brother.

FACSIMILE EQUIPMENT
SERVICE MANUAL

MODEL: FAX560/FAX580MC/MFC660MC
FAX-T72/FAX-T74/FAX-T76/FAX-T78
FAX-T82/FAX-T84/FAX-T86
FAX645/FAX685MC/MFC960MC
FAX1280/FAX1980MC/FAX816

PREFACE

This publication is a Service Manual covering the specifications, construction, theory of operation, and maintenance of the Brother facsimile equipment. It includes information required for field troubleshooting and repair--disassembly, reassembly, and lubrication--so that service personnel will be able to understand equipment function, to rapidly repair the equipment and order any necessary spare parts.

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

This manual is made up of six chapters and appendices.

This manual describes the models and their versions to be destined for major countries. The specifications and functions are subject to change depending upon each destination.

CHAPTER I.

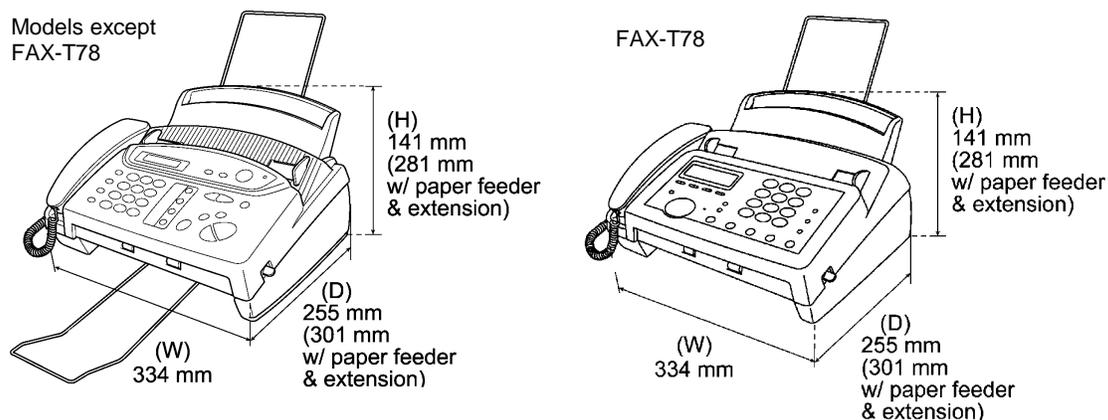## GENERAL DESCRIPTION

CHAPTER I. GENERAL DESCRIPTION

CONTENTS

1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

The figure below shows the equipment appearance and approximate dimensions.

Models except
FAX-T78

(H)
141 mm
(281 mm
w/ paper feeder
& extension)

(D)
255 mm
(301 mm
w/ paper feeder
& extension)

(W)
334 mm

FAX-T78

(H)
141 mm
(281 mm
w/ paper feeder
& extension)

(D)
255 mm
(301 mm
w/ paper feeder
& extension)

(W)
334 mm

		Models except European models	European models
Weight:	Machine proper (excluding accessories)	Approx. 2.9 kg	Approx. 3.0 kg
	In package MFC660MC/MFC960MC	Approx. 4.5 kg	—
	Other models	Approx. 4.1 kg	Approx. 4.3 kg

1.2 Components

The equipment consists of the following major components:

Handset mount

Handset

Control cover sub ASSY

Chute cover ASSY

Main frame

Recording head

CIS unit

Drive unit

Power supply PCB

Main PCB

NCU PCB

Bottom plate

I - 1
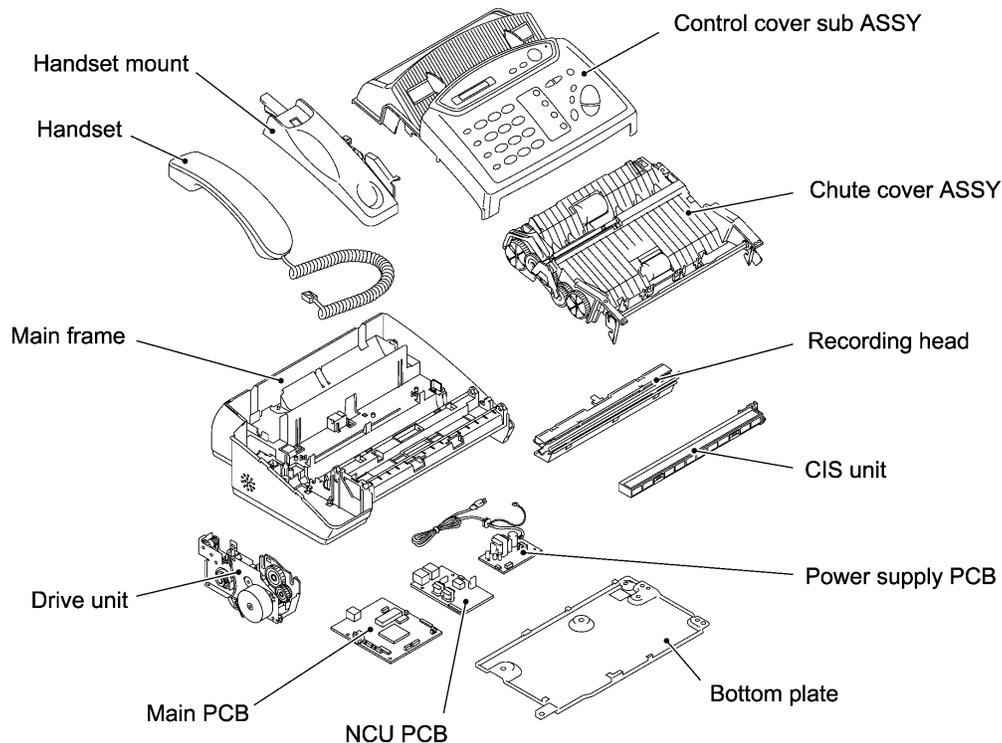
2.   SPECIFICATIONS

The tables below list the detailed specifications of typical models. The specifications of other models differ from them on the points of with/without handset, LCD type and others according to destinations as shown on page I-7.

(1/2)

Model Name	FAX560	FAX580MC	MFC660MC
Engine	Thermal transfer	Thermal transfer	Thermal transfer
Color	Upper: New Personal white (1485) Lower: 1473 gray	Upper: New Personal white (1485) Lower: 1473 gray	Upper: MFC white (1495 gray) Lower: 1473 gray
Transmission Speed (sec)	15	9	9
Modem Speed (bps)	9600	14,400	14,400
Group Compatibility	G3	G3	G3
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF (pages)	10	10	10
Paper Feeder (sheets)	Letter: 50*, Legal: 30	Letter: 50*, Legal: 30	Letter: 50*, Legal: 30
Ribbon Yield (letter-size)	150 pages (47 m)	150 pages (47 m)	150 pages (47 m)
Starter Ribbon Yield (letter-size)	30 pages (10 m)	30 pages (10 m)	30 pages (10 m)
Replacement Roll	PC401: 47 m (150 pages)	PC401: 47 m (150 pages)	PC401: 47m (150 pages)
LCD Size	16 x 1	16 x 1	16 x 1
On-Screen Programming	Yes	Yes	Yes
Super Fine	Yes	Yes	Yes
Smoothing	Yes	Yes	Yes
Gray Scale (levels)	64 by Dithered	64 by Dithered	64 by Dithered
One Touch	4	4	4
Speed Dial	50	50	50
Telephone Index	Yes as "Search"	Yes as "Search"	Yes as "Search"
Speaker Phone	Monitor	Full duplex (digital)	Full duplex (digital)
Handset	Yes	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Distinctive Ring Detection	Yes	Yes	Yes
Caller ID	Yes	Yes	Yes
Call Waiting Caller ID	Yes	Yes	Yes
TAD Interface	Yes	Yes	Yes
Enhanced Remote Activation	Yes	Yes	Yes
Automatic Redial	Yes	Yes	Yes
Next-FAX Reservation	Yes	Yes	Yes
Multi-Resolution Transmission	Yes	Yes	Yes
Polling Type	Sim/Seq	Sim/Seq	Sim/Seq
Delayed Transmission	3-timer	3-timer	3-timer
Call Reservation	Yes	Yes	Yes
Electronic Coverpage	Yes-Super	Yes-Super	Yes-Super
Call Back Message	Yes	Yes	Yes
Activity Report	Yes	Yes	Yes
TX Verification Report	Yes	Yes	Yes
Memory Capacity (pages)	512 KB (up to 25 pages for OPR**)	512 KB (up to 25 pages for OPR**)	512 KB (up to 25 pages for OPR**)
ECM	Yes	Yes	Yes
Broadcasting	Yes	Yes	Yes

 *Paper feeder: 50 sheets for US/Canada

**Page memory: 25 pages in OPR (out-of-paper reception), 22 pages in quick scan

I - 2

Model Name	FAX-T72	FAX-T74
Engine	Thermal transfer	Thermal transfer
Color	New Personal black (1293)	New Personal black (1293)
Transmission Speed (sec)	15	15
Modem Speed (bps)	9600	9600
Group Compatibility	G3	G3
Input/Output Width	8.5"/8.5"	8.5"/8.5"
ADF (pages)	10	10
Paper Feeder (A4-size)	30 sheets	30 sheets
Ribbon Yield (A4-size)	144 pages (47 m)	144 pages (47 m)
Starter Ribbon (A4-size)	Yes-10 m (30 pages)	Yes-10 m (30 pages)
LCD Size	16 x 1	16 x 1
On-Screen Programming	Yes	Yes
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Gray Scale (levels)	64 by Dithered	64 by Dithered
One Touch	4	4
Speed Dial	50	50
Telephone Index	Yes as "Search"	Yes as "Search"
Speaker Phone	Monitor	Monitor
Handset	No	Yes
FAX/TEL Switch	Yes	Yes
Caller ID	Yes GER/FRA/SPA	Yes GER/HOL/SWE/UK/IRE/ FRA/NOR/BEL/DEN/SPA
Call Waiting Caller ID	No	No
Distinctive Ring Detection	No	Yes for DEN/UK
TAD Interface	Yes	Yes
Enhanced Remote Activation	Yes	Yes
Automatic Redial	Yes	Yes
Next-FAX Reservation	Yes	Yes
Multi-Resolution Transmission	Yes	Yes
Polling Type	Sim/Sec/Del/Seq	Sim/Sec/Del/Seq
Delayed Transmission	3-timer	3-timer
Call Reservation	Yes	Yes
Electronic Coverpage	Yes-Super	Yes-Super
Callback Message	Yes	Yes
Journal Report	Yes	Yes
TX Verification Report	Yes	Yes
Memory Capacity	512 KB (up to 20 pages for OPR*)	512 KB (up to 20 pages for OPR*)
ECM	Yes	Yes
Broadcasting	Yes	Yes
Quick Scan	Yes	Yes

*Page memory: 20 pages ITU-T No.1 chart in OPR (out-of-paper reception) in the ECM mode

I - 3

Model Name	FAX-T76	FAX-T78
Engine	Thermal transfer	Thermal transfer
Color	New Personal black (1293)	White (1517)
Transmission Speed (sec)	9	9
Modem Speed (bps)	14,400	14,400
Group Compatibility	G3	G3
Input/Output Width	8.5"/8.5"	8.5"/8.5"
ADF (pages)	10	10
Paper Feeder (A4-size)	30 sheets	30 sheets
Ribbon Yield (A4-size)	144 pages (47 m)	144 pages (47 m)
Starter Ribbon (A4-size)	Yes-10 m (30 pages)	Yes-10 m (30 pages) (Not applicable to UK model)
LCD Size	16 x 1	16 x 2 + pict sign
On-Screen Programming	Yes	Yes
Super Fine	Yes	Yes
Smoothing	Yes	Yes
Gray Scale (levels)	64 by Dithered	64 by Dithered
One Touch	4	N/A
Speed Dial	50	100
Telephone Index	Yes as "Search"	Yes as "Jog Search"
Speaker Phone	Full duplex (digital)	Full duplex (digital)
Handset	Yes	Yes
FAX/TEL Switch	Yes	Yes
Caller ID	Yes GER/HOL/SWE/UK/IRE/FRA/ NOR/BEL/DEN/SPA	Yes GER/UK/FRA/BEL/SPA
Call Waiting Caller ID	No	No
Distinctive Ring Detection	Yes for DEN/UK	Yes for UK
TAD Interface	Yes	Yes
Enhanced Remote Activation	Yes	Yes
Automatic Redial	Yes	Yes
Next-FAX Reservation	Yes	Yes
Multi-Resolution Transmission	Yes	Yes
Polling Type	Sim/Sec/Del/Seq	Sim/Sec/Del/Seq
Delayed Transmission	3-timer	3-timer
Call Reservation	Yes	Yes
Electronic Coverpage	Yes-Super	Yes-Super
Callback Message	Yes	Yes
Journal Report	Yes	Yes
TX Verification Report	Yes	Yes
Memory Capacity	512 KB (up to 20 pages for OPR*)	512 KB (up to 20 pages for OPR*)
ECM	Yes	Yes
Broadcasting	Yes	Yes
Quick Scan	Yes	Yes

*Page memory: 20 pages ITU-T No.1 chart in OPR (out-of-paper reception) in the ECM mode

I - 4

Model Name	FAX-T82	FAX-T84	FAX-T86
Engine	Thermal Transfer	Thermal Transfer	Thermal Transfer
Color	WHITE (1517)	WHITE (1517)	WHITE (1517)
Transmision Speed (sec)	15	15	9
Modem Speed (bps)	9600	9600	14,400
Group Compatibility	G3	G3	G3
Input/Output Width	8.5"/8.5"	8.5"/8.5"	8.5"/8.5"
ADF(pgs)	10	10	10
Paper Cassette (A4 size)	30 Sheets	30 Sheets	30 Sheets
Ribbon Yield (A4 size)	144 Pages (47 m)	144 Pages (47 m)	144 Pages (47 m)
Starter ribbon (A4 size)	Yes - 10 m (30 pages)	Yes - 10 m (30 pages)	Yes - 10 m (30 pages)
LCD Size	16X1	16X1	16X1
On-Screen Programming	Yes	Yes	Yes
Super Fine	Yes	Yes	Yes
Smoothing	Yes	Yes	Yes
Gray Scale (levels)	64 by Dithered	64 by Dithered	64 by Dithered
One Touch	4	4	4
Speed Dial	100	100	100
Telephone Index	Yes as "Search"	Yes as "Search"	Yes as "Search"
Speaker Phone	Monitor	Monitor	Full duplex (digital)
Handset	No	Yes	Yes
FAX/TEL Switch	Yes	Yes	Yes
Caller ID	Yes FRA/SPA/GER/AUS	Yes HOL/SWE/UK/IRE/ FRA/NOR/BEL/DEN/SPA/ GER/AUS/POR	Yes HOL/SWE/UK/IRE/ FRA/NOR/BEL/DEN/SPA/ GER/AUS/POR
Call waiting caller ID	No	No	No
Distinctive Ring Detection	No	Yes for DEN/UK	Yes for DEN/UK
TAD Interface	Yes	Yes	Yes
Enhanced Remote Activation	Yes	Yes	Yes
Automatic Redial	Yes	Yes	Yes
Next-FAX Reservation	Yes	Yes	Yes
Multi-Resolution Transmission	Yes	Yes	Yes
Polling Type	Sim/Sec/Del/Seq	Sim/Sec/Del/Seq	Sim/Sec/Del/Seq
Delayed Transmission	3-timer	3-timer	3-timer
Call Reservation	Yes	Yes	Yes
Electronic Coverpage	Yes - Super	Yes - Super	Yes - Super
Call Back Message	Yes	Yes	Yes
Journal Report	Yes	Yes	Yes
TX Verification Report	Yes	Yes	Yes
Memory Capacity (pgs)	512KB (up to 20pages for OPR*)	512KB (up to 20pages for OPR*)	512KB (up to 20pages for OPR*)
ECM	Yes	Yes	Yes
Broadcasting	Yes	Yes	Yes
Quick-Scan	Yes	Yes	Yes

*Page memory: 20 pages ITU-T No.1 chart in OPR (out-of-paper reception) in the ECM mode

Model Name	FAX560	FAX580MC	MFC660MC
Quick Scan	Yes	Yes	Yes
Out-of-Paper Reception	Yes	Yes	Yes
Multi-Copying w/ Sorting	Yes	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)	Yes (50-150%)
Multi-Transmission	No	No	No
Confidential Mailbox	No	No	No
Auto Reduction	Yes	Yes	Yes
Message Center	No	Yes	Yes
TAD Recording Time	No	15 minutes	15 minutes
Fax Forwarding/Paging	Yes	Yes	Yes
Fax Retrieval	Yes	Yes	Yes
Fax-/Voice-on-Demand	No	No	No
Fax & Voice Mailbox	No	No	No
Help List	Yes	Yes	Yes
Missing Link	No	Ready	Included
Optional Memory	No	No	No
Voice Alarm	No	No	No
Output Tray	Yes, wire included.	Yes, wire included.	Yes, wire included.
Others	Call Manage	Call Manage	Call Manage

Model Name	FAX-T72	FAX-T74
Out-of-Paper Reception	Yes	Yes
Multi-Copying w/ Sorting	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)
Multi-Transmission	No (w/o SHIFT key)	No (w/o SHIFT key)
Confidential Mailbox	No	No
Auto Reduction	Yes	Yes
Message Manager	No	No
TAD Recording Time	No	No
Fax Forwarding/Paging	Yes-Only Fax Forwarding	Yes-Only Fax Forwarding
Fax Retrieval	Yes	Yes
Fax-/Voice-on-Demand	No	No
Fax & Voice Mailbox	No	No
Help List	Yes	Yes
MFL PRO for FAX	No	No
Optional Memory	No	No
Memo Manager	No	No
Mute Key	No	Yes-music on hold; Green Sleeves
Backup for Clock	9 hours	9 hours
Output Tray	Not available	Not available
Backup for Page Memory	No	No

Power Consumption	Standby:
	  Less than 2 W (SWITZ)
	  Less than 5 W (Other countries)
	Peak: 150 W
		Standby:
		  Less than 2 W (SWITZ, DEN)
		  Less than 5 W (Other countries)
		Peak: 150 W

Others	—	—

I - 7

Model Name	FAX-T76	FAX-T78
Out-of-Paper Reception	Yes	Yes
Multi-Copying w/ Sorting	Yes	Yes
Enlargement/Reduction Ratio	Yes (50-150%)	Yes (50-150%)
Multi-Transmission	No (w/o SHIFT key)	No (w/o SHIFT key)
Confidential Mailbox	No	No
Auto Reduction	Yes	Yes
Message Manager	Yes	Yes
TAD Recording Time	15 minutes	15 minutes
Fax Forwarding/Paging	Yes-both	Yes-both
Fax Retrieval	Yes	Yes
Fax-/Voice-on-Demand	No	No
Fax & Voice Mailbox	No	No
Help List	Yes	Yes
MFL PRO for FAX	Ready	No
Optional Memory	No	No
Memo Manager	No	No
Mute Key	Yes-music on hold; Green Sleeves	Yes-music on hold; 4 melodies, 8 patterns, and OFF
Backup for Clock	15 hours	15 hours
Output Tray	Not available	Not available
Backup for Page Memory	6 hours	6 hours
Power Consumption	Standby: Less than 2 W (SWITZ, DEN) Less than 5 W (Other countries) Peak: 150 W	Standby: Less than 2 W (SWITZ) Less than 5 W (Other countries) Peak: 150 W
Others	—	Ringer pattern: 8 patterns available

I - 8

Model Name	FAX-T82	FAX-T84	FAX-T86
Out-of-Paper Reception	Yes	Yes	Yes
Multi-Copying w/Sorting	Yes	Yes	Yes
Enlargement/Redcution Ratio	Yes(50-150%)	Yes(50-150%)	Yes(50-150%)
Multi-Transmision	No (w/o SHIFT key)	No (w/o SHIFT key)	No (w/o SHIFT key)
Confidential MailBox	No	No	No
Auto Reduction	Yes	Yes	Yes
Message Manager	No	No	Yes
TAD Recording Time	No	No	15 minutes
Fax Forwarding/Paging	Yes - Only Fax Forwarding	Yes - Only Fax Forwarding	Yes - both
Fax Retrieval	Yes	Yes	Yes
Fax & Voice on Demand	No	No	No
Fax & Voice Mailbox	No	No	No
Help List	Yes	Yes	Yes
MFL PRO for fax	No	No	No
Optional Memory	No	No	No
Memo Manager	No	No	No
Mute key	No	Yes - music on hold; Green Sleeves	Yes - music on hold; Green Sleeves
Backup for clock	9 hours	9 hours	15 hours
Output tray	Not available	Not available	Not available
Backup for Page Memory	6 hours	6 hours	6 hours
Power Consumption	Stand-by: under 5 w*** Peak: 170 w	Stand-by: under 5 w*** Peak: 170 w	Stand-by: under 5 w*** Peak: 170 w
Others			-

Relationship between models and destinations

	Base models		MC models	
	w/o handset	w/ handset	Single-row LCD	Double-row LCD w/ job dial
American models	—	FAX560	FAX580MC/MFC660MC	—
European models	FAX-T72/FAX-T82	FAX-T74/FAX-T84	FAX-T76/FAX-T86	FAX-T78
Asian/Oceanic models	—	FAX645	FAX685MC/MFC960MC	—
Chinese models	—	FAX1280	FAX1980MC	—
Taiwanese models	—	FAX816	—	—

I - 9

CHAPTER II.

INSTALLATION

CHAPTER III.

THEORY OF OPERATION

CHAPTER III. THEORY OF OPERATION

CONTENTS

1. OVERVIEW

```
                              To PC**    ┌──────────┐ *
                                         │ Handset  │
                                         └──────────┘
                                              ↕
┌──────────────────────────────────────────────────────────────────┐
│  ┌─────────────────────┐   ┌──────────────┐   ┌──────────────────┐│
│  │  Control panel      │   │              │   │ Sensor PCB       ││
│  │  ┌───────────────┐  │←→ │  Main PCB    │←→ │ (Cover sensor,   ││
│  │  │     LCD       │  │   │ (Ribbon      │   │ registration     ││
│  │  └───────────────┘  │   │  sensor)     │   │ sensor,          ││
│  │  ┌───────────────┐  │   │              │   │ and hook switch*)││
│  │  │ (Document     │  │   │              │   └──────────────────┘│
│  │  │ front and rear│  │   │              │   ┌──────────────────┐│
│  │  │ sensors)      │  │   │              │←→ │  Drive unit      ││
│  │  └───────────────┘  │   └──────────────┘   │  ┌────────────┐  ││
│  └─────────────────────┘          ↕           │  │   Motor    │  ││
│  ┌─────────────────────┐   ┌──────────────┐   │  └────────────┘  ││
│  │  Scanner            │   │              │   │ (Arm HP switch)  ││
│  │  ┌───────────────┐  │   │  NCU PCB     │   └──────────────────┘│
│  │  │   CIS unit    │←→│   │              │   ┌──────────────────┐│
│  │  └───────────────┘  │   └──────────────┘   │                  ││
│  └─────────────────────┘          ↕           │                  ││
│                            ┌──────────────┐   ┌──────────────────┐│
│                            │ Power supply │←→ │ Recording head   ││
│                            │ PCB          │   │                  ││
│                            └──────────────┘   └──────────────────┘│
└──────────────────────────────────────────────────────────────────┘
              Line  Ext.        AC
```

*Not provided on models w/o handset.
**Provided on MC models.

III - 1

2. MECHANISMS

The facsimile equipment is classified into the following mechanisms:

- Scanning Mechanism
  - ADF mechanism
  - Document scanning & feeding mechanism

- Printing Mechanism
  - ACF and registration mechanism
  - Printing and paper ejecting mechanism

- Power Transmission Switching Mechanism

- Sensors and Actuators
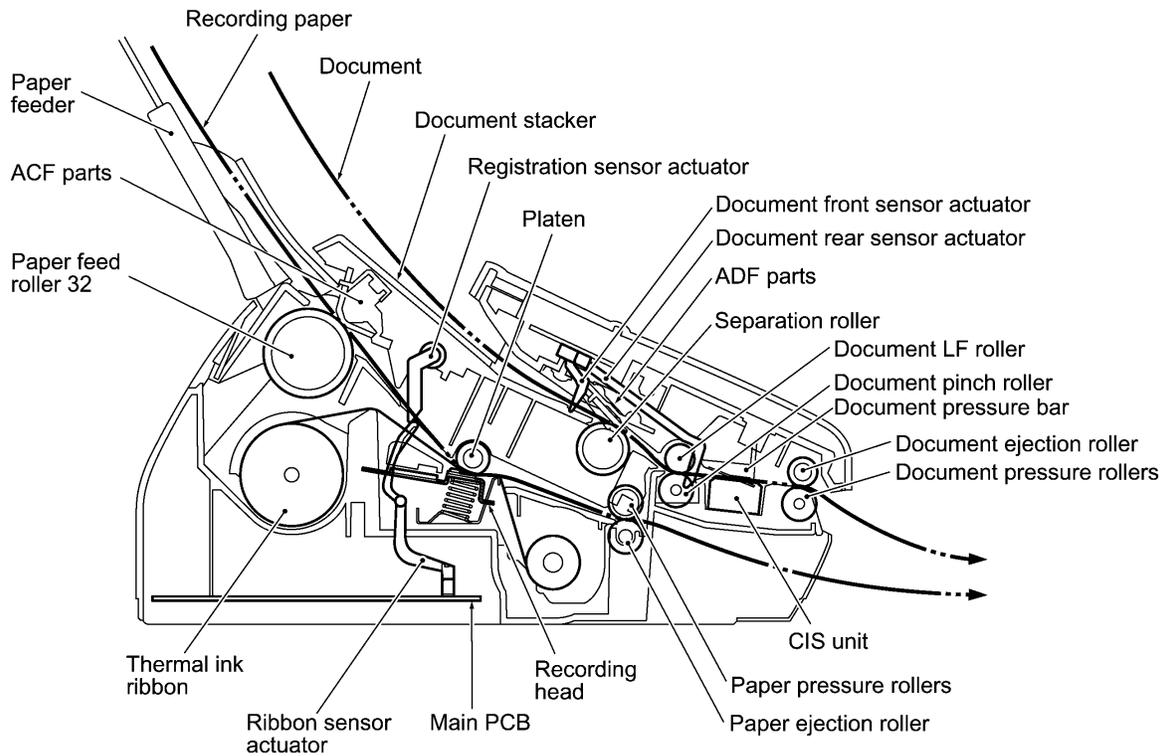
2.1 Scanning Mechanism

The scanning mechanism consists of the document stacker, automatic document feeder (ADF), separation roller, document LF roller, scanner, document ejection roller, and document sensors. (For details about the sensors, refer to Section 2.4.)

Automatic document feeder (ADF)

If you set documents with their faces down on the stacker and start the transmitting operation, the ADF (consisting of the separation roller and ADF parts) feeds those documents into the equipment, starting from the bottom sheet (first page) to the top (last page), page by page. Each document advances to the scanner with the document LF roller, and then it is fed out of the equipment with the document ejection roller.

Scanner

The scanner uses a contact image sensor (CIS) unit which consists of an LED array illuminating documents, a self-focus lens array collecting the reflected light, a CIS PCB carrying out photoelectric conversion to output picture element data, and a cover glass on which a document advances. When the document passes between the document pressure bar and the cover glass, it is scanned.

2.2 Printing Mechanism

The printing mechanism consists of the paper feeder, automatic cut sheet feeder (ACF), paper feed roller 32, platen, thermal recording head, paper ejection roller, and sensors. (For details about the sensors, refer to Section 2.4.)

Automatic cut sheet feeder (ACF) and registration mechanism

If the operator sets cut sheets into the paper feeder and receiving operation starts, the ACF (paper feed roller 32 and ACF parts) feeds paper into the equipment, 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 up to the printing position where the thermal recording head prints while the thermal ink ribbon advances. Then the paper is fed out of the equipment with the paper ejection roller.

2.3 Power Transmission Switching Mechanism

The facsimile equipment 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 equipment 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 arm of the planet gear ASSY turns on the arm HP 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.
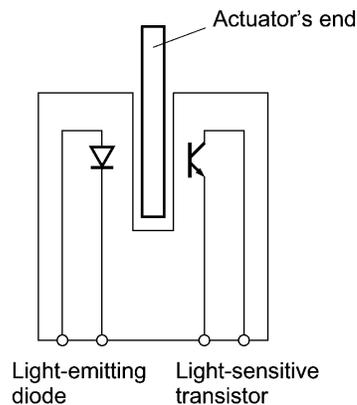
III - 3

2.4 Sensors and Actuators

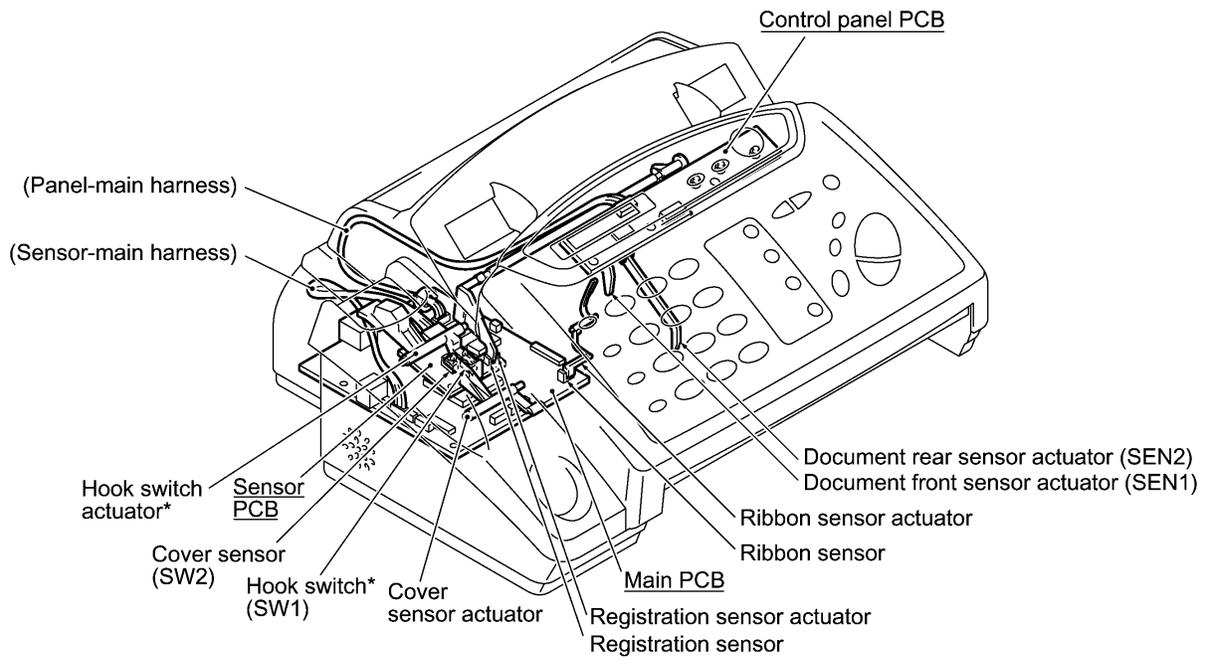This equipment has two photosensors and five mechanical switches as described below.

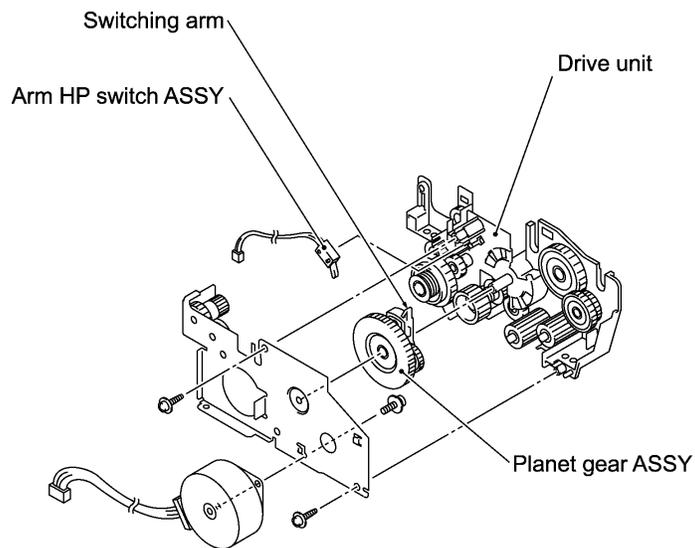| Sensor name	Type	Located on
Document front sensor	Microswitch (SEN1)	Control panel PCB
Document rear sensor	Microswitch (SEN2)	Control panel PCB
Cover sensor	Microswitch (SW2)	Sensor PCB
Hook switch*	Microswitch (SW1)	Sensor PCB
Registration sensor	Photosensor	Sensor PCB
Ribbon sensor	Photosensor	Main PCB
Arm HP switch	Leaf switch	Drive unit

*Not provided on models w/o handset.

- Document front sensor which detects the presence of documents.
- Document rear sensor which detects the leading and trailing edges of pages to tell the control circuitry when the leading edge of a new page has reached the starting position and when the scan for that page is over.
- Cover sensor which detects whether the control panel ASSY is closed.
- Hook switch sensor* which detects whether the handset is placed on the handset mount.
- Registration sensor which detects the leading and trailing edges of recording paper, which allows the controller to determine the registration timing and check paper jam.
- Ribbon sensor which detects whether the ink ribbon is loaded.
- Arm HP switch which detects whether the switching arm of the drive unit is placed in the home position.

The registration sensor and ribbon sensor is 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 paper or ink ribbon.

Actuator's end

Light-emitting diode Light-sensitive transistor

III - 4

Control panel PCB

(Panel-main harness)

(Sensor-main harness)

Document rear sensor actuator (SEN2)
Document front sensor actuator (SEN1)

Ribbon sensor actuator

Ribbon sensor

Hook switch
actuator*

Sensor
PCB

Cover sensor
(SW2)

Hook switch*
(SW1)

Cover
sensor actuator

Main PCB

Registration sensor actuator

Registration sensor

*Not provided on models w/o handset.

Switching arm

Drive unit

Arm HP switch ASSY

Planet gear ASSY

Location of Sensors and Actuators

III - 5

3. CONTROL ELECTRONICS

3.1 Configuration

The hardware configuration of the facsimile equipment is shown below.
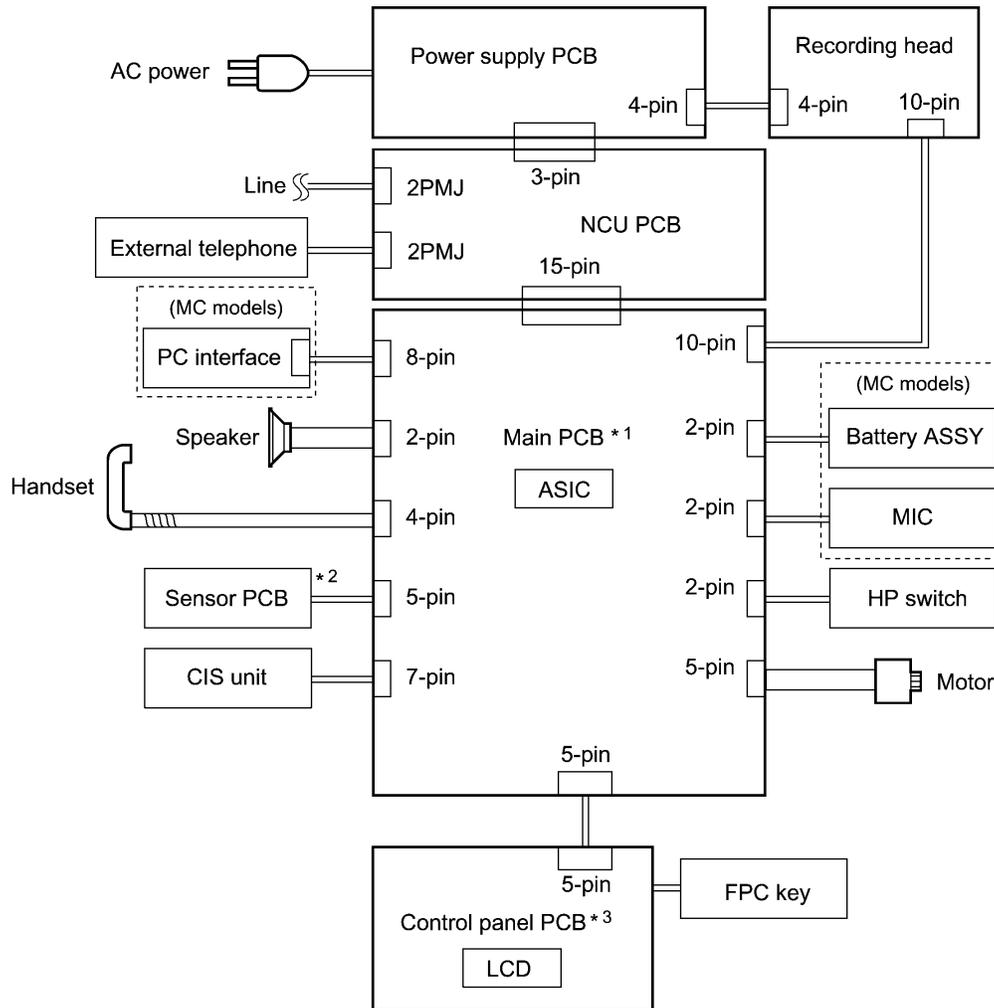
*1   On the main PCB is the ribbon sensor.
*2   On the sensor PCB are these sensors:
  ● Cover sensor (SW2)
  ● Hook switch* (SW1)
  ● Registration sensor
*3   On the control panel PCB are these sensors:
  ● Document front sensor (SEN1)
  ● Document rear sensor (SEN2)

Configuration of Facsimile Equipment

CHAPTER IV.

DISASSEMBLY/REASSEMBLY AND LUBRICATION

CHAPTER IV. DISASSEMBLY/REASSEMBLY AND LUBRICATION

CONTENTS

1. DISASSEMBLY/REASSEMBLY

n Safety Precautions

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

(1) Unplug the power cord from the power outlet before replacing parts or units. When having access to the power supply, be sure to unplug the power cord from the power outlet.

(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) Before handling the PCBs, touch a metal portion of the equipment to discharge static electricity; otherwise, the electronic parts may be damaged due to the electricity charged in your body.

(5) When transporting PCBs, be sure to wrap them in conductive sheets such as aluminum foil.

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

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

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

(9) Before reassembly, apply the specified lubricant to the specified points. (Refer to Section 2 in this chapter.)

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

Tightening Torque List

Location	Screw type	Q'ty	Tightening torque N•m (kgf•cm)	Loosening torque N•m (kgf•cm)
Cover stopper link	Taptite, pan B M4x6D10	1	0.69 ±0.20 (7 ±2)	Min. 0.40 (4.0)
ROM cover	Taptite, cup B M3x8	1	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
Chute cover ASSY	Taptite, cup B M3x8	4	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
ACF parts	Taptite, bind B M3x8	4	0.39 ±0.20 (4 ±2)	Min. 0.15 (1.5)
ADF parts	Taptite, pan B M3x6	1	0.39 ±0.20 (4 ±2)	Min. 0.10 (1.0)
Panel rear cover	Taptite, cup B M3x8	4	0.39 ±0.20 (4 ±2)	Min. 0.15 (1.5)
Control panel PCB	Taptite, cup B M3x8	2 (1)*	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
Handset mount	Taptite, cup B M3x8	1	0.49 ±0.20 (5 ±2)	Min. 0.15 (1.5)
Sensor PCB	Taptite, cup B M3x8	1	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
Recorder frame	Taptite, cup B M3x8	2	0.49 ±0.20 (5 ±2)	Min. 0.20 (2.0)
Drive unit	Taptite, cup B M3x8	2	0.49 ±0.20 (5 ±2)	Min. 0.20 (2.0)
Sub frame ASSY	Taptite, cup B M3x8	2	0.49 ±0.20 (5 ±2)	Min. 0.20 (2.0)
Motor	Screw, pan (spring washer) M3x6	1	0.69 ±0.20 (7 ±2)	Min. 0.34 (3.5)
Lower cover	Taptite, cup B M3x8	2	0.49 ±0.20 (5 ±2)	Min. 0.15 (1.5)
CIS spring	Taptite, cup B M3x8	1	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
CIS holder	Taptite, cup B M3x8	1	0.39 ±0.20 (4 ±2)	Min. 0.20 (2.0)
	Taptite, bind B M3x8	1	0.39 ±0.10 (4 ±1)	Min. 0.20 (2.0)
Bottom plate	Taptite, cup B M3x8	5	0.49 ±0.20 (5 ±2)	Min. 0.15 (1.5)
(Drive unit)	Taptite, cup S M3x6	1	0.69 ±0.20 (7 ±2)	Min. 0.40 (4.0)
Grounding wire	Screw, pan (plain washer) M4x6DB	1	0.69 ±0.20 (7 ±2)	Min. 0.40 (4.0)
Main PCB	Taptite, cup B M3x8	1	0.49 ±0.20 (5 ±2)	Min. 0.15 (1.5)

* The control panel PCB of base models is secured with a single screw.

IV - 2

■ **Preparation**

Prior to proceeding to the disassembly procedure,

(1) Unplug

- the modular jack of the telephone line,
- the modular jack of the curled cord* (and remove the handset*),
- the PC interface cable** and
- the modular jack of an external telephone set if connected. (Not shown below.)

(2) Remove

- the paper wire extension and paper feeder
- the output paper extension, and
- the ribbon cartridge.

