8
		   0 X : Automatic
		   1 0 : Super light
		   1 1 : Super dark

- **Selectors 5 and 6: Default resolution**

  These selectors set the default resolution which applies when the machine is turned on or completes a transaction.

- **Selectors 7 and 8: Default contrast**

  These selectors set the default contrast which applies when the machine is turned on or completes a transaction.

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WSW33 (Function setting 11)

Selector No.	Function	Setting and Specifications

1 | 3	Detection threshold level of "no tone" during recording of ICM	No. 1 2 3
		    0 0 0 : -42.5 dBm (A)
		    0 0 1 : -44.0 dBm (B)
		    0 1 0 : -45.5 dBm (C)
		    0 1 1 : -47.0 dBm (D)
		    1 0 0 : -48.5 dBm (E)
		    1 0 1 : -50.0 dBm (F)
		    1 1 0 : -51.5 dBm (G)
		    1 1 1 : -53.0 dBm (H)

4 5	FAX receiving speed to be kept within the transmission speed limit to the PC	No. 4 5
		    0 0 : 14,400 bps
		    0 1 : 12,000 bps
		    1 0 : 9,600 bps
		    1 1 : 7,200 bps

6	Report output of polled transmission requests	0: Yes 1: No

7 8	Comfortable noise level (Not used.)	No. 7 8
		    0 0 : OFF
		    0 1 : Low (A)
		    1 0 : Medium (B)
		    1 1 : High (C)

NOTE: Selectors 1 through are applicable to models equipped with built-in TADs.

NOTE: Selectors 4 and 5 are applicable to those models equipped with a PC interface.

NOTE: Selector 6 is not applicable to the U.S.A. models.

● **Selectors 1 through 3: Detection threshold level of "no tone" during recording of ICM**

If the tone level during recording of ICM is less than the threshold setting made by these selectors, the tone is interpreted as "no tone." When the "no tone" state is kept for the period specified by selectors 1 through 5 of WSW21, the machine disconnects the line.

● **Selectors 4 and 5: FAX receiving speed to be kept within the transmission speed limit to the PC**

To transmit FAX data being received from other machine to the connected PC, you may need to keep the FAX receiving speed within the transmission speed limit specified for the PC. In an initial negotiation sequence for transmission, the machine responds to the calling station with the allowable FAX receiving speed specified by these selectors.

● **Selectors 7 and 8: Comfortable noise level (Not used.)**

These selectors set the level of noise to be added during playing-back of voice signals recorded with no-signal compression.

If they are set to "0, 0," no noise will be added.

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WSW34 (Function setting 12)

Selector No.	Function	Setting and Specifications

1 | 3	Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received	No. 1 2 3
		   0 0 0 : 0 sec.
		   0 0 1 : 1 sec.
		   0 1 0 : 2 sec.
		   0 1 1 : 3 sec.
		   1 0 0 : 4 sec.
		   1 0 1 : 5 sec.
		   1 1 0 : 6 sec.
		   1 1 1 : 7 sec.

4 5	No. of CNG cycles to be detected
	(when the line is connected via the external telephone in the external TAD mode or via the machine in F/T mode)
		No. 4 5
		   0 0 : 0.5 (A)
		   0 1 : 1 (B)
		   1 0 : 1.5 (C)
		   1 1 : 2 (D)

6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation	No. 6 7
		   0 0 : 3
		   0 1 : 2
		   1 0 : 1
		   1 1 : OFF

8	Not used.	

NOTE: Selectors 1 through 5 are applicable to models equipped with built-in TADs.

- **Selectors 1 through 3: Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received**

If the machine has disconnected the line after detection of disconnection tone in ICM recording, it erases tone recorded preceding the tone detection starting point for the time length set by these selectors.

- **Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the machine in F/T mode)**

The machine interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode or via the machine in F/T mode.

- **Selectors 6 and 7: Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation**

If the machine receives this specified number of DTMF tone signals during external TAD operation, it will not detect CNG afterwards.

If these selectors are set to "1, 1," the CNG detection will not be inhibited.

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WSW35 (Function setting 13)

Selector No.	Function	Setting and Specifications
1 | 4	Max. detection period of dial tone/busy tone during recording of ICM	No. 1 2 3 4 0 0 0 0 : No detection 0 0 0 1 : 1 sec. 0 0 1 0 : 2 sec. 0 1 0 0 : 4 sec. | | 1 1 1 1 : 15 sec.
5 | 8	Not used.	

