



**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**

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Specifications are subject to change without notice.

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.

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| Appendix 1. | EEPROM Customizing Codes |
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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

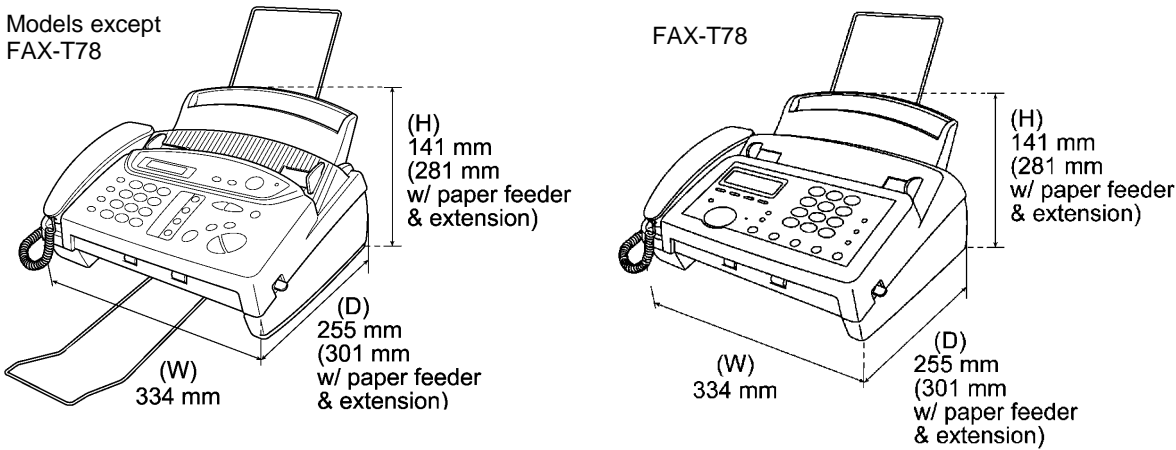
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1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

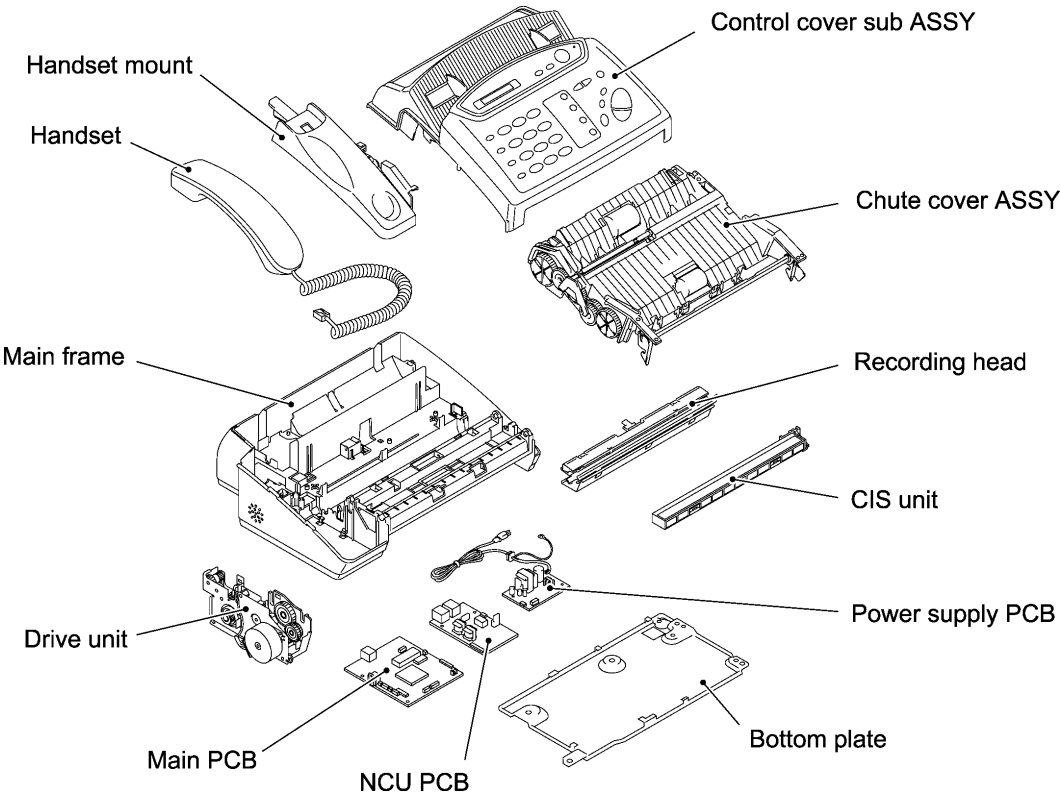
The figure below shows the equipment appearance and approximate dimensions.