Ribbon cartridge   Paper wire extension

Telephone
line cord

Handset and
curled cord*

Paper feeder

Output paper
extension

PC interface
cable**
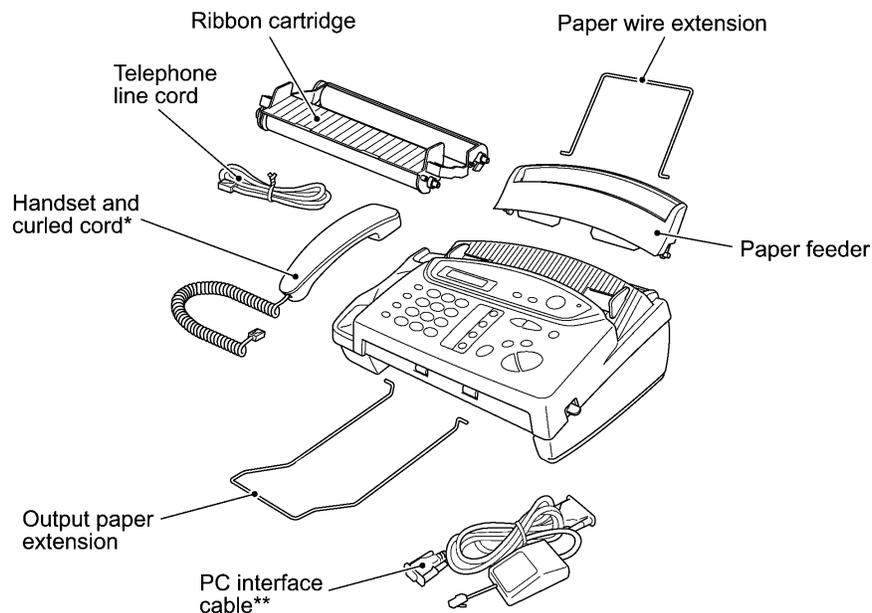
*Not provided on the FAX-T72/FAX-T82.
**Provided on the MFC660MC.

■ **How to Access the Object Component**

• On the next page is a disassembly order flow which helps you access the object components. To remove the motor, for example, first find it on the flow and learn its number (⟨1.8⟩ in this case). You need to remove parts numbered ⟨1.1⟩, ⟨1.5⟩, and ⟨1.6⟩ so as to access the motor.

• Unless otherwise specified, the disassembled parts or components should be reassembled in the reverse order of removal.

IV - 3

■ Disassembly Order Flow

Cover stopper link

Ribbon shaft stopper

ROM cover

Control panel ASSY (NOTE 1)

Document pressure bar

Chute cover ASSY

Paper pressure rollers

Separation roller

Paper feed roller 32

Platen

Registration sensor actuator

Lock bar & lock levers

Control cover sub ASSY

ACF parts

ADF parts

Panel rear cover

Control panel PCB

FPC key

LCD

Keys

Battery ASSY *3

Sensor PCB (NOTE 2)

Cover sensor actuator

Hook switch actuator *1

Handset mount *1

Dummy mount *2

Speaker

Paper ejection roller

Document ejection roller

Document LF roller

Drive unit
- Motor
- Gear HP switch ASSY

Head protector

Recording head ASSY

Recorder frame

Document pinch roller

CIS unit

Document pressure rollers

Lower cover

Support plate

CIS spring

CIS film

Bottom plate

Main PCB (NOTE 3)

NCU PCB

Ribbon sensor actuator

Power supply PCB

*1 For models w/ handset
*2 For models w/o handset
*3 For MC models

(NOTE 1) On the control panel PCB are the document front sensor and document rear sensor.
(NOTE 2) On the sensor PCB are the cover switch, registration sensor, and hook switch.
(NOTE 3) On the main PCB is the ribbon sensor.

IV - 4

1.1 Cover Stopper Link, Ribbon Shaft Stopper, ROM Cover, and Control Panel ASSY

(1) Open the control pane ASSY (in the direction of arrow •).

(2) Remove the screw from the cover stopper link. Pull the link outwards (arrow ⌐) to release it from the control panel ASSY and then turn it to the front (arrow ƒ) to remove.

(3) Press the latch of the ribbon shaft stopper with a screwdriver to release it from the main frame. The spring also comes off.

Control panel ASSY

Cover stopper link

② ①

Taptite, pan B M4x6D10

Latch

③

Ribbon shaft stopper

Ribbon stopper spring

Main frame

IV - 5
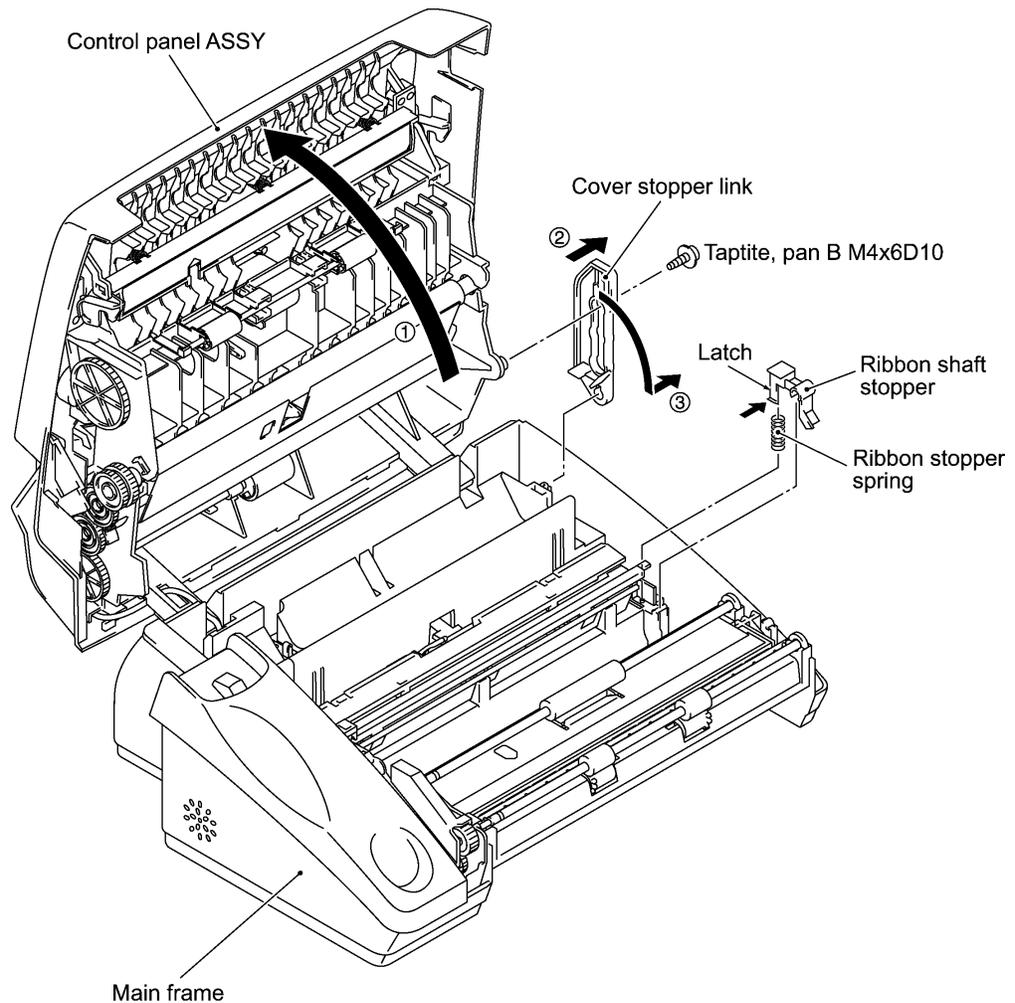
(4) Remove the screw from the ROM cover. Unlatch the ROM cover and take it up.

(5) Disconnect the panel-main harness from the main PCB.

Control panel ASSY

①

Taptite, cup B M3x8

ROM cover

Latches

Panel-main harness

②

Panel-main harness

②

*

Main frame
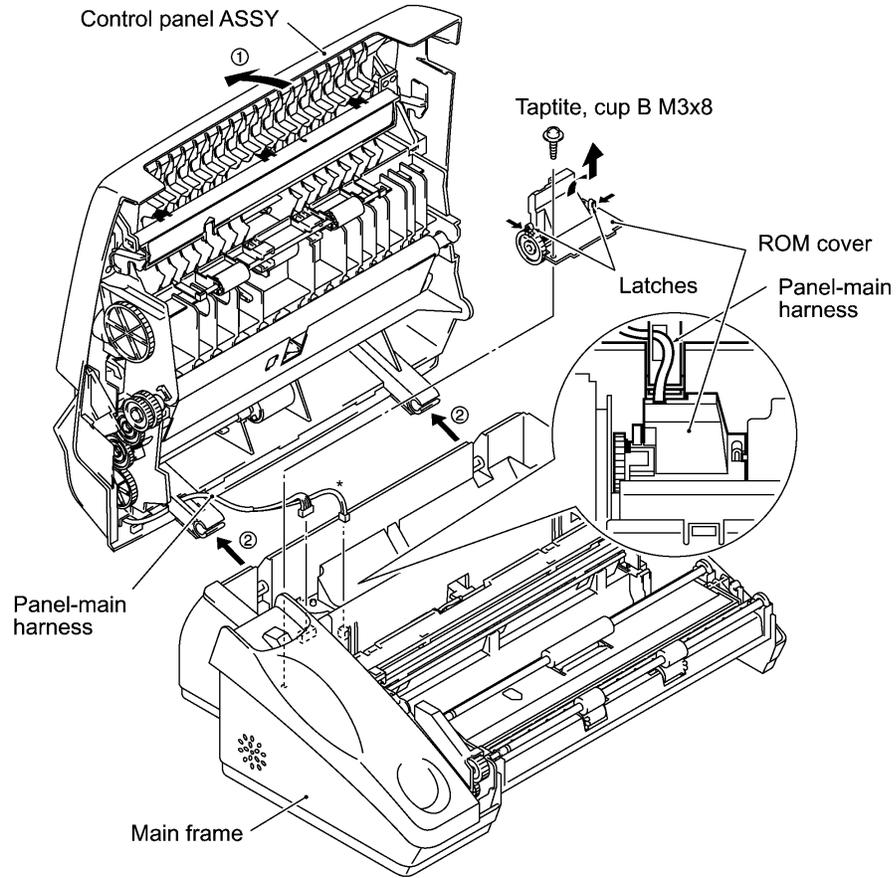
*MIC harness not provided on base models.

n   Reassembling Notes

• When connecting the panel-main harness to the main PCB, place the ferrite core as illustrated below.

Panel-main harness

Control panel ASSY

Ferrite core in correct position

Main frame

Main PCB

(Ferrite core in wrong position)

IV - 6
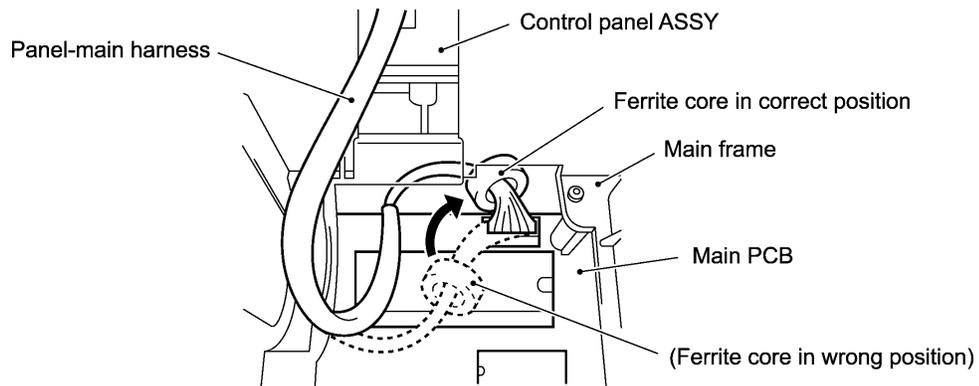
1.2 Disassembly of the Control Panel ASSY
(Document pressure bar and chute cover ASSY)

(1) Place the control panel ASSY upside down.

(2) Pull either of the supports provided on the panel rear cover outwards and lift up the document pressure bar. The three springs also come off.

(3) To replace the white film of the document pressure bar, remove it.

    NOTE: Once removed, the white film will become unusable and a new one will have to be put back in.

    NOTE: When attaching a new white film to the document pressure bar, align the right and rear edges as shown below.

Corner cut

Attaching a new white film

White film

Document pressure bar

White film

Right edge

Align

Rear edge

Align

(Rear)

Document pressure bar

Support

Springs

(Front)

Panel rear cover

Support

Control panel ASSY placed upside down
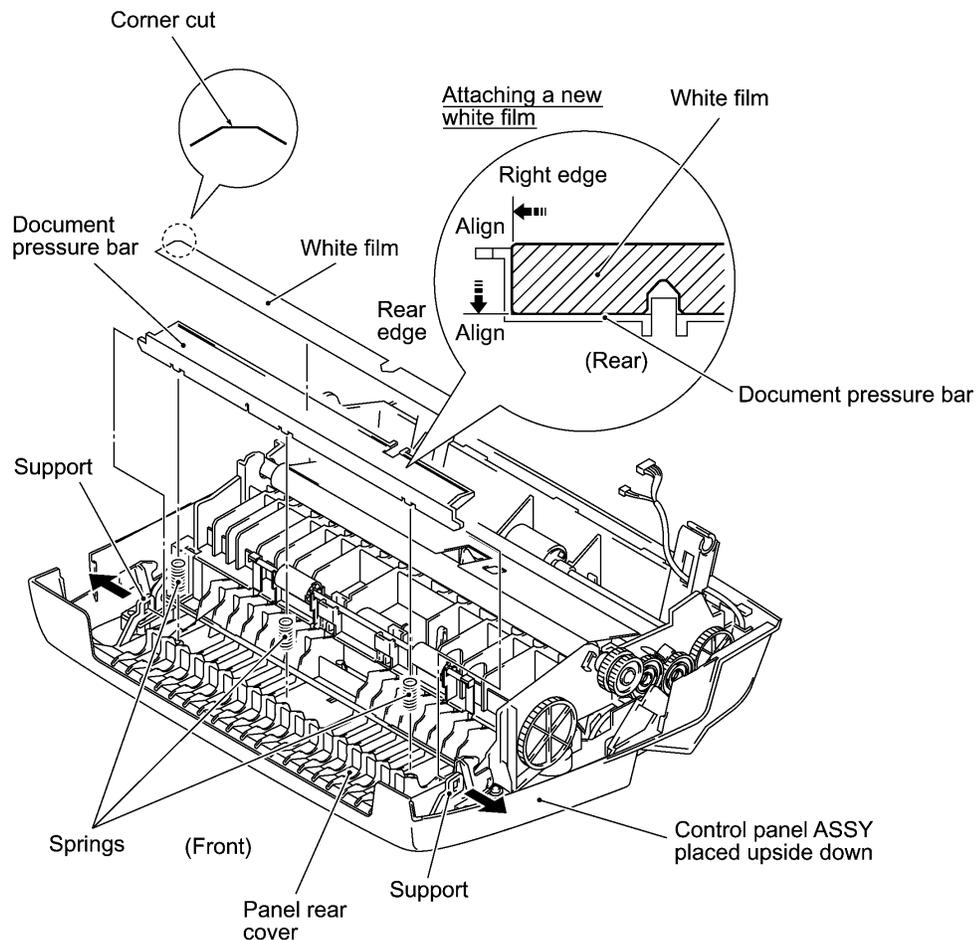
(4) Remove four screws from the chute cover ASSY.

(5) Slightly lift up the chute cover ASSY and remove the panel-main harness from the chute cover ASSY.

Taptite, cut B M3x8

Chute cover ASSY

Panel-main
harness

Control cover sub ASSY

*MIC harness not provided on base models.

IV - 8
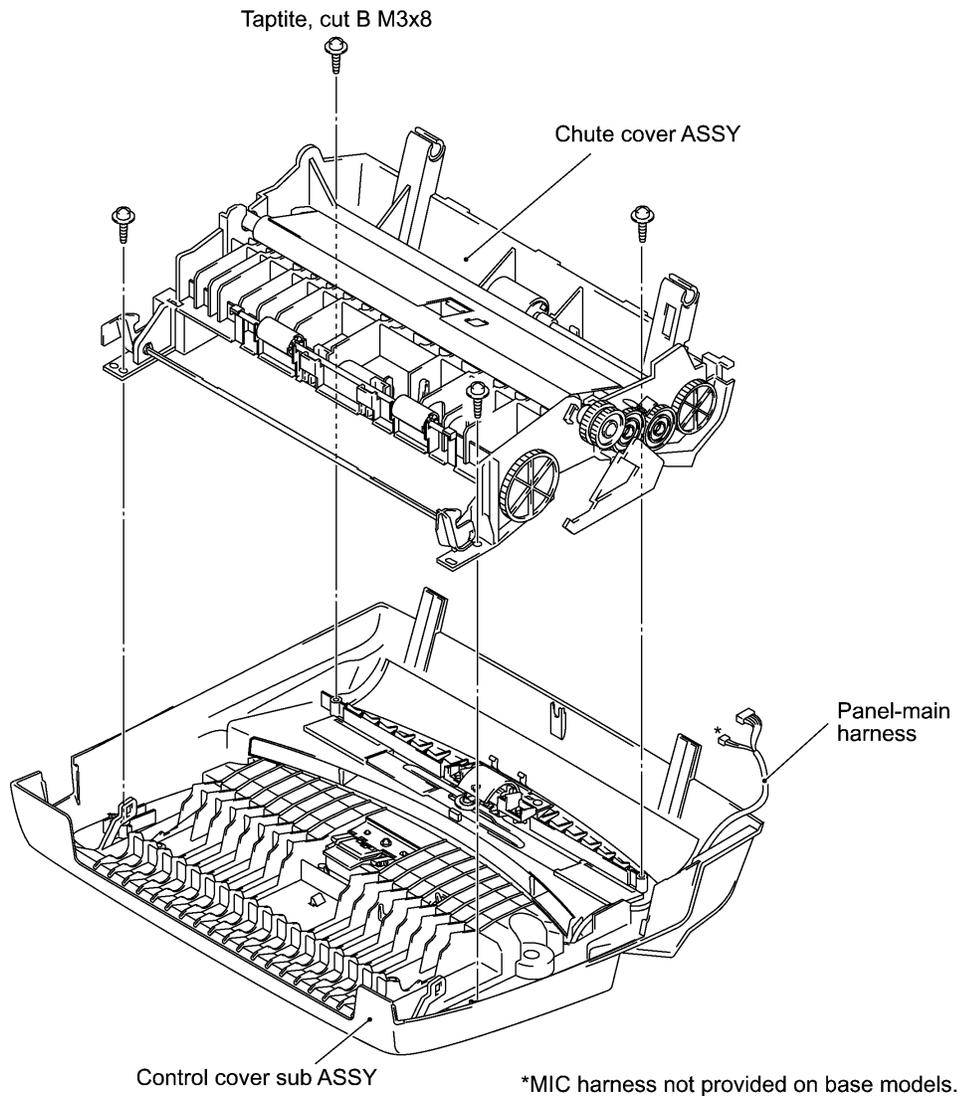
n   Reassembling Notes

• When reinstalling the chute cover ASSY, first pass the panel-main harness through the opening provided in the chute cover ASSY and route it as shown below.

Then place the chute cover ASSY onto the control sub ASSY so that the box on the chute cover ASSY becomes fitted over the tab on the control cover sub ASSY.

Tighten four screws in the order shown below.

Box provided on the
chute cover ASSY

Fitting the box
over the tab

Tab provided on the
rear inside of the
control cover sub ASSY

③

*MIC harness not provided on base models.

①

④

Panel-main
harness

②

Opening

Panel-main harness

Chute
cover ASSY

Routing the panel-main
harness

IV - 9
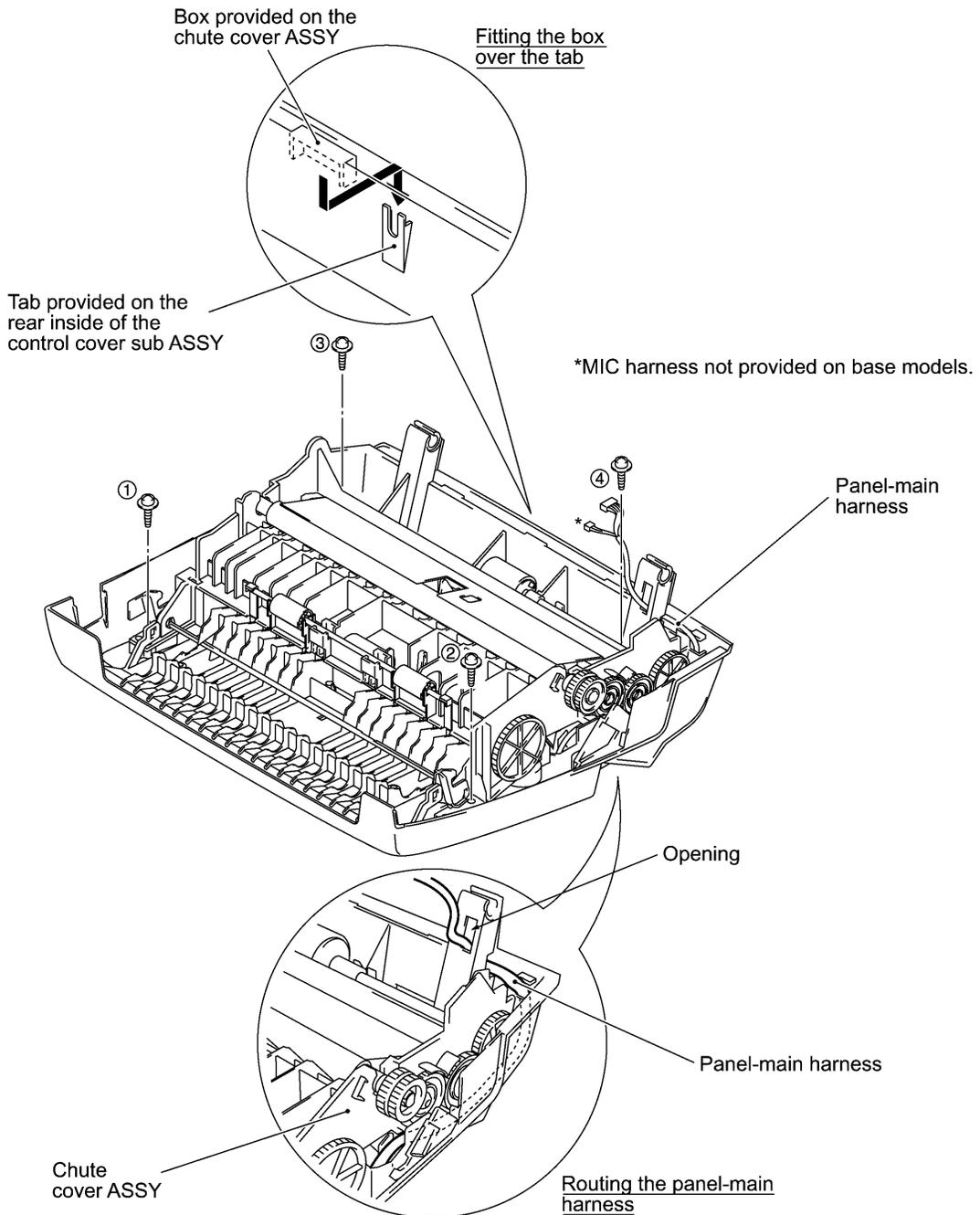
1.3 Disassembly of the Chute Cover ASSY
(Paper pressure rollers, separation roller, paper feed roller 32, platen, registration sensor actuator, and lock bar & lock levers)

(1) Press the latches to release the pressure roller shaft and take out the paper pressure rollers and their shaft. The springs also come off.

Pressure roller shaft

Paper pressure rollers

Chute cover ASSY placed upside down

Pressure roller springs

Latches
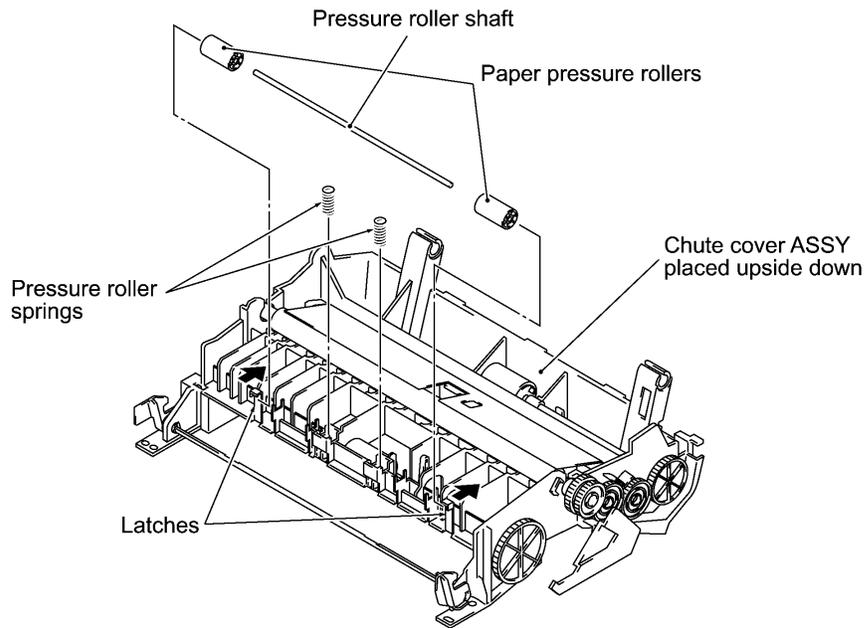
(2) Press the locking arm and pull out the separation roller gear 46. Take out the separation roller.

Separation roller

Locking arm

Chute cover ASSY placed upside down

Separation roller gear 46

IV - 10
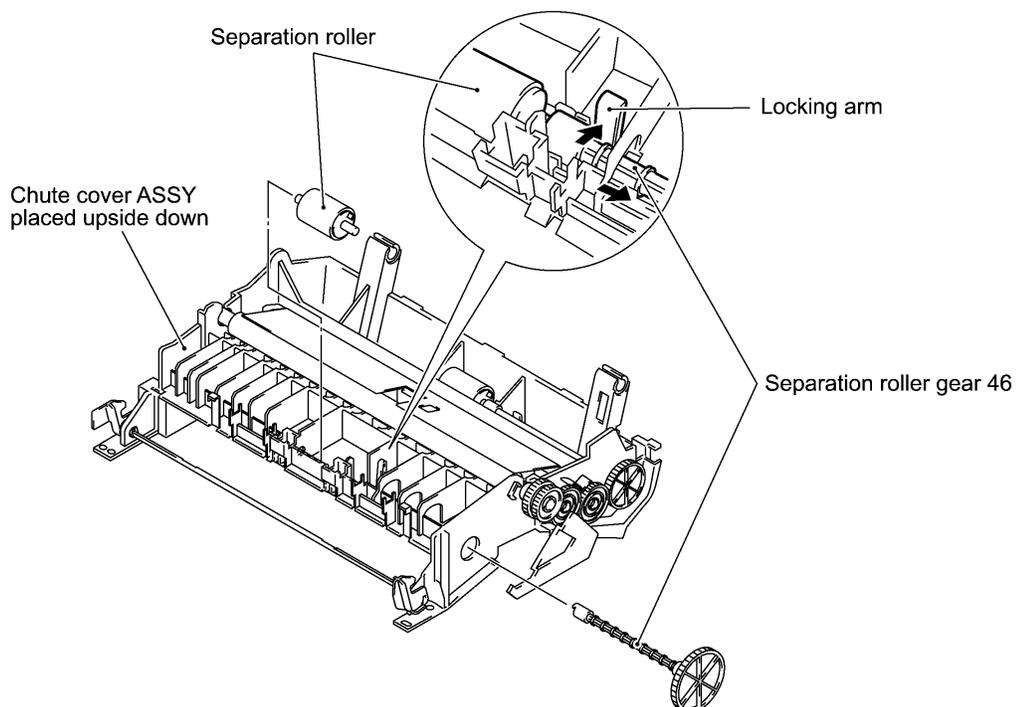
(3) Press the locking arm and pull out the paper feed roller gear 37. Take out the paper feed
    roller 32.

Paper feed roller 32

Chute cover ASSY
placed upside down

Locking arm

Paper feed roller gear 37

IV - 11
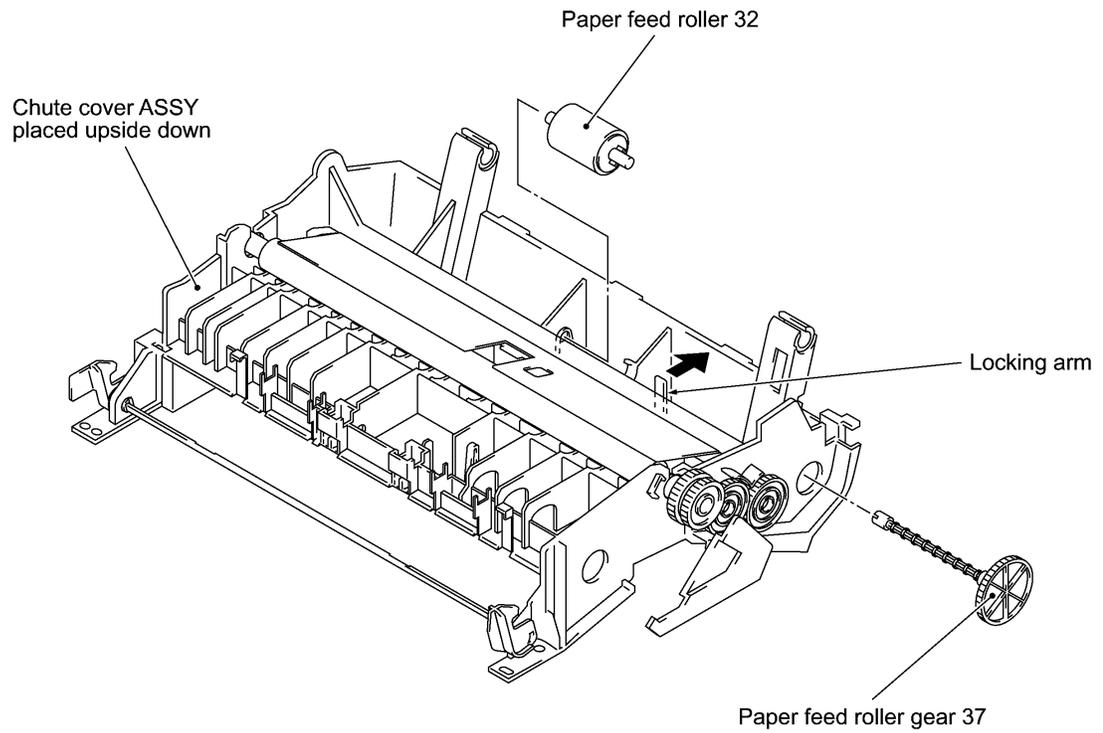
(4) To replace the platen, remove gear 23 by cutting off the two locks (having no rib) out of three with nippers. Then remove gear 24, platen shaft bushings, and platen in the direction of the arrows shown below.

NOTE: Do not remove the platen except when the platen is defective and requires replacement. When placing an order for a platen, also order gear 23.

Platen

Platen shaft bushing R (white)

Gear 32

Gear 32

Gear 24

Gear 23

Chute cover ASSY placed upside down

Platen shaft bushing L (black)

Nippers

Removing the gear 23

Cut off these two locks having no rib.

IV - 12
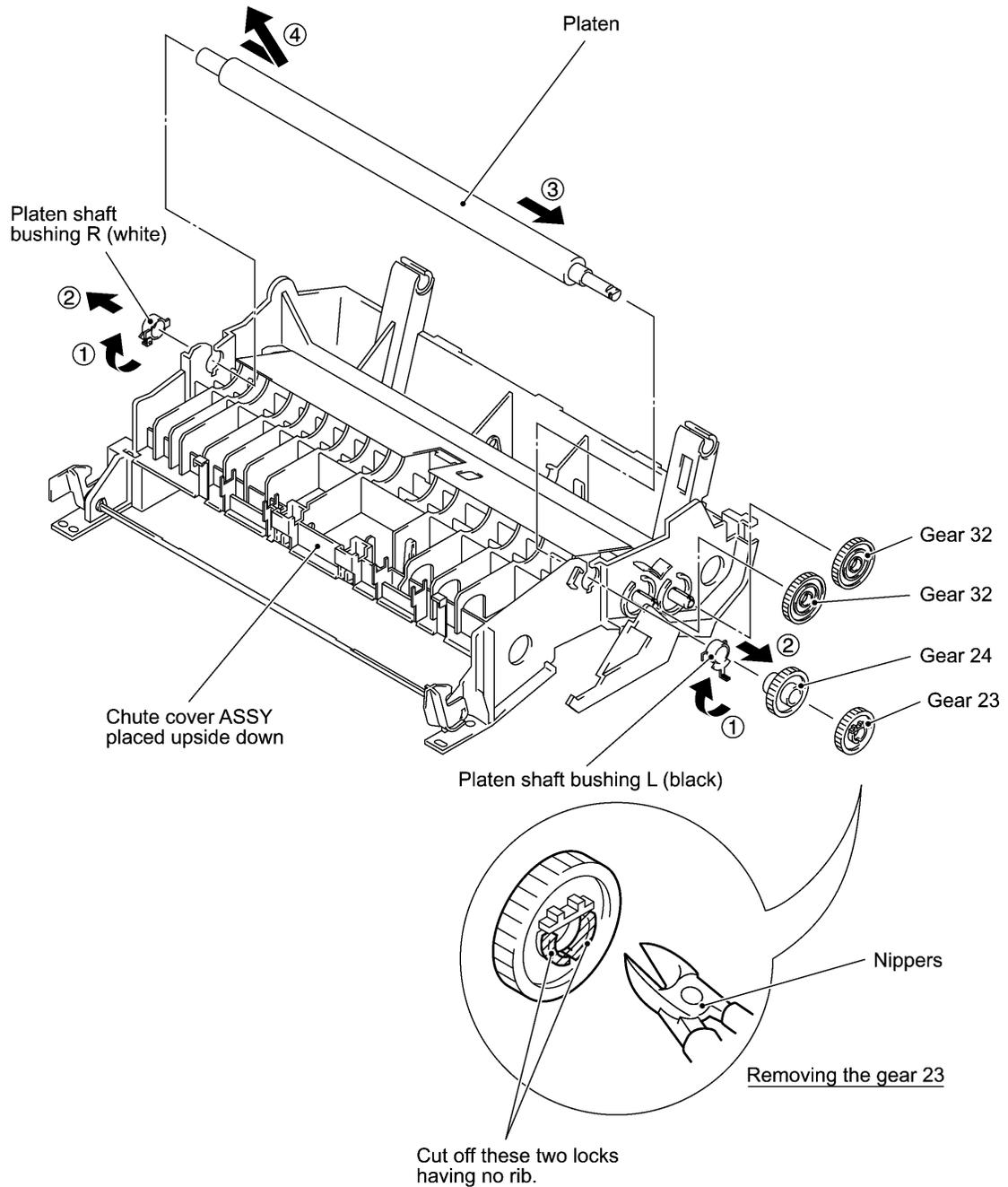
(5) Remove the chute film.

NOTE: Once removed, the chute film will become unusable and a new one will have to be put back in.

NOTE: When attaching a new chute film to the chute cover ASSY, fit the rear edge as shown below.

Chute film

Chute cover ASSY
placed upside down
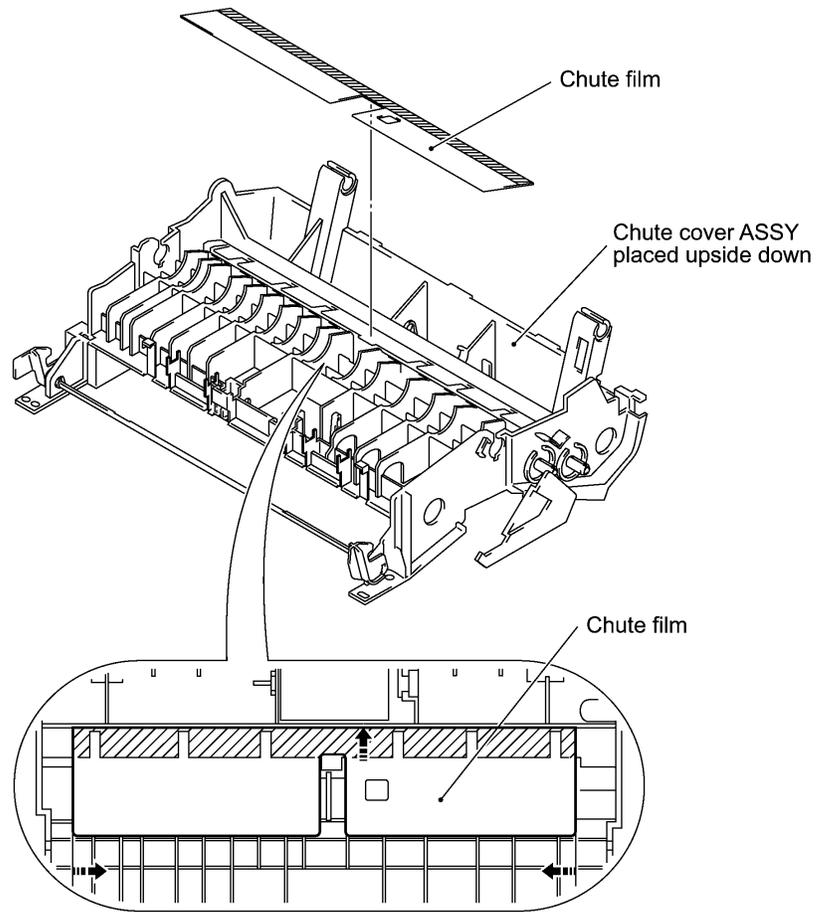
Chute film

Attaching a new chute film

(6) Lightly press the locking arm and remove the registration sensor actuator (actuator RF) in the direction of the arrow.

Registration sensor
actuator (actuator RF)

Locking arm

Chute cover ASSY
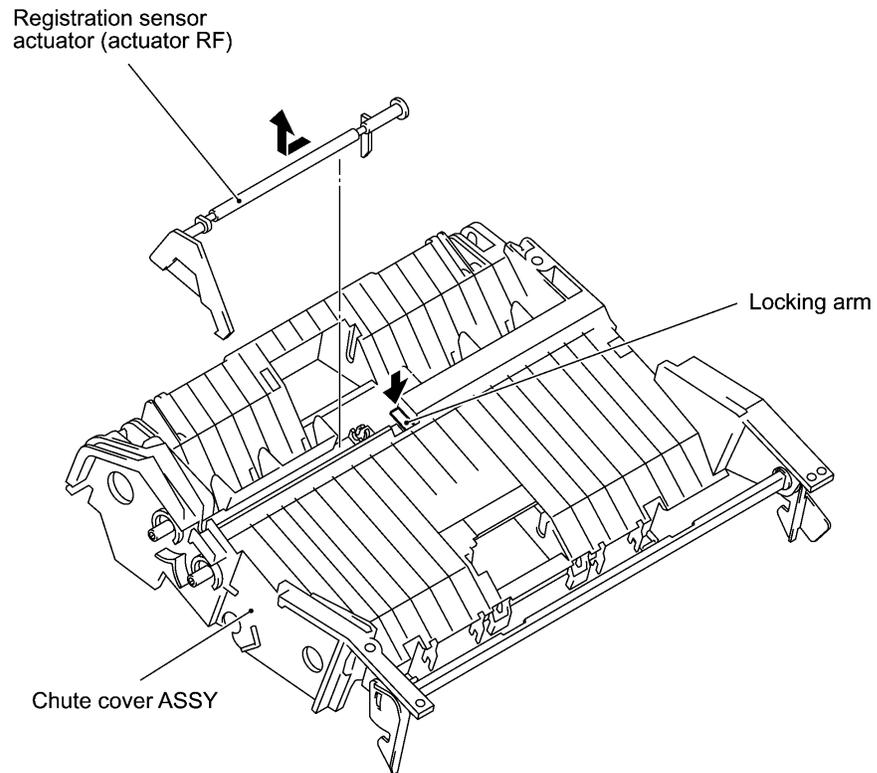
(7) At the right end of the lock bar, release the latch of the lock lever R (gray) and pull it out to the right. The lock spring also comes off. At the left side, release the latch of the lock lever L (white) and pull it out to the left.