NOTE: Selectors 1 through 4 are applicable to models equipped with built-in TADs.

- **Selectors 1 through 4:   Max. detection period of dial tone/busy tone during recording of ICM**

  If the machine (called station) detects dial tone or busy tone exceeding the detection level specified by selectors 1 through 3 of WSW30 for the period specified by these selectors, then it disconnects the line.

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WSW36 (Function setting 14)

Selector No.	Function	Setting and Specifications
1 | 5	Not used.	

6
|
8
	Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 of WSW14	No. 6 7 8
		     0 0 0 : 0 (Ignored)
		     0 0 1 : 4 (448 Hz)
		     0 1 0 : 8 (244 Hz)
		     0 1 1 : 12 (162 Hz)
		     1 0 0 : 16 (122 Hz)
		     1 0 1 : 20 (97 Hz)
		     1 1 0 : 24 (81 Hz)
		     1 1 1 : 28 (69 Hz)

*ECP (Enhanced Capabilities Port)

- **Selectors 6 through 8:   Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 of WSW14**

At the start of reception, if the machine detects the frequency of a CI signal specified by selectors 1 through 4 of WSW14, it starts the ringer sounding. However, the machine may fail to detect the CI signal normally due to noise superimposed at the time of reception. To prevent it, use selectors 6 through 8 of WSW36.

If the machine detects higher frequencies than the setting made here, it regards them as noise and interprets the detecting state as being normal, allowing the ringer to keep sounding according to the preset number of ringers (until it starts automatic reception of FAX data in the FAX mode or enters the TAD mode in the TEL mode).

WSW37 (Function setting 15)

Selector No.	Function	Setting and Specifications
1 | 8	Not used.	

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FAX837MC/827/817
FAX-T106/T104/T102
FAX575

Appendix 5. Wiring Diagram

This appendix provides the wiring diagram that helps you understand the connections between PCBs.

■ FAX837MC
  FAX-T106

LCD   MIC

CN1-6 5 4 3 2 1 — S0V +5V S0V STB LCDCK LDATA

MC1-2 + S0V

Control panel

CN1-6 2 3 4 5 6 CN2-7 — M0V MIC +5V GND PCLK SDOUT SDIN

Motor — CN7-5 4 3 2 1 — M2 M1 +25V M4 M3

Battery — CN4-2 1 — GND BAT

CIS — CN2-7 6 5 4 3 2 1 — VID R0V R5V TC RB LIGHT +25V

Recording head
CONNECTOR B — CN11-9 8 7 6 5 4 3 2 1 — GND GND TM1 +5V ST2 NC DOUT +25V +25V
CONNECTOR A — CN10-9 8 7 6 5 4 3 2 1 — +25V +25V HDC LATCH DIN ST1 SM2 GND GND

Sensor PCB — CN5-5 4 3 2 1 — +5V HOOK FSEN CSEN GND

MAIN PCB

CN8-15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 CN1-1 — EARTH ADLC RDPS POL +25V CML CI GND PLS TELOFF TELRL +5V TELSL SL RL1