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

1.2 Components

The equipment consists of the following major components:



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

(1/2)

| 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

(1/2)

| 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

| Model Name | FAX-T82 | FAX-T84 | FAX-T86 |
|-------------------------------|-----------------------------------|---|---|
| Engine | Thermal Transfer | Thermal Transfer | Thermal Transfer |
| Color | WHITE (1517) | WHITE (1517) | WHITE (1517) |
| Transmission 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

(2/2)

| 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 |

(2/2)

| 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 | — | — |

(2/2)

| 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 |

(2/2)

| Model Name | FAX-T82 | FAX-T84 | FAX-T86 |
|-----------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 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 (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 | — | — |

CHAPTER II.

INSTALLATION

CHAPTER III.

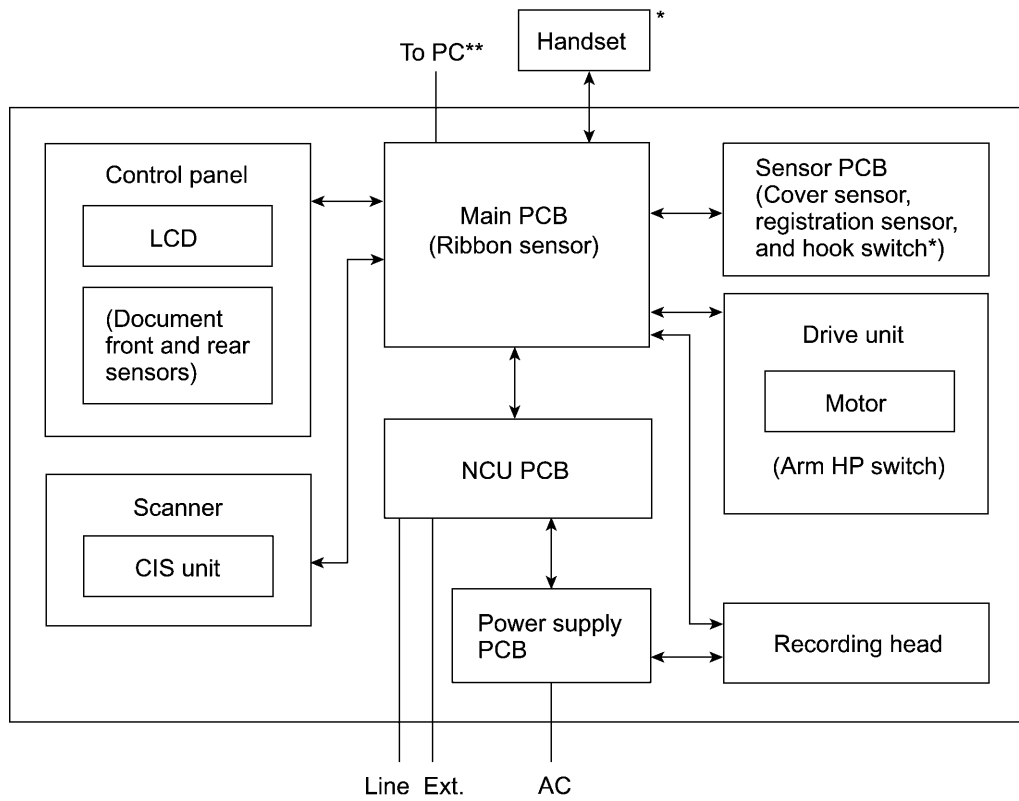
THEORY OF OPERATION

CHAPTER III. THEORY OF OPERATION

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1. OVERVIEW



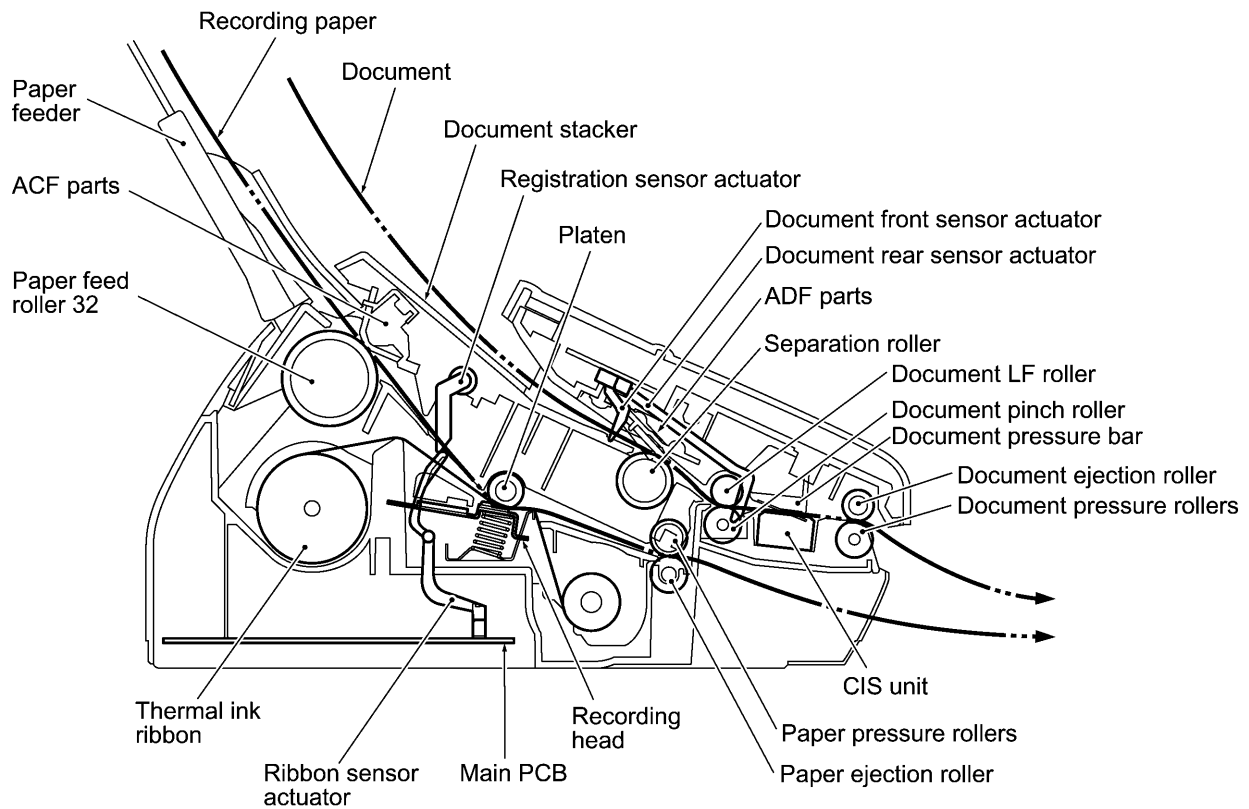
*Not provided on models w/o handset.

**Provided on MC models.

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.