Right side of the
chute cover ASSY

Viewed from the right

Lock lever R
(gray)

Lock spring

Chute cover ASSY

Latch

Lock lever R (gray)

Lock spring

Lock bar

Lock lever L
(white)
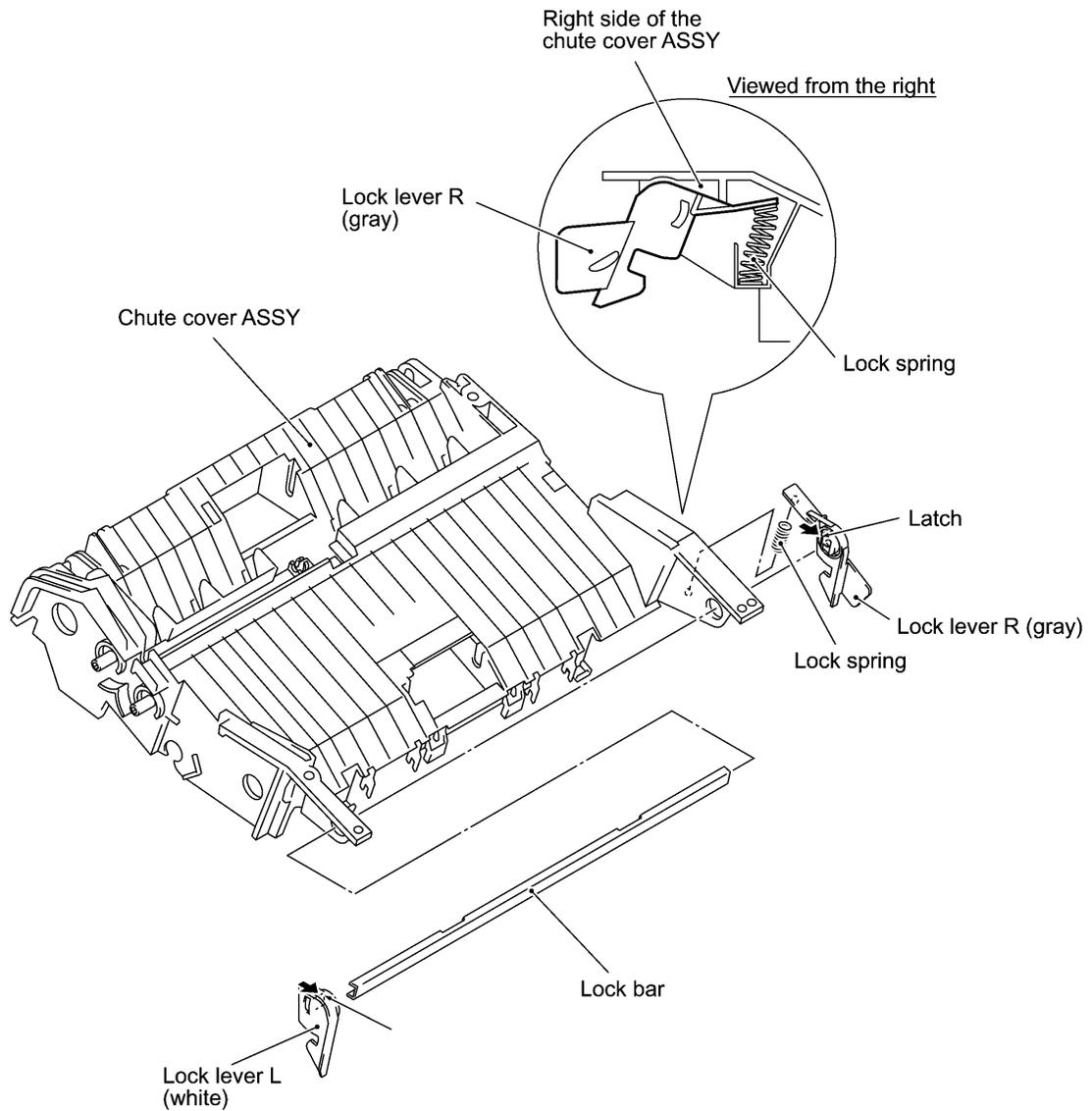
(8) Remove the ADF film.

NOTE: Once removed, the ADF film will become unusable and a new one will have to be put back in.

NOTE: When attaching a new ADF film, align the right and rear edges as shown below.

ADF film

ADF film

Align

Align

Chute cover ASSY

Attaching a new
ADF film
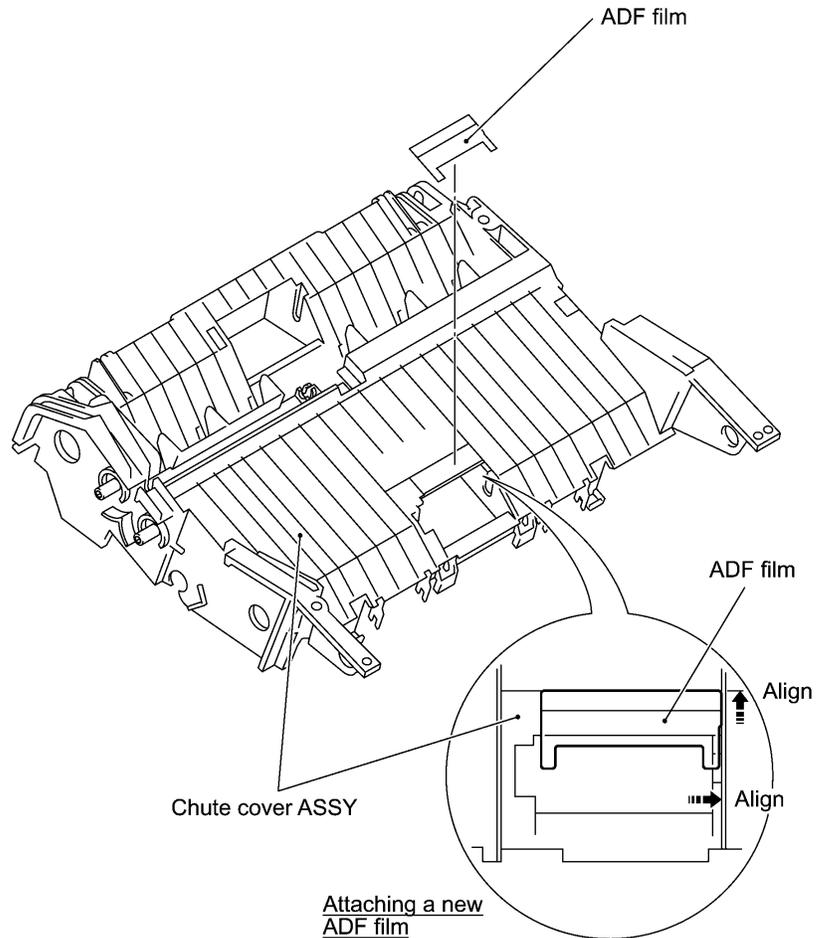
1.4 Disassembly of the Control Cover Sub ASSY
(ACF parts, ADF parts, panel rear cover, control panel PCB, FPC key, LCD, and keys)

(1) Remove the two screws to release the ACF (auto cut sheet feeder) leaf spring.

(2) Remove two screws to release the ACF parts.

Taptite, bind B M3x8

ACF (Auto cut sheet feeder) parts

ACF leaf spring

Control cover sub ASSY
placed upside down
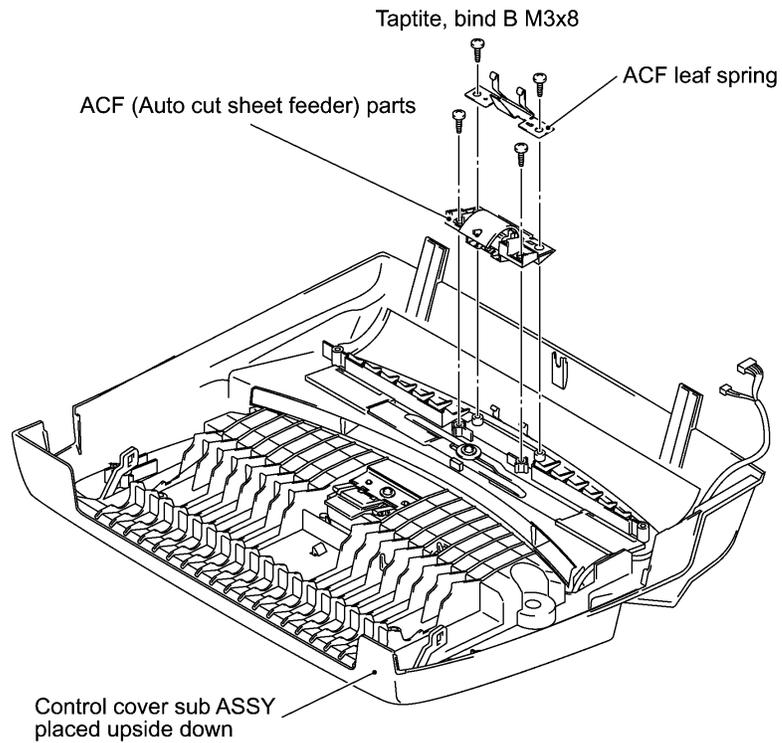
(3) Disassemble the ACF parts as illustrated below.

ACF separation rubber

ACF plate

ACF spring

ACF holder

IV - 17
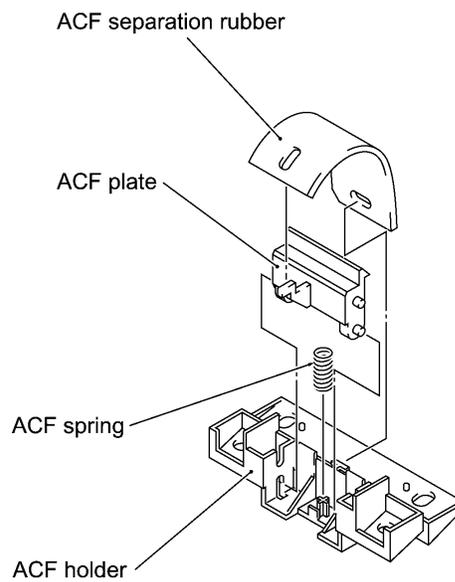
(4) Remove the screw and disassemble the ADF parts as illustrated below.

ADF separation rubber   Taptite, pan B M3x6

ADF spring plate

Separation
rubber film

ADF parts   ADF holder

ADF spring

Panel rear cover

Control cover sub ASSY
placed upside down
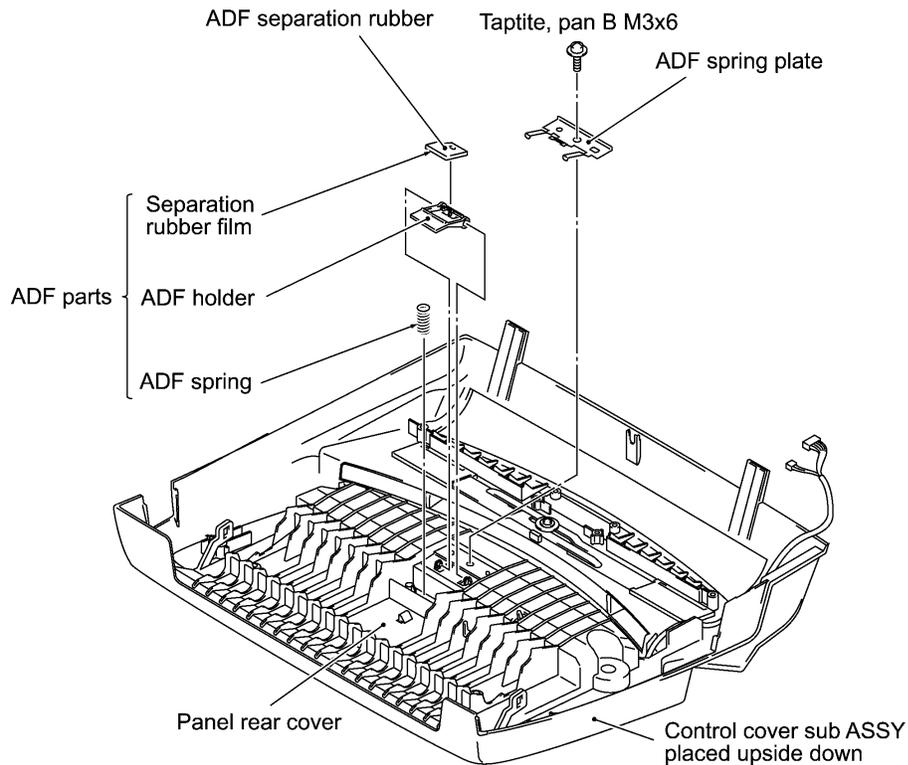
(5) Remove the four screws from the panel rear cover. (See the illustration given on the next page.)

(6) Unhook the panel rear cover from the three latches provided on the control cover sub ASSY, then slide the panel rear cover to the front to prevent it from catching the document front and rear sensor actuators.

(7) Remove the two screws (one screw on base models) from the control panel PCB and slide the control panel PCB to the front. Slightly lift up the PCB, unlock the LCD flat cable connector, and disconnect the flat cable.

(8) Pull out the microphone (not provided on base models).

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

(10) Disconnect the FPC key from the control panel PCB.

(11) As shown below, pull the locks outwards and gently pull out the LCD flat cable to take out the LCD.

Lock   LCD

(Rear)   LCD flat cable

Lock

IV - 18

Taptite, cup B M3x8

Panel rear cover

MIC rubber*

MIC cover*

Taptite, cup B M3x8

Control panel PCB
(MC models)

Control panel PCB
(Base models)

Panel-main harness

*MIC and related parts not
provided on base models.

Taptite, cup B M3x8

FPC key

Document front sensor actuator

Document rear sensor actuator

LCD

Control cover sub ASSY
placed upside down

(Front)

3 latches

IV - 19

n   Reassembling Notes

- Route the panel-main harness as illustrated below.

  When setting the control panel PCB back into place, route the MIC harness (not provided on base models) beneath the PCB at center hook "x."

Latch   (Rear)

Microphone*

MIC harness*

Center hook "x"

Control panel PCB

Control cover sub ASSY placed upside down
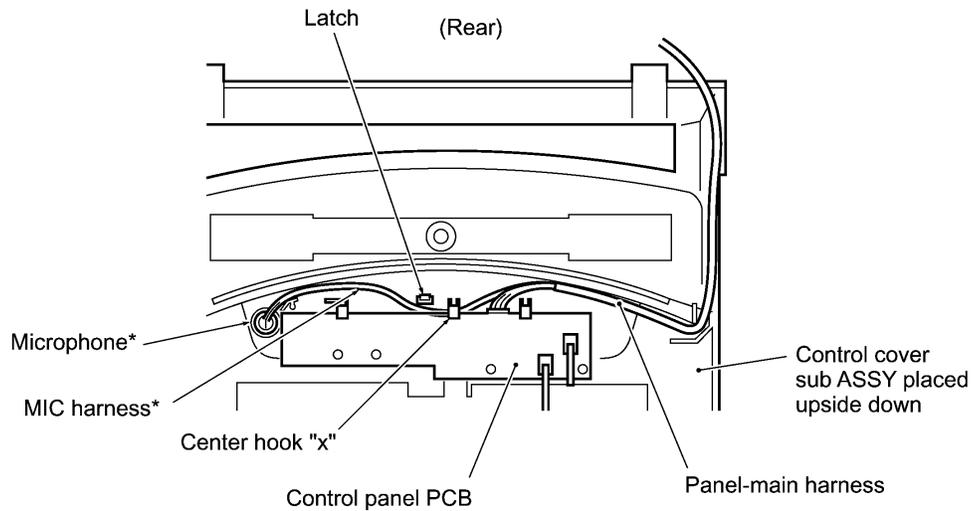
Panel-main harness

*Not provided on base models.

- When setting the panel rear cover back into place, pull the panel-main harness and take care not to pinch the harness between the panel rear cover and the control cover sub ASSY.

IV - 20

1.5 Handset Mount*[1], Dummy Mount*[2], Battery ASSY*[3], Sensor PCB, Cover Sensor Actuator, and Hook Switch Actuator*[1]

(*[1]For models w/ handset, *[2]For models w/o handset, *[3]For MC models)

(1) Release the latches with a flat screwdriver in the order of • and , while twisting the handset mount*[1] or dummy mount*[2] so that it tilts over to the left.

(2) MC models: To replace the battery ASSY (Ni-MH battery), plug the power cord of the facsimile equipment into a power outlet, disconnect the battery harness from the main PCB, and take out the battery ASSY from the main frame. Set a new battery ASSY and unplug the power cord.

Disconnecting the battery harness with the power cord unplugged will lose the settings (e.g., calendar clock, voice messages, and received FAX data) stored in the RAM.

If you do not need to replace the battery ASSY, take out the battery ASSY from the main frame and put it on the main PCB with the battery harness being connected.

Taptite, cup B M3x8

Handset mount (Dummy mount)

Latches

Sensor-main harness

Battery ASSY
(provided on MC models)

Main frame
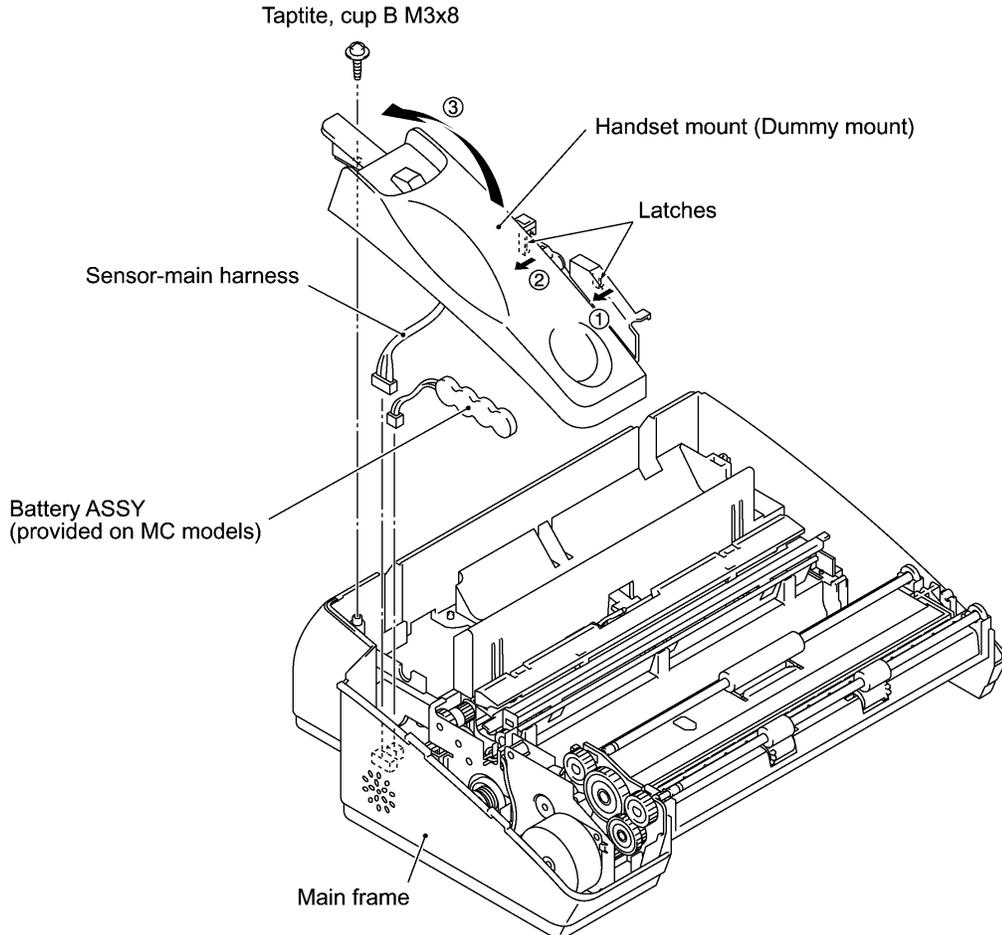
(3) Disconnect the sensor-main harness from the sensor PCB.

(4) Remove the screw, release the latch, and take out the sensor PCB in the direction of arrows
    ① and ② .

(5) Pull arm "a" to release the cover sensor actuator (black). The spring also comes off.

(6) Pull arm "b" to release the hook switch actuator*[1]. The spring also comes off.

<figure>
Hook switch actuator

Actuator spring

Taptite, cup B M3x8

Cover sensor
actuator (black)

Actuator spring

Latch

Sensor-main
harness

Handset mount

"b"

"a"

②

①

Sensor PCB

Rib

Sensor PCB

Lock

Hook switch actuator

Arm "b"

Cover sensor actuator

Arm "a"
</figure>
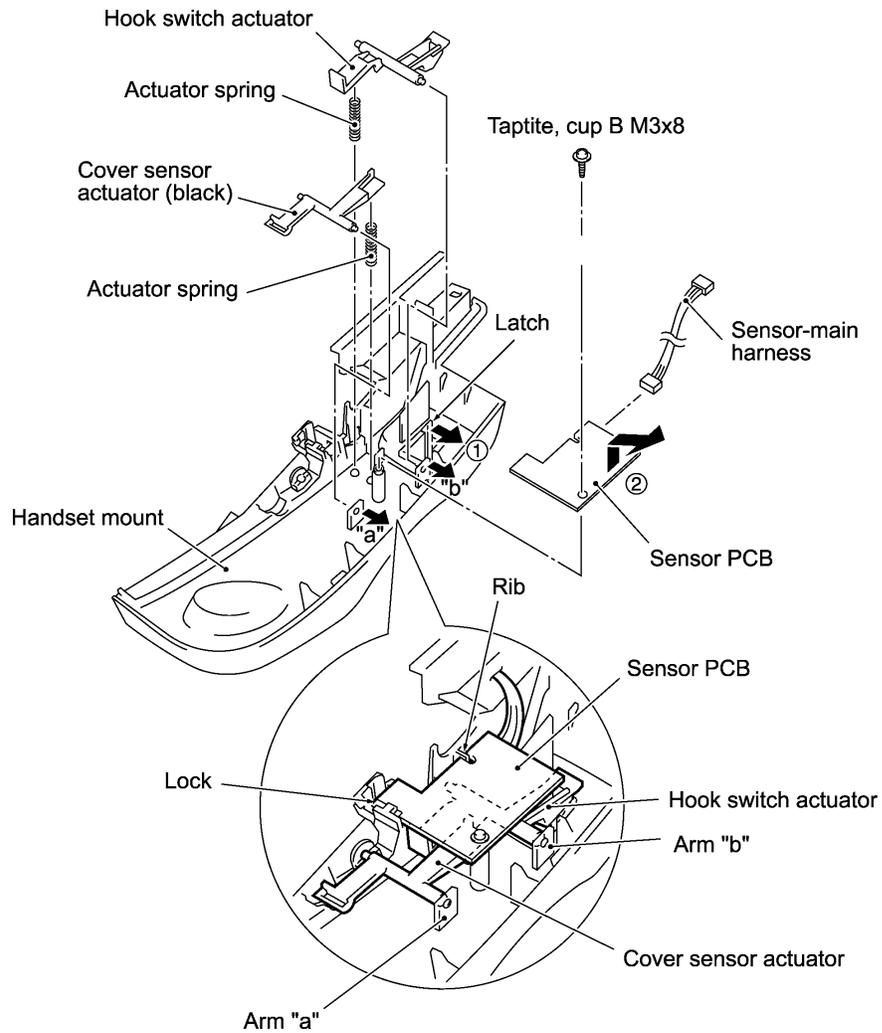
n   Reassembling Notes

- When setting the battery ASSY*^{3} back into place, route the battery harness as illustrated below.
- When setting the handset mount back into place, route the sensor-main harness around the boss as illustrated below.

Sensor-main harness   Boss

(Rear)

Battery ASSY*^{3}

Main PCB

Main frame

Battery harness*^{3}
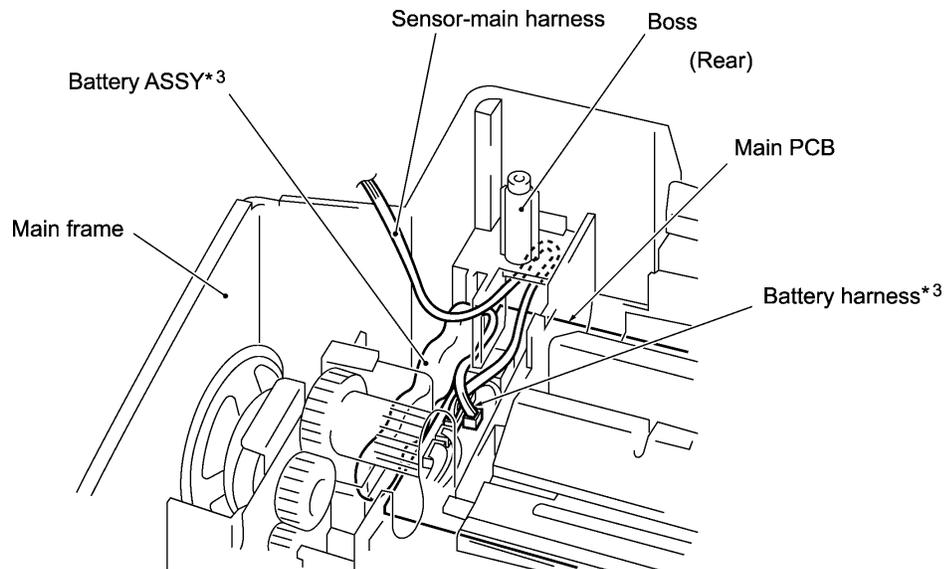
*^{3} Provided on MC models.

IV - 23

1.6 Paper Ejection Roller, Document LF Roller, and Document Ejection Roller

(1) Unlatch the paper ejection roller and take it out.

(2) Remove the retaining ring and take the document LF roller out of the main frame.

(3) Remove the retaining ring and take the document ejection roller out of the main frame.

Document ejection roller

Document LF roller

Paper ejection roller

Roller bushings

Retaining rings

Main frame
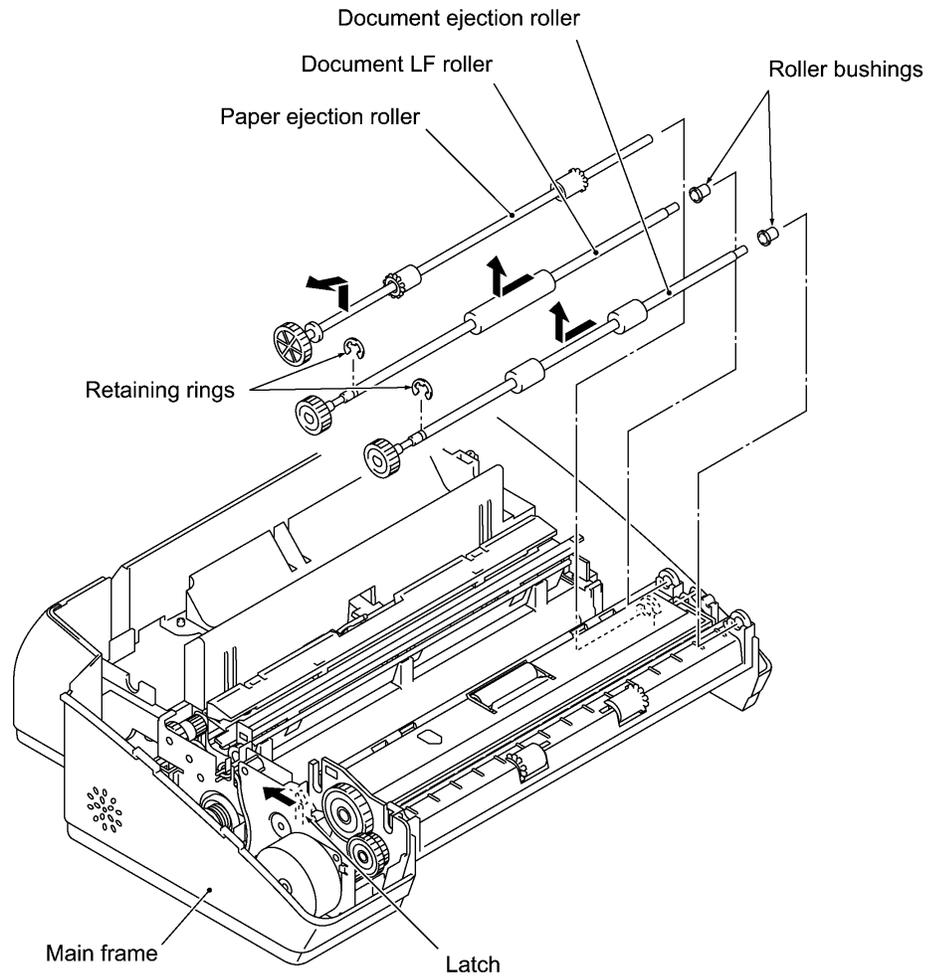
Latch

1.7 Head Protector, Recording Head ASSY, and Recorder Frame

(1) While pulling up the left end of the head protector, unhook latches ① through ④ in this order with a small flat screwdriver as illustrated below.

Head protector

Recording head ASSY

Main frame

Head protector

Recording head ASSY
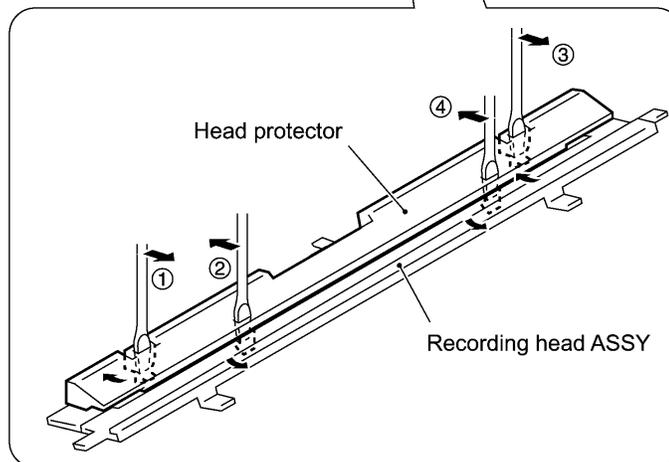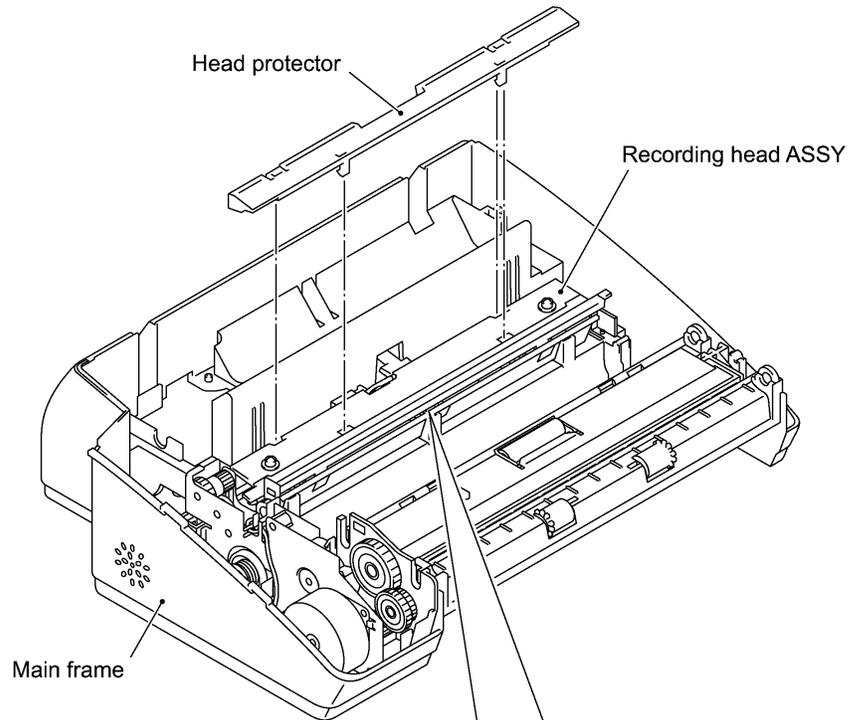
Unhooking the latches of the head protector

IV - 25

(2) Push down both ends of the recording head ASSY and move it to the rear to release the tabs from the cutouts provided in the recorder frame.

(3) Disconnect the two harnesses (main-head harness and head-power harness) from the recording head ASSY and then lift up the ASSY.

(4) Remove the three head springs.

Recording head ASSY

Tab

Tab

Main-head harness (white)

Head springs

Head-power harness
(black & red)

Main frame

IV - 26
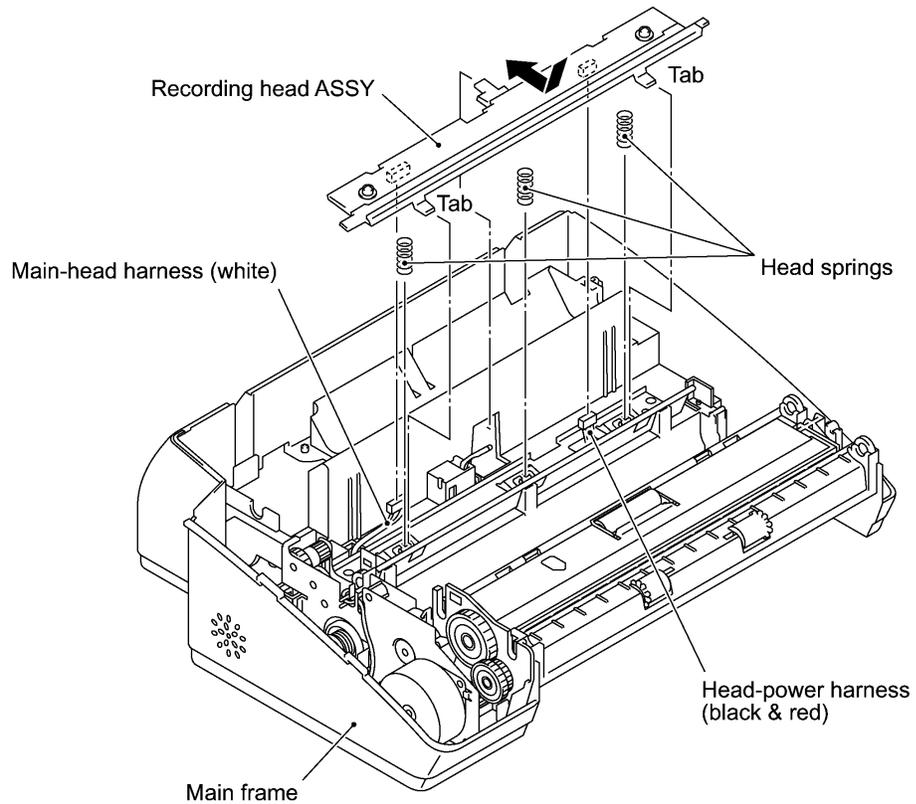
(5) Remove two screws to release the recorder frame.

(6) Remove the grounding spring.

(7) Unhook the head-power harness from the main frame.

Taptite, cup B M3x8

Check the top end for
scratches or burrs.

Recorder frame

Grounding spring

Head-power harness
(black & red)

Hook
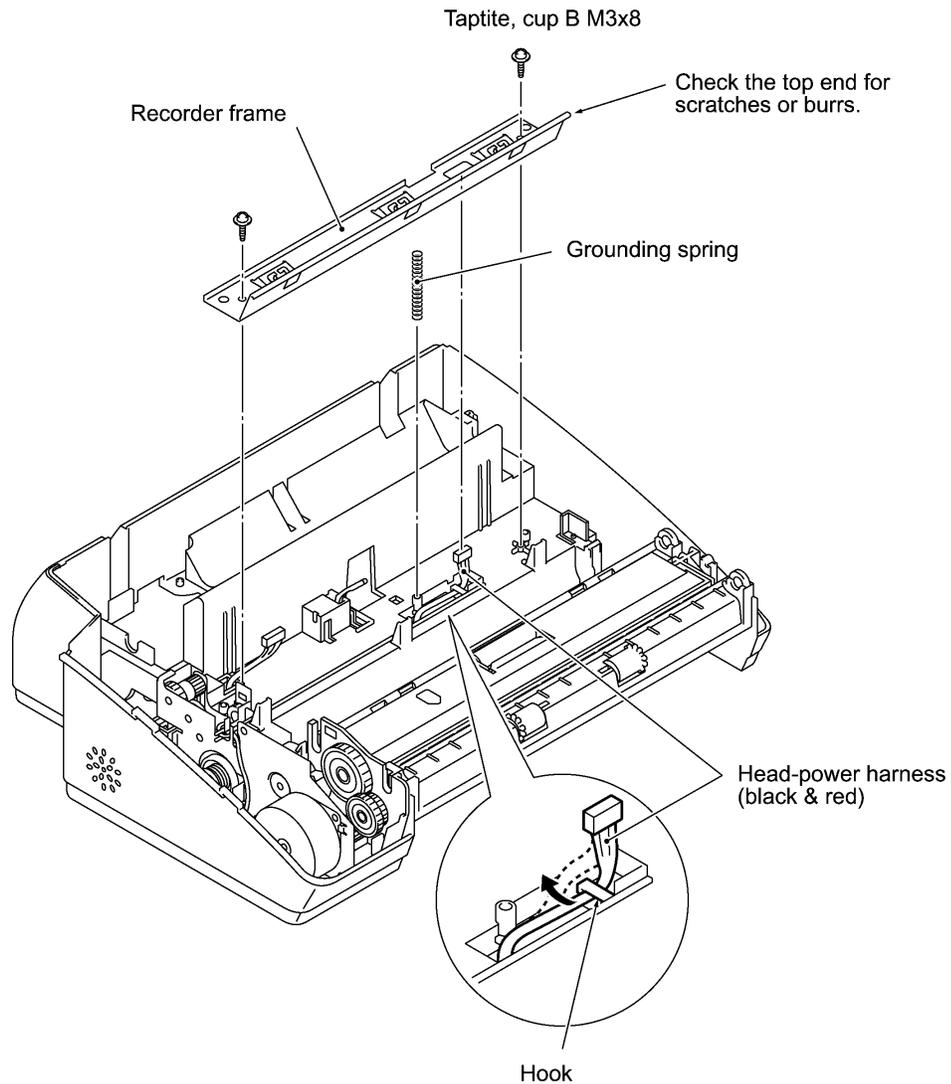
n   Reassembling Notes

• Before reinstalling the recorder frame, check its top end (on which paper and ribbon pass) for scratches or burrs. Those on the top end will affect the printed image.

• When reinstalling the recording head ASSY, make sure that the three head springs are set into place.

IV - 27

1.8 Drive Unit, Motor, and Arm HP Switch ASSY

(1) Remove the screw from the bottom plate.

(2) Remove the two screws from the drive unit.

(3) Slightly lift up the drive unit and disconnect the two harnesses (HP switch harness and motor harness) from the main PCB.

Taptite, cup B M3x8

Drive unit

HP switch harness

Motor harness

Main frame

③ Taptite, cup S M3x6

① to ③ : Tightening order
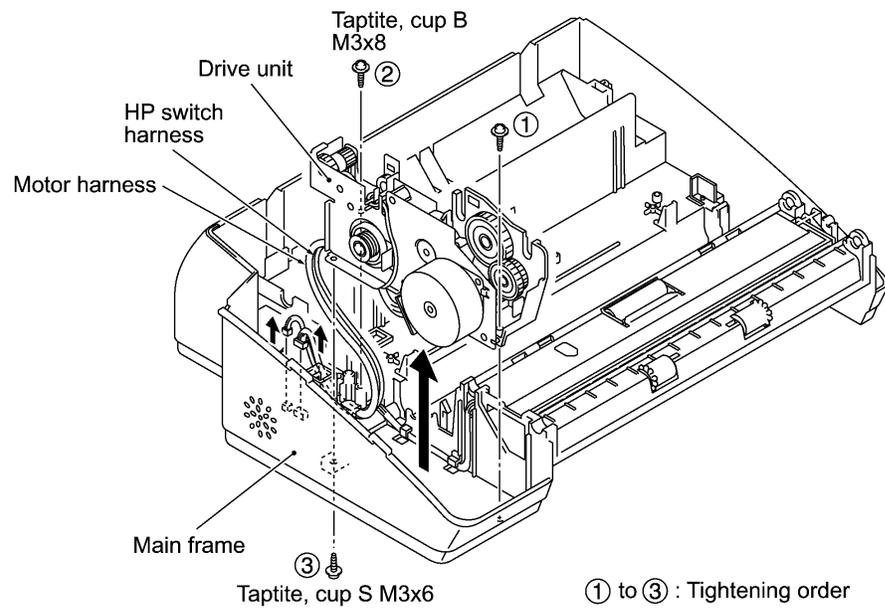
(4) Remove the two screws to release the sub frame ASSY.

(5) Remove the screw from the sub frame ASSY to release the motor.

(6) Remove the planet gear ASSY from the drive unit.

(7) Unhook the arm HP switch ASSY.

Unhooking the arm
HP switch ASSY

Latches

Drive gear frame

Arm HP switch ASSY

Sub frame ASSY

Motor with harness

Planet gear ASSY

Screw, pan (spring washer)
M3x6

Taptite, cup B M3x8

Motor with flat cable

IV - 29
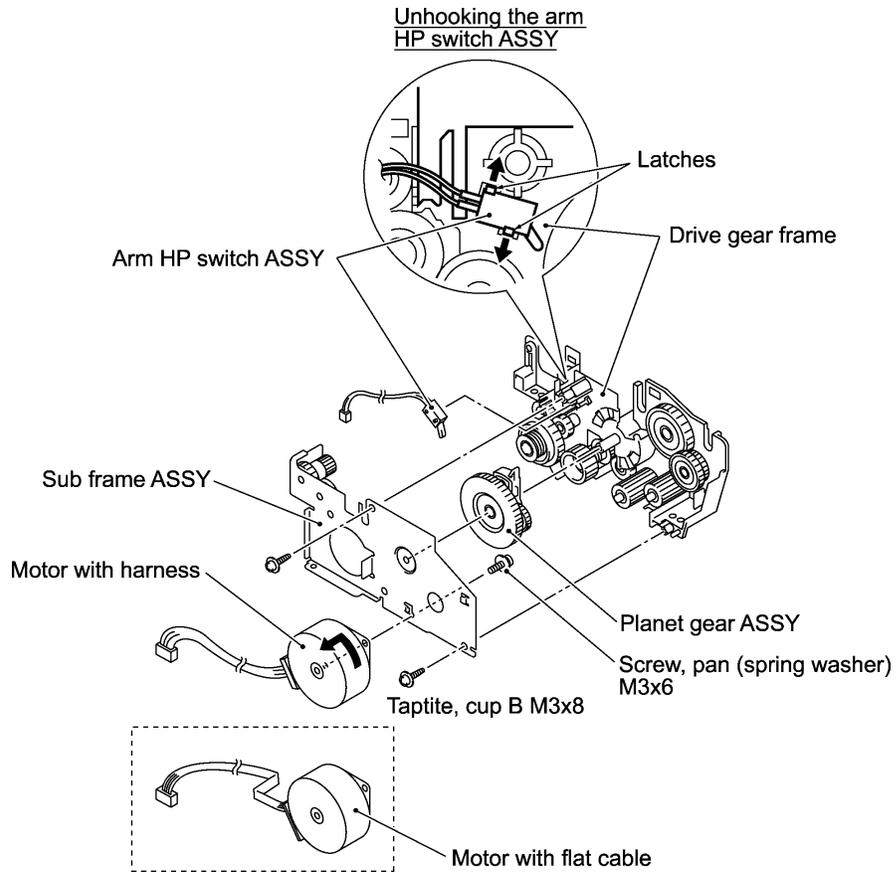
n   Reassembling Notes

- As shown below, set the arm HP switch ASSY back into place.
- Set the planet gear ASSY with its planet gears facing towards the drive gear frame, taking care not to let the switching arm interfere with the actuator of the arm HP switch ASSY.