CN9-9 8 7 6 5 4 3 2 1 — +25V +25V +25V +25V P0V P0V P0V +8V GND +5V

CN6-2 1 — GND GENTEN
CN3-2 1 — SP2 SP1
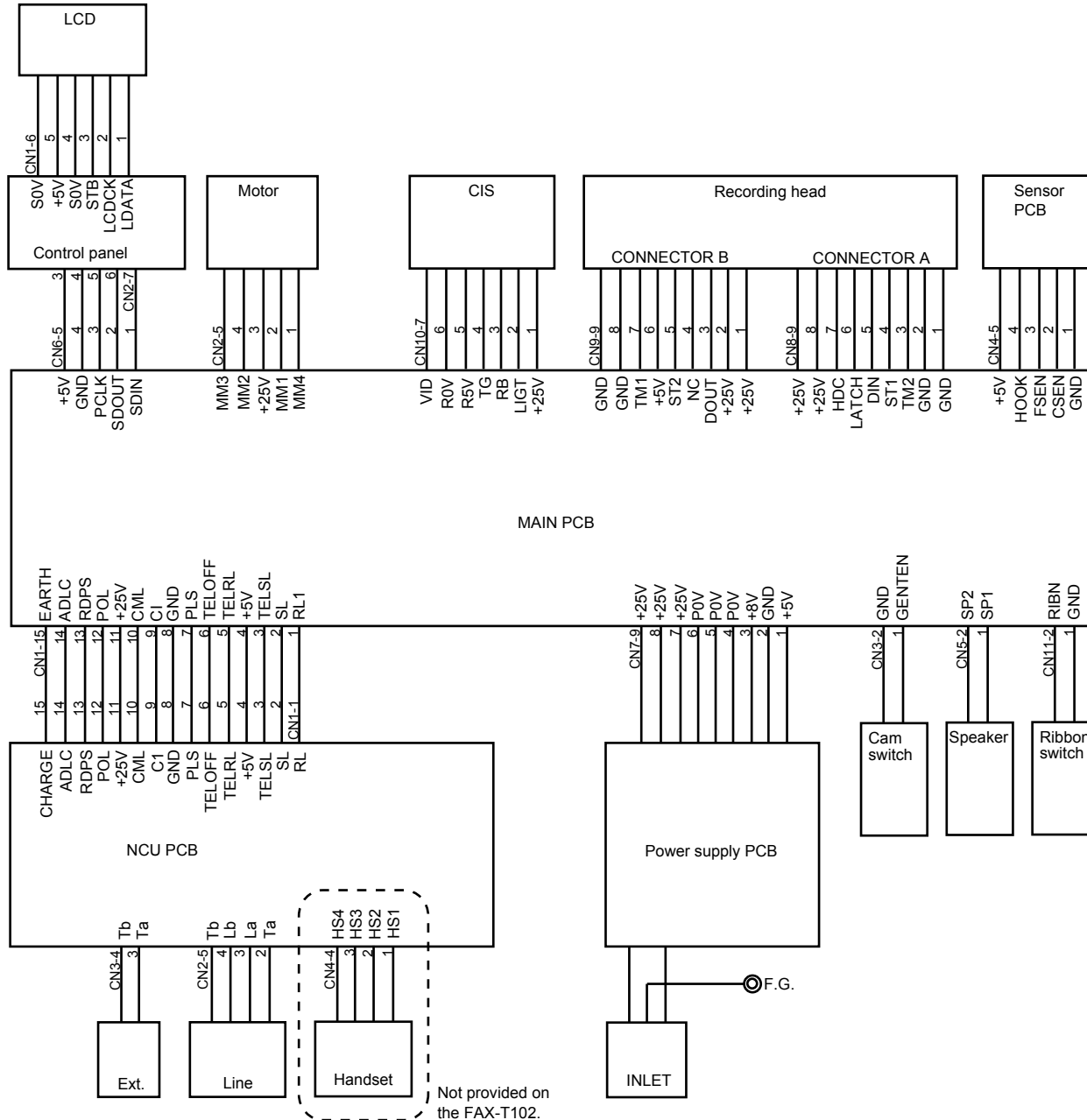CN12-2 1 — RIBN GND

NCU PCB
15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 — CHARGE ADLC RDPS POL +25V CML C1 GND PLS TELOFF TELRL +5V TELSL SL RL

Power supply PCB

Cam switch
Speaker
Ribbon switch

CN3-4 3 — Tb Ta
CN2-5 4 3 2 — Tb Lb La Ta
CN4-4 3 2 1 — HS4 HS3 HS2 HS1

Ext.
Line
Handset
INLET
◎ F.G.

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■ FAX827/817
  FAX-T104/-T102
  FAX575

LCD

Control panel

CN1-6: 5 4 3 2 1 — S0V, +5V, S0V, STB, LCDCK, LDATA

Motor

CIS

Recording head

CONNECTOR B   CONNECTOR A

Sensor PCB

CN6-5: 3 4 5 6 CN2-7 — +5V, GND, PCLK, SDOUT, SDIN

CN2-5: MM3, MM2, +25V, MM1, MM4

CN10-7: 6 5 4 3 2 1 — VID, R0V, R5V, TG, RB, LIGT, +25V

CN9-9: 8 7 6 5 4 3 2 1 — GND, GND, TM1, +5V, ST2, NC, DOUT, +25V, +25V

CN8-9: 8 7 6 5 4 3 2 1 — +25V, +25V, HDC, LATCH, DIN, ST1, TM2, GND, GND

CN4-5: 4 3 2 1 — +5V, HOOK, FSEN, CSEN, GND

MAIN PCB

CN1-15: 14 13 12 11 10 9 8 7 6 5 4 3 2 CN1-1 — EARTH, ADLC, RDPS, POL, +25V, CML, CI, GND, PLS, TELOFF, TELRL, +5V, TELSL, SL, RL1