2.4 Sensors and Actuators

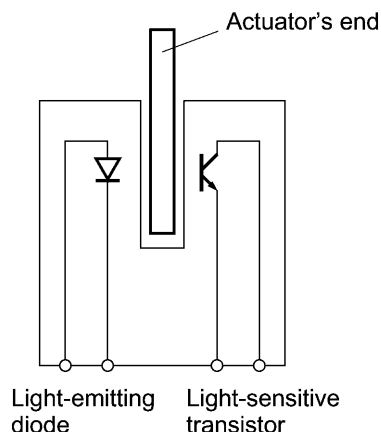
This equipment has two photosensors and five mechanical switches as described below.

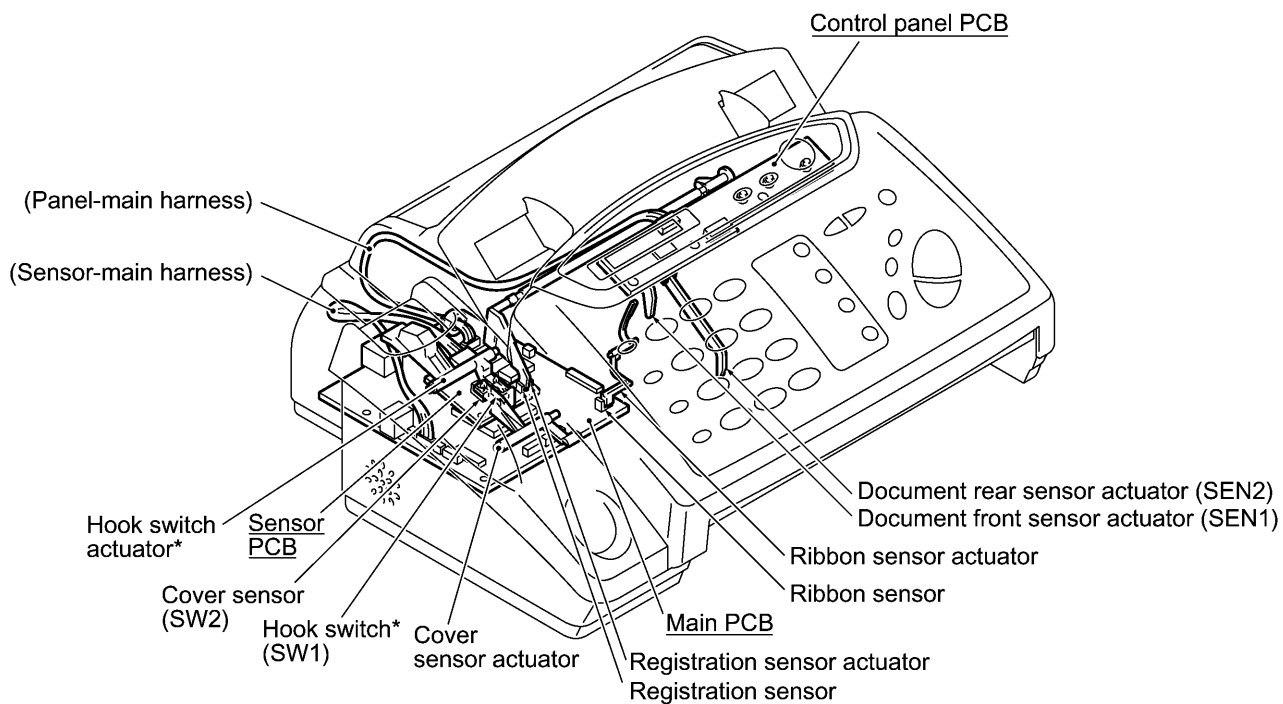
| Sensor name | Type | Located on |
|-----------------------|--------------------|-------------------|
| Document front sensor | Microswitch (SEN1) | Control panel PCB |
| Document rear sensor | Microswitch (SEN2) | Control panel PCB |
| Cover sensor | Microswitch (SW2) | Sensor PCB |
| Hook switch* | 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.