Arm HP switch ASSY
Drive unit
Drive gear frame
Switching Arm
Planet gear ASSY
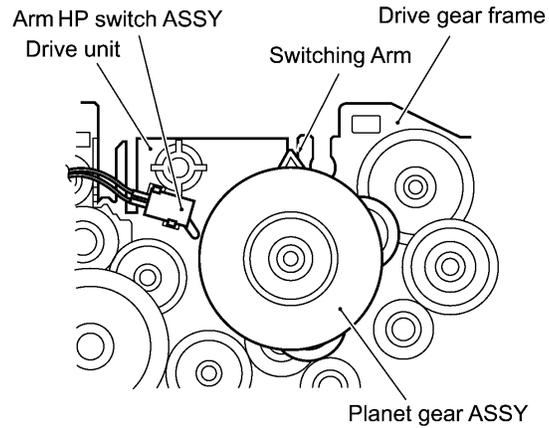
- Reinstall the motor with its connector facing downwards as shown below.
- When fitting the sub frame ASSY to the drive gear frame, route the HP switch harness as illustrated below.

HP switch harness
Routing the HP switch harness
Drive gear frame
Arm HP switch ASSY
Sub frame ASSY
Sub frame ASSY
Drive gear frame
Motor connector

IV - 30
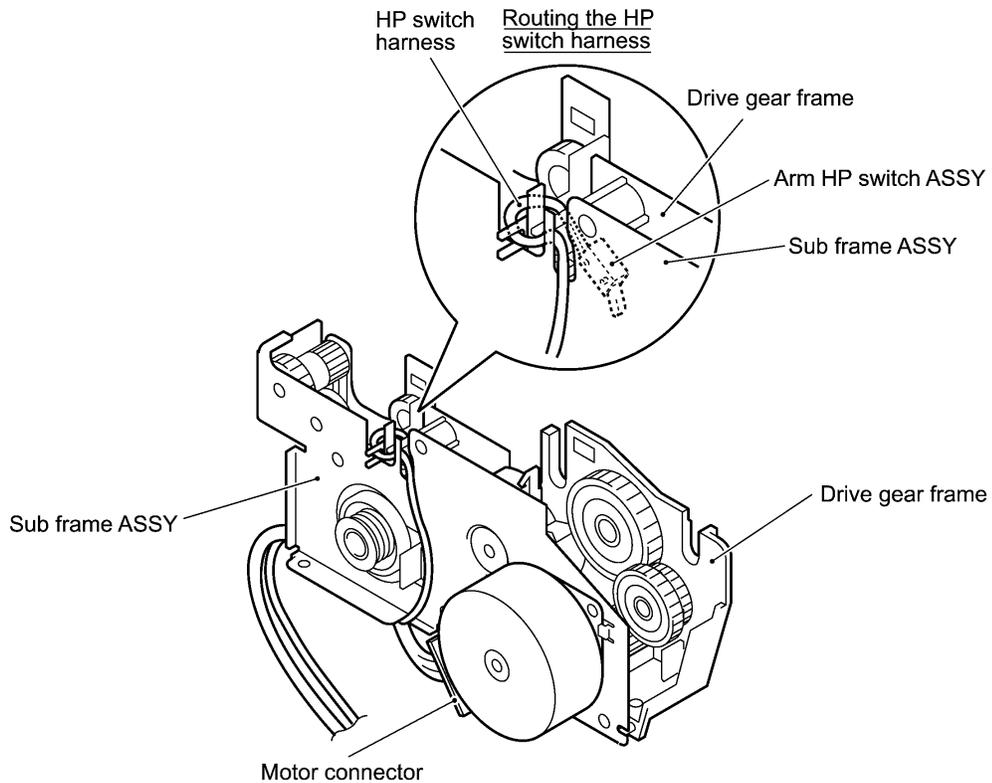
• Route the motor harness (or motor flat cable) and HP switch harness along the guides on the bottom of the drive unit.

For motor with harness
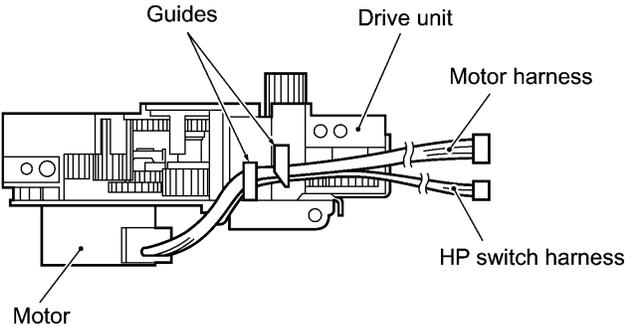
For motor with flat cable
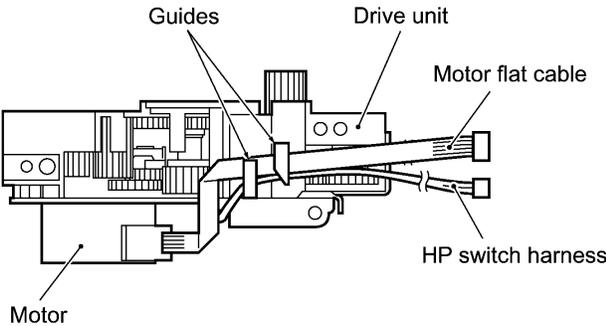
• When securing the drive unit to the main frame, tighten the three screws in the order of • to ƒ shown on page IV-28.

IV - 31

1.9 Speaker

(1) Disconnect the speaker harness from the main PCB.

(2) With a flat screwdriver, unhook the speaker support spring and pull it up.

(3) Remove the speaker.

IV - 32
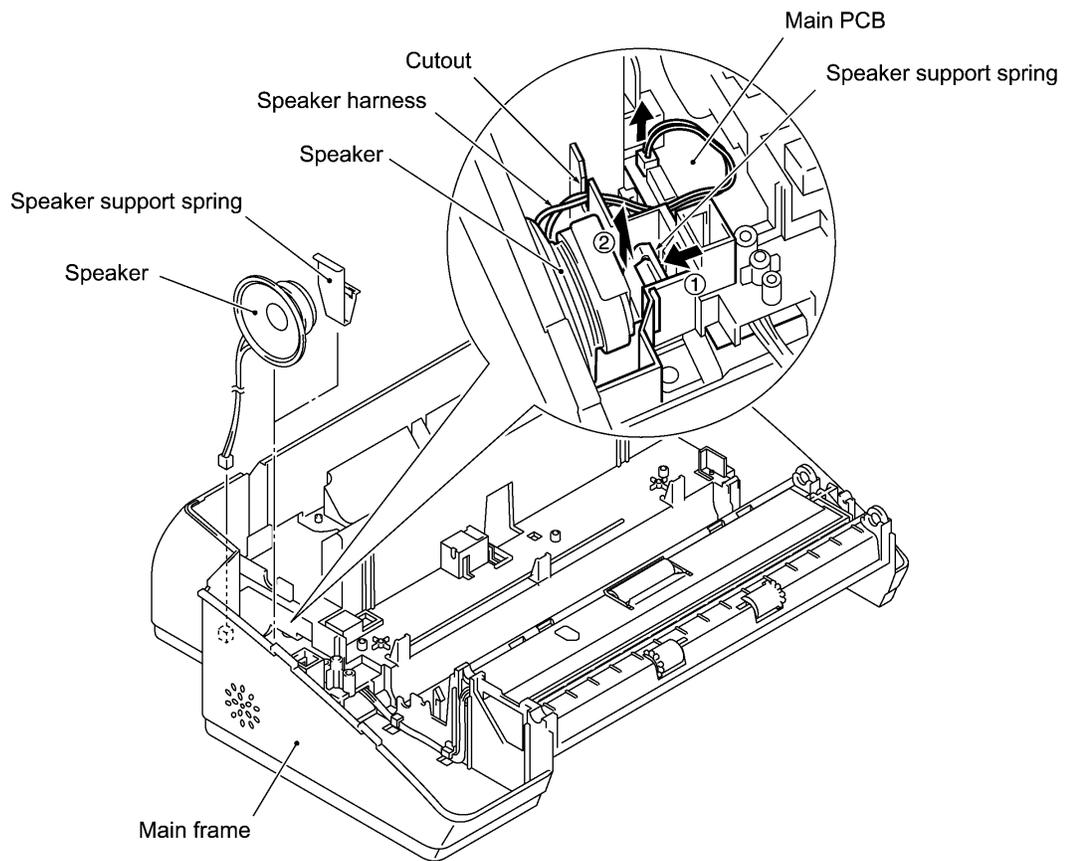
1.10 Lower Cover, Support Plate, and CIS Spring

(1) Remove the two screws to release the lower cover. The support plate also comes off.

(2) Remove the screw to release the CIS spring.

Main frame

CIS-main harness

CIS unit

Main frame

(Front)

CIS spring

Support plate

Taptite, cup B M3x8

Lower cover

IV - 33
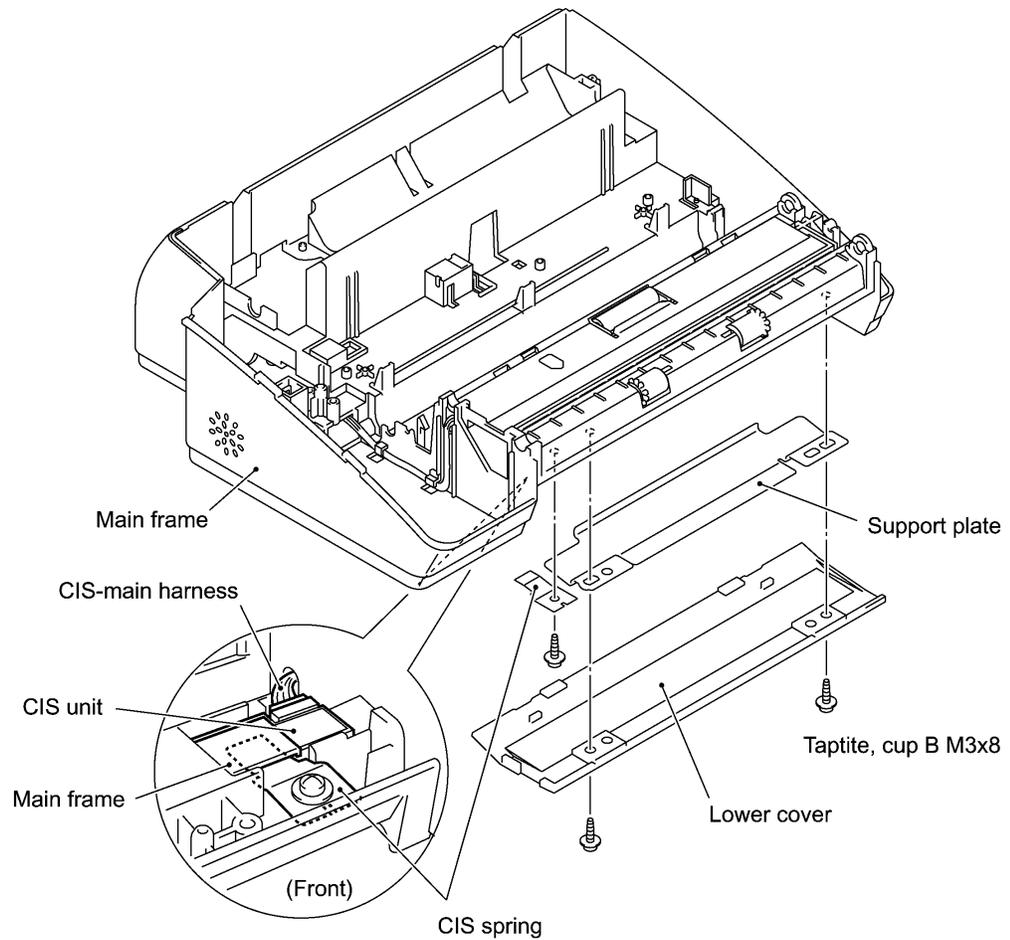
1.11 CIS Film and CIS Unit

(1) Peel off the black CIS film.

NOTE: Once removed, the CIS film will become unusable and a new one will have to be put back in.

CIS film (black)

Attaching the CIS film

Main frame

Align

CIS film

Document pinch roller
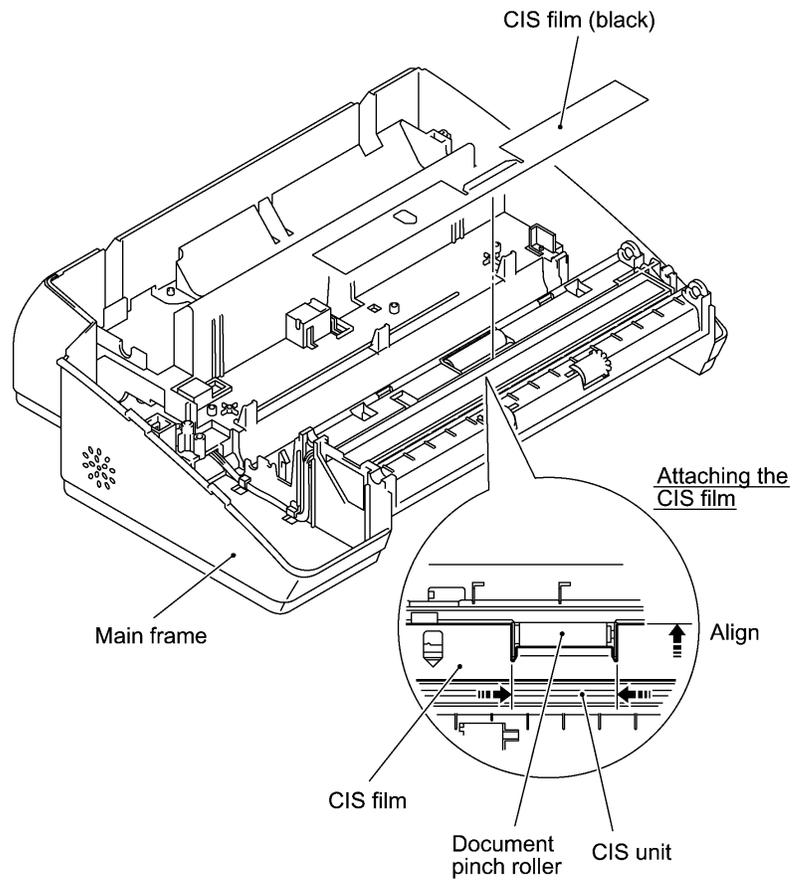
CIS unit

(2) Remove screw "a" from the CIS holder.

(3) Push up the rear end of the CIS holder, slightly lift up the CIS unit, and disconnect the CIS-main harness from the CIS unit.

(4) Remove screw "b" to release the CIS holder.

CIS unit

"a"

"b"

CIS holder

"a": Taptite, cup B M3x8
"b": Taptite, bind B M3x8

Harness guides

Main frame

CIS-main
harness

IV - 35
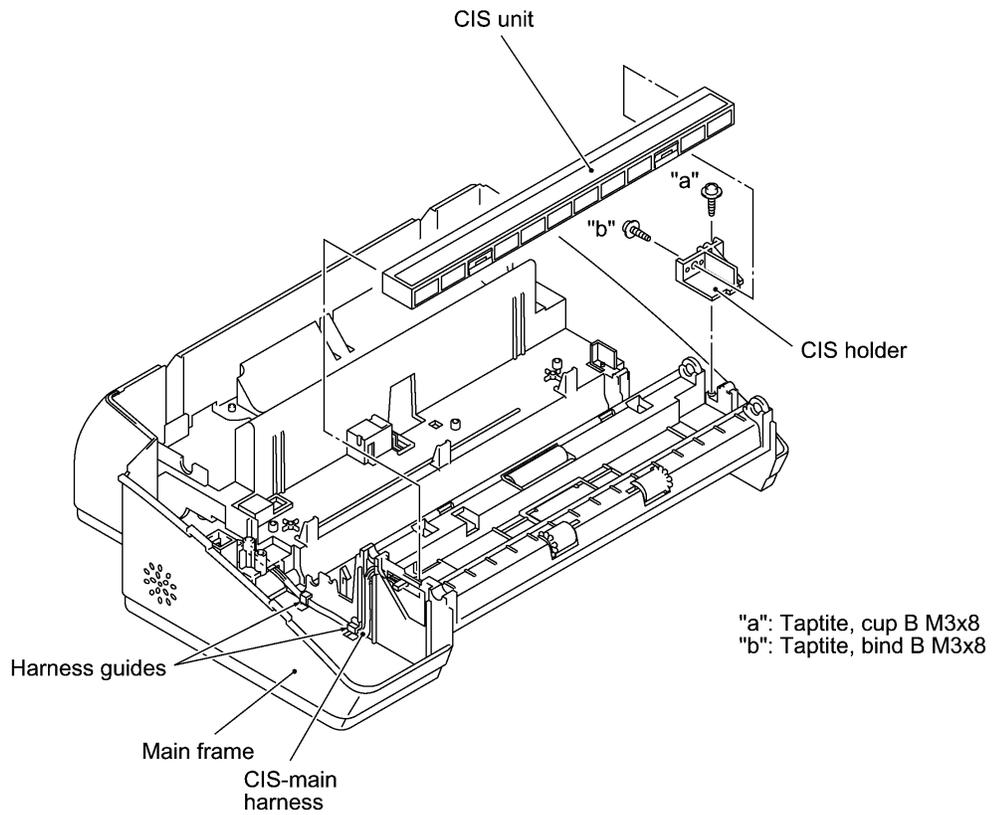
1.12 Document Pressure Rollers and Document Pinch Roller

(1) Insert the tip of a flat screwdriver under tab "z" of the document pressure roller spring to release it from the boss (in the direction of arrow •), push the underside of the spring with your fingers (arrow ,), and take it out (arrow 𝒇).

(2) Unlatch the pressure roller shaft and remove the document pressure rollers.

Flat screwdriver

Document pressure
roller spring

Tab "z"

Boss

Main frame

Latch

Latch

(Front)

Document pressure roller spring

Document pressure
rollers

Latch

Pressure roller shaft

IV - 36
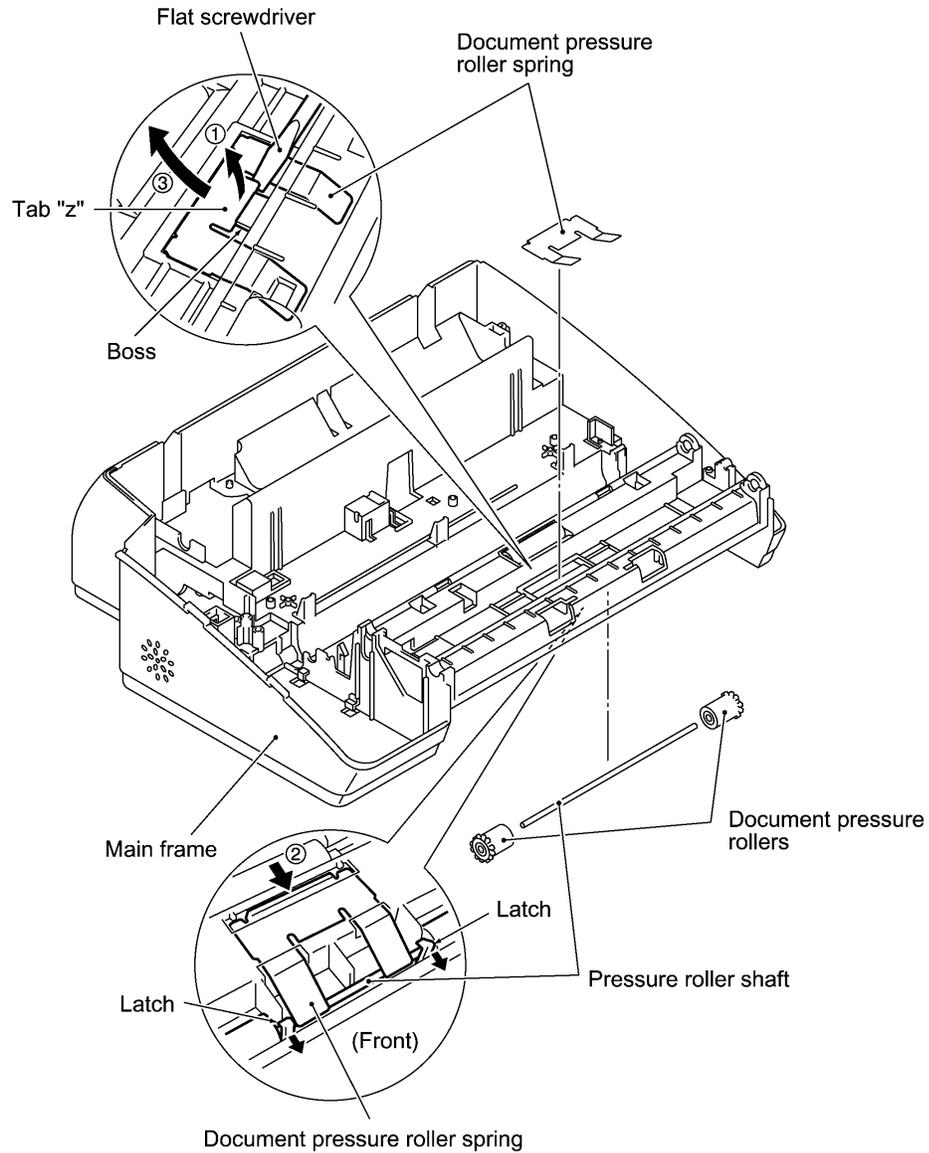
(3) Pull up the outer end of each pinch roller spring (in the direction of arrow •) and press it inwards (arrow ,).

(4) Remove the document pinch roller and its shaft.

Main frame

Pinch roller springs

Pinch roller shaft

Document pinch roller

IV - 37
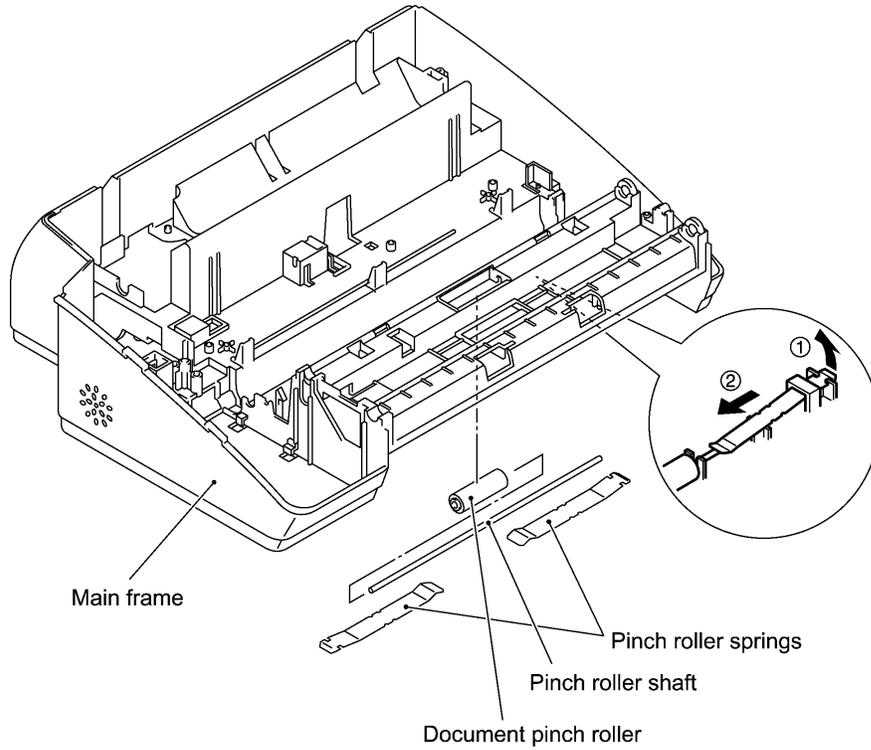
1.13 Bottom Plate, Main PCB, NCU PCB, Power Supply PCB, and Ribbon Sensor Actuator

(1) Place the main frame upside down.

(2) Remove the five screws from the bottom plate.

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

Taptite, cup B
M3x8

Bottom plate

Grounding wire

Screw, pan (plain washer)
M4x6

Main frame placed
upside down
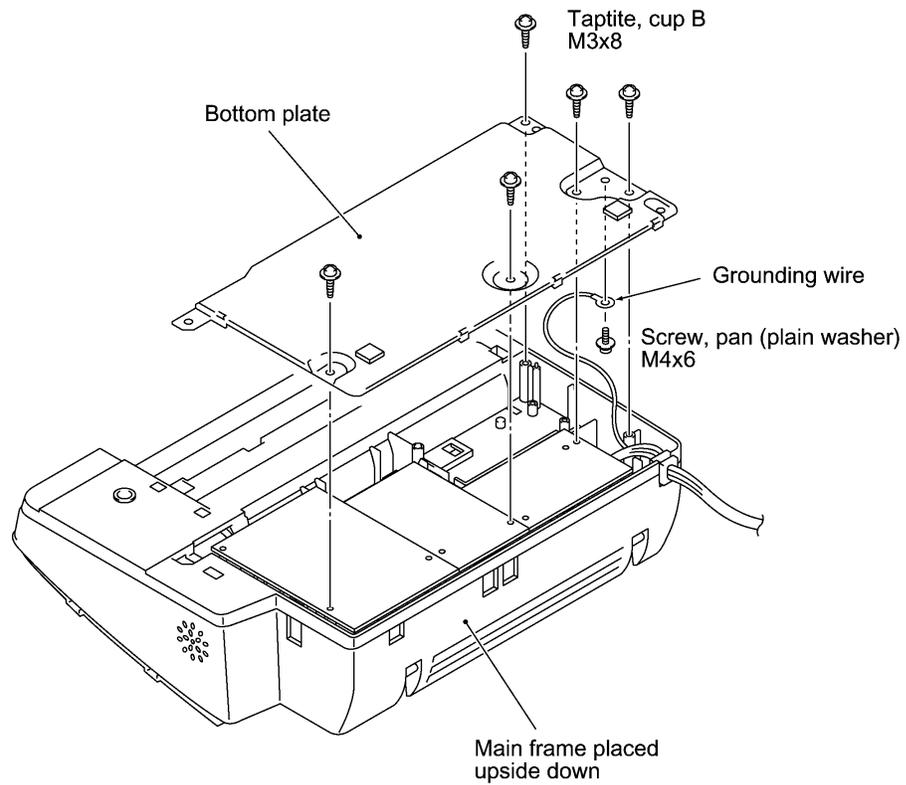
(4) Remove the screw from the main PCB.

(5) Unhook the NCU PCB.

(6) Slightly lift up the main PCB, disconnect it from the NCU PCB, and disconnect the harnesses from the main PCB.

(7) Slightly lift up the NCU PCB and disconnect it from the power supply PCB.

(8) Slightly lift up the power supply PCB and disconnect the head-power harness.

Power supply PCB
NCU PCB
Taptite, cup B M3x8
Main PCB
Latch
AC cord bushing
Main frame placed upside down
(Rear)
Head-power harness (black & red)
CIS-main harness
Main-head harness (white)
Routing the head-power harness

(Rear)
Main PCB
Panel-main harness
Speaker harness
Battery harness*
Sensor-main harness
HP switch harness
Motor harness (Motor flat cable)
MIC harness*
Ribbon sensor
CIS-main harness
Main-head harness

*Provided on MC models.

IV - 39

(9) As shown below, push the locking arm and take out the ribbon sensor actuator.

Locking arm

Ribbon sensor actuator

(Rear)

Main frame placed
upside down
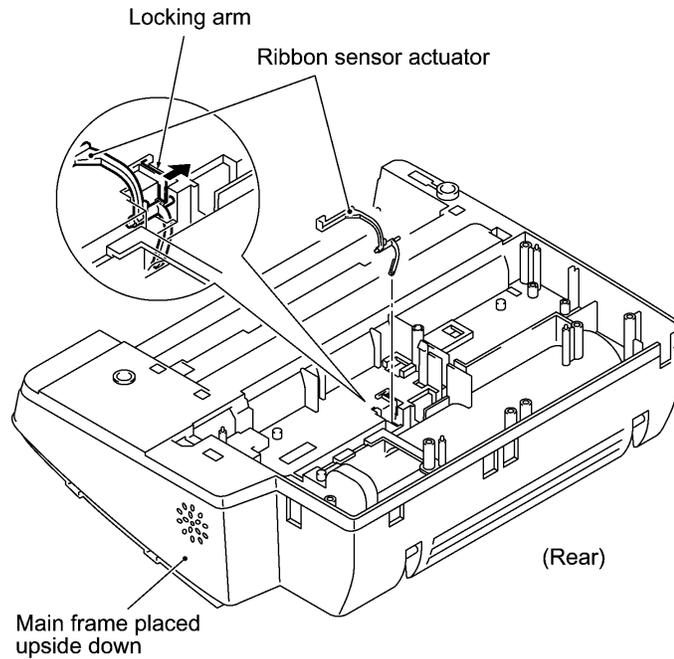
n   Reassembling Notes

- When setting the power supply PCB back into place, route the head-power harness as illustrated on the previous page.
- If you replace the bottom plate with a new one, attach an insulation film to the new bottom plate as illustrated below.

Insulation film

Align

Metal stamp

(Rear)

Inside of the
bottom plate

Align with the edge
of the metal stamp.

IV - 40
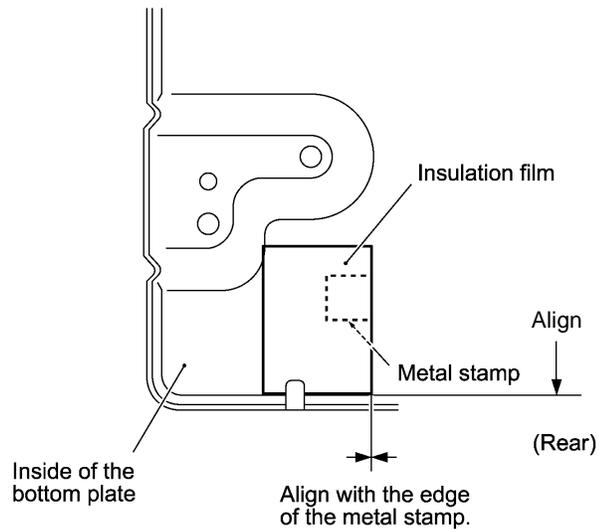
- When setting the main PCB back into place, route the CIS-main harness to place the ferrite core as illustrated below. Make sure that the ferrite core lies horizontally.

(Rear)

Main frame placed upside down

Main PCB

Ferrite core

Main PCB

Main frame

CIS-main harness
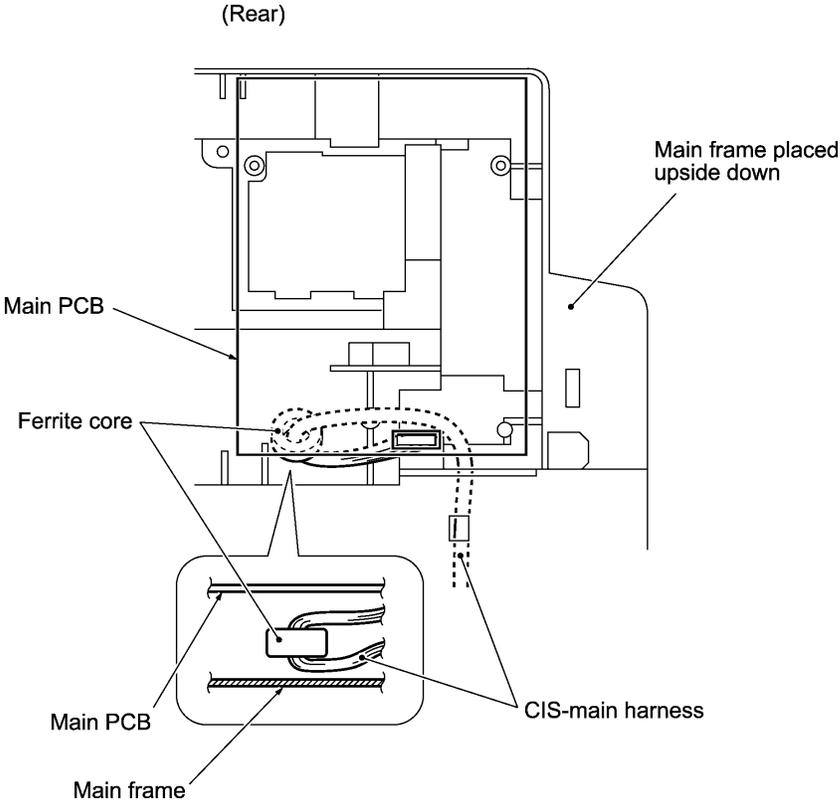
- After you replace the main PCB, be sure to follow the flowchart given on the next page.

Setting up the main PCB after replacement

```
                    ◇ Replaced with a new main PCB? ◇ ──── N (Replaced with one used) ────┐
                              │ Y                                                          │
                              ▼                                                            ▼
┌──────────────────────────────────────┐              ┌──────────────────────────────────────┐
│ Power on the facsimile equipment.    │              │ Power on the facsimile equipment.    │
│ The "■■ MAINTENANCE■ブ■" appears on the│              │ The calendar clock appears on the LCD.│
│ LCD.                                 │              │                                      │
└──────────────────────────────────────┘              └──────────────────────────────────────┘
                              │                                                            │
                              ▼                                                            ▼
┌──────────────────────────────────────┐              ┌──────────────────────────────────────┐
│ Press the 9 key twice to exit from the│              │ Make the equipment enter the maintenance│
│ maintenance mode.                    │              │ mode and check that the "■■ MAINTENANCE│
│                                      │              │ ■■■" appears.                        │
└──────────────────────────────────────┘              └──────────────────────────────────────┘
                              │                                                            │
                              ▼                                                            ▼
┌──────────────────────────────────────┐              ┌──────────────────────────────────────┐
│ Make the equipment enter the         │              │ Perform the following in the order below:│
│ maintenance mode and check that the  │              │   - EEPROM parameter initializing    │
│ "■■ MAINTENANCE ■■■" appears.        │              │     [Function code: 01]              │
└──────────────────────────────────────┘              │   - EEPROM customizing               │
                              │                        │     [Function code: 74]              │
                              ▼                        │   - CIS scanner area setting         │
┌──────────────────────────────────────┐              │     [Function code: 55]              │
│ Perform the following in the order    │              │   - Document draw adjustment         │
│ below:                               │              │                                      │
│   - EEPROM customizing               │              │   (Refer to Chapter V, Subsections   │
│     [Function code: 74]              │              │   3.1, 3.11, 3.10, and 3.14.)        │
│   - CIS scanner area setting         │              └──────────────────────────────────────┘
│     [Function code: 55]              │                                  │
│   - Document draw adjustment         │                                  │
│                                      │                                  │
│   (Refer to Chapter V, Subsections   │                                  │
│   3.11, 3.10, and 3.14.)             │                                  │
└──────────────────────────────────────┘                                  │
                              │                                            │
                              └────────────────┬───────────────────────────┘
                                               ▼
                              ┌──────────────────────────────────────┐
                              │ Press the 9 key twice to exit from the│
                              │ maintenance mode.                    │
                              └──────────────────────────────────────┘
                                               │
                                               ▼
                                          (  End  )
```

2.   LUBRICATION

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

Lubricant type (Manufacturer):   Molykote EM-30L (Dow Corning) or
                                                  Floil BG-11 (Kanto-Kasei Ltd.)

Apply a rice-sized pinch of grease (6 mm^3) to the specified points.

[1]   Separation roller and its gear and paper feed roller 32 and its gear

Paper feed roller 32   Paper feed roller gear 37

Paper feed roller 32

Separation roller

Chute cover ASSY
placed upside down

Paper feed roller gear 37

(Front)

Separation roller gear 46

Separation roller   Separation roller gear 46

IV - 43
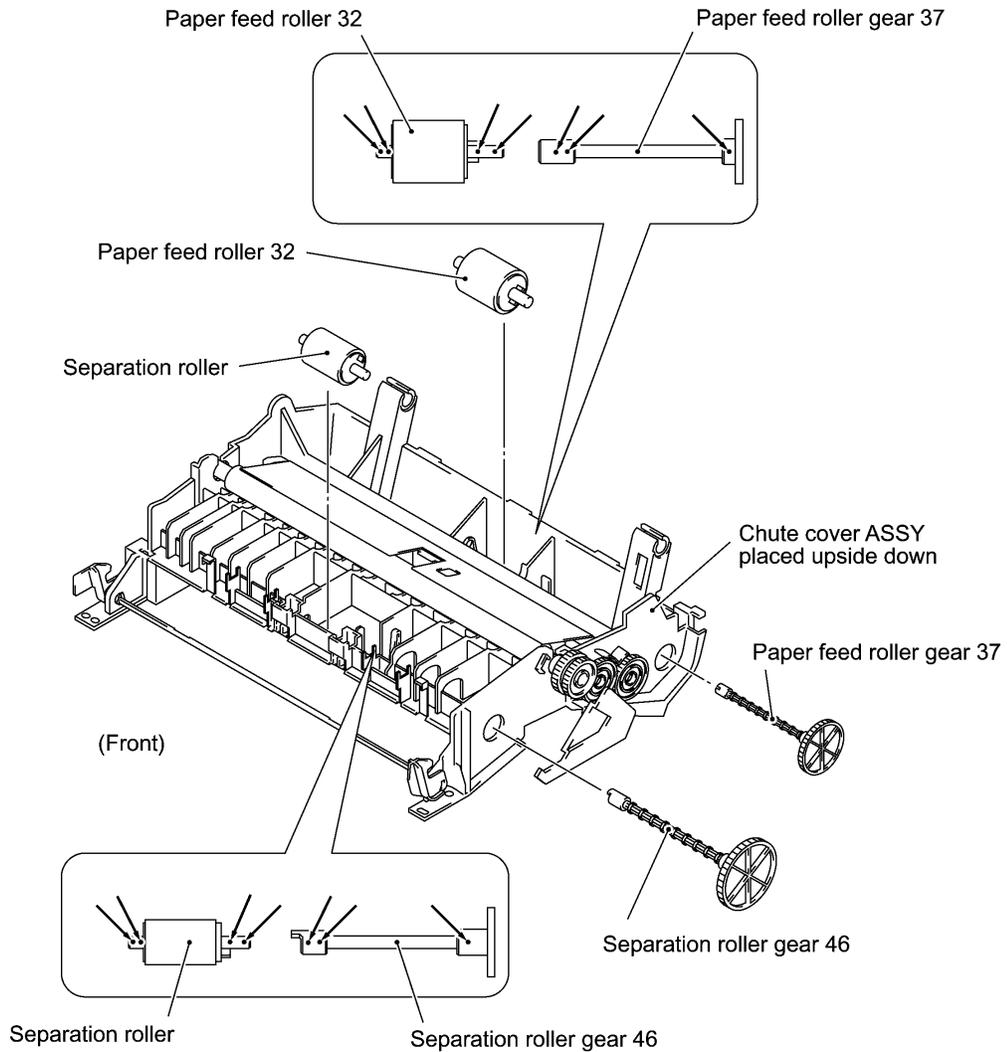
[2] Platen gear (Gear 24) and joint between gears 32 and chute cover ASSY
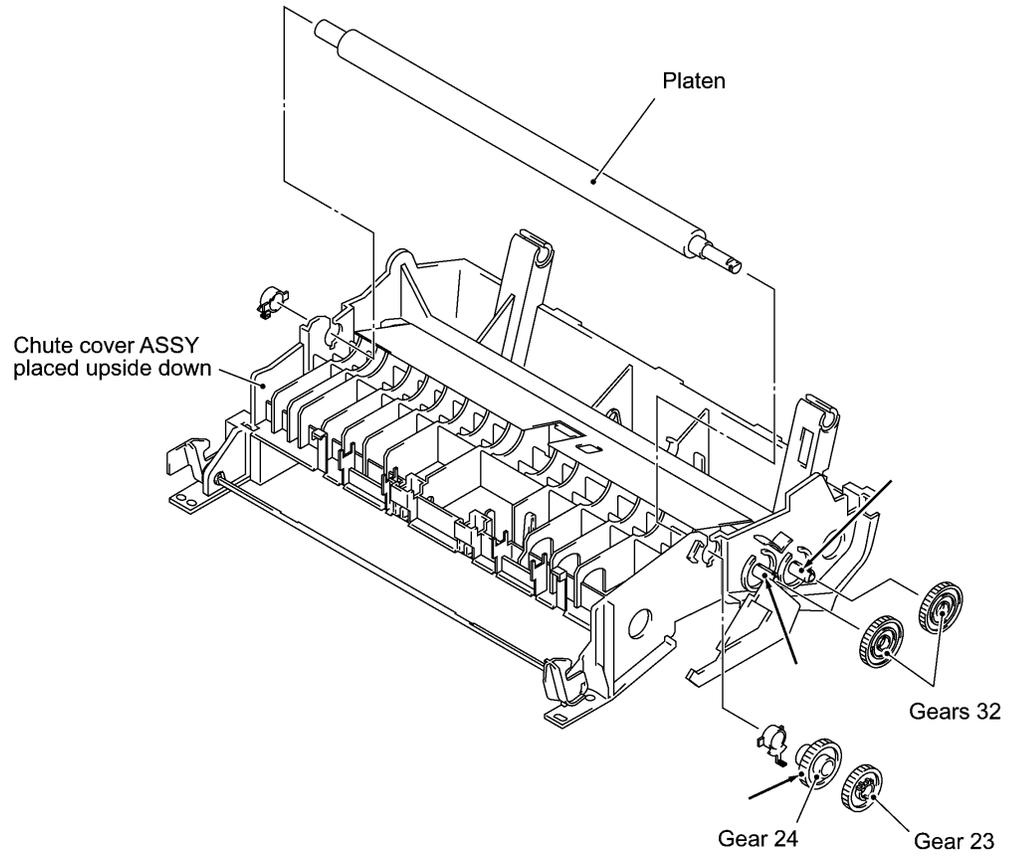
Platen

Chute cover ASSY
placed upside down

Gears 32

Gear 24   Gear 23

IV - 44

[3]   Paper ejection roller, document LF roller, and document ejection roller

Paper ejection roller

Main frame

Paper ejection roller

Drive unit

Document LF roller

Document ejection roller

IV - 45
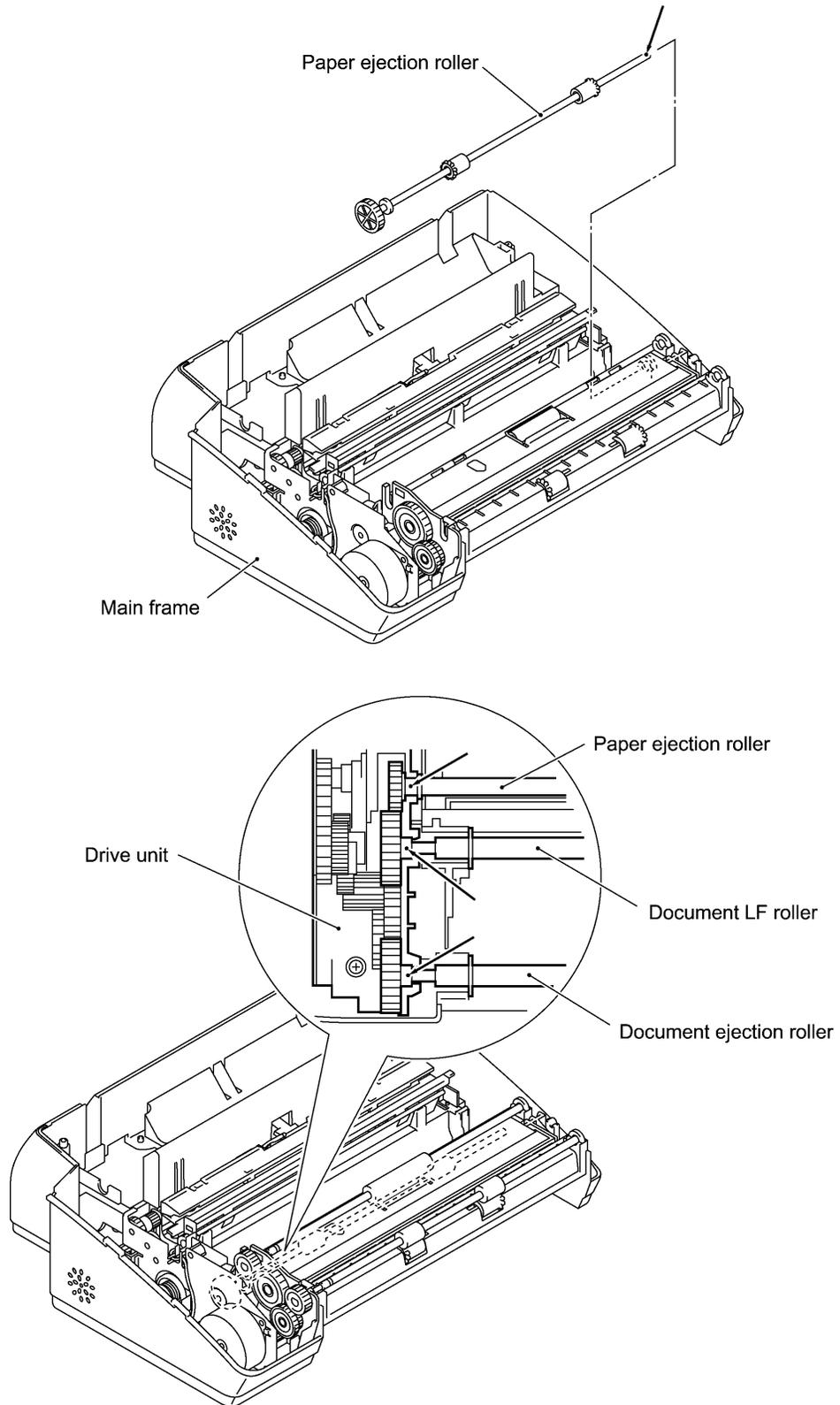
CHAPTER V.