CN7-9: 8 7 6 5 4 3 2 1 — +25V, +25V, +25V, P0V, P0V, P0V, +8V, GND, +5V

CN3-2: GND, GENTEN

CN5-2: SP2, SP1

CN11-2: RIBN, GND

NCU PCB

15 14 13 12 11 10 9 8 7 6 5 4 3 2 CN1-1 — CHARGE, ADLC, RDPS, POL, +25V, CML, C1, GND, PLS, TELOFF, TELRL, +5V, TELSL, SL, RL

Power supply PCB

Cam switch

Speaker

Ribbon switch

CN3-4: Tb, Ta — 3

CN2-5: 4 3 2 — Tb, Lb, La, Ta

CN4-4: 3 2 1 — HS4, HS3, HS2, HS1

F.G.

Ext.

Line

Handset

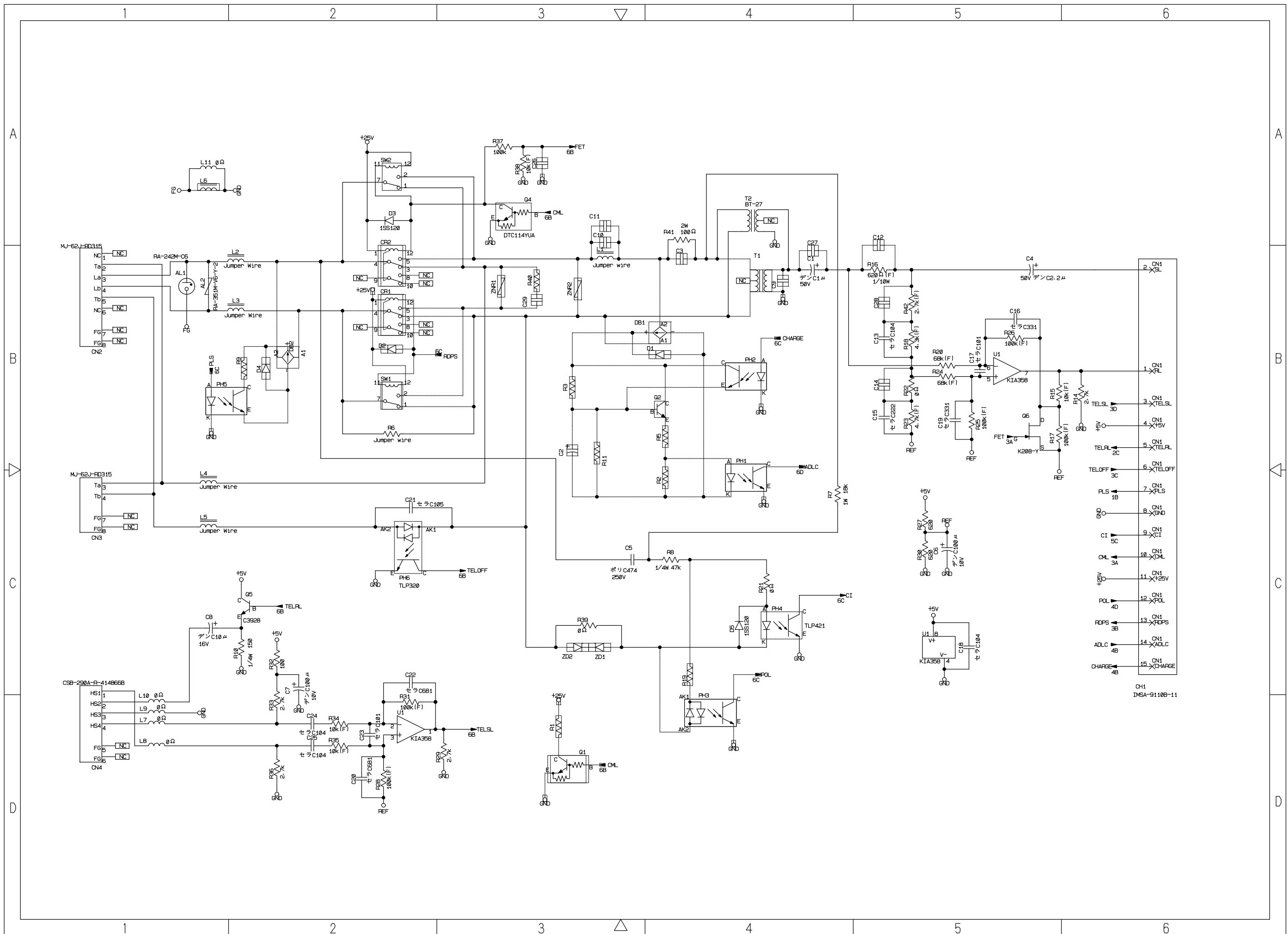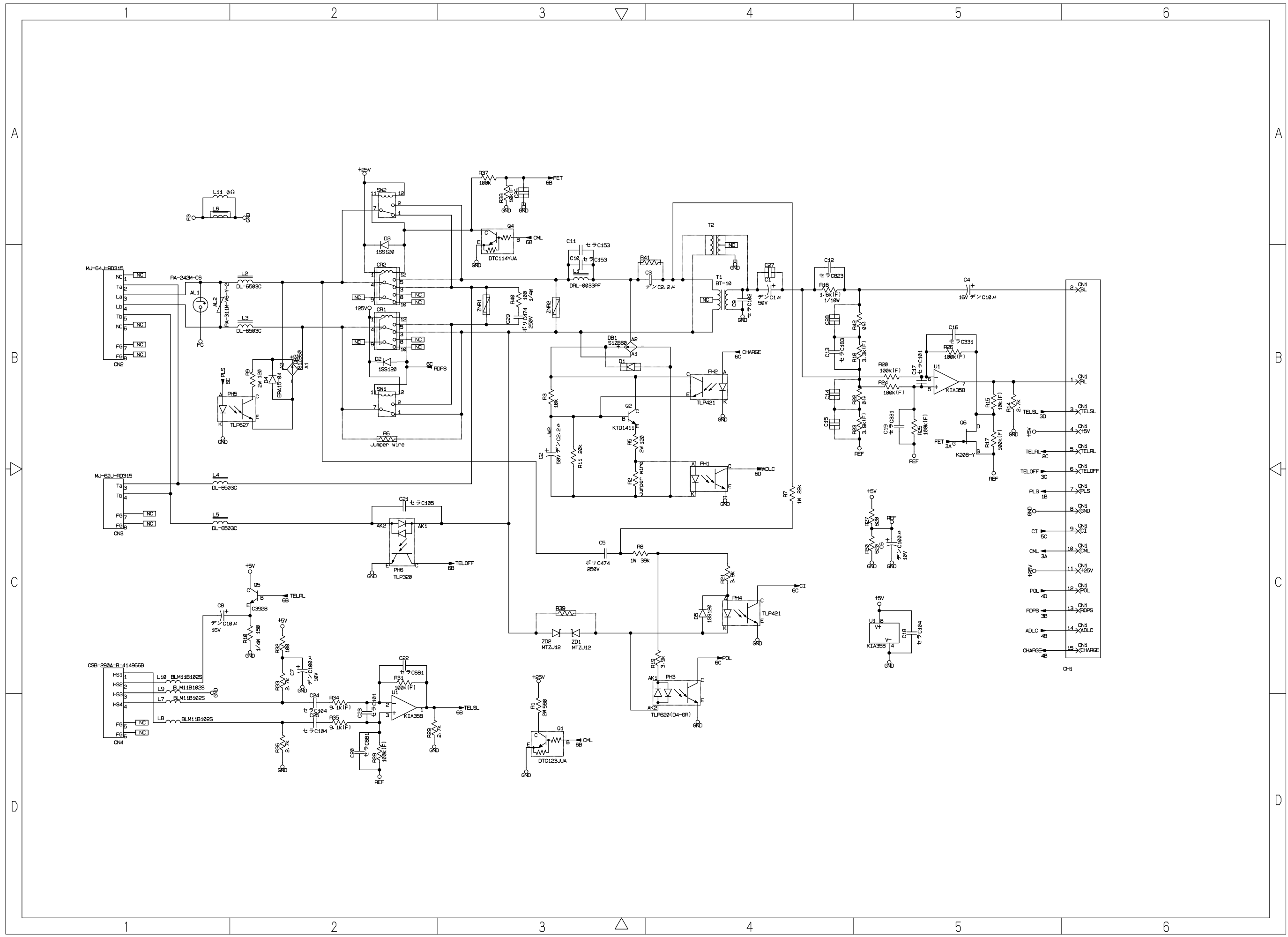Not provided on the FAX-T102.

INLET

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FAX837MC/827/817
FAX-T106/T104/T102
FAX575

Appendix 6. Circuit Diagrams

This appendix provides the circuit diagrams of the NCU PCB and power supply PCB.

* 調整 (Adjust)

brother®