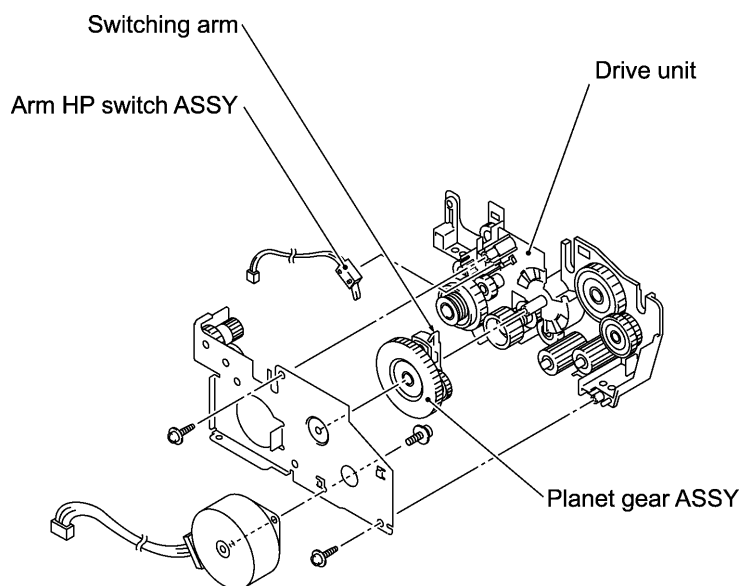
- Document front sensor which detects the presence of documents.
- Document rear sensor which detects the leading and trailing edges of pages to tell the control circuitry when the leading edge of a new page has reached the starting position and when the scan for that page is over.
- Cover sensor which 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.





*Not provided on models w/o handset.