MAINTENANCE MODE

CHAPTER V. MAINTENANCE MODE

CONTENTS

1. ENTRY INTO THE MAINTENANCE MODE

American models (e.g., FAX560/FAX580MC/MFC660MC):

To make the facsimile equipment enter the maintenance mode, press the **Function**, *****, **2**, **8**, **6**, and **4** keys in this order.

|← Within 2 seconds →|

European models (e.g., FAX-T72/FAX-T74/FAX-T76/FAX-T78/FAX-T82/FAX-T84/FAX-T86):

To make the facsimile equipment enter the maintenance mode, press the **Menu**, *****, **2**, **8**, **6**, and **4** keys in this order.

|← Within 2 seconds →|

FAX645/FAX685MC/MFC960MC:

For the Oceanic version of those models, apply the description given for European models; for the Asian version, apply that given for American models.

The equipment 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 equipment is ready to accept entry from the keys.

To select one of the maintenance-mode functions listed in Section 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 3.)

NOTES: • Pressing the **9** key twice in the initial stage of the maintenance mode makes the equipment exit from the maintenance mode, restoring it to the standby state.

• Pressing the **Stop** button after entering only one digit restores the equipment to the initial stage of the maintenance mode.

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

V - 1

2. LIST OF MAINTENANCE-MODE FUNCTIONS

Maintenance-mode Functions

Function Code	Function	Reference Section (Page)
01	EEPROM Parameter Initialization	3.1 (V-5)
02	———————	———————
03	———————	———————
04	———————	———————
05	Printout of Scanning Compensation Data	3.2 (V-6)
06	———————	———————
07	———————	———————
08	ADF* Performance Test	3.3 (V-8)
09	Test Pattern 1	3.4 (V-9)
10	Firmware Switch Setting	3.5 (V-10)
11	Printout of Firmware Switch Data	3.5 (V-51)
12	Operational Check of LCD	3.6 (V-52)
13	Operational Check of Control Panel PCB (Check of Keys and Buttons)	3.7 (V-53)
32	Sensor Operational Check	3.8 (V-55)
54	Fine Adjustment of Scanning Start/End Position	3.9 (V-56)
55	CIS Scanner Area Setting	3.10 (V-57)
74	EEPROM Customizing	3.11 (V-57)
82	Equipment Error Code Indication	3.12 (V-58)
87	Output of Transmission Log to the Telephone Line	3.13 (V-58)
91	EEPROM Parameter Initialization (except the telephone number storage area)	3.1 (V-5)
99	Exit from the Maintenance Mode	---- (V-1)
-----	Document Draw Adjustment	3.14 (V-59)

* ADF: Automatic document feeder

Downloaded from www.Manualslib.com manuals search engine

- **IMPORTANT** -

Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you may 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, 82, 87 and 91) are <u>shaded</u> in the table given on the previous page. Function code 10 accesses the firmware switches WSW01 to WSW37, each of which has eight selectors. You should not allow end users to access all of those selectors, but you may allow them to access user-accessible selectors which are <u>shaded</u> in the firmware switch tables in Section 3.5.

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

(1) American models: Press the **Function** and **Mode** keys in this order.

European models: Press the **Menu** and **Mode** keys in this order.

The LCD clears the current display.

NOTE: The **Mode** key is disabled during standby for redialing or timer.

(2) Press the **0** key.

(3) Enter the desired function code (10, 11, 12, 82, 87, or 91) with the numerical keys.

For function code 10, access the desired firmware switch according to the operating procedure described in Section 3.5.

(4) To make the equipment return to the standby state, press the **Stop** key.

Models except FAX-T78

Mode key

Function/Set key

0 key

Stop key

V - 3

FAX-T78

Mode key

Menu/Set key   Stop key   0 key
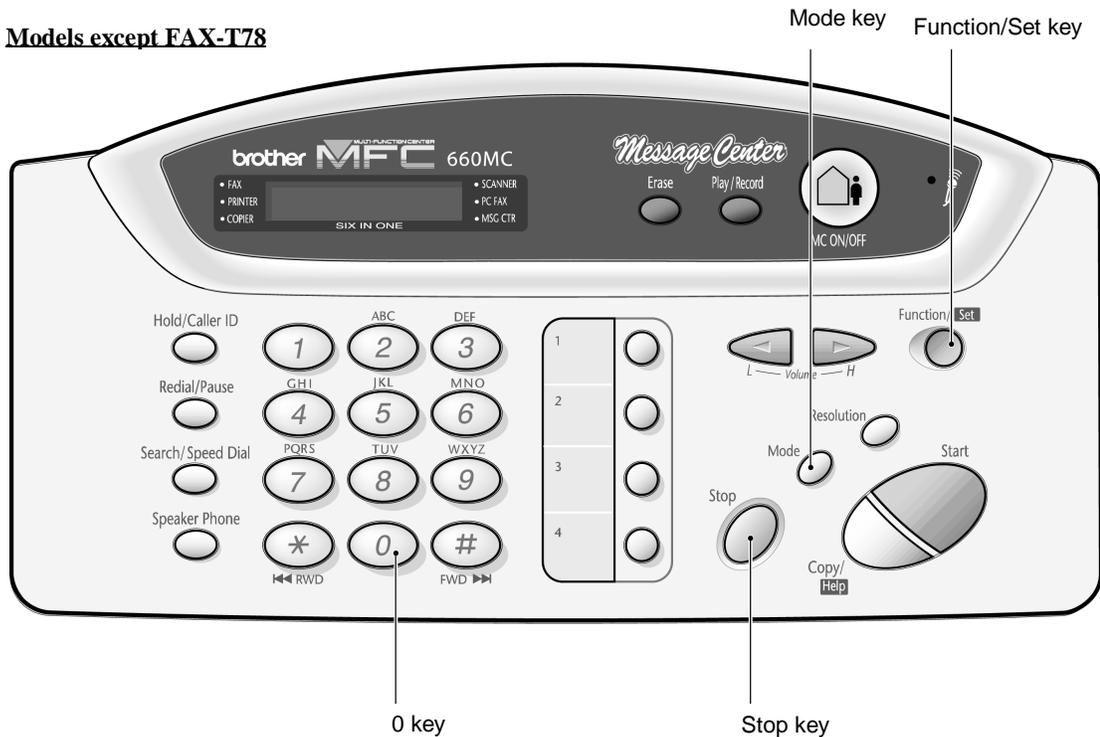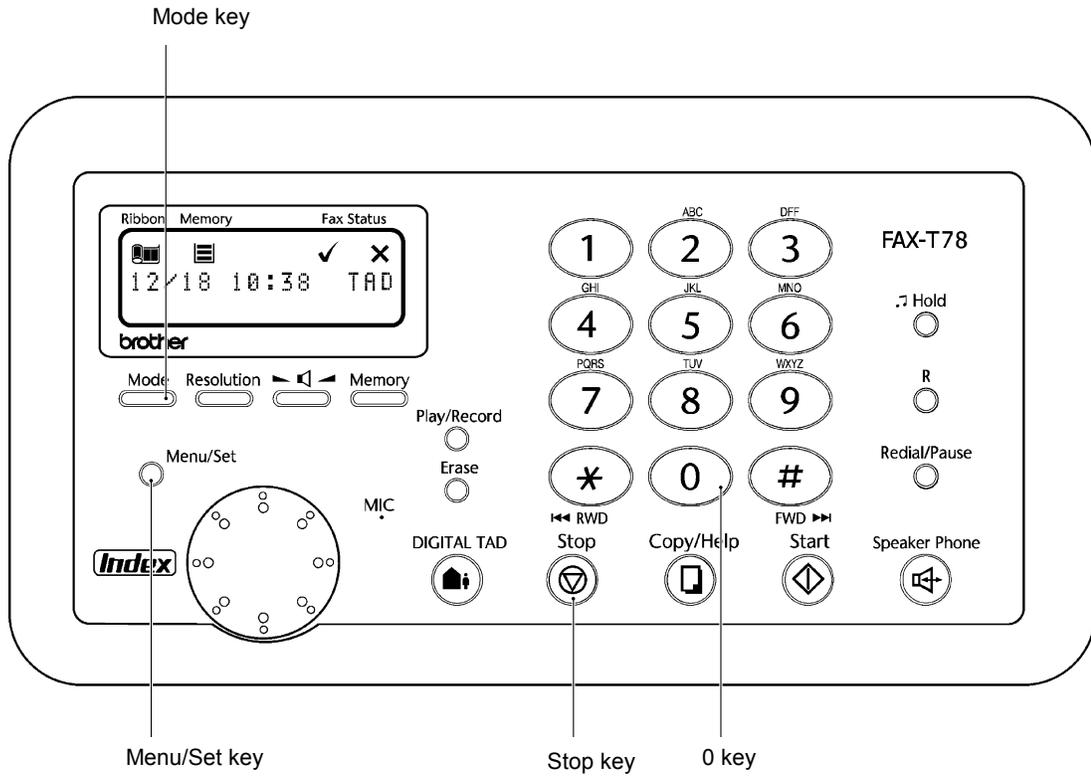
3. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

3.1 EEPROM Parameter Initialization

■ Function

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

Data item \ Function code	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 not be initialized
EEPROM customizing code 　　(4-digit)	This will not be initialized. (Note that the first digit of the 4-digit code will be initialized to "0." If the code is 9001, for example, it will be initialized to 0001.)	

NOTE: If you replace the main PCB with one used for other facsimile equipment, carry out this procedure and then customize the EEPROM (maintenance-mode function code 74 in Section 3.11).

■ 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 equipment returns to the initial stage of the maintenance mode.

3.2 Printout of Scanning Compensation Data

■ Function

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

■ Operating Procedure

Do not start this function merely after powering on the equipment but start it after carrying out a sequence of scanning operation. Unless the equipment 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 equipment 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 equipment 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 (2 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 equipment 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.

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 0C 08 08 0C
    5F50 : 0C 0E 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

h) 5F00 : 81

i) 5F00 : 81

j) 5F00 : 77 7A

k) 5F00 : AD

Scanning Compensation Data List

V - 7

3.3 ADF Performance Test

■ **Function**

The equipment 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 equipment

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** key to return the equipment to the initial maintenance mode.

3.4   Test Pattern 1

■   **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.
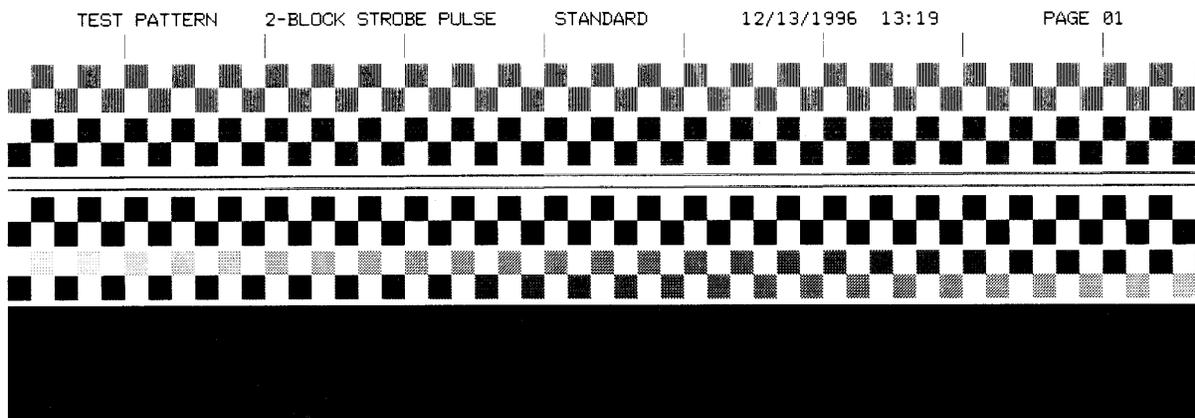
Test Pattern 1

3.5 Firmware Switch Setting and Printout

[A] Firmware switch setting

■ Function

The facsimile equipment incorporates the following firmware switch functions (WSW01 through WSW37) which may be activated with the procedures using the control panel keys and buttons.
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	Reference Page
WSW01	Dial pulse setting	V-12
WSW02	Tone signal setting	V-13
WSW03	PABX mode setting	V-14
WSW04	TRANSFER facility setting	V-16
WSW05	1st dial tone and busy tone detection	V-17
WSW06	**Pause** key setting and 2nd dial tone detection	V-19
WSW07	Dial tone setting 1	V-21
WSW08	Dial tone setting 2	V-22
WSW09	Protocol definition 1	V-23
WSW10	Protocol definition 2	V-24
WSW11	Busy tone setting	V-25
WSW12	Signal detection condition setting	V-26
WSW13	Modem setting	V-27
WSW14	AUTO ANS facility setting	V-28
WSW15	REDIAL facility setting	V-29
WSW16	Function setting 1	V-30
WSW17	Function setting 2	V-31
WSW18	Function setting 3	V-32
WSW19	Transmission speed setting	V-33
WSW20	Overseas communications mode setting	V-34
WSW21	TAD setting 1	V-35
WSW22	ECM and caller ID setting	V-36
WSW23	Communications setting	V-37
WSW24	TAD setting 2	V-38
WSW25	TAD setting 3	V-39
WSW26	Function setting 4	V-40
WSW27	Function setting 5	V-41
WSW28	Function setting 6	V-42
WSW29	Function setting 7	V-43
WSW30	Function setting 8	V-44
WSW31	Function setting 9	V-45
WSW32	Function setting 10	V-46
WSW33	Function setting 11	V-47
WSW34	Function setting 12	V-48
WSW35	Function setting 13	V-49
WSW36	Function setting 14	V-49
WSW37	Function setting 15	V-50

■   **Operating Procedure**

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

The equipment 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:

WSWXX = 0 0 0 0 0 0 0 0

Selector No.1   Selector No.8

(3) Use the ◄ and ► 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 **Set** key. This operation saves the newly entered selector values onto the EEPROM and readies the equipment 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 **Set** or **Stop** key to return the equipment to the initial stage of the maintenance mode.

NOTES: • To cancel this operation and return the equipment to the initial stage of the maintenance mode during the above procedure, press the **Stop** 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 equipment will automatically return to the initial stage of the maintenance mode.

■   **Note**

The user-accessible selectors of the firmware switches are shaded in the tables given on the following pages.

V - 11

■ Detailed Description for the Firmware Switches

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 versions supporting no pulse dialing, e.g., U.S.A. and German versions.

● **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.)
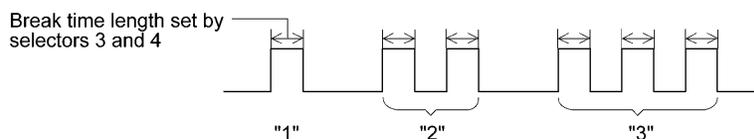
● **Selectors 5 and 6:   Inter-digit pause**

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.)

V - 12
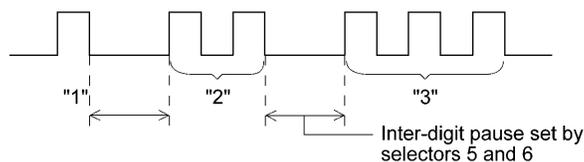
● **Selector 7:   Switching between pulse (DP) and tone (PB) dialing, by the function switch**

This selector determines whether or not the dialing mode may 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 may 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)	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.)
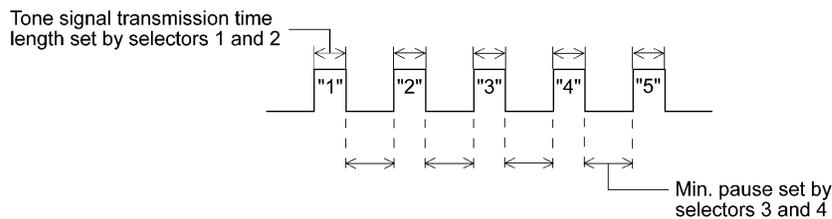
● **Selectors 5 through 8:   Attenuator for pseudo ring backtone to the line**

These selectors are used to adjust the sound level of beep generated as a ring backtone in the F/T mode or 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."

V - 13

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	Min. detection time length of PABX* dial tone, required for starting dialing	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*	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 equipment detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the equipment. Upon detection of CNG signals by the number of cycles specified by these selectors, the equipment 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:   Min. detection time length of PABX dial tone, required for starting dialing**

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

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

V - 14

● **Selectors 6 and 7:   Dial tone detection in PABX**

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 equipment 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 equipment 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 equipment will automatically carry out the 1st dial tone detection function following the original transfer function as shown below.
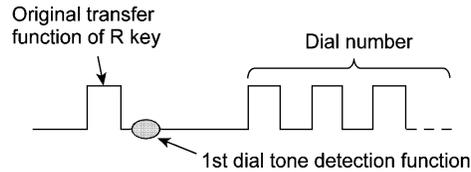
WSW04 (TRANSFER facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility	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	Tone detection sensitivity in ICM recording	0: OFF 1: High

5
 	
6
	Earth time length for earth function	No. 5 6
		     0 0 : 200 ms
		     0 1 : 300 ms
		     1 0 : 500 ms
		     1 1 : 700 ms

7
 	
8
	Break time length for flash function	No. 7 8
		     0 0 : 80 ms
		     0 1 : 110 ms
		     1 0 : 250 ms
		     1 1 : 500 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 those models equipped with a built-in TAD.

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

- **Selector 1:   Earth function in transfer facility**

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

- **Selectors 4: Tone detection sensitivity in ICM recording**

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

- **Selectors 5 and 6:   Earth time length for earth function**

  These selectors set the short-circuiting time length of the telephone line (La or Lb) to ground.
  This setting is effective only when the earth function is selected for the R key by using the function switch.

- **Selectors 7 and 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.

V - 16

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 automatic 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 automatic 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 equipment 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 equipment 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 equipment 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.

V - 17

- **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 equipment 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 equipment does not disconnect the line.

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

   Setting both of selectors 5 and 6 to "1" makes the equipment 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 equipment automatically disconnects a line upon detection of a busy tone in automatic receiving mode.

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 times	0: Once 1: Twice
8	2nd dial tone interrupt detecting time	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.

V - 19

● **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 facsimile equipment will insert WAIT as defined in the above table. If the **Pause** key is pressed repeatedly, the equipment 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 equipment 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 equipment will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the **Pause** key will cause the equipment to insert a WAIT of 3.5 seconds. In tone dialing, the equipment will insert a WAIT of 3.5 seconds. When these selectors are set to "1, 1, 1": If you press the **Pause** key, the equipment 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 equipment to insert a WAIT of 3.5 seconds. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 1, 0," "1, 0, 1," 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 equipment starts dialing.

This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 1 0 1, 1 1 0, or 1 1 1).

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

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

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

● **Selector 8: 2nd dial tone interrupt detecting time**

This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 2nd tone dialing.

WSW07 (Dial tone setting 1)

Selector No.	Function	Setting and Specifications
1 2	Frequency band range	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 Ω)	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	1st dial tone interrupt detecting time	0: 30 ms　　　1: 50 ms
8	PABX loop current control	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: If selector 3 is set to "1", manual dialing becomes impossible in those countries where no line current detection is supported.

● **Selectors 1 and 2:　Frequency band range**

These selectors set the frequency band for the 1st dial tone and the 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**

This selector determines whether or not the equipment should 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:　1st dial tone interrupt detecting time**

This selector sets the allowable time length of an interrupt which should not be interpreted as an interrupt in the 1st dial tone dialing.

● **Selector 8:　PABX loop current control**

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 facsimile equipment 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.

V - 21

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 equipment 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 equipment waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

V - 22

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
	Elapsed time for time-out control for no response from the called station in automatic sending mode	No. 7 8
		     0 0 : 55 sec.
		          (U.S.A./Canada versions)
		          60 sec. (Other versions)
		     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 facsimile equipment can divide a message into 64-octet frames.

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

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

If this selector is set to "0," the equipment may 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 equipment 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:   Elapsed time for time-out control**

If the equipment receives no response (no G3 command) from the called terminal in automatic sending during the time set by these selectors, it disconnects the line.

V - 23

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 equipment 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 equipment 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 equipment 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.

WSW11 (Busy tone setting)

Selector No.	Function	Setting and Specifications

1
2
	Frequency band range	No. 1 2
		      0 0 : Narrows by 10 Hz
		      0 1 : Initial value
		      1 x : Widens by 10 Hz

3	Not used.	
4	ON/OFF time length ranges (More than one setting allowed)	1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000/17-660 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:   Frequency band range**

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

● **Selectors 4 through 8:   ON/OFF time length ranges**

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. OFF time length of calling signal (Ci)	No. 1 2 0 0 : 1500 ms 0 1 : 500 ms 1 0 : 700 ms 1 1 : 900 ms
3 4	Max. OFF time length of calling signal (Ci)	No. 3 4 0 0 : 6 sec. 0 1 : 7 sec. 1 0 : 9 sec. 1 1 : 11 sec.
5 6	Detecting time setting	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 versions.

● **Selectors 1 through 4: Min. and max. OFF time length of calling signal (Ci)**

If the equipment detects the OFF state of calling signal (Ci) for a time length which is 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: Detecting time setting**

These selectors set the time length required to make the equipment acknowledge itself to be called. That is, if the equipment continuously detects calling signals with the frequency set by selectors 1 through 4 of WSW14 during the time length set by these selectors 5 and 6, it acknowledges the call.

● **Selector 7: Delay**

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

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 facsimile equipment.

● **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 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.

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

V - 27

WSW14 (AUTO ANS facility setting)

Selector No.	Function	Setting and Specifications

1
 	
2
	Frequency band selection (Lower limit)	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)	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**

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

In the French versions, 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.

WSW15 (REDIAL facility setting)

Selector No.	Function	Setting and Specifications
1 2	Selection of 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 8	Not used.	

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

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

WSW16 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	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:   CCITT superfine recommendation**

If this selector is set to "1," the equipment communicates in 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. versions.

● **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 the equipment outputs 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 equipment 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 a communications error code will be printed in the activity report.

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

Setting this selector to "1" makes the equipment 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 facsimile equipment, the equipment 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."

● **Selectors 7 and 8:   Tone sound monitoring**

These selectors set monitoring specifications of the tone sound inputted from the line.

V - 32

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 9600 bps capability, selection of 12,000 bps or 14,400 bps will still only produce a set speed automatically reduced to 9600 bps.

NOTE: Selector 8 is applicable only to those models that support 14,400 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 equipment attempts to establish the transmission link via the MODEM. If the establishment fails, the equipment automatically steps down to the next lowest speed and attempts to establish the transmission link again. The equipment 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.

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	Chattering elimination for CNG detection	No. 6 7 0 0 : A (During CNG ON and OFF) 0 1 : B (During CNG OFF only) 1 X : C (No elimination)
8	CNG detection on/off	0: OFF 1: ON

* EP: Echo protection

● **Selector 1:   EP tone prefix**

Setting this selector to "1" makes the equipment 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 effective when the equipment fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

● **Selectors 2 and 3:   Overseas communications mode**

These selectors should be used if the facsimile equipment malfunctions in overseas communications. According to the communications error state, select the signal specifications.

Setting selector 2 to "1" allows the equipment 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 equipment 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.

● **Selectors 8: CNG detection on/off**

If this selector is set to "1," the equipment 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 equipment detects a CNG signal as long as the line is connected.

V - 34

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 those models equipped with a built-in TAD.

● **Selectors 1 through 5:　Max. waiting time for voice signal**

In the TAD mode, the equipment 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**

Setting this selector to "0" will erase the message recorded in the memory after the document retrieval feature transfers the message.

WSW22 (ECM and caller ID setting)

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)	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 U.S.A. versions only.

NOTE: Selectors 5 through 8 are applicable to the Chinese, Taiwanese and Asian versions 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.

● **Selectors 5 through 8:   Acceptable TCF bit error rate (%)**

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%.

V - 36

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 versions.

- **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 facsimile equipment 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.

- **Selector 6:   Issue of RTN at the occurrence of a pagination error**

  If this selector is set to "0," the facsimile equipment 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.

  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 a built-in TAD.

- **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 those versions which have an OGM facility, 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 will not be 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 versions.

● **Selectors 5 through 7: Pause between paging number and PIN**

These selectors set the pause time between a telephone number being paged and PIN (private 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 or via the facsimile equipment in 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 a built-in TAD.

● **Selectors 1 and 2: Application of DC wetting pulse and overvoltage limiter**

These selectors take effect only when the UK version of the facsimile equipment 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**

The equipment 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 except in the external TAD mode or via the built-in telephone.

● **Selectors 6 and 7: No. of CNG cycles to be detected**

The equipment 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 facsimile equipment in 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 equipment 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 equipment disconnects the line.

If this selector is set to "1," the equipment disconnects the line after issuing pseudo ring backtones.

V - 40

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 at the start time of OGM ON 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. versions.

NOTE: Selector 3 is applicable to those models equipped with a built-in TAD.

● **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 at the start time of OGM ON mode**

This selector determines whether or not the equipment automatically plays back an OGM the moment it switches to the OGM ON mode in the MC mode.

● **Selector 4: Detection of distinctive ringing pattern**

If this selector is set to "1," the equipment detects only the number of rings; if it is set to "0," the equipment detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

V - 41

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 equipment for the Standard. Never access them.

V - 42

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 for activity report	0: No 1: Yes

NOTE: Selectors 1 through 6 are applicable to those models equipped with a built-in TAD.

NOTE: Selector 8 is not applicable to the U.S.A. versions.

● **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 for activity report**

This selector determines whether or not the equipment will beep if the activity report memory area becomes full with 30 records, 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	Detection level of dial tone or busy tone for the built-in TAD operation	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 those models equipped with a built-in TAD.

● **Selectors 1 through 3:   Detection level of dial tone or busy tone for built-in TAD operation**

If dial tone or busy tone inputted during ICM recording is below the level specified by these selectors, the TAD stops recording and disconnects the line.

● **Selectors 7 and 8   Recording density control**

Density level   A   B   C   D

Low   High
(light)   (dark)

V - 44
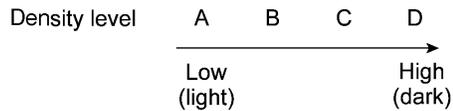
WSW31 (Function setting 9)

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 4	Not used.	
5	Minimum short-OFF duration 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 equipment records one-page data at full size (100%) without reduction; if it is set to "1," the equipment records it at half size (50%).

● **Selector 5   Minimum short-OFF duration in distinctive ringing**

The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum OFF duration following a short ring in order to avoid missing ringer tones in distinctive ringing.

If this selector is set to "1," when the short-OFF duration is a minimum of 90 ms long, then the equipment will interpret the short-OFF as OFF.

V - 45

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 equipment is powered up or completes a transaction.

● **Selectors 7 and 8   Default contrast**

These selectors set the default contrast which applies when the equipment is powered up or completes a transaction.

V - 46

WSW33 (Function setting 11)

Selector No.	Function	Setting and Specifications
1 | 3	Detection threshold level for voice signals inputted via the telephone line in the built-in TAD operation	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 trans-mission requests	0: Yes 1: No
7 8	Comfortable noise level	No. 7 8 0 0 : OFF 0 1 : Low (A) 1 0 : Medium (B) 1 1 : High (C)

NOTE: Selectors 1 through 3 and 6 through 8 are applicable to those models equipped with a built-in TAD.

NOTE: Selector 6 is not applicable to the U.S.A. versions.

NOTE: Selectors 4 and 5 are applicable to those models equipped with a PC interface.

● **Selectors 1 through 3: Detection threshold level for voice signals inputted via the telephone line in the built-in TAD operation**

If the equipment detects voice signals exceeding the threshold level set by these selectors, it will interpret them as effective voice.

● **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 facsimile equipment to the connected PC, you may need to keep the FAX receiving speed within the transmission speed limit to the PC. In an initial negotiation sequence for transmission, the equipment responds to the calling station with the allowable FAX receiving speed specified by these selectors.

● **Selectors 7 and 8: Comfortable noise level**

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.

V - 47

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 facsimile equipment in F/T or TAD 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 those models equipped with a built-in TAD.

● **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 equipment 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**

The equipment interprets a CNG as an effective signal if it detects a CNG signal by the number of cycles specified by these selectors in any of the following cases:

- when the line is connected via the external telephone in the external TAD mode.
- when the line is connected via the facsimile equipment in F/T or TAD mode.

● **Selectors 6 and 7:** **Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation**

If the equipment 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.

V - 48

WSW35 (Function setting 13)

Selector No.	Function	Setting and Specifications

1 | 4	Detection time length of the disconnection tone in ICM recording	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.
		       I I
		   1 1 1 1 : 15 sec.

5 | 8	Not used.	

NOTE: Selectors 1 through 4 are applicable to those models equipped with a built-in TAD.

● **Selectors 1 through 4: Detection time length of the disconnection tone in ICM recording**

If the equipment detects disconnection tone for the time length set by these selectors, it will disconnect the line.

WSW36 (Function setting 14)

Selector No.	Function	Setting and Specifications
1 | 5	Not used.	

6 | 8	Lower limit of frequency to be ignored after detection of calling signals (Ci)	No. 6 7 8
		   0 0 0 : 0 (Not 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)

● **Selectors 6 through 8: Lower limit of frequency to be ignored after detection of calling signals (Ci)**

At the start of reception, if the equipment detects the frequency of calling signals (Ci) specified by selectors 1 through 4 of WSW14, it will start the ringer sounding. When doing so, the equipment may fail to detect the calling signals normally due to noises superimposed at the time of reception. To prevent it, use selectors 6 through 8 of WSW36.

If the equipment detects higher frequencies than the lower limit specified by these selectors, it will regard them as noise and interpret that detecting state as being normal, allowing the ringer to keep sounding (until the equipment starts automatic reception of FAX data if in the FAX mode or enters the TAD mode if set in the TEL mode, according to the preset number of ringers).

V - 49

WSW37 (Function setting 15)

Selector No.	Function	Setting and Specifications
1 | 8	Not used.	

[B] Printout of firmware switch data

■   Function

The equipment 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 equipment prints out the configuration list as shown in the figure below.

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

```
                    ┌─────────────────────┐
                    │  CONFIGURATION LIST │
                    └─────────────────────┘
                                          MODEL: 8X4-501
                                          TIME : 01/06/2001 00:09
                                          REV. : LG0099001  VER.A
                                          SUM  : 7050
                                                                        0:10
   WSW01 = 00000010                                                     ER.A
     1-2. DIAL FORMAT                       : NORMAL
     3-4. BREAK TIME                        : 60 MS
     5-6. INTERDIGIT PAUSE                  : 800 MS
     7.   DP/PB CHANGE IN USER SW           : NO
     8.   DP/PB FIXING SELECTION            : PB
   WSW02 = 11111010
     1-2. ON TIME                           : 100 MS
     3-4. OFF TIME                          : 140 MS
     5-8. LINE BEEP ATTENUATOR              : 10 DB
   WSW03 = 10000000
     1.   PARA. CNG DETECTION1              : B
     2-4. NOT USED
     5.   PARA. CNG DETECTION2              : A
     6-8. NOT USED
   WSW04 = 00010111
     1-4. NOT USED
     5-6. EARTHING TIME                     : 300 MS
     7-8. FLASHING TIME                     : 500 MS
   WSW05 = 00000110
     1-3. DIAL TONE DETECTION               : 3.5 SEC WAITING          0:10
     4.   REMOTE ID DETECTION TIMEOUT       : 2 SEC                    ER.A
     5-6. BUSY TONE DETECTION (CALLING)     : AFTER DIALING
     7.   BUSY TONE DETECTION (CALLED)      : OFF
     8.   NOT USED
   WSW06 = 00101100
     1-3. PAUSE KEY                         : 3.5 SEC WAITING
     4-8. NOT USED
   WSW07 = 01001100
     1-8. NOT USED
   WSW08 = 01100100
     1-8. NOT USED
   WSW09 = 00000000
     1.   ECM FRAME                         : 256 OCTET
     2.   NON STANDARD FACILITIES           : ON
     3-4. TIMES OF FALL BACK                : 4
     5.   T5 TIMER                          : 300 SEC
     6.   T1 TIMER                          : 35 SEC
     7-8. CALLING TIMEOUT                   : 55 SEC
   WSW10 = 00010111
     1.   DPS LINK WITH CML                 : NO
     2.   TIMING OF LAST DIGIT-MODEM CHANGE : 100 MS
     3.   TIMING OF CML ON CNG TRANSMISSION : 2 SEC
     4.   TIMING OF CML ON CED TRANSMISSION : 2 SEC
     5-6. TRAINING RETRIES                  : 2
     7-8. NOT USED
   WSW11 = 01011000
     1-2. FREQUENCY RANGE                   : INITIAL DATA
     3.   NOT USED
     4-8. ON/OFF TIME                       : 400 - 600 MS / 400 - 600 MS
                                              175 - 440 MS / 175 - 440 MS
   WSW12 = 10011011
     1-2. OFF DETECTION TIME                : 700 MS
     3-4. AUTO ANS OFF DETECTION TIME       : 7 SEC
     5-6. ON DETECTION TIME                 : 250 MS
     7.   DELAY                             : OFF
     8.   NOT USED

        4-5. RTN CRITERION                   : 14%
        6.   RTN ON UNSYNC. RECEIVE          : NO
        7.   NOT USED
        8.   ATTENUATOR LIMIT               : ON
        WSW2  01001011
        1-:  NOT USED
        3-4. DELAY OF CML ON-OGM            : 4 SEC
        5-8. NOT USED

          WSW36 = 00000000
            1-5. NOT USED
            6-8. IGNORE CI COUNT                    : 0
          WSW37 = 10000101
            1-8. NOT USED
```

Configuration List

V - 51

3.6 Operational Check of LCD

■ Function

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

■ Operating Procedure

Models except FAX-T78

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

The LCD shows black boxes as shown at right (top).

(2) Press the **Start** key. Each time you press the **Start** key, the LCD cycles through these three patterns as shown at right.

Start key

Start key

Start key
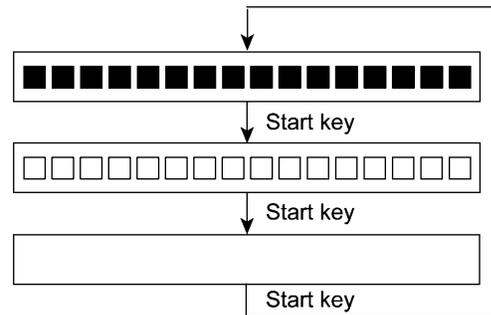
(3) Press the **Stop** key in any process of the above pattern cycle. The equipment beeps for one second and returns to the initial stage of the maintenance mode.

FAX-T78

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

The LCD shows boxes as shown at right (top).

(2) Turn the jog dial. The LCD cycles through these three patterns as shown at right, according to the rotation direction of the jog dial.
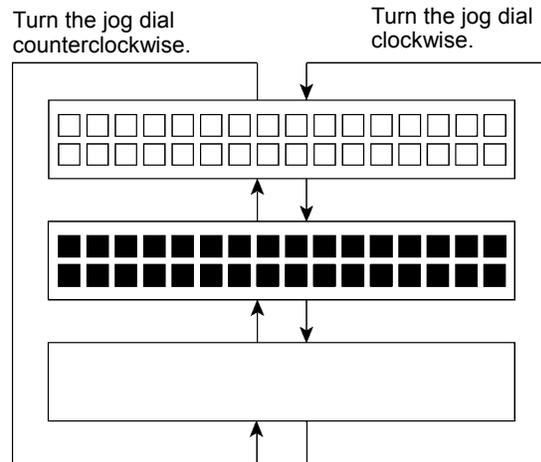
Turn the jog dial counterclockwise.

Turn the jog dial clockwise.

(3) Press the **Stop** key in any process of the above pattern cycle. The equipment beeps for one second and returns to the initial stage of the maintenance mode.

V - 52

3.7 Operational Check of Control Panel PCB

■ **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 " will appear on the LCD.

(2) Press the keys and buttons in the order designated in the illustration shown on the next page.