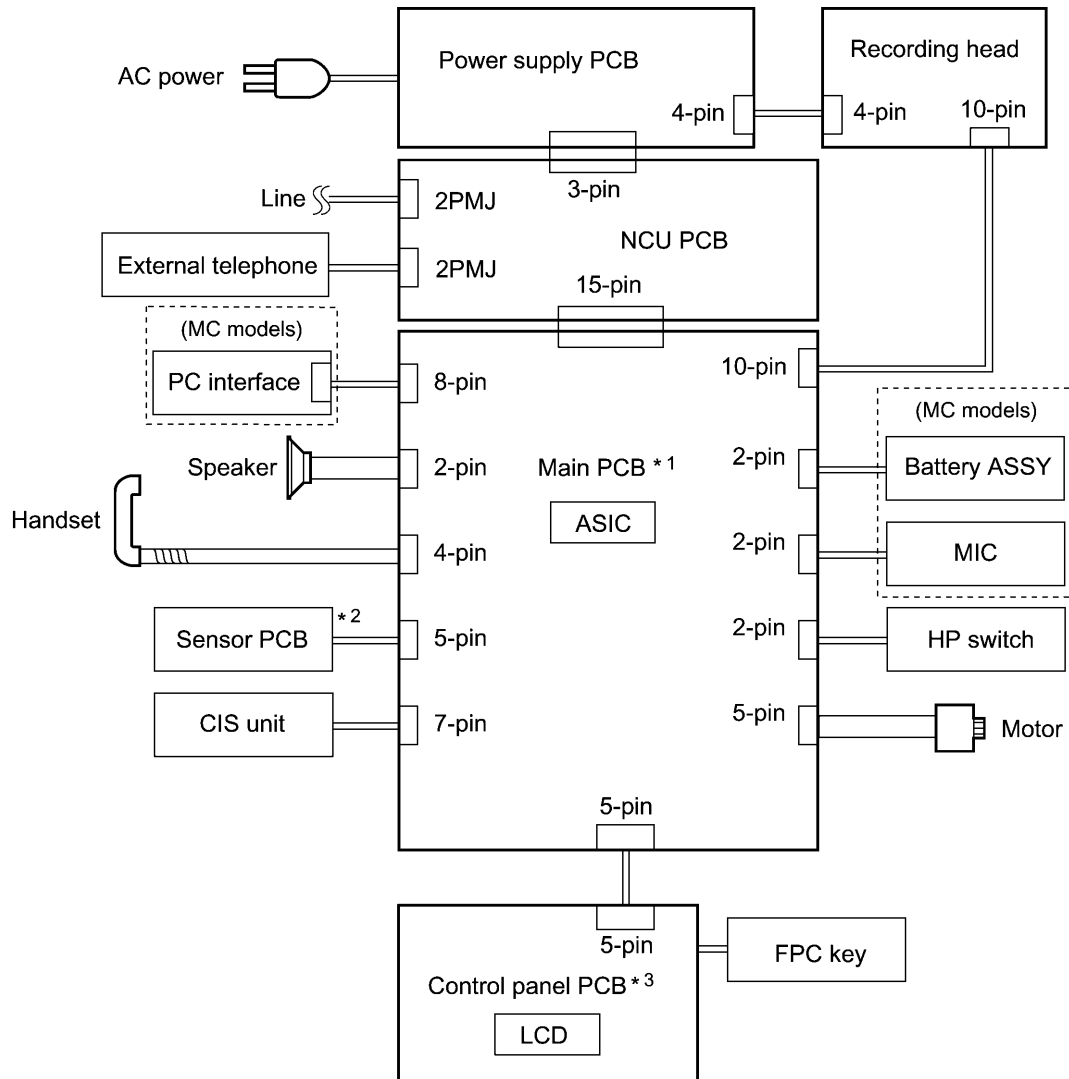


Location of Sensors and Actuators

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

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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.

■ Preparation

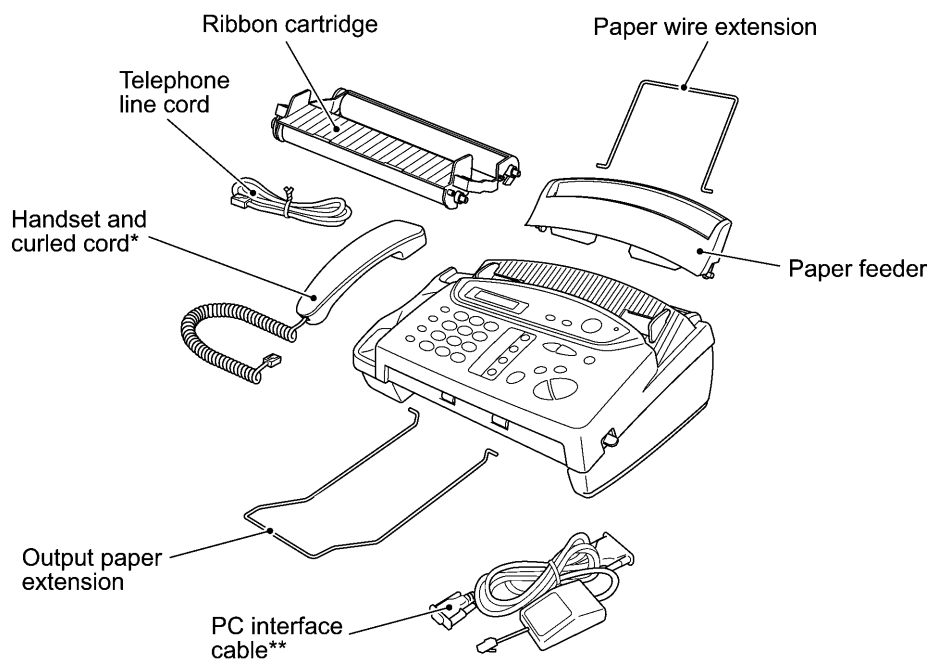
Prior to proceeding to the disassembly procedure,

(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.



*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.