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

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

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

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

Models except FAX-T78, not equipped with a built-in TAD
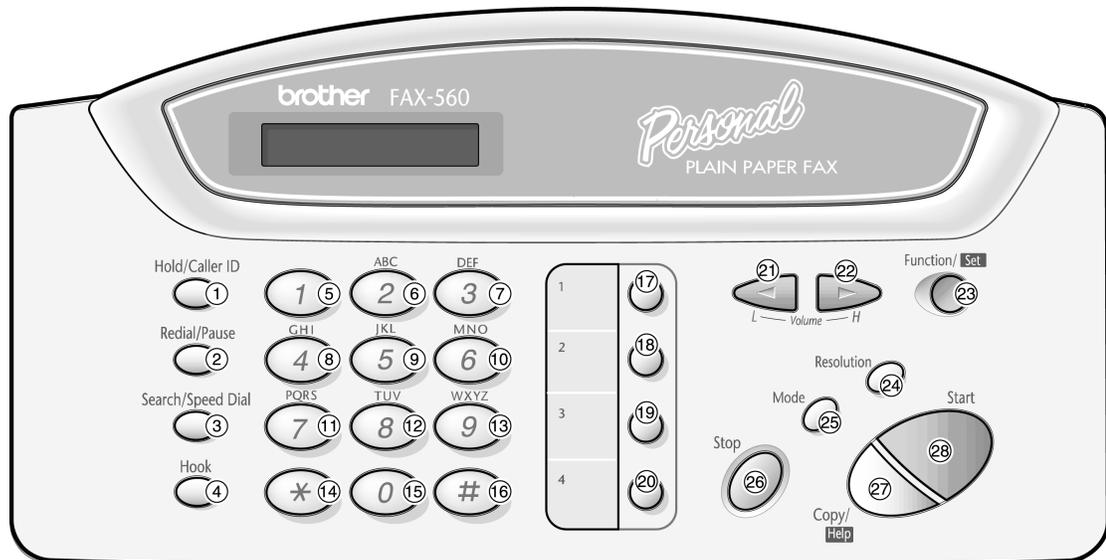
Key & Button Entry Order (1)

V - 53

Models except FAX-T78, equipped with a built-in TAD
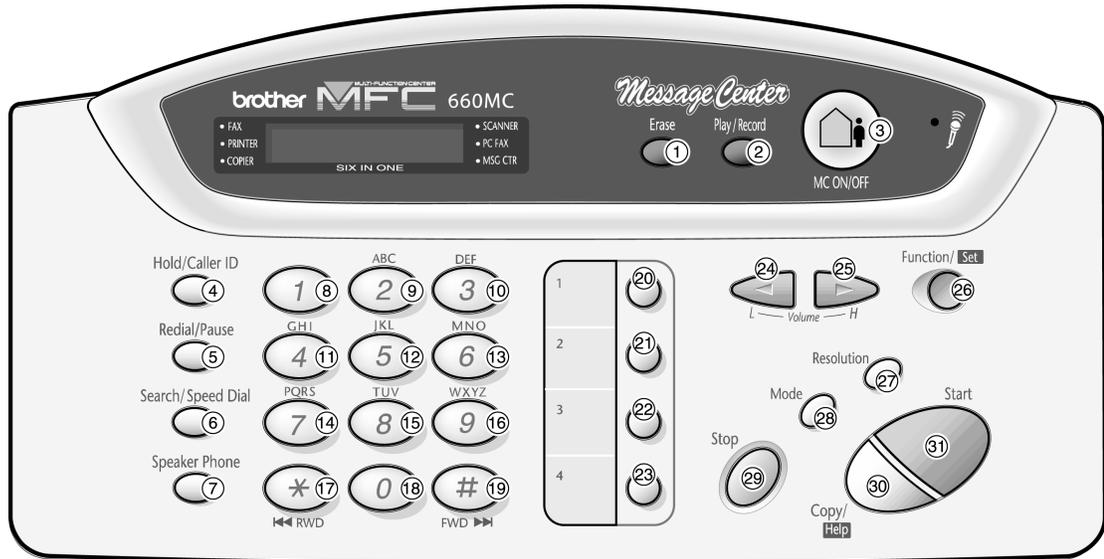
FAX-T78
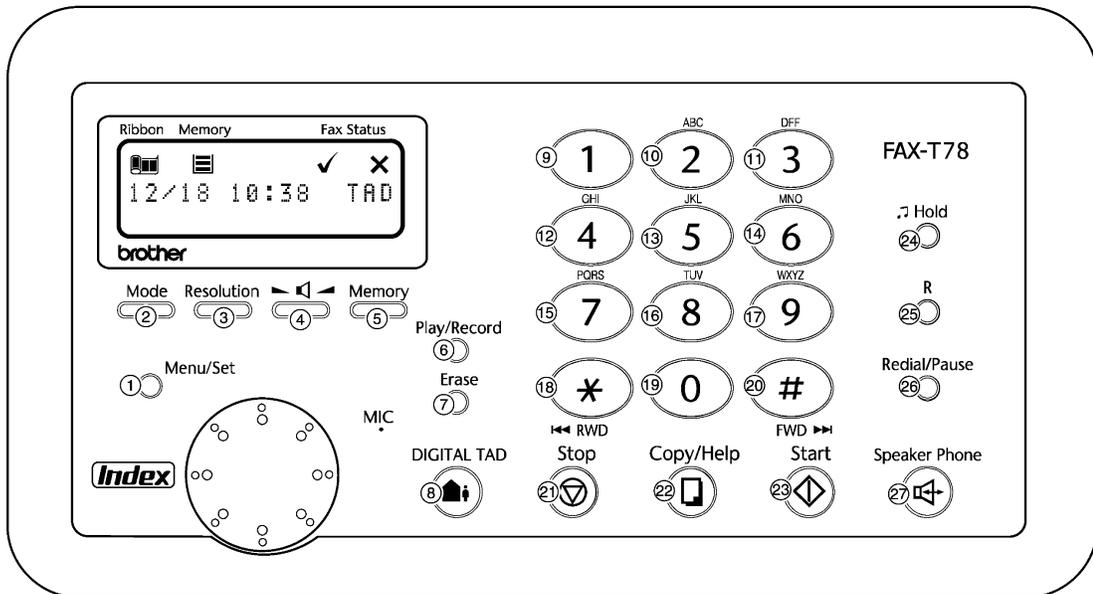
Key & Button Entry Order (2)

V - 54

3.8   Sensor Operational Check

■   <u>Function</u>

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 arm HP switch) operate correctly.

(*In the models not equipped with handset, the hook switch serves no function.)

■   <u>Operating Procedure</u>

(1) Press the **3** and **2** keys in this order in the initial stage of the maintenance mode. The equipment 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  │
                    └──────────────────────┘
```
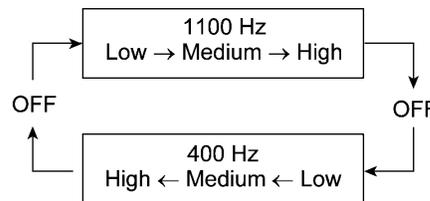
To disable the speaker, press the **Function** key (American models) or **Menu** key (European models). With the key, you may toggle the speaker on and off.

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

"FRERCPHRXCH 0" on the models not equipped with handset

"FRERCPHRXCHHK 0" on other models

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 sensor 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.
HK	Hook switch	On-hook state.
CH	Arm HP switch (on the drive unit)	Switching arm out of the home position.

(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) To stop this operation, press the **Stop** key. The equipment beeps for one second and returns to the initial stage of the maintenance mode.

V - 55

3.9 Fine Adjustment of Scanning Start/End Position

■ **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 **Start** key. Each time you press the **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 → -1 → -2 → +1
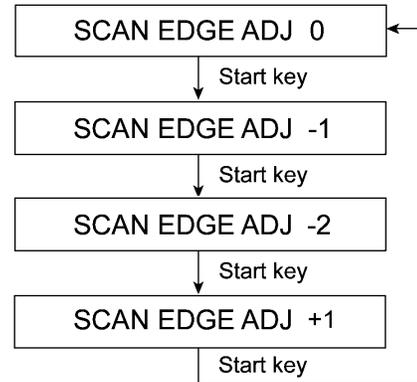
```
┌─────────────────────────┐
│   SCAN EDGE ADJ  0       │◄─┐
└─────────────────────────┘  │
           │ Start key        │
           ▼                  │
┌─────────────────────────┐  │
│   SCAN EDGE ADJ  -1      │  │
└─────────────────────────┘  │
           │ Start key        │
           ▼                  │
┌─────────────────────────┐  │
│   SCAN EDGE ADJ  -2      │  │
└─────────────────────────┘  │
           │ Start key        │
           ▼                  │
┌─────────────────────────┐  │
│   SCAN EDGE ADJ  +1      │  │
└─────────────────────────┘  │
           │ Start key        │
           └──────────────────┘
```

(3) To stop this operation, press the **Stop** key. The equipment 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      │
└─────────────────────────────────┘
```

V - 56
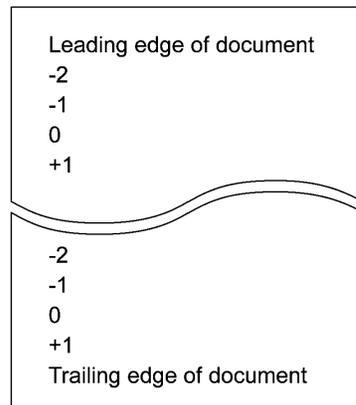
3.10 CIS Scanner Area Setting

■ **Function**

The equipment 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 equipment checks and sets the area to be scanned.

If no error is noted, the equipment 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 equipment to the initial stage of the maintenance mode, press the **Stop** key.

3.11 EEPROM Customizing

■ **Function**

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings. The customizing codes list is given in Appendix 1.

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., 9001 in the case of FAX560 U.S.A. versions) appears.

(2) Enter the desired customizing code (e.g., 0002 in the case of FAX580MC Canadian versions).

The newly entered code appears.

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

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

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

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

3.12 Equipment Error Code Indication

■ 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 _ _" (for 2-digit error code indication) or "MACHINE ERR _ _ _ _" (for 4-digit error code indication).

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

3.13 Output of Transmission Log to the Telephone Line

■ Function

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

■ Operating Procedure

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

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

    1) American models: Press the **Function**, **Mode**, and **0** keys in this order.

    European models: Press the **Menu**, **Mode**, and **0** keys in this order.

NOTE: The **Mode** key is disabled during standby for redialing or timer. You need to cancel those job to start the above procedure.

    2) Press the **8** and **7** keys.

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

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

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

V - 58

3.14 Document Draw Adjustment

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

■ **Function**

        This function adjusts how much the document is drawn in, starting at the point when the document rear sensor is turned on until the leading edge of the document reaches the scanning start position.

■ **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)   For American models: Press the **Function** key.

          For European models: Press the **Menu** key.

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

          Upon completion of normal counting, the equipment 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.
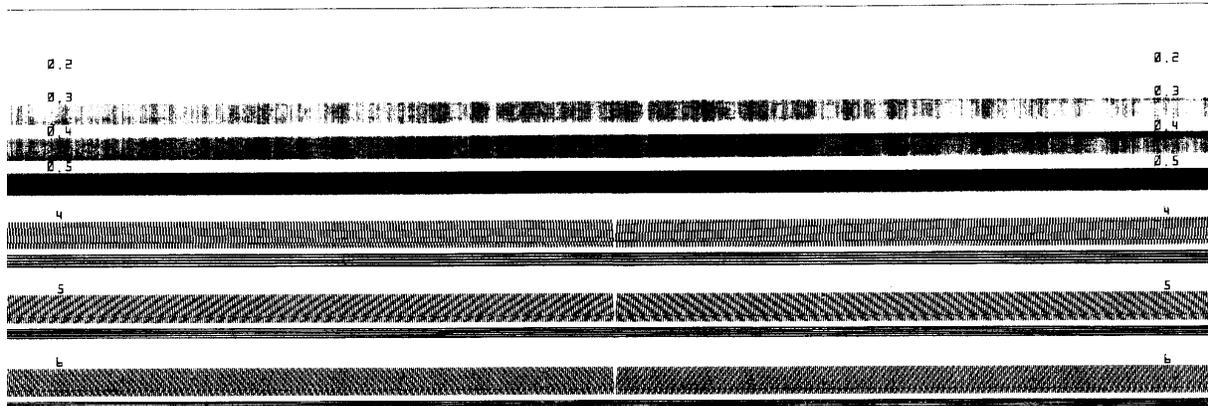
Printout after Normal Completion of Document Draw Adjustment

CHAPTER VI.

ERROR INDICATION AND TROUBLESHOOTING

CHAPTER VI. ERROR INDICATION AND TROUBLESHOOTING

CONTENTS

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.

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 V, Section 3.12).

[1]   Error messages on the LCD

Models except FAX-T78

Messages on the single-row LCD		Probable Cause
On early models	On recent models	
CHANGE CARTRIDGE	CHANGE CARTRIDGE PLS OPEN COVER	The ribbon sensor detects that no ribbon cartridge is loaded or the ink ribbon has run out.
CHECK PAPER (NOTE 1)	CHECK PAPER PLS OPEN COVER CHECK PAPER REMOVE PAPER	The registration sensor detects paper present when no paper should exist at the sensor detection area.
CHECK PAPER PRESS START KEY (NOTE 1)	CHECK PAPER PRESS START KEY RELOAD PAPER PRESS START KEY	The registration sensor detects no paper when paper should be fed in FAX reception, in copying, or in list/report output.
CLEAN UP SCANNER	CLEAN UP SCANNER	In the scanning compensation data list printed by the maintenance-mode function code 05, less than fifty percent of the white level data is faulty. (This message may appear only in the maintenance mode.)

(NOTE 1) If a recording paper feeding or ejecting error occurs *in the maintenance mode*, this paper-related error message will not appear on the LCD but some 4-digit error code listed on page VI-6 will appear instead.

Messages on the single-row LCD		Probable Cause
On early models	On recent models	

`DOCUMENT JAM`	`DOCUMENT JAM`
	`REMOVE DOCUMENT`
	`DOCUMENT JAM`
	`PRESS STOP KEY`
		■ Document jam
		
		(1) The document length exceeds the limitation (400 or 90 cm) registered by firmware switch WSW16. (Refer to Chapter V, Section 3.5.)
		
		(Both the document front and rear sensors stay ON even after the document has been fed by the registered length.)
		
		(2) The document rear sensor detects no trailing edge of a document after the document has been fed by 400 cm.
		
		(The document rear sensor stays ON even after the document has been fed when the document front and rear sensors were OFF and ON, respectively.)
		
		■ Document loading error
		
		(1) The document rear sensor detects no leading edge of a document within 10 seconds from the start of document loading operation.
		
		(The document rear sensor stays OFF even after the document has been fed when the document front sensor was ON.)
		
		(2) The loaded document is too short.
		
		(Since the document is shorter than the distance between the document front and rear sensors, the document front sensor is turned OFF before the document rear sensor is turned ON.)

`MACHINE ERROR__`
or
`MACHINE ERR____`
	`MACHINE ERROR__`
	or
	`MACHINE ERR____`
		"_ _" indicates an error code. Refer to [2] in this section.

`PC BUSY OR FAIL`
`PRESS STOP KEY`
	`PC BUSY OR FAIL`
	`CHECK PC CABLE`
	`PC BUSY OR FAIL`
	`PRESS STOP KEY`
		After connected with the host computer, the equipment has received no response from the computer. (A communications error has occurred.)

`PRINTER FAULT`	`PRINTER FAULT`
	`COOLING DOWN`
	`PRINTER FAULT`
	`WAIT FOR A WHILE`
		The thermistor in the recording head caused a heat error.

`SCANNER ERROR`	`SCANNER ERROR`	In the scanning compensation data list printed by the maintenance-mode function code 05, fifty percent or more of the white level data is faulty. (This message may appear only in the maintenance mode.)

VI - 2

Messages on the single-row LCD		Probable Cause
On early models	On recent models	
`TOP COVER OPEN`	`TOP COVER OPEN` `PLS CLOSE COVER`	The cover sensor detects that the control panel ASSY is not closed.

FAX-T78

Messages on the double-row LCD	Probable Cause
`CHECK CARTRIDGE` `RESET OR REPLACE`	The ribbon sensor detects that no ribbon cartridge is loaded or the ink ribbon has run out.

`CHECK DOCUMENT`
`REMOVE DOCUMENT`
 	
`CHECK DOCUMENT`
`PRESS STOP KEY`
	■ Document jam
	
	(1) The document length exceeds the limitation (400 or 90 cm) registered by firmware switch WSW16. (Refer to Chapter V, Section 3.5.)
	
	(Both the document front and rear sensors stay ON even after the document has been fed by the registered length.)
	
	(2) The document rear sensor detects no trailing edge of a document after the document has been fed by 400 cm.
	
	(The document rear sensor stays ON even after the document has been fed when the document front and rear sensors were OFF and ON, respectively.)
	
	■ Document loading error
	
	(1) The document rear sensor detects no leading edge of a document within 10 seconds from the start of document loading operation.
	
	(The document rear sensor stays OFF even after the document has been fed when the document front sensor was ON.)
	
	(2) The loaded document is too short.
	
	(Since the document is shorter than the distance between the document front and rear sensors, the document front sensor is turned OFF before the document rear sensor is turned ON.)

`CHECK PAPER`
`RELOAD PAPER`
 	
`CHECK PAPER`
`PRESS START KEY`
 	
(NOTE 1)
	The registration sensor detects no paper when paper should be fed in FAX reception.

(NOTE 1) If a recording paper feeding or ejecting error occurs *in the maintenance mode*, this paper-related error message will not appear on the LCD but some 4-digit error code listed on page VI-6 will appear instead.

Messages on the double-row LCD	Probable Cause

`CHECK  PAPER`
`RELOAD  PAPER`
 	
`CHECK  PAPER`
`PRESS  STOP  KEY`
 	
(NOTE 1)
	The registration sensor detects no paper when paper should be fed in copying or in list/report output.

`CLEAN  UP  SCANNER`	In the scanning compensation data list printed by the maintenance-mode function code 05, less than fifty percent of the white level data is faulty. (This message may appear only in the maintenance mode.)
`COOLING  DOWN` `WAIT  FOR  A  WHILE`	The thermistor in the recording head caused a heat error.
`COVER  OPEN` `PLS  CLOSE  COVER`	The cover sensor detects that the control panel ASSY is not closed.

`MACHINE  ERROR__`
 	
or
 	
`MACHINE  ERR____`
	"_ _" indicates an error code. Refer to [2] in this section.

`PAPER  JAM`
`PLS  OPEN  COVER`
 	
`PAPER  JAM`
`REMOVE  PAPER`
 	
(NOTE 1)
	The registration sensor detects paper present when no paper should exist at the sensor detection area.

`PC  BUSY  OR  FAIL`
`CHECK  PC  CABLE`
 	
`PC  BUSY  OR  FAIL`
`PRESS  STOP  KEY`
	After connected with the host computer, the equipment has received no response from the computer. (A communications error has occurred.)

`SCANNER  ERROR`	In the scanning compensation data list printed by the maintenance-mode function code 05, fifty percent or more of the white level data is faulty. (This message may appear only in the maintenance mode.)

(NOTE 1) If a recording paper feeding or ejecting error occurs *in the maintenance mode*, this paper-related error message will not appear on the LCD but some 4-digit error code listed on page VI-6 will appear instead.

VI - 4

[2] Error codes shown in the "MACHINE ERROR _ _" message

Error Code (Hex.)	Error factor	
(81	Cam sensor error in the drive unit.)	*2
(85	Ink ribbon empty.)	
(87	Fails to complete the sequence of recording operation.)	
8A	Wrong or weak contact of the recording head connectors.	
(8B	Recording head overheat.)	
(A1	Control panel ASSY opened.)	
(A2	Document too long to scan.)	
(A4	50% or more faulty of white level data.)	*1
(A5	Faulty operation of DMA0 during scanning.)	
(A6	Faulty operation of DMA1 during scanning.)	
(A7	One-line feeding time-out error.)	
(A8	One-line scanning time-out error.)	
(AB	Document feed-in amount measuring error.)	*1
(AC	Less than 50% faulty of white level data.)	*1
(B9	Light emission intensity error of the LED array.)	
(BE	Abnormal clamp PWM value)	
(BF	Light emission intensity error of the LED array at the setting time of initial values.)	*1
(D2	Fatal error. The main PCB should be replaced.)	
(D3	Same as above.)	
(D4	Same as above.)	
(D5	The MODEM fails to complete the command transmission sequence.)	
(D6	No MODEM interrupt for 60 seconds.)	
(D7	Fatal error. The main PCB should be replaced.)	
(D8	Same as above.)	
(D9	Same as above.)	
E6	Write error in EEPROM.	
(E8	Data scanning error during transmission.)	
F3	Voice message recording or playing-back not started.	
(F5	EOL not found in page memory transmission mode.)	
(F6	PC interface error.)	
(FF	Fatal error. The main PCB should be replaced.)	

Error codes in parentheses do not appear in the "MACHINE ERROR _ _," since those errors are displayed as messages described in "[1] Error messages on the LCD." You can display those error codes in the maintenance mode (Function code 82). If an equipment error occurs during communications, they appear in the communications error lists.

*1 These error codes could appear only in the maintenance mode.
*2 These errors could occur only in machines equipped with an improved type of drive unit.

| Error Code (Hex.)	Error factor
(8101	The cam sensor sticks to OFF.) *
(8102	The cam sensor sticks to ON.) *
(8103	At the unexpected timing, the cam sensor detects the switching cam being in the home position.) *
(8104	The cam sensor cannot detect the home position of the switching cam even after one full turn of the cam.) *
(8105	After coming ON, the cam sensor cannot go OFF even if the switching cam turns in the reverse direction.) *
(82xx	Although recording paper has been fed by 150 mm after the start of recording, the registration sensor is still OFF.)
(8303	Although recording paper has been fed by 360 mm after the start of recording, the registration sensor is still ON.)
(8809	Before the start of paper feeding, the registration sensor is already ON.)
(880B	The registration sensor is ON when you turn the power on or after you open and close the control panel ASSY.
(A301	In document scanning, the document front sensor goes OFF although the document rear sensor is still OFF.)
(A302	In document scanning, the document rear sensor is still OFF although a document has passed through the document front sensor.)
(A303	In document ejecting caused by any of the following, the document front sensor goes OFF but the document rear sensor remains OFF: - Depression of the **STOP** key in midway of scanning. - Illegal copying (Copying a document longer than the recording paper or making an enlargement copy larger than the recording paper). - Recovery operation from the error state (e.g., "DOCUMENT JAM" and "CHECK PAPER" error.)
(A304	In document ejecting caused by any of the following, the document rear sensor sticks to OFF: - Depression of the **STOP** key in midway of scanning. - Illegal copying (Copying a document longer than the recording paper or making an enlargement copy larger than the recording paper). - Recovery operation from the error state (e.g., "DOCUMENT JAM" and "CHECK PAPER" error.)
(A307	In document scanning, the document rear sensor remains ON although the document has been fed by the specified amount after the document front sensor went OFF.)
(A308	In document ejecting caused by any of the following, the document rear sensor remains ON although the document has been fed by the specified amount after the document front sensor went OFF: - Depression of the **STOP** key in midway of scanning. - Illegal copying (Copying a document longer than the recording paper or making an enlargement copy larger than the recording paper). - Recovery operation from the error state (e.g., "DOCUMENT JAM" and "CHECK PAPER" error.)

* These errors could occur only in machines equipped with improved drive units.

VI - 6

NOTE: Four-digit error codes listed above are preceded by MACHINE ERR instead of MACHINE ERROR.

Error codes in parentheses do not appear in the "MACHINE ERR _ _ _ _," since those errors are displayed as messages described in "[1] Error messages on the LCD." You can display those error codes in the maintenance mode (Function code 82). If an equipment error occurs during communications, they appear in the communications error lists.

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.

VI - 8

■ **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.

VI - 9

(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.

VI - 10

(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.

VI - 11

(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.

VI - 12

(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.
B0	04	PC interface error.

VI - 13

(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.
E0	03	Failed to detect any command from the RS-232C interface in burn-in operation.

(13) Equipment error

Code 1	Code 2	Causes
FF	X X	Equipment error (For X X, refer to Section 1.1 [2].)

VI - 14

2. TROUBLESHOOTING

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.

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 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.

2.3 Checking prior to Troubleshooting

Prior to proceeding to the troubleshooting procedures given in Section 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.

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, NCU PCB and power supply PCB • LCD • Control panel PCB • Power supply PCB • NCU PCB • Main PCB
(2) Control panel inoperative.	• Panel-main harness between the main PCB and the control PCB • Interfaces between the main PCB, NCU PCB and power supply PCB • Control panel PCB • FPC key • Main PCB

[2] Telephone related

Trouble	Check:
(1) No phone call can be made.	• FPC key • Control panel PCB by using the maintenance-mode function code 13. If any defective keys are found, replace them. (Refer to Chapter V, Section 3.7, "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

VI - 16

[3] Communications related

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

[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 V, Section 3.8, "Sensor Operational Check".) • Document front sensor actuator and rear sensor actuator • Control panel PCB and its harness • Main PCB
(2) Document not fed.	• ADF and its related sections • Drive motor and its harness • LF roller and its related gears • Arm HP switch and the planetary gear train • Main PCB
(3) Recording paper not fed.	• ACF and its related sections • Drive motor and its harness • Platen and its related gears • Arm HP switch and the 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	• Main PCB • CIS unit • CIS-main harness
At the recorder	• Main-head harness and head-power harness • Compression springs beneath the recording head • Recording head • Main PCB
(2) White vertical streaks At the scanner	• CIS unit
At the recorder	• Recording head
(3) All black At the scanner	• CIS-main harness • CIS unit • Main PCB
At the recorder	• Main-head harness and head-power harness • Recording head • Main PCB
(4) Black vertical streaks At the scanner	• CIS unit
At the recorder	• Recording head
(5) Light or dark At the scanner	• CIS unit • Main PCB
At the recorder	• Compression springs beneath the recording head • Position of the head adjuster
(6) Faulty image registration At the scanner	• CIS-main harness • CIS unit • Main PCB
At the recorder	• Main-head harness and head-power harness • Main PCB • Recording head

VI - 18

Trouble	Check:
(7) Image distortion <u>In communications</u>	• Error code displayed (Refer to Section 1, "ERROR INDICATION" in this chapter.) • NCU PCB • Main PCB
<u>At the scanner</u>	• Separation roller and its related sections • Document LF roller and its related gears • Arm HP switch and the 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 • Arm HP switch and the planetary gear train • Drive motor and its harness • Main PCB

[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.

**FAX560/FAX580MC/MFC660MC
FAX-T72/FAX-T74/FAX-T76/FAX-T78
FAX-T82/FAX-T84/FAX-T86
FAX645/FAX685MC/MFC960MC
FAX1280/FAX1980MC/FAX816**

Appendix 1. EEPROM Customizing Codes

EEPROM Customizing Codes

This function allows you to customize the EEPROM according to language, function settings, and firmware switch settings. The customizing codes list is given on the next page.

■ Operating Procedure

|←— Within 2 seconds —→|

(1) American models: Press the **Function**, *****, **2**, **8**, **6**, and **4** keys in this order to make the equipment enter the maintenance mode.

|←— Within 2 seconds —→|

European models: Press the **Menu**, *****, **2**, **8**, **6**, and **4** keys in this order to make the equipment enter the maintenance mode.

FAX645/FAX685MC/MFC960MC: For the Oceanic version of those models, apply the description given for European models; for the Asian version, apply that given for American models.

The equipment 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 (e.g., 9001 in the case of FAX560 U.S.A. versions) appears.

(3) Enter the desired customizing code (e.g., 0002 in the case of FAX580MC Canadian versions).

The newly entered code appears.

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

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

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

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

■ EEPROM Customizing Codes List

Versions	Model		
	FAX560	FAX580MC	MFC660MC
U.S.A.	9001	9001	9101
CANADA	0002	0002	—
ARGENTINA	0035	0035	—
SOUTH AMERICA	0035	0035	—
BRAZIL	0042	0042	—
MEXICO	0035	0035	0035

Versions	Model		
	FAX560 (FAX1280)	FAX580MC (FAX1980MC)	—
China	0020	0020	—

Versions	Model		
	FAX560 (FAX645/FAX816)	FAX580MC (FAX685MC)	FAX660MC (MFC960MC)
AUSTRALIA	0006	0006	0006
NEW ZEALAND	0027	0027	—
TAIWAN	0023	—	—
HONG KONG	0040	0040	—
ASIA	0040	0040	—
GULF	0041	0041	—
RUSSIA	0040	0040	—

Versions	Model			
	FAX-T72	FAX-T74	FAX-T76	FAX-T78
GERMANY	0003	0003	0003	0003
UK	—	0004	0004	0004
FRANCE	0005	0005	0005	0005
NORWAY	—	0007	0007	—
BELGIUM	—	0008	0008	0008
NETHERLANDS	—	0009	0009	—
SWITZERLAND	0010	0010	0010	0010
IRELAND	—	0011	0011	—
FINLAND	—	0012	0012	—
DENMARK	—	0013	0013	—
AUSTRIA	—	0014	0014	0014
SPAIN	0015	0015	0015	0015
ITALY	—	0016	0016	0016
SOUTH AFRICA	—	0004	0004	—
SWEDEN	—	0026	0026	—
GENERIC	—	0004	0004	0004

Versions	Model		
	FAX-T82	FAX-T84	FAX-T86
GERMANY	0003	0003	0003
UK	—	0004	0004
FRANCE	0005	0005	0005
NORWAY	—	0007	0007
BELGIUM	—	0008	0008
NETHERLANDS	—	0009	0009
SWITZERLAND	0010	0010	0010
IRELAND	—	0011	0011
FINLAND	—	0012	0012
DENMARK	—	0013	0013
AUSTRIA	0003	0014	0014
SPAIN	0015	0015	0015
ITALY	—	0016	0016
ISRAEL	—	0004	0004
PORTUGAL	—	0018	0018
SOUTH AFRICA	—	0004	0004
SWEDEN	—	0026	0026
CZECH	—	0037	0037
POLAND	—	0039	0039
GENERIC	—	0004	0004

FAX560/FAX580MC/MFC660MC
FAX-T72/FAX-T74/FAX-T76/FAX-T78
FAX-T82/FAX-T84/FAX-T86
FAX645/FAX685MC/MFC960MC
FAX1280/FAX1980MC/FAX816

Appendix 2. Circuit Diagrams

A. Main PCB
B. Network Control Unit (NCU) PCB
C. Control Panel PCB
D. Power Supply PCB

セラC： Ceramic capacitor

Main PCB 1/5
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

A

Main PCB 2/5
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

A

Main PCB 3/5
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

A

セラC： Ceramic capacitor

Main PCB 4/5
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

A

セラC： Ceramic capacitor

Main PCB parts list

			'00.3.9	'00.3.9	'00.5.26	'00.6.30	'00.6.19	'00.6.19	'00.7.25	'00.7.18	'00.7.18	'00.7.18
			01: US	05: GULF	27: NZ	21: EUR	22: ASIA	23: AUSTRAL	24: TWN	25: SWITZ	26: W/O TEL	28: W/OTEL, SWITZ
PAGE	NOTE	ADDRESS	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME	PART CODE / PART NAME
	MAIN PCB ASSY		LG2572001 B53K465S	LG2572001 B53K465S	LG2780001 B53K465 (NZ)	LG2724021 B53K465 (EUR)	LG2735022 B53K465 (ASA)	LG2724023 B53K465 (ASA)	LG2735024 B53K465 (EUR)	LG2724025 B53K465 (EUR)	LG2877026 B53K465 W/O TEL	LG2877028 B53K465 W/O TEL
1	H/S	L2,L5	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	UG6705000 BEAD:B102S	UG6705000 BEAD:B102S	UG6705000 BEAD:B102S	UG6705000 BEAD:B102S	UG6705000 BEAD:B102S	Not assy	Not assy
	DAREC	R45	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	Not assy	Not assy	Not assy	094103020 GR-C116J103	Not assy	Not assy	Not assy
		C31	Y81042402 CC25C104	Y81042402 CC25C104	Y81042402 CC25C104	Not assy	Not assy	Y81042402 CC25C104	Y81042402 CC25C104	Not assy	Not assy	Not assy
	DAST	R33	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	094103020 GR-C116J103	Not assy	Not assy	Not assy
		C25	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Y81042402 CC25C104	Not assy	Not assy	Not assy
	BACK UP	C2	UG1595000 EC5.5B473	UG6771000 EC5.5B224	UG1595000 EC5.5B473	UG1595000 EC5.5B473	UG6771000 EC5.5B224	UG1595000 EC5.5B473	UG6771000 EC5.5B224	UG1595000 EC5.5B473	UG1595000 EC5.5B473	UG1595000 EC5.5B473
	TLSL	R8,R11	094243000 GR-C116F243	094243000 GR-C116F243	094243000 GR-C116F243	094103000 GR-C116F103	094203000 GR-C116F203	094103000 GR-C116F103	094103000 GR-C116F103	094103000 GR-C116F103	Not assy	Not assy
		R6,R14	094394020 GR-C116J394	094394020 GR-C116J394	094394020 GR-C116J394	094274000 GR-C116F274	094274000 GR-C116F274	094274000 GR-C116F274	094274000 GR-C116F274	094274000 GR-C116F274	Not assy	Not assy
		C10,C15	Y72212112 CC50C221CH	Y72212112 CC50C221CH	Y72212112 CC50C221CH	Y73912112 CC50C391CH	Y73912112 CC50C391CH	Y73912112 CC50C391CH	Y73912112 CC50C391CH	Y73912112 CC50C391CH	Not assy	Not assy
	TLRL	Q5	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	UG3551000 FET2SK1399	Not assy	Not assy	Not assy
		R19	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	094152020 GR-C116J152	Not assy	Not assy	Not assy
	PCI	CN5	Not assy	U78222000 B8B-PH-K-S	U78222000 B8B-PH-K-S	W00329001 B2B-PH	U78222000 B8B-PH-K-S	U78222000 B8B-PH-K-S	U78222000 B8B-PH-K-S	W00329001 B2B-PH	W00329001 B2B-PH	W00329001 B2B-PH
		C100 (Added)	Not assy	Not assy	Not assy	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH
		C102 (Added)	Not assy	Not assy	Not assy	Not assy	Not assy	Y71012112 CC50C101CH	Not assy	Not assy	Not assy	Not assy
	HREF	C101 (Added)	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Y42212592 EC16B221	Not assy	Not assy
	PCLK	C62	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy
	RFON	Q14	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	YF0144240 DTA123YUA	Not assy	094000020 GR-C116J000	094000020 GR-C116J000
		R61	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	Not assy	094000020 GR-C116J000	YF0144240 DTA123YUA
3	SEON	Q7	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	YF0144240 DTA123YUA	Not assy	YF0144240 DTA123YUA	YF0144240 DTA123YUA
		R24	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	Not assy	094000020 GR-C116J000	Not assy
4	NCU CN	CN12	LG2669001 CN9110S-11L	LG2669001 CN9110S-11L	LG2669001 CN9110S-11L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L	LG2298001 CN9110S-15L
	CI	R86	094223020 GR-C116J223	094223020 GR-C116J223	094223020 GR-C116J223	094223020 GR-C116J223	094124020 GR-C116J124	094124020 GR-C116J124	094223020 GR-C116J223	094223020 GR-C116J223	094223020 GR-C116J223	094223020 GR-C116J223
		C64	Y81030012 CC50C103B	Y81030012 CC50C103B	Y81030012 CC50C103B	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH	Y71012112 CC50C101CH
	POL	R89	094223020 GR-C116J223	094223020 GR-C116J223	094223020 GR-C116J223	094274020 GR-C116J274	094223020 GR-C116J223	094274020 GR-C116J274	094223020 GR-C116J223	094274020 GR-C116J274	094274020 GR-C116J274	094274020 GR-C116J274
	ADLC	R87	Not assy	Not assy	Not assy	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103
	SL	R73,R103	094563020 GR-C116J563	094563020 GR-C116J563	094563020 GR-C116J563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563
		R102	094753020 GR-C116J753	094753020 GR-C116J753	094753020 GR-C116J753	094753000 GR-C116F753	094753000 GR-C116F753	094753000 GR-C116F753	094753000 GR-C116F753	094753000 GR-C116F753	094753000 GR-C116F753	094753000 GR-C116F753
		R108	094332000 GR-C116F332	094332000 GR-C116F332	094332000 GR-C116F332	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152
		C79	Not assy	Not assy	Not assy	Y81052442 CC10C105	Y81052442 CC10C105	Y81052442 CC10C105	Y81052442 CC10C105	Y81052442 CC10C105	Y81052442 CC10C105	Y81052442 CC10C105
		C82	Y81030012 CC50C103B	Y81030012 CC50C103B	Y81030012 CC50C103B	Y82730002 CC25C273B	Y82730002 CC25C273B	Y82730002 CC25C273B	Y82730002 CC25C273B	Y82730002 CC25C273B	Y82730002 CC25C273B	Y82730002 CC25C273B
		R106	094822000 GR-C116F822	094822000 GR-C116F822	094822000 GR-C116F822	094752000 GR-C116F752	094752000 GR-C116F752	094752000 GR-C116F752	094752000 GR-C116F752	094752000 GR-C116F752	094752000 GR-C116F752	094752000 GR-C116F752
		R98	094563020 GR-C116J563	094563020 GR-C116J563	094473020 GR-C116J473	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563	094563000 GR-C116F563
		C85	UG3576000 EC50B22-1	UG3576000 EC50B22-1	UG3576000 EC50B22-1	Y41002292 EC16B100	Y41002292 EC16B100	Y41002292 EC16B100	Y41002292 EC16B100	Y41002292 EC16B100	Y41002292 EC16B100	Y41002292 EC16B100
		C80	Y81042402 CC25C104	Y81042402 CC25C104	Y81042402 CC25C104	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy
		R113	094104020 GR-C116J104	094104020 GR-C116J104	094104020 GR-C116J104	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy
		R112	Not assy	Not assy	Not assy	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103	094103020 GR-C116J103
		ZD4	Not assy	Not assy	Not assy	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2	UG3113000 ZDMTZJ8.2
		ZD1,ZD2	Not assy	Not assy	Not assy	Not assy	Not assy	LG2782001 ZD02D5.1	Not assy	Not assy	Not assy	Not assy
	TLSL	R71	094182000 GR-C116F182	094182000 GR-C116F182	094182000 GR-C116F182	094000020 GR-C116J000	094000020 GR-C116J000	094182000 GR-C116F182	094182000 GR-C116F182	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000
		R70	094182000 GR-C116F182	094182000 GR-C116F182	094182000 GR-C116F182	Not assy	Not assy	Not assy	094182000 GR-C116F182	Not assy	Not assy	Not assy
	TLRL	Q3	LG2002001 FET2SK208-Y	LG2002001 FET2SK208-Y	LG2002001 FET2SK208-Y	Not assy	Not assy	Not assy	UG2593000 FET2SK208	Not assy	Not assy	Not assy
		R10	094204020 GR-C116J204	094204020 GR-C116J204	094204020 GR-C116J204	094393000 GR-C116F393	094563000 GR-C116F563	094563000 GR-C116F563	094393000 GR-C116F393	094393000 GR-C116F393	Not assy	Not assy
		R9	094104020 GR-C116J104	094104020 GR-C116J104	094104020 GR-C116J104	094393000 GR-C116F393	094393000 GR-C116F393	094393000 GR-C116F393	094333000 GR-C116F333	094393000 GR-C116F393	Not assy	Not assy
		C12	Y81020012 CC50C102B	Y81020012 CC50C102B	Y81020012 CC50C102B	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy	Not assy
		C14	Y81030012 CC50C103B	Y81030012 CC50C103B	Y81030012 CC50C103B	Y81042402 CC25C104	Y81042402 CC25C104	Y81042402 CC25C104	Y81030012 CC50C103B	Y81042402 CC25C104	Not assy	Not assy
		R12	094822000 GR-C116F822	094822000 GR-C116F822	094822000 GR-C116F822	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094102000 GR-C116F102	094000020 GR-C116J000	Not assy	Not assy
		R5	094822000 GR-C116F822	094822000 GR-C116F822	094822000 GR-C116F822	Not assy	Not assy	Not assy	094681000 GR-C116F681	Not assy	Not assy	Not assy
	SRL	R110	094621020 GR-C116J621	094621020 GR-C116J621	094391020 GR-C116J391	094152000 GR-C116F152	094911000 GR-C116F911	094112000 GR-C116F112	094911000 GR-C116F911	094152000 GR-C116F152	094152000 GR-C116F152	094152000 GR-C116F152
		C76	Not assy	Not assy	Not assy	Y85630032 CC16C563B	Y85630032 CC16C563B	Y85630032 CC16C563B	Y85630032 CC16C563B	Y85630032 CC16C563B	Y85630032 CC16C563B	Y85630032 CC16C563B
		R94,R99	094104000 GR-C116F104	094104000 GR-C116F104	094124020 GR-C116J124	094683000 GR-C116F683	094683000 GR-C116F683	094683000 GR-C116F683	094683000 GR-C116F683	094683000 GR-C116F683	094683000 GR-C116F683	094683000 GR-C116F683
		C67,C70	Y72212112 CC50C221CH	Y72212112 CC50C221CH	Y72212112 CC50C221CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH	Y75612112 CC50C561CH
		R109	094562020 GR-C116J562	094562020 GR-C116J562	094472020 GR-C116J472	094392000 GR-C116F392	094472000 GR-C116F472	094272000 GR-C116F272	094472020 GR-C116F472	094392000 GR-C116F392	094392000 GR-C116F392	094392000 GR-C116F392
		R105	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094202000 GR-C116F202	Y81040032 CC16C104B	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000	094000020 GR-C116J000
		R101	094912020 GR-C116J912	094912020 GR-C116J912	094103020 GR-C116J103	094392000 GR-C116F392	094512000 GR-C116F512	094333020 GR-C116F332	094512000 GR-C116F512	094392000 GR-C116F392	094392000 GR-C116F392	094392000 GR-C116F392
		C78	Not assy	Not assy	Not assy	Y88220012 CC50C822	Not assy	Y81030012 CC50C103B	Y88220012 CC50C822	Not assy	Y88220012 CC50C822	Y88220012 CC50C822
		C75	Not assy	Not assy	Not assy	Not assy	Not assy	Y81040032 CC16C104B	Not assy	Not assy	Not assy	Not assy
		C73	Not assy	Not assy	Not assy	Not assy	Y81030012 CC50C103B	Not assy	Y81030012 CC50C103B	Not assy	Not assy	Not assy

CC: Ceramic capacitor
EC: Aluminum electrolytic capacitor
CN: Connector

A	**Main PCB 5/5** (FAX560/FAX645/FAX816/ FAX1280/FAX-T72/FAX-T74/ FAX-T82/FAX-T84)

セラC： Ceramic capacitor

Main PCB 1/5
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

A

セラ C： Ceramic capacitor

Main PCB 2/5
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

A

セラC： Ceramic capacitor

Main PCB 3/5
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

A

セラ C ： Ceramic capacitor

Main PCB 4/5
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

A

PAGE	NOTE	ADDRESS	11: US ('00.3.9) PART CODE	PART NAME	27: NZ ('00.5.26) PART CODE	PART NAME	31: EUR ('00.6.29) PART CODE	PART NAME	32: ASIA ('00.6.19) PART CODE	PART NAME	33: AUSTRAL ('00.6.19) PART CODE	PART NAME	34: SWITZ PART CODE	PART NAME
			LG2671011	MAIN PCB ASSY B53K472S	LG2781001	MAIN PCB ASSY B53K472 (NZ)	LG2725031	MAIN PCB ASSY B53K472 (EU)	LG2762032	MAIN PCB ASSY B53K472 (ASA)	LG2725033	MAIN PCB ASSY B53K472 (ARL)	LG2725034	MAIN PCB ASSY B53K472 (EU)
1	DAREC	R27	094103020	GR-C116J103	094103020	GR-C116J103	Not assy		Not assy		Not assy		Not assy	
		C24	Y81042402	CC25C104	Y81042402	CC25C104	Not assy		Not assy		Not assy		Not assy	
	TLSL	R17,R19	094243000	GR-C116F243	094243000	GR-C116F243	094103000	GR-C116F103	094203000	GR-C116F203	094103000	GR-C116F103	094103000	GR-C116F103
		R15,R21	094394020	GR-C116J394	094394020	GR-C116J394	094274000	GR-C116F274	094274000	GR-C116F274	094274000	GR-C116F274	094274000	GR-C116F274
		C19,C22	Y72212112	CC50C221CH	Y72212112	CC50C221CH	Y73912112	CC50C391CH	Y73912112	CC50C391CH	Y73912112	CC50C391CH	Y73912112	CC50C391CH
	PCLK	C81	Y71012112	CC50C101CH	Y71012112	CC50C101CH	Not assy		Not assy		Not assy		Not assy	
3	SEON	Q11	Not assy		Not assy		Not assy		Not assy		Not assy		YF0144240	DTA123YUA
		R31	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000	Not assy	
4	NCU CN	CN13	LG2669001	CN 9110S-11L	LG2669001	CN 9110S-11L	LG2298001	CN 9110S-15L	LG2298001	CN 9110S-15L	LG2298001	CN 9110S-15L	LG2298001	CN 9110S-15L
	CI	R114	094223020	GR-C116J223	094223020	GR-C116J223	094223020	GR-C116J223	094124020	GR-C116J124	094124020	GR-C116J124	094223020	GR-C116J223
	POL	R112	094223020	GR-C116J223	094223020	GR-C116J223	094274020	GR-C116J274	094274020	GR-C116J274	094274020	GR-C116J274	094274020	GR-C116J274
	SL	R81, R126	094563020	GR-C116J563	094563020	GR-C116J563	094563000	GR-C116F563	094563000	GR-C116F563	094563000	GR-C116F563	094563000	GR-C116F563
		R129	094753020	GR-C116J753	094753020	GR-C116J753	094753000	GR-C116F753	094753000	GR-C116F753	094753000	GR-C116F753	094753000	GR-C116F753
		R78	094332020	GR-C116F332	094332000	GR-C116F332	094152000	GR-C116F152	094152000	GR-C116F152	094152000	GR-C116F152	094152000	GR-C116F152
		C61	Y81030012	CC50C103B	Y81030012	CC50C103B	Y82730002	CC25C273	Y82730002	CC25C273	Y82730002	CC25C273	Y82730002	CC25C273
		R134	094822000	GR-C116F822	094822000	GR-C116F822	094752000	GR-C116F752	094752000	GR-C116F752	094752000	GR-C116F752	094752000	GR-C116F752
		R131	094563020	GR-C116J563	094473020	GR-C116J473	094563000	GR-C116F563	094563000	GR-C116F563	094563000	GR-C116F563	094563000	GR-C116F563
		C2	UG3576000	EC50B22-1	UG3576000	EC50B22-1	Y41002292	EC16B100	Y41002292	EC16B100	Y41002292	EC16B100	Y41002292	EC16B100
		R137	094104020	GR-C116J104	094104020	GR-C116J104	Not assy		Not assy		Not assy		Not assy	
		C101	Y81042402	CC25C104	Y81042402	CC25C104	Not assy		Not assy		Not assy		Not assy	
		R133	Not assy		Not assy		094103020	GR-C116J103	094103020	GR-C116J103	094103020	GR-C116J103	094103020	GR-C116J103
		ZD3	Not assy		Not assy		UG3113000	ZDMTZJ8.2	UG3113000	ZDMTZJ8.2	UG3113000	ZDMTZJ8.2	UG3113000	ZDMTZJ8.2
		ZD1, ZD2	Not assy		Not assy		Not assy		Not assy		LG2782001	ZD02DZ5.1	Not assy	
	TLSL	R74	094182000	GR-C116F182	094182000	GR-C116F182	094000020	GR-C116J000	094000020	GR-C116J000	094182000	GR-C116F182	094000020	GR-C116J000
		R73	094182000	GR-C116F182	094182000	GR-C116F182	Not assy		Not assy		Not assy		Not assy	
	TLRL	Q7	LG2002001	FET2SK208-Y	LG2002001	FET2SK208-Y	Not assy		Not assy		Not assy		Not assy	
		R13	094304020	GR-C116J304	094304020	GR-C116J304	094623000	GR-C116F623	094623020	GR-C116J623	094753000	GR-C116F753	094623000	GR-C116F623
		R14	094104020	GR-C116J104	094104020	GR-C116J104	094393000	GR-C116F393	094393000	GR-C116F393	094393000	GR-C116F393	094393000	GR-C116F393
		C17	Y81020012	CC50C102B	Y81020012	CC50C102B	Not assy		Not assy		Not assy		Not assy	
		C18	Y81030012	CC50C103B	Y81030012	CC50C103B	Y81042402	CC25C104	Y81042402	CC25C104	Y81042402	CC25C104	Y81042402	CC25C104
		R10	094822000	GR-C116F822	094822000	GR-C116F822	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000
		R12	094822000	GR-C116F822	094822000	GR-C116F822	Not assy		Not assy		Not assy		Not assy	
	SRL	R125	094621020	GR-C116J621	094391020	GR-C116J391	094152000	GR-C116F152	094911000	GR-C116F911	094112000	GR-C116F112	094152000	GR-C116F152
		C95	Not assy		Y81040032	CC16C104B	Y85630032	CC16C563B	Not assy		Y85630032	CC16C563B	Y85630032	CC16C563B
		R119, R122	094104000	GR-C116F104	094124020	GR-C116J124	094683000	GR-C116F683	094683000	GR-C116F683	094683000	GR-C116F683	094683000	GR-C116F683
		C89, C93	Y72212112	CC50C221CH	Y72212112	CC50C221CH	Y75612112	CC50C561CH	Y75612112	CC50C561CH	Y75612112	CC50C561CH	Y75612112	CC50C561CH
		R136	094562020	GR-C116J562	094472020	GR-C116J472	094392000	GR-C116F392	094472000	GR-C116F472	094272000	GR-C116F272	094392000	GR-C116F392
		R135	094000020	GR-C116J000	094000020	GR-C116J000	094000020	GR-C116J000	094202000	GR-C116F202	Y81040032	CC16C104B	094000020	GR-C116J000
		R128	094912020	GR-C116J912	094103020	GR-C116J103	094392000	GR-C116F392	094512000	GR-C116F512	094332000	GR-C116F332	094392000	GR-C116F392
		C100	Not assy		Not assy		Y88220012	CC50C822	Not assy		Y81030012	CC50C103B	Y88220012	CC50C822
		C99	Not assy		Not assy		Not assy		Not assy		Y81040032	CC16C104B	Not assy	
		C94	Not assy		Not assy		Not assy		Y81030012	CC50C103B	Not assy		Not assy	

CC: Ceramic capacitor
EC: Aluminum electrolytic capacitor
CN: Connector

A	**Main PCB 5/5** (FAX580MC/FAX685MC/FAX1980MC/ FAX-T76/ FAX-T86/MFC660MC/ MFC960MC)

セラC： Ceramic capacitor

Main PCB 1/4
(FAX-T78)

A

Main PCB 2/4
(FAX-T78)

A

セラC： Ceramic capacitor

Main PCB 3/4
(FAX-T78)

A

セラC： Ceramic capacitor

Main PCB 4/4
(FAX-T78)

A

セラC： Ceramic capacitor

Main PCB 1/4
(FAX560 for U.S.A.)

A

B53K529

セラC： Ceramic capacitor

Main PCB 2/4
(FAX560 for U.S.A.)

A

B53K529

セラ C： Ceramic capacitor

Main PCB 3/4
(FAX560 for U.S.A.)

A

B53K529

セラC： Ceramic capacitor

Main PCB 4/4
(FAX560 for U.S.A.)

A

B53K529

セラ C： Ceramic capacitor
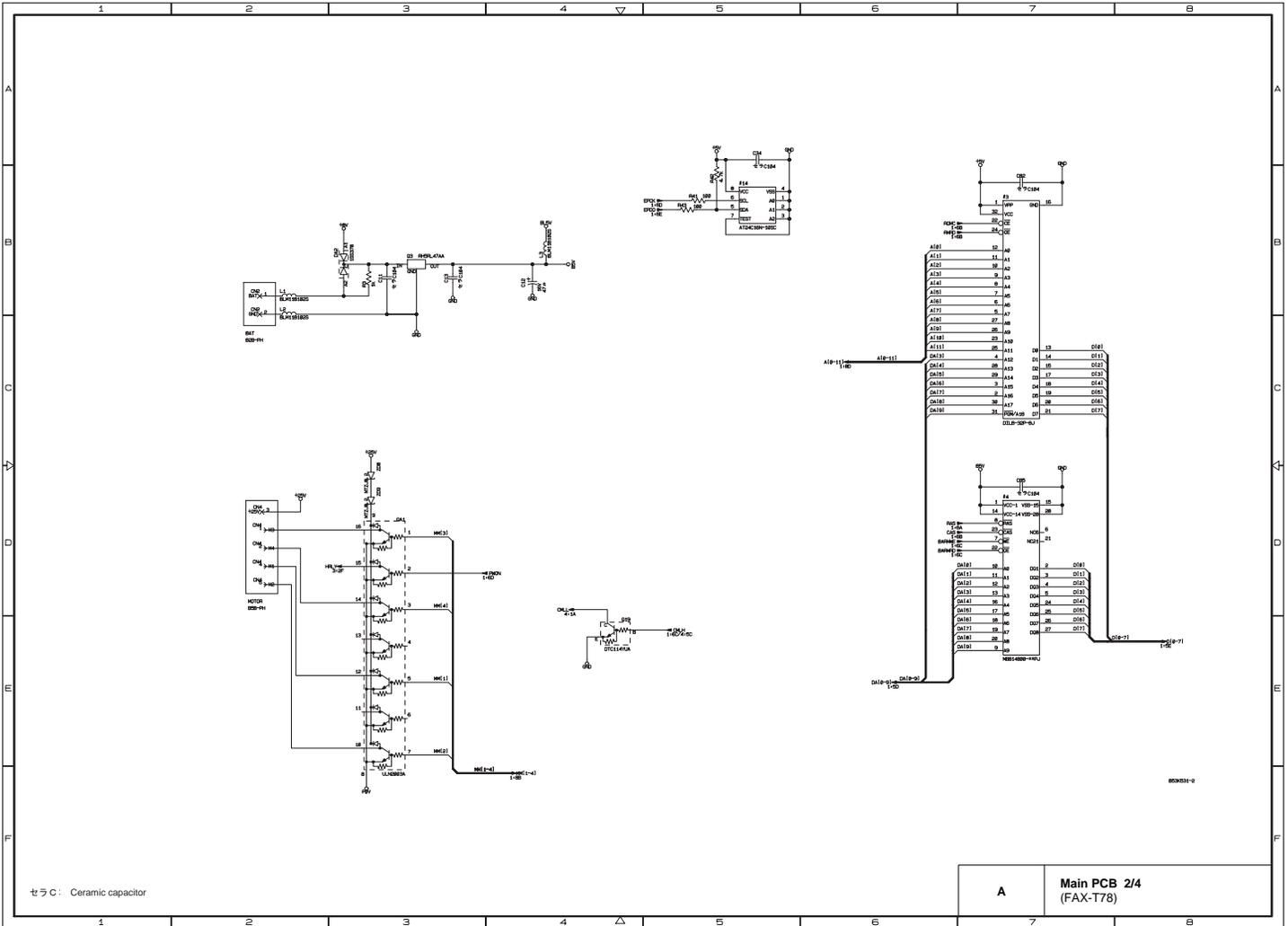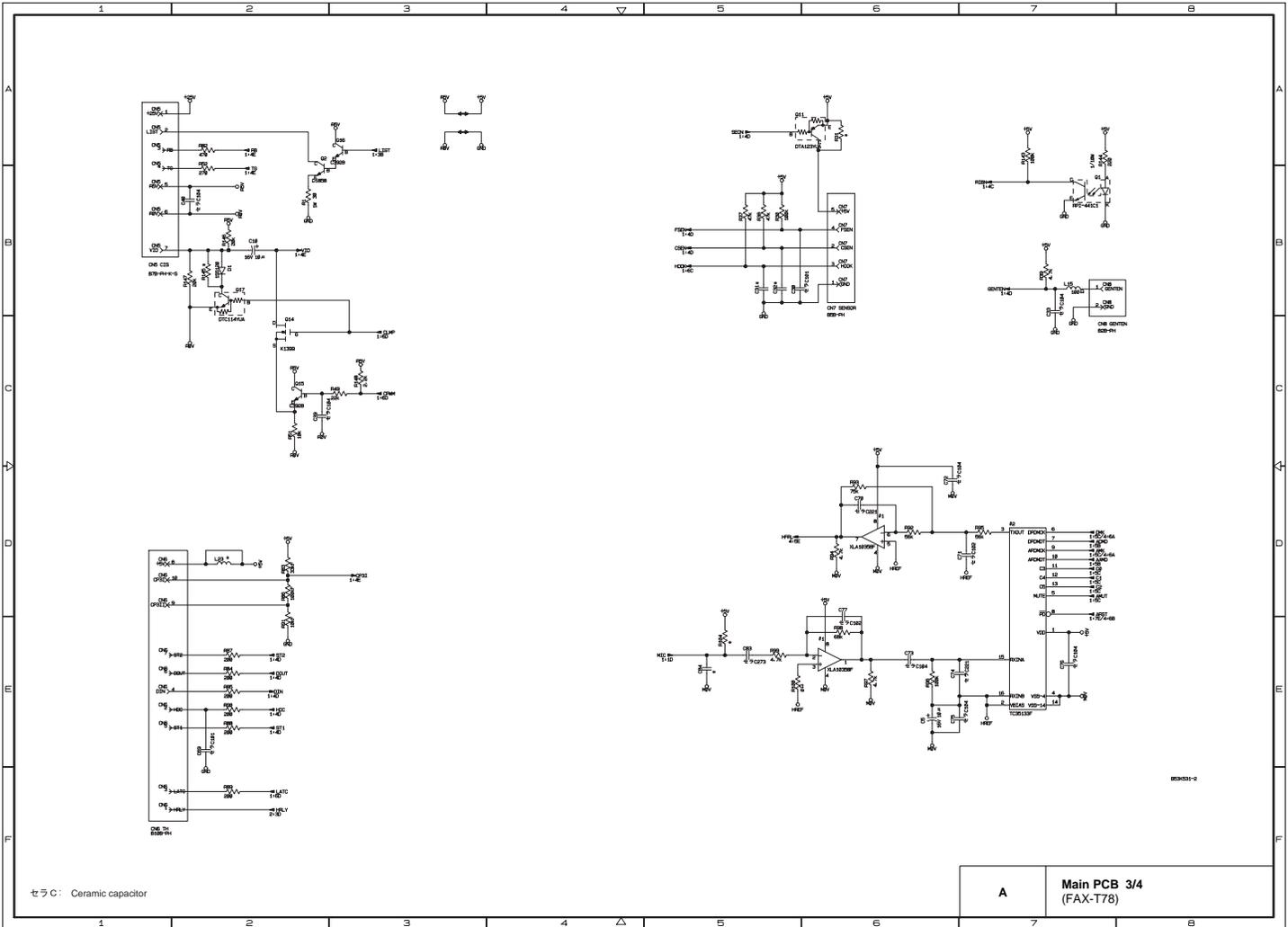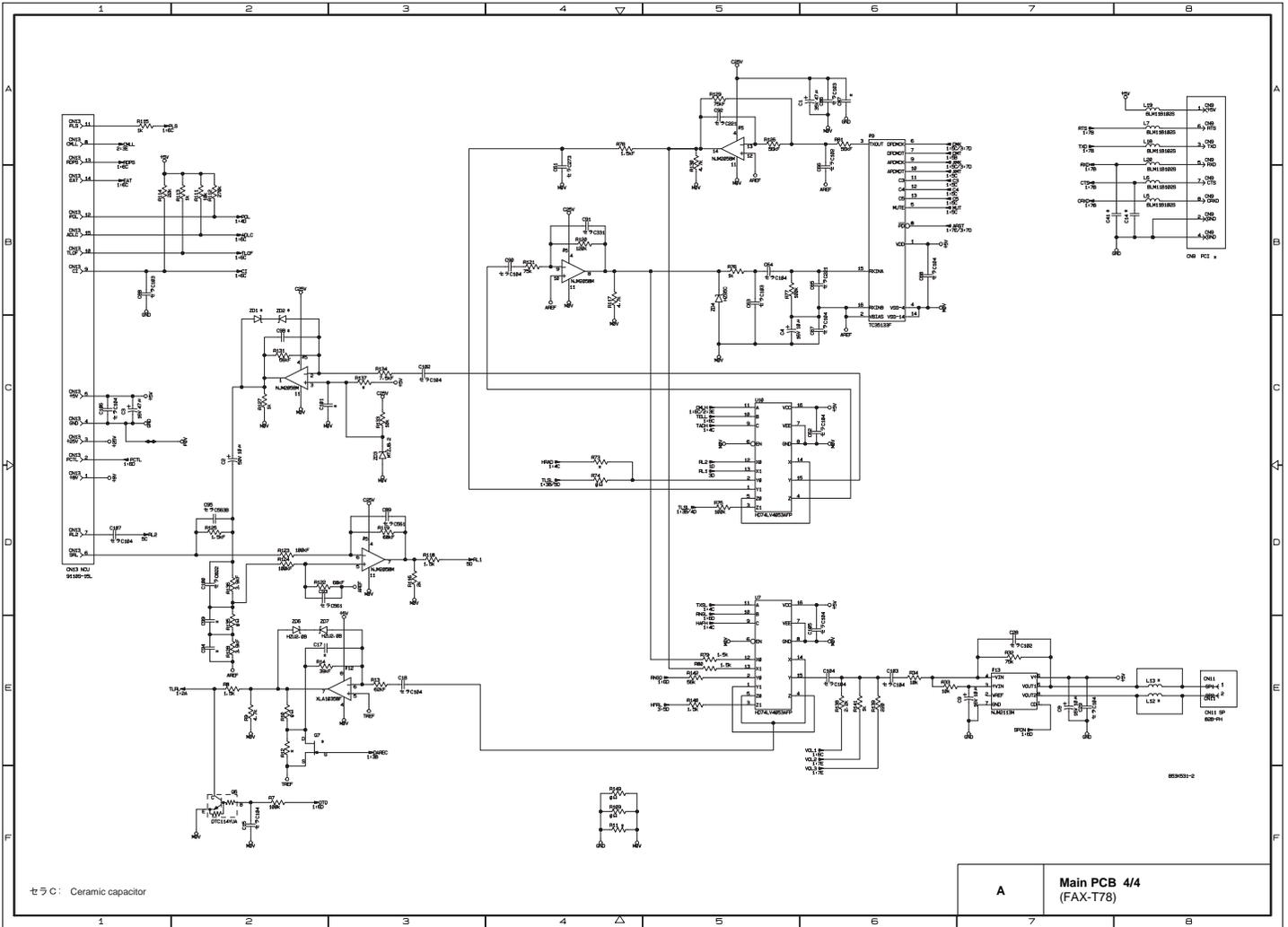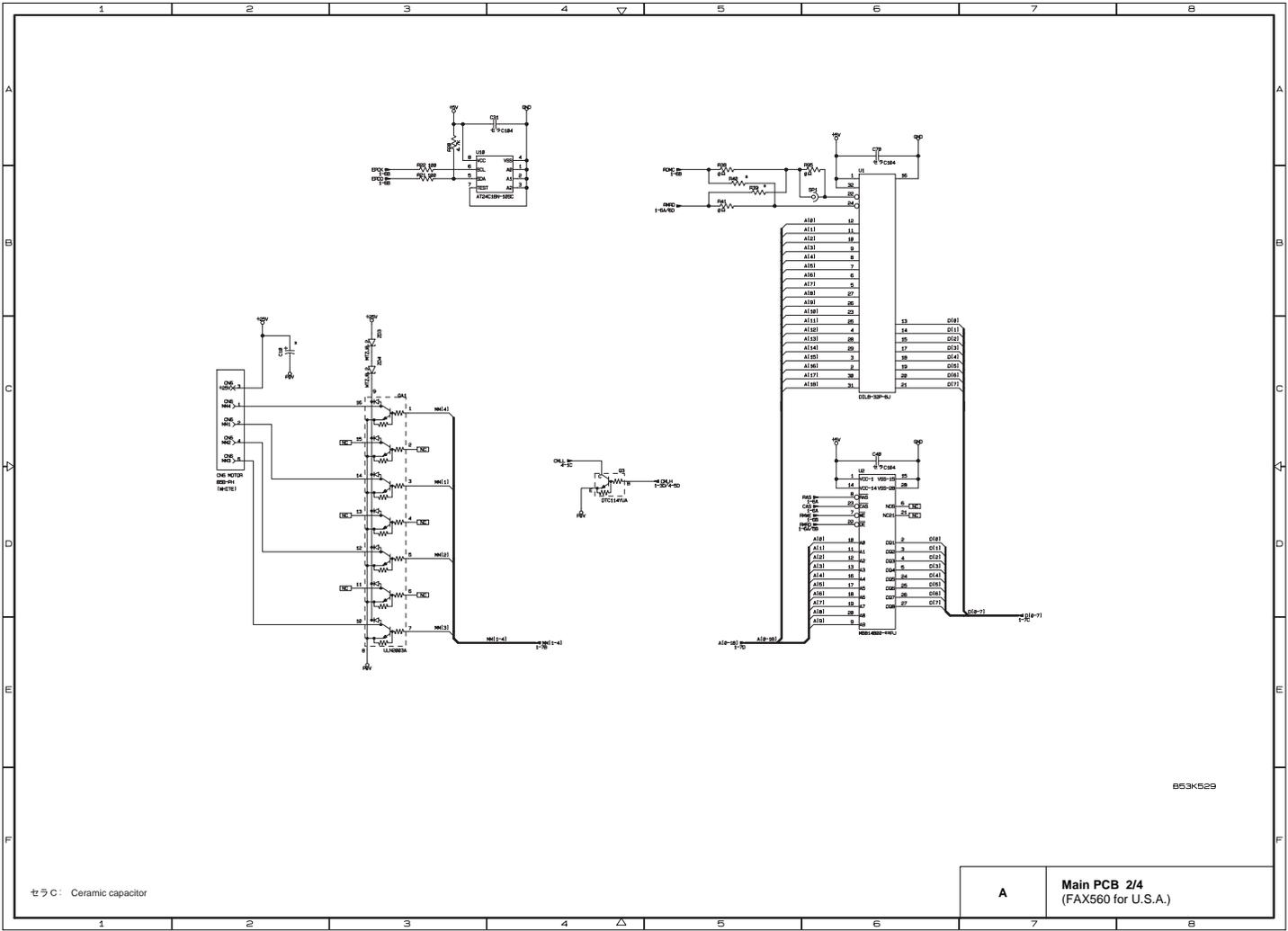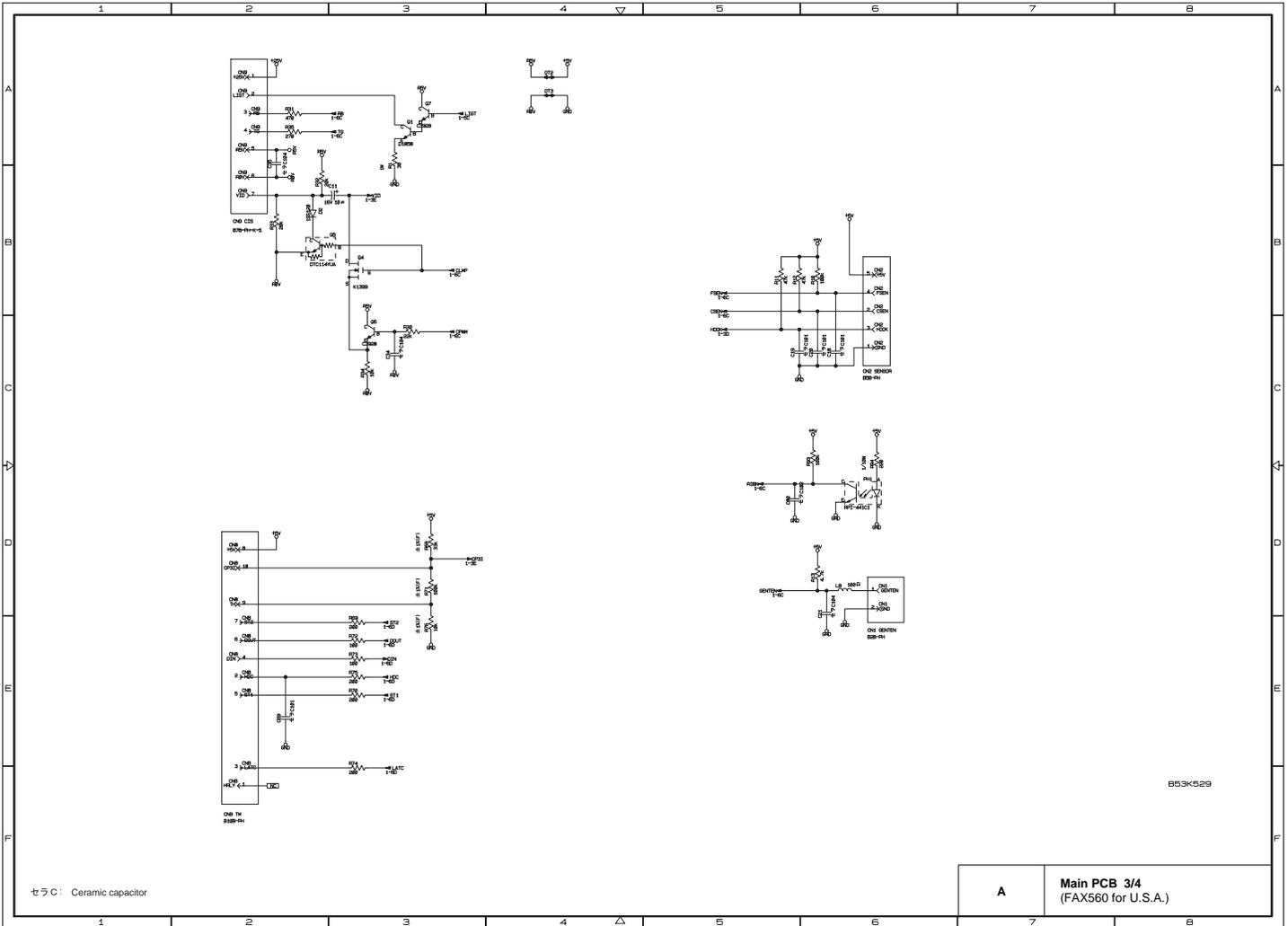
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
4. DB1, R3 AND PC1 ARE NOT MOUNTED FOR US MODEL.
5. ZD1 AND ZD2 ARE MOUNTED ONLY FOR MC MODEL.

+25V   D3 1SS120

L2, L5
SBT0260
or FL5R200PN
or SBT-0460
or DL-6503C

CR1
A5X-24E-904
or
OUAZ-SH-124DZ

CML   8

J1
6-2PMJ

3

A1
RA351

L2

4

A2
RA242

FG

52065-6245
or 52830-6245
or 290A-62-31
or R41-4910-A
or 285D-D620J-111
or MJ-62J-RD315
X2

L3   L5

JW4

JW6

DB1
S1YB40
or
S1ZB60

R3
100Ω
2W

D1

PLS

PC1
PS2533
or
TLP627

SOV

R4
100Ω
2W

C7

C3
EC1μ
50V

T2
BT27

SRL   6

SOV

C8
PC153
400V

JW5

T1
BT28

R2
10K

2.0V X2

ZD2
ZD1

R1
20K

RL2   7

PLS   11

SOV

TELOFF   10

C9
MC474
250V

R5
24K

R6
24K

D2
1SS120

PC2
TLP521
or
PS2501
or
PS2561

SOV

CI   9

J2
6-2PMJ

4

3

L4
SBT0260
or FL5R200PN
or SBT-0460
or DL-6503C
or JUMPER WIRE

PC3
PS2525
or
TLP320

TELOFF

SOV

KIA7805P/
PI/AP/API
or AN7805
or L7805CV

C6
EC100μ
16V

#1

IN   OUT
GND

C2
EC100μ
16V

+8V   1

SOV   2

+25V   3

JW1

C5
CC104

+25V

C4
CC104

C1

SOV

P2
9110S-03L

+5V   5

SOV   4

+25V   3

NC   2

+8V   1

P1
6033B-11Z

J1, J2
TOP VIEW

5 3 1
6 4 2

PLUG
SIDE

JW2 JW3 JW7

SOV

JUMPER WIRE
L1

FG   SOV

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

B	**NCU 1/1** (U.S.A., CANADA, ARGENTINA, CHILI, MEXICO, GULF)

NCU 1/2
(U.K., FRANCE, NORWAY, BELGIUM, HOLLAND, SWITZERLAND, IRELAND, FINLAND, DENMARK, SPAIN, ITALY, SWEDEN, SOUTH AFRICA)

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

	ASSY 10 SWITZ	ASSY 04 UK	ASSY 05 FRA	ASSY 26 SWE/HOL	ASSY 07 EXCEPT FOR GER/AUS	ASSY 13 DEN
L1	COIL 3.3mH	JUMPER WIRE	←	←	←	←
C14, C15	CC273	NOT ASSY	←	←	←	←
PH3	NOT ASSY	TLP620	NOT ASSY	TL620	NOT ASSY	←
R18	NOT ASSY	3.9kΩ	NOT ASSY	3.9kΩ	NOT ASSY	←
R7	2W/100Ω	←	2W/390Ω	2W/100Ω	←	←
V1	ENC121D07A	NOT ASSY	←	ENC121D07A	←	←
C7	NOT ASSY	PC250V/105	PC250V/474	NOT ASSY	←	←
C18	NOT ASSY	CC154	NOT ASSY	NOT ASSY	←	←
R16, R19	NOT ASSY	2kΩ	2.4kΩ	NOT ASSY	←	←
R13	NOT ASSY	820Ω	0Ω	NOT ASSY	←	←
R20, R21	NOT ASSY	←	←	200kΩ	NOT ASSY	←
SP1	Not soldered	Soldered	Soldered	Soldered	Not soldered	Not soldered
P2	4-pin	4-pin	3-pin	←	←	4-pin

B	**NCU PCB 2/2** (U.K., FRANCE, NORWAY, BELGIUM, HOLLAND, SWITZERLAND, IRELAND, FINLAND, DENMARK, SPAIN, ITALY, SWEDEN, SOUTH AFRICA)

NCU 1/1
(GERMANY, AUSTRIA)

B

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

NCU 1/1 (AUSTRALIA)

B

CN1 6-6PMJ
A2 RA-242MS-V7
A1 RA-311M -V6-2
LINE
S
Ta
La
Lb
Tb
E

CN2 6-2PMJ

+25V D5 1SS120 CML
CR2 QUAZ-SH-124Z

JW9 (5) JW8 (5) NOT ASSY

L2
L5
JW11 (5)
JW15 (5)
C12 C11 C9 C10
NOT ASSY
FG

V1 NOT ASSY
CR1

DB2 S1YB40 or S1ZB60
D4 ERA15-04
D3 +25V Q3 SOV RDPS NOT ASSY

R13
R12 0ΩX2

PLS
PH4 TLP627
R6 2W 100Ω
SOV

JW14 (5)

L3
L4
JW13 (5)

PH5 TLP320
SOV
TELOFF

DB1 S1YB40 or S1ZB60
D2 ERA15-04

T1 BT6
C1 EC10μ 16V
C3 BP2.2μ 50V
SOV

R11 10K
ZD3
C5 2.2μ 50V
Q1 2SD2009 2W 75Ω
R10 47K R1 R2
C6 PC153 400V
1/4W 39ΩX2

PH1 TLP521G R9 470Ω +5V
Q2 DTC123EK
EARTH
SOV
PH2 TLP521G
ADLC
SOV

R3 1/4W 22KX2 R14
T2 BT28
R7 10K
ZD1
ZD2
R8 20K
2VX2
SOV

C8 MC474 250V
R4 1W 27K CI
ZD5 ZD4 18VX2 D1 1SS120
PH3 TLP521G
SOV

P3 NOT ASSY
1
2
3
(4)

C7 220μ 16V
#1 7805 IN OUT GND
C4 220μ 16V
C14 CC104 C13 CC104
CC104
C2
JW5 (5) NOT ASSY
A C15 CC102
JW12 (5)
C16 A

P2 IMSA-9110S-03L

P1 IMSA-6033B -15Z

SRL 6
RL2 7
JW10 (5) CML 8
CI 9
TELOFF 10
PLS 11
NC 12
RDPS 13
JW7 (5) EARTH 14
JW6 (5) ADLC 15
+5V 5
SOV 4
+25V 3
PCTL 2
+8V 1

L2-L5
SBT-0260
or SBT-0460
or DL-6503C
or FL5R200PN

L1 JUMPER WIRE
SOV FG

JW1 (5) +25V
JW4 (5) JW3 (5) +5V
JW2 (10) SOV

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

CN1
6-6PMJ
A2
RA-242MS-V7
S
Ta
La
Lb
Tb
E
LINE

A1
RA-311M
-V6-2

+25V   D5
1SS120 CML
CR2
OUAZ-SH-124Z

L2

L5

JW11
(5)

JW15
(5)

C12   C11   C9   C10
NOT ASSY

FG

DB2
S1YB40
or
S1ZB60

D4
ERA15-04

PLS

PH4
TLP627

R6
2W
100Ω

JW14
(5)

CN2
6-2PMJ

L3

L4

L2-L5
SBT-0260
or SBT-0460
or DL-6503C
or FL5R200PN

JW9 (5)   JW8 (5)
NOT ASSY

V1
NOT ASSY

CR1

D3
+25V   SOV

Q3
NOT ASSY

RDPS

R13
0ΩX2

R12

JW13 (5)

PH5
TELOFF
SOV   TLP320

C8
MC474
250V

R4
1W 27K

ZD5 ZD4
18VX2

D1
1SS120
SOV

PH3
TLP521G

T1
BT6

C1
EC10μ
16V

C3
BP2.2μ
50V

DB1
S1YB40
or
S1ZB60

D2
ERA15-04

R11
10K

ZD3

C5
2.2μ
50V

R10
47K

C6
PC153
400V

R1   R2
1/4W
39ΩX2

Q1
2SD2009

R5
2W
75Ω

R3
1/4W
22KX2   R14

T2   BT28

R7
10K
ZD1
ZD2
2VX2

R8
20K
SOV

PH1 TLP521G
R9 470Ω   +5V
Q2
DTC123EK
EARTH
SOV

ADLC

PH2
TLP521G
SOV

CI

SRL   6
RL2   7
JW10 (5) CML   8
CI   9
TELOFF 10
PLS   11
NC   12
RDPS   13
JW7 (5) EARTH 14
JW6 (5) ADLC   15

JW5 (5)
NOT ASSY
C7
220μ
16V
#1 7805
IN   OUT
GND
C4
220μ
16V
+5V   5

P3
NOT ASSY
C14
CC104
C13
CC104
C2
CC104 SOV

+25V

C15
CC102 PCTL   2

JW12 (5)

C16

P2
IMSA-9110S-03L

+8V   1

P1
IMSA-6033B
-15Z

L1
JUMPER
WIRE
SOV   FG

JW1 (5)   JW4 (5)   JW2 (10)
+25V   JW3 (5)
+5V   SOV

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR
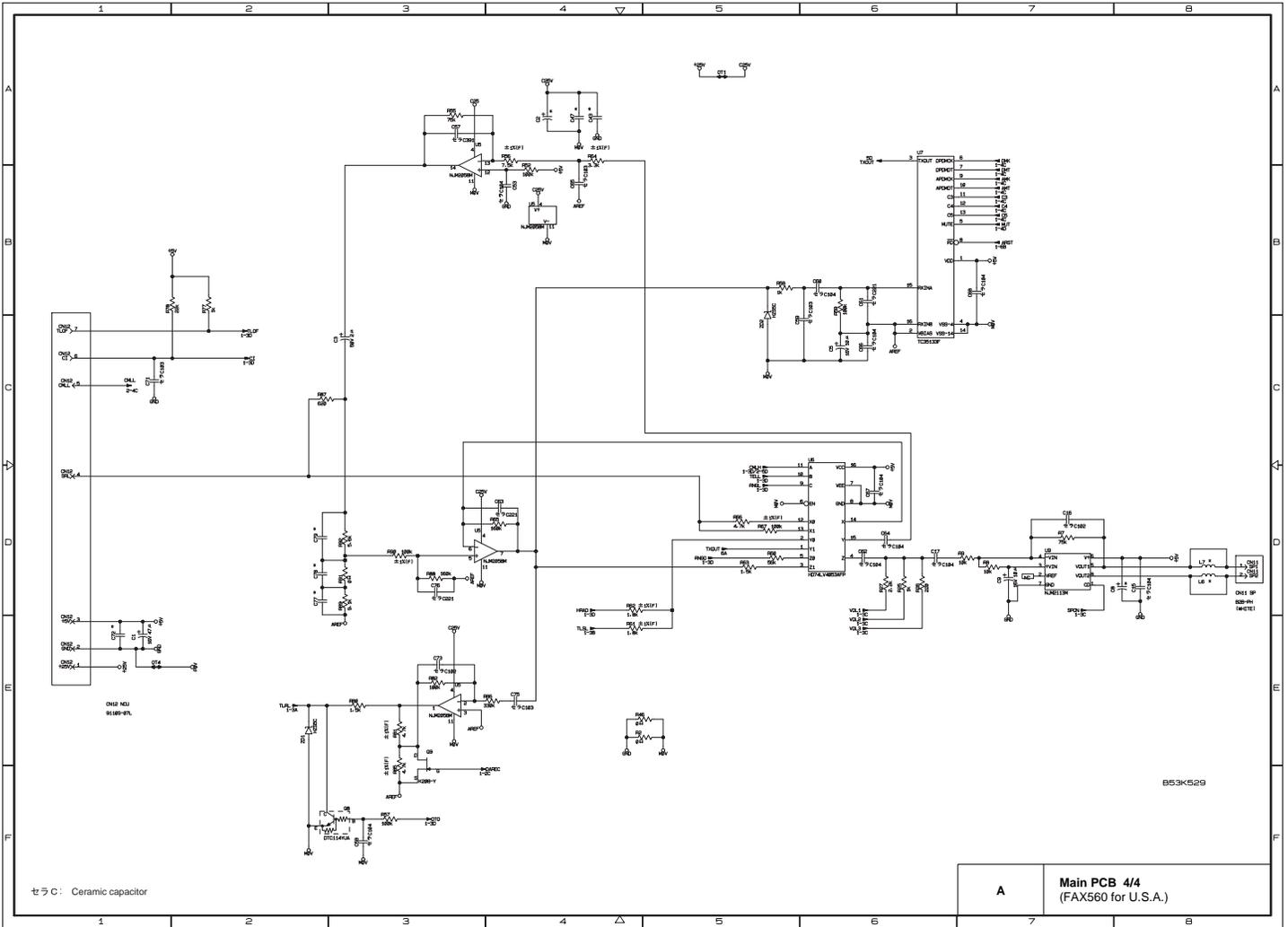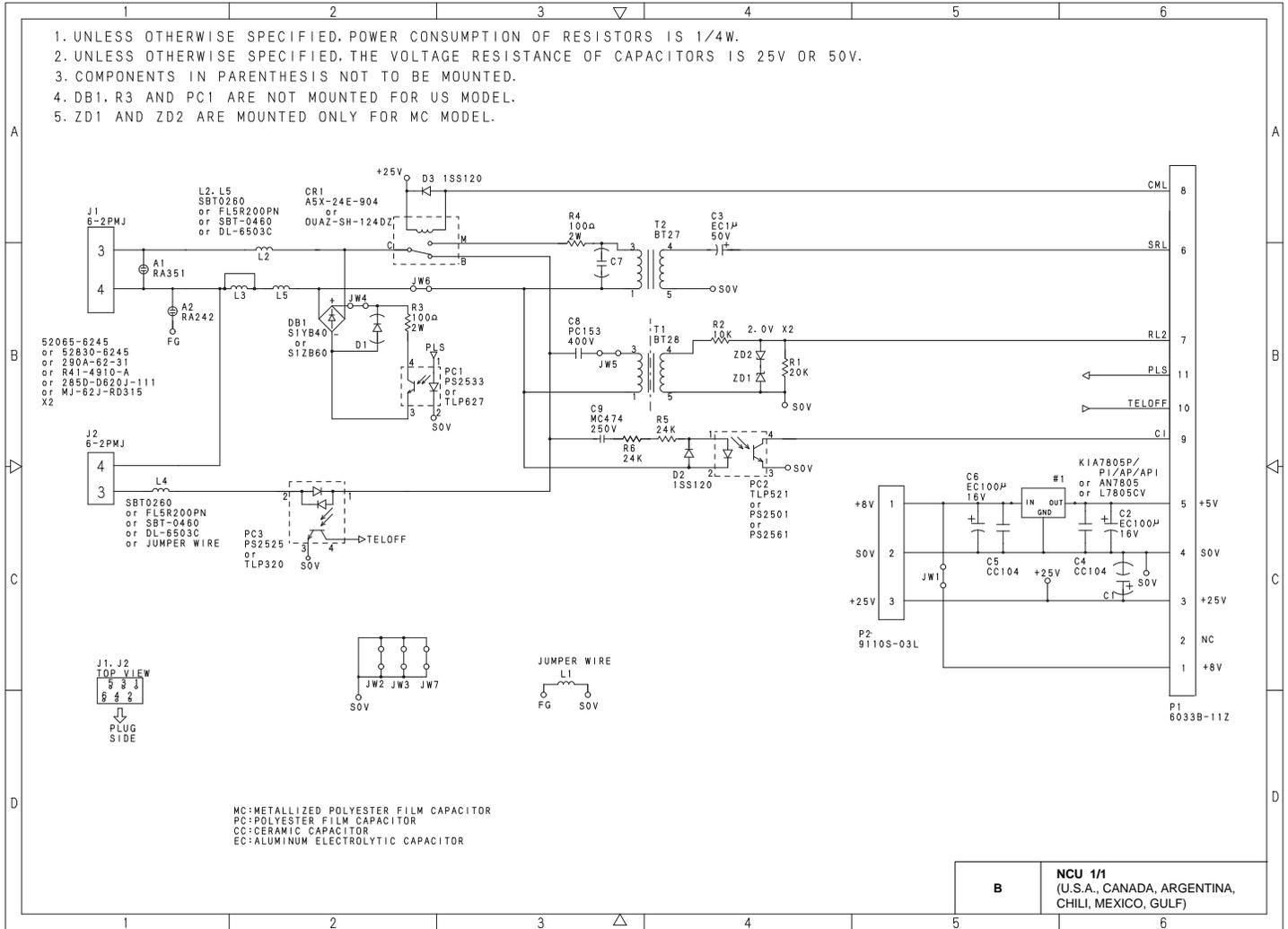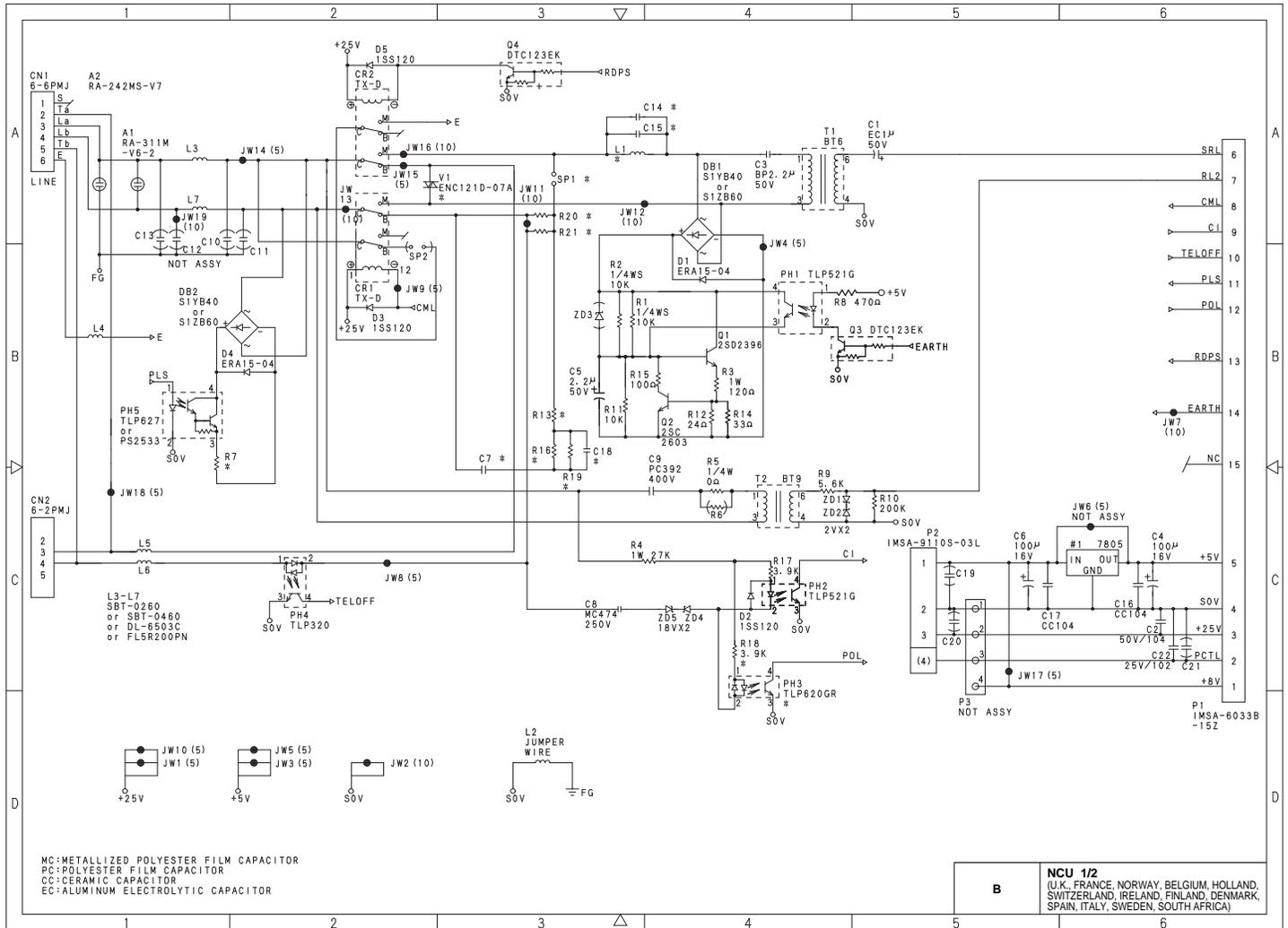
B

NCU 1/1
(CHINA, TAIWAN, HONG KONG,
SINGAPORE, RUSSIA)

1. UNLESS OTHERWISE SPECIFIED,POWER CONSUMPTION OF RESISTORS IS 1/4W.
2. UNLESS OTHERWISE SPECIFIED,THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
4. ZD1 AND ZD2 ARE MOUNTED ONLY FOR MC MODEL.

J1
6-2PMJ

L2,L5
SBT0260
or FL5R200PN
or SBT-0460
or DL-6503C

+25V   D3 1SS120

CR1
A5X-24E-904
or
OUAZ-SH-124DZ

CML   8

A1
RA351

L2

R4
220Ω
2W

T2
BT27

C3
EC6.8μ
35V

SRL   6

PC823   C7

A2
RA242

L3   L5

JW6

JW4

S0V

FG

DB1   D1

R3

PLS
PC1

C8
PC153
400V

JW5

T1
BT28

R2
10K

2.0V X2

ZD2

ZD1

R1
20K

RL2   7

PLS   11

TELOFF   10

S0V

52065-6245
or 52830-6245
or 290A-62-31
or R41-4910-A
or 285D-D620J-111
or MJ-62J-RD315
X2

NOT ASSY

J2
6-2PMJ

C9
MC474
250V

R5
24K

CI   9

L4

R6
24K

D2
1SS120

PC2
TLP521
or
PS2501
or
PS2561

S0V

SBT0260
or FL5R200PN
or SBT-0460
or DL-6503C
or JUMPER WIRE

PC3
PS2525
or
TLP320

TELOFF

S0V

KIA7805P/
PI/AP/API
or AN7805
or L7805CV

C6
EC220μ
16V

#1

IN   OUT
GND

C2
EC220μ
16V

+8V   1

+5V   5

S0V   2

JW1

C5
CC104

+25V

C4
CC104

S0V

S0V   4

+25V   3

+25V

NC   2

+8V   1

P2
9110S-03L

P1
6033B-11Z

J1,J2
TOP VIEW

5 3 1
6 4 2

PLUG
SIDE

JW2 JW3 JW7

S0V

JUMPER WIRE
L1

FG   S0V

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
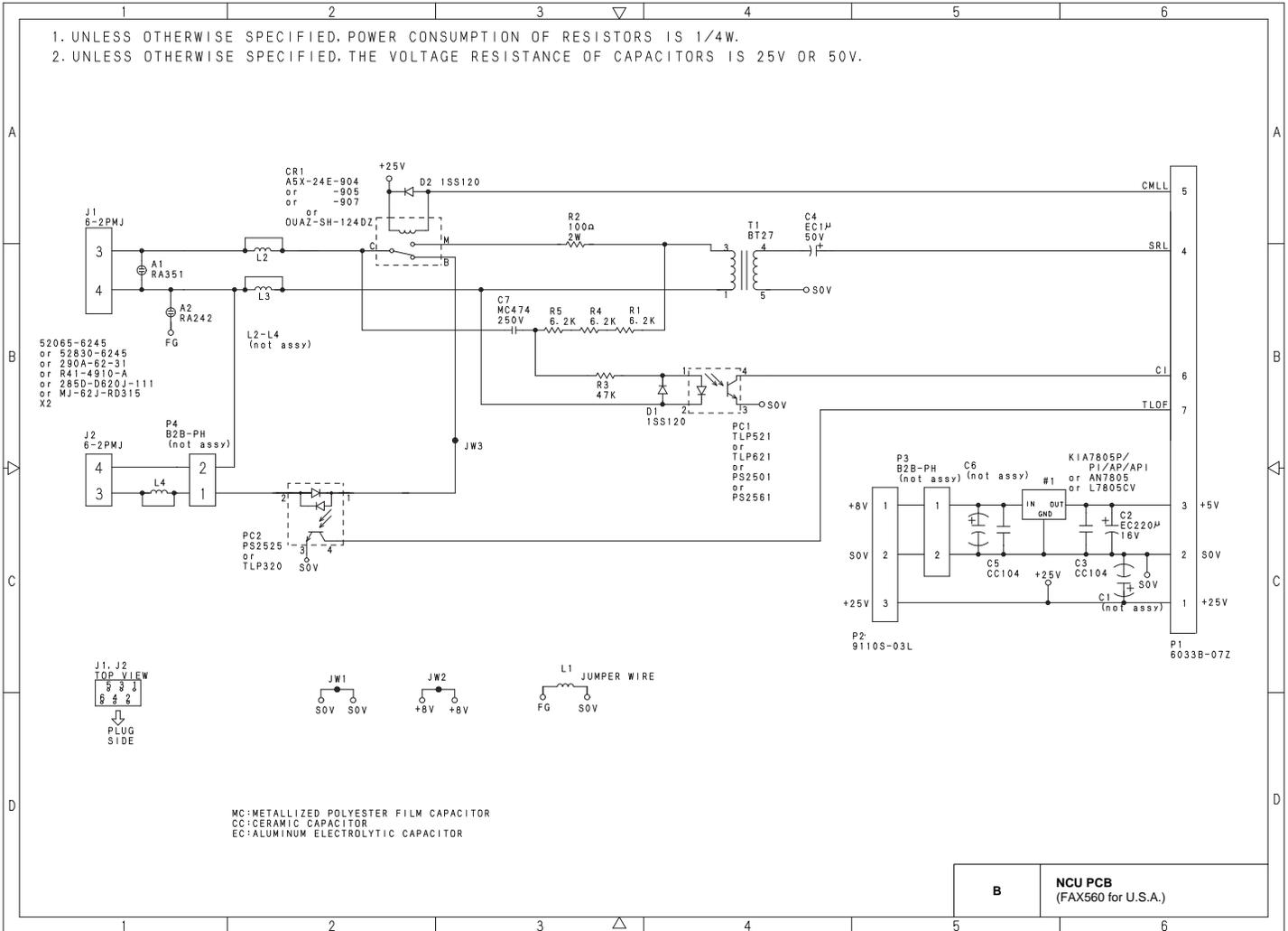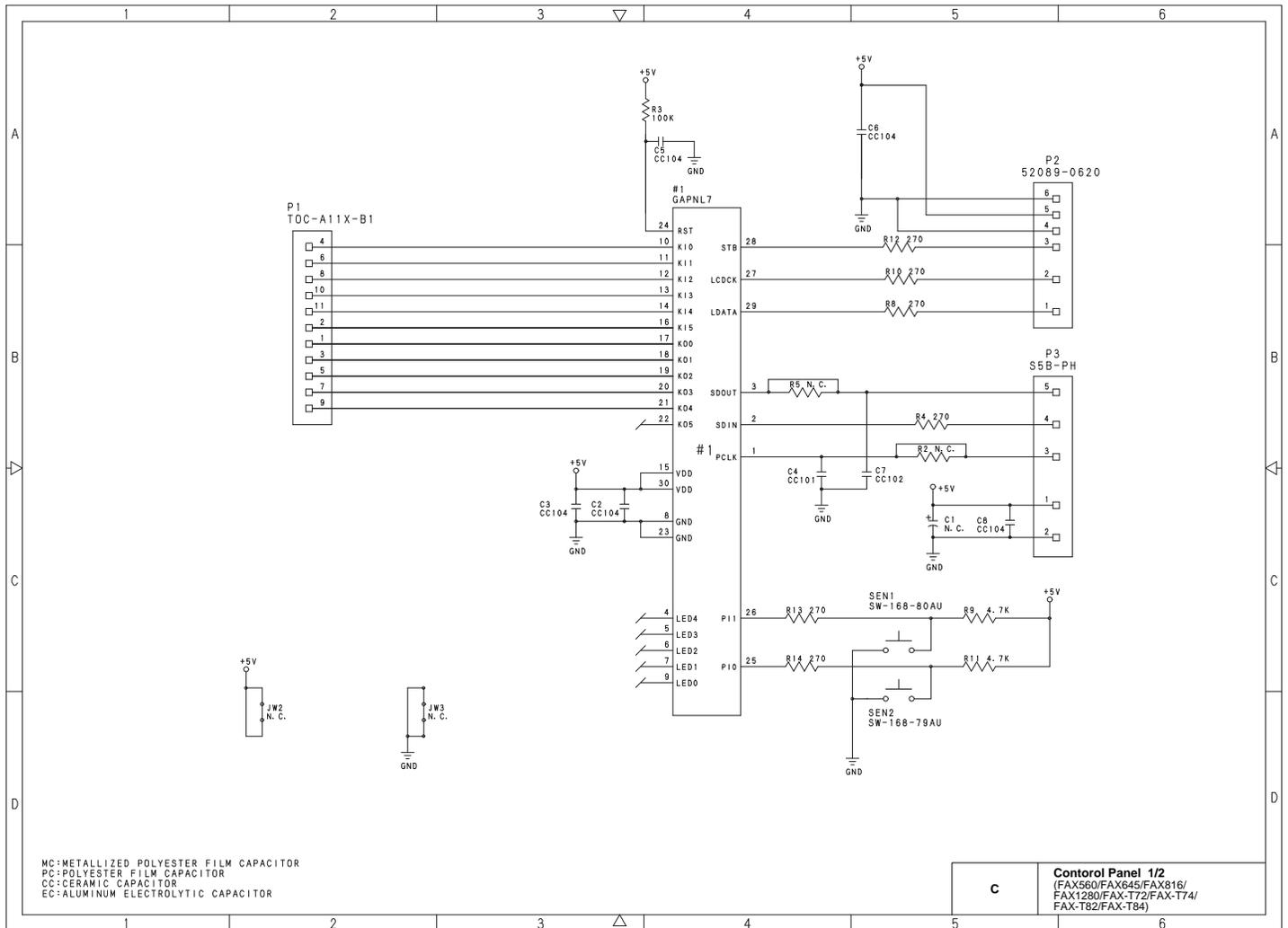EC:ALUMINUM ELECTROLYTIC CAPACITOR

B   NCU 1/1
(NEW ZEALAND)

1. UNLESS OTHERWISE SPECIFIED,POWER CONSUMPTION OF RESISTORS IS 1/4W.
2. UNLESS OTHERWISE SPECIFIED,THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.

CR1
A5X-24E-904
or   -905
or   -907
or
OUAZ-SH-124DZ

J1
6-2PMJ

52065-6245
or 52830-6245
or 290A-62-31
or R41-4910-A
or 285D-D620J-111
or MJ-62J-RD315
X2

J2
6-2PMJ

P4
B2B-PH
(not assy)

PC2
PS2525
or
TLP320

J1,J2
TOP VIEW

PLUG
SIDE

MC:METALLIZED POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

| B | NCU PCB |
| | (FAX560 for U.S.A.) |

Contorol Panel 1/2
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

C

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

T7 PANEL KEY MATRIX REFERENCE TABLE 1

KEY NO.	KEY NAME	KEY COE
1	Hold/Caller ID	01
2	10key-1	21
3	10key-2	11
4	10key-3	09
5	Redial/Pause	19
6	10key-4	02
7	10key-5	12
8	10key-6	0A
9	Speed Dial/Search	1E
10	10key-7	22
11	10KEY-8	1A
12	10KEY-9	0B
13	Speaker Phone	06
14	10key-*	26
15	10key-0	16
16	10key-#	0E
17	1touch-01	04
18	1touch-02	1B
19	1touch-03	23
20	1touch-04	05
21	←	24
22	→	14
23	Function/Set	1C
24	Resolution	03
25	Mode	13
26	Stop	25
27	Copy/Help	15
28	Start	1D
SW1	MC ON/OFF	29
SW2	Play	2A
SW3	Erase	2D

T7 PANEL KEY MATRIX REFERENCE TABLE 2

	K00 P1-1P	K01 P1-3P	K02 P1-5P	K03 P1-7P	K04 P1-9P	K05 –
K10 P1-4P	1	4	3	5	2	*SW1
K11 P1-6P	6	8	7	11	10	*SW2
K12 P1-8P	24	12	25	18	19	–
K13 P1-10P	17	–	22	23	21	–
K14 P1-11P	20	–	27	28	26	*SW3
K15 P1-2P	13	16	15	9	14	–

*MC ONLY

C

Contorol Panel 2/2
(FAX560/FAX645/FAX816/
FAX1280/FAX-T72/FAX-T74/
FAX-T82/FAX-T84)

P1
TOC-A11X-B1

#1
GAPNL7

+5V
R3
100K
C5
CC104
GND

+5V
C6
CC104
GND

P2
52089-0620

24 RST
10 KI0
11 KI1
12 KI2
13 KI3
14 KI4
16 KI5
17 KO0
18 KO1
19 KO2
20 KO3
21 KO4
22 KO5

28 STB
27 LCDCK
29 LDATA

R12 270
R10 270
R8 270

P3
S5B-PH

3 SDOUT
2 SDIN
1 #1 PCLK

R5 N.C.
R4 270
R2 N.C.

C4
CC101
C7
CC102
GND

+5V
C1
10V
100μ
C8
CC104
GND

SW3 SKQNAD
SW2 SKQNAD
SW1 SKQNAD

C3
CC104
C2
CC104
GND

15 VDD
30 VDD
8 GND
23 GND

4 LED4
5 LED3
6 LED2
7 LED1
9 LED0

+5V
R1 390
LED1 BR2272S

SEN1
SW-168-80AU
26 PI1
R13 270
R9 4.7K
+5V

25 PI0
R14 270
R11 4.7K

SEN2
SW-168-79AU
GND

+5V
JW1 JW2
0Ω N.C.
JW3
N.C.
GND

MC:METALLIZED POLYESTER FILM CAPACITOR
PC:POLYESTER FILM CAPACITOR
CC:CERAMIC CAPACITOR
EC:ALUMINUM ELECTROLYTIC CAPACITOR

C

Contorol Panel 1/2
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

T7 PANEL KEY MATRIX REFERENCE TABLE 1

KEY NO.	KEY NAME	KEY COE
1	Hold/Caller ID	01
2	10key-1	21
3	10key-2	11
4	10key-3	09
5	Redial/Pause	19
6	10key-4	02
7	10key-5	12
8	10key-6	0A
9	Speed Dial/Search	1E
10	10key-7	22
11	10KEY-8	1A
12	10KEY-9	0B
13	Speaker Phone	06
14	10key-*	26
15	10key-0	16
16	10key-#	0E
17	1touch-01	04
18	1touch-02	1B
19	1touch-03	23
20	1touch-04	05
21	←	24
22	→	14
23	Function/Set	1C
24	Resolution	03
25	Mode	13
26	Stop	25
27	Copy/Help	15
28	Start	1D
SW1	MC ON/OFF	29
SW2	Play	2A
SW3	Erase	2D

T7 PANEL KEY MATRIX REFERENCE TABLE 2

	K00 P1-1P	K01 P1-3P	K02 P1-5P	K03 P1-7P	K04 P1-9P	K05 -
KI0 P1-4P	1	4	3	5	2	*SW1
KI1 P1-6P	6	8	7	11	10	*SW2
KI2 P1-8P	24	12	25	18	19	-
KI3 P1-10P	17	-	22	23	21	-
KI4 P1-11P	20	-	27	28	26	*SW3
KI5 P1-2P	13	16	15	9	14	-

*MC ONLY

Contorol Panel 2/2
(FAX580MC/FAX685MC/FAX1980MC/
FAX-T76/FAX-T86/MFC660MC/
MFC960MC)

C

セラ C： Ceramic capacitor
未実装： Not mounted

Control Panel 1/2
(FAX-T78)

C

CR5000
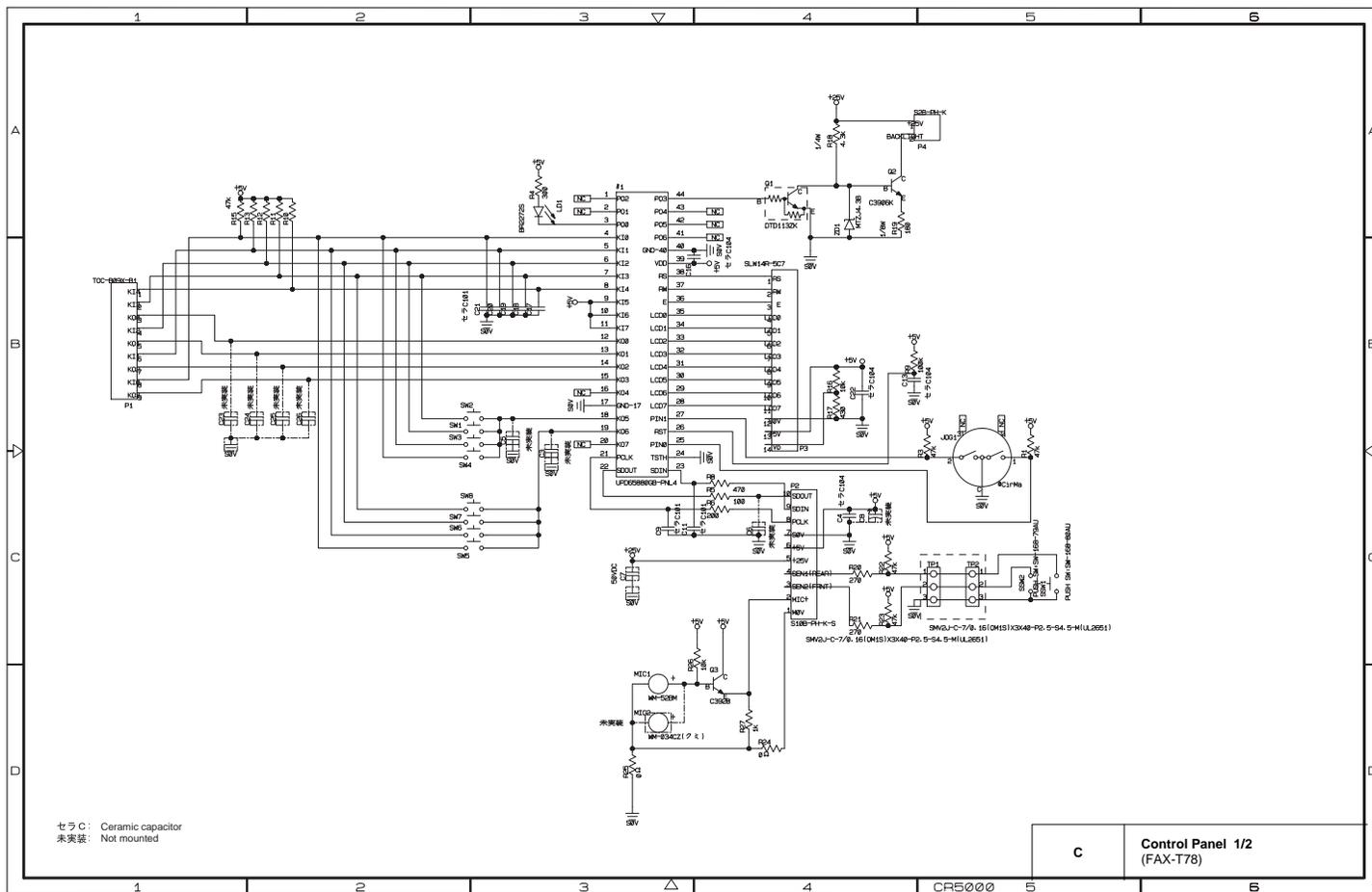
T7-JPN-CL PANEL KEY MATRIX REFERENCE TABLE 1

KEY NO.	KEY NAME	KEY CODE
1	10KEY-1	19
2	10KEY-2	09
3	10KEY-3	01
4	Hold	11
5	10KEY-4	1A
6	10KEY-5	0A
7	10KEY-6	02
8	R	12
9	10KEY-7	1B
10	10KEY-8	0B
11	10KEY-9	03
12	Redial/Pause	13
13	10KEY-*	1C
14	10KEY-0	0C
15	10KEY-#	04
16	Speaker Phone	14
17	Stop	1D
18	Copy/Help	0D
19	Start	15
SW1	Erase	2B
SW2	DIGITAL TAD	2C
SW3	Play/Record	2A
SW4	Memory	29
SW5	Volume	31
SW6	Resolution	32
SW7	Mode	33
SW8	Menu/Set	34

T7-JPN-CL PANEL KEY MATRIX REFERENCE TABLE 2

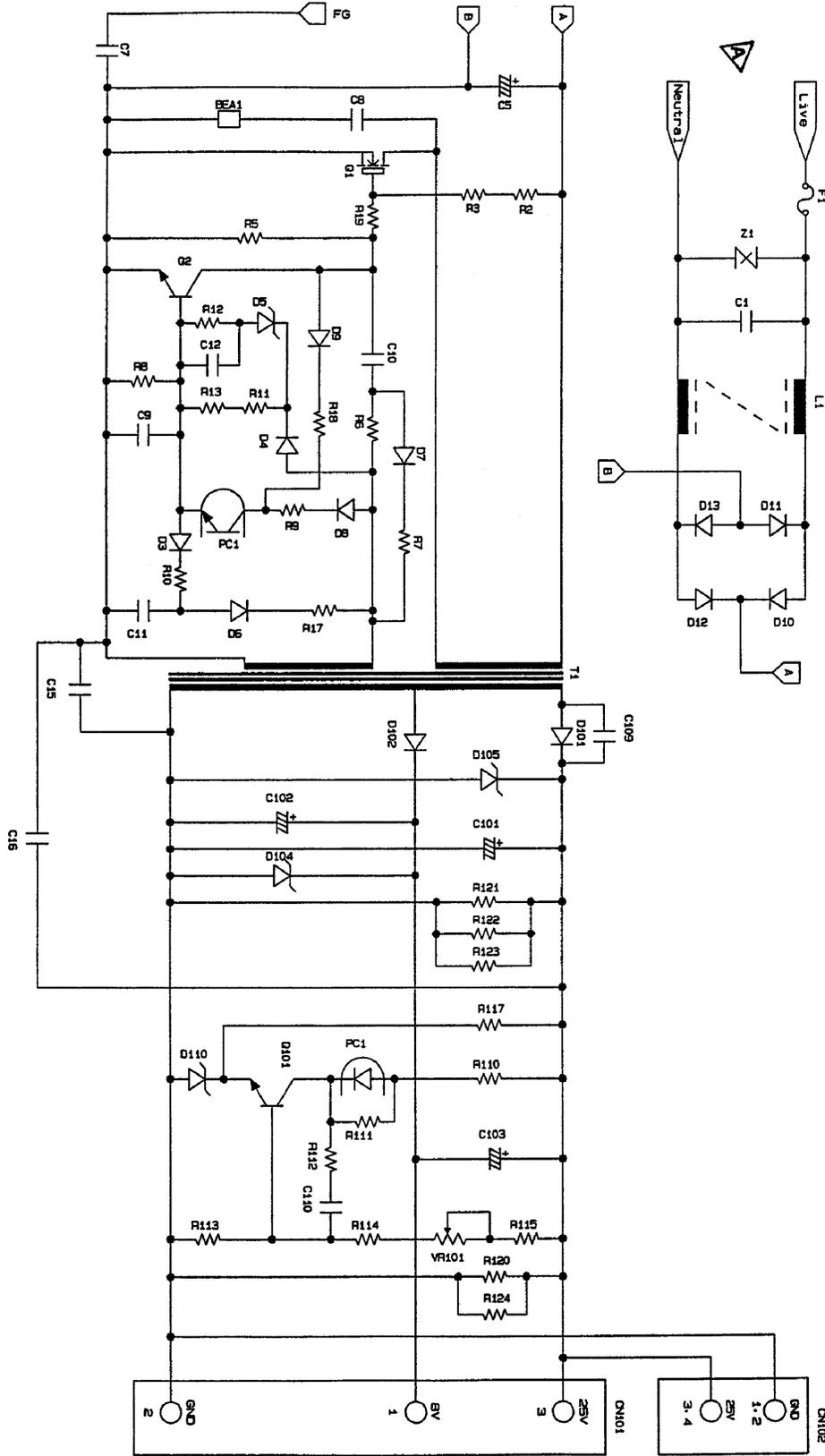|	KO0 P1-3P	KO1 P1-5P	KO2 P1-7P	KO3 P1-9P	KO4 –	KO5 #1-18P	KO6 #1-19P
KI0 P1-8P	3	2	4	1	–	SW4	SW5
KI1 P1-6P	7	6	8	5	–	SW3	SW6
KI2 P1-4P	11	10	12	9	–	SW1	SW7
KI3 P1-2P	15	14	16	13	–	SW2	SW8
KI4 P1-1P	–	18	19	17	–	–	–

C | **Control Panel 2/2** (FAX-T78)

MPW2295
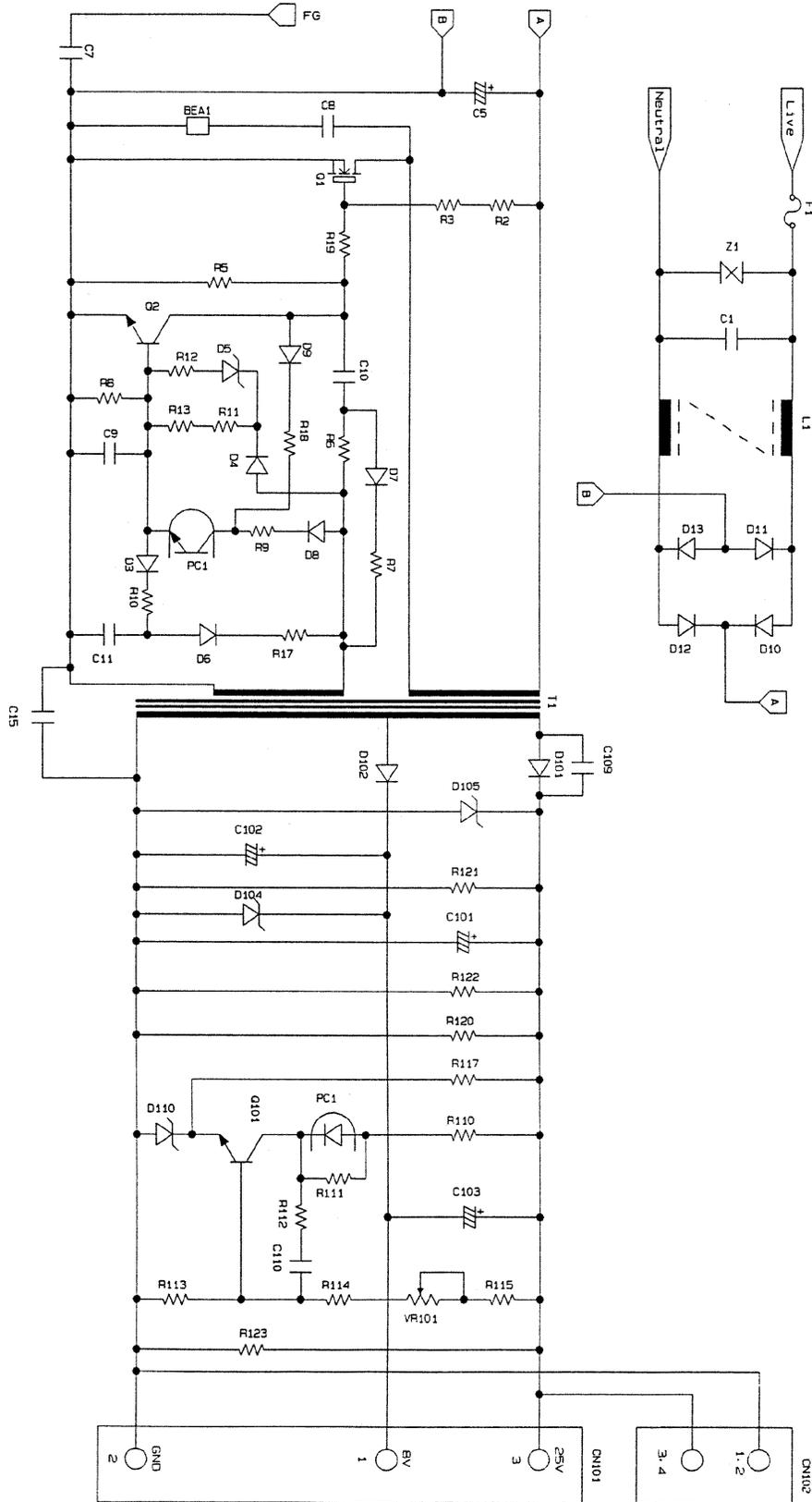
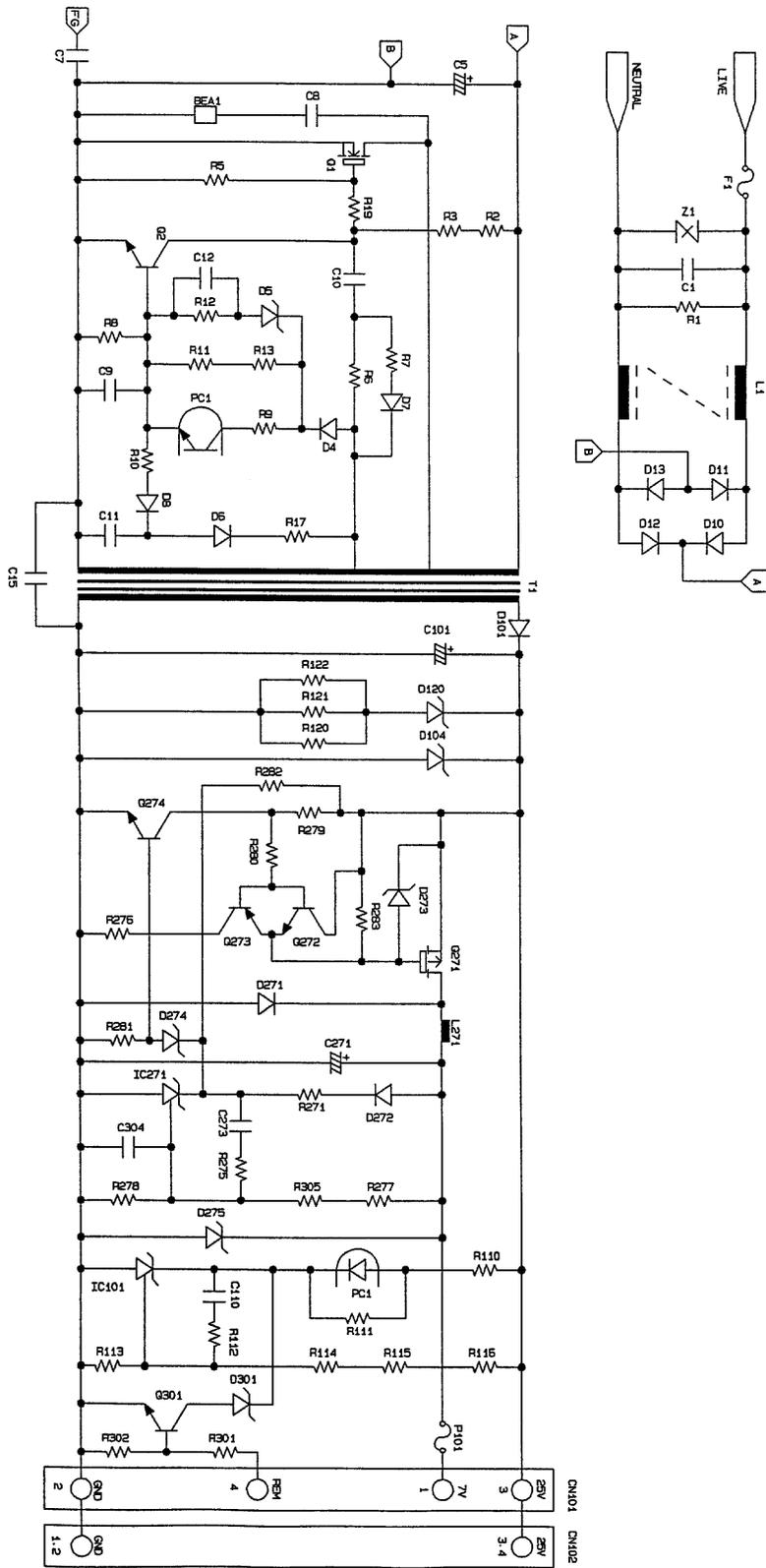**D** | **Power supply 100-120V**

Power supply
200V (Europe except SWITZ, Oceania, South America)

D

Power supply
200V (SWITZ)

D

| D | **Power supply 200V (ASIA)** |
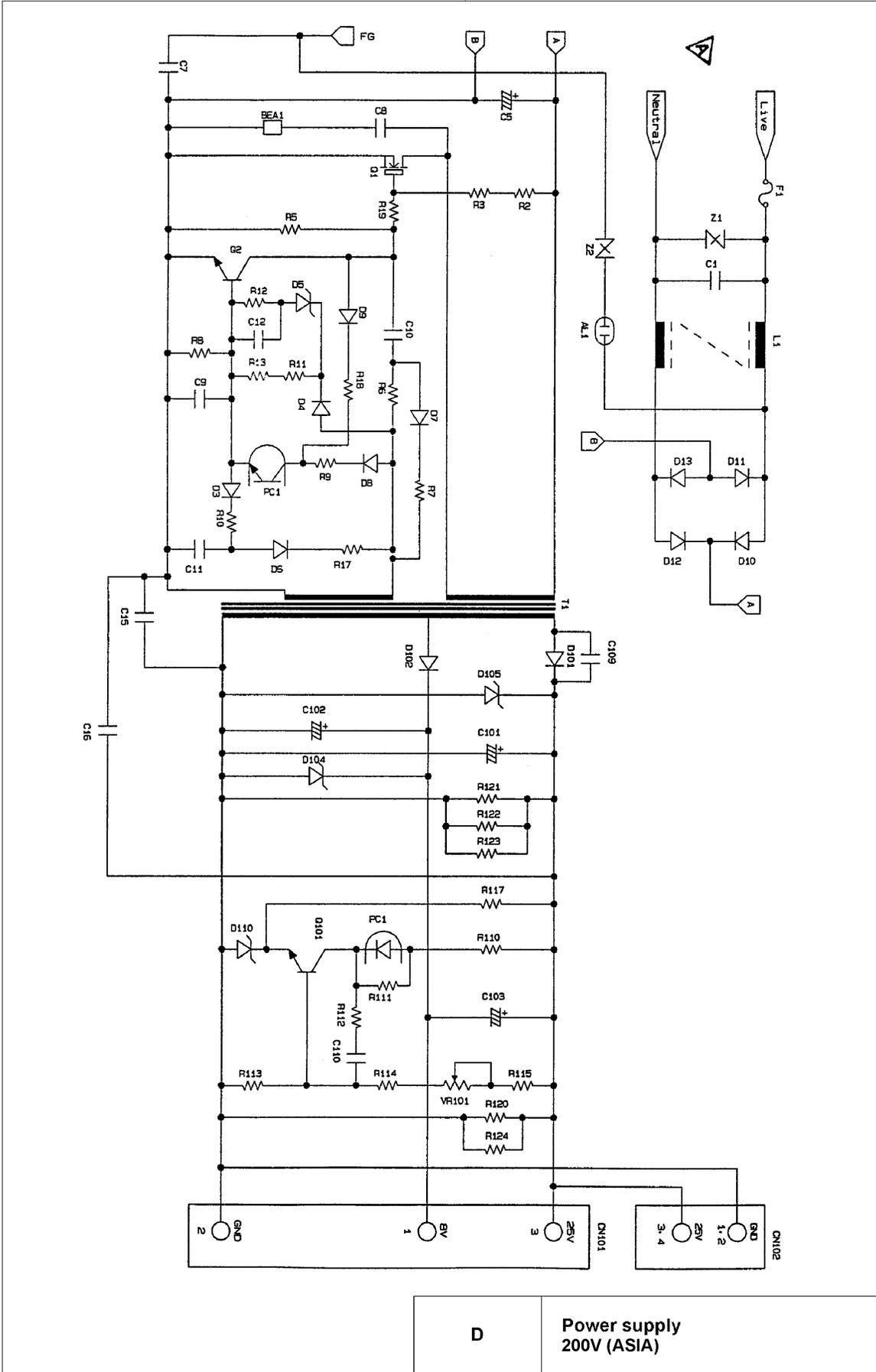
brother®

June 2003
SM8X4501(2)
Printed in Japan