[illegible]

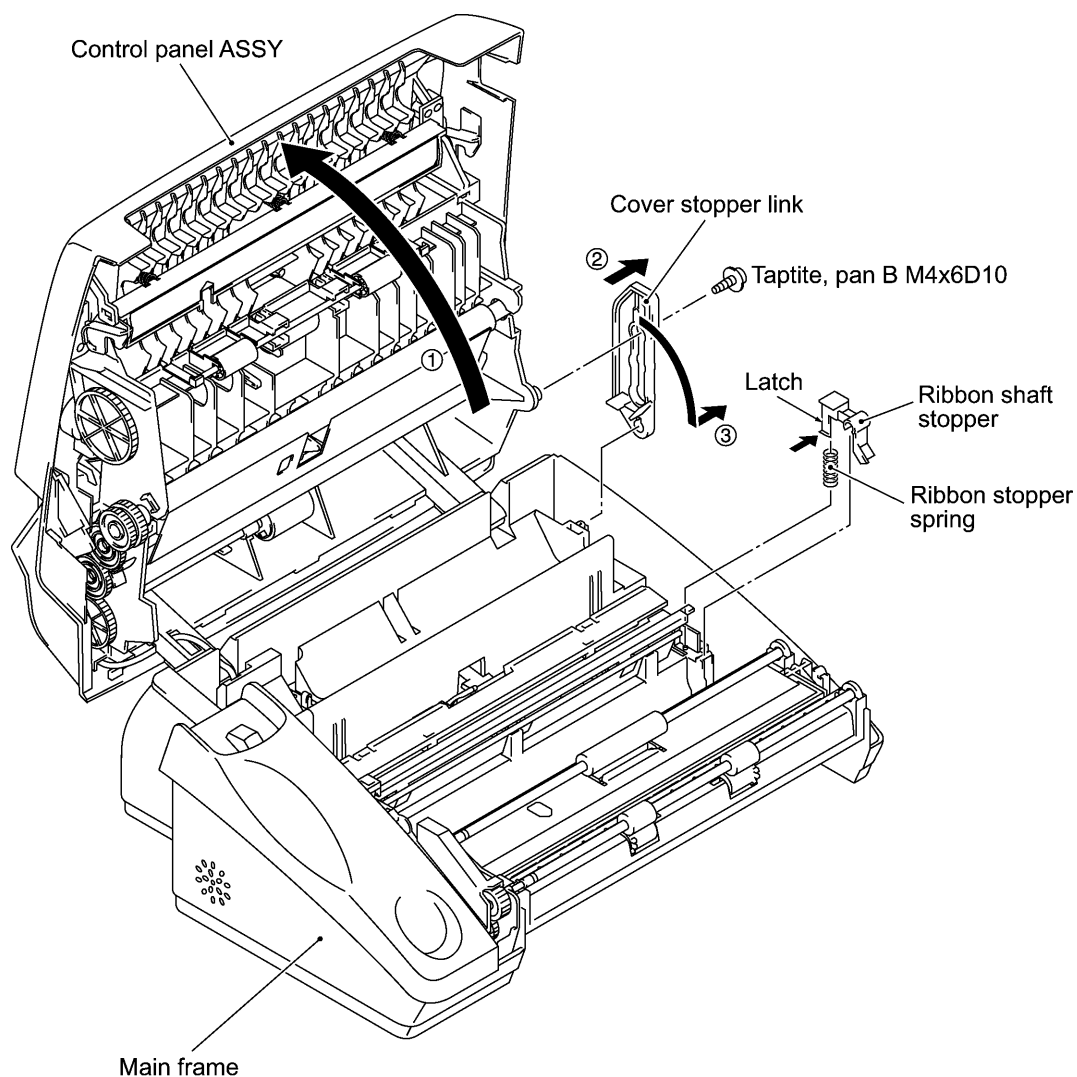
(NOTE 1) On the control panel PCB are the document front sensor and document rear sensor.

(NOTE 2) On the sensor PCB are the cover switch, registration sensor, and hook switch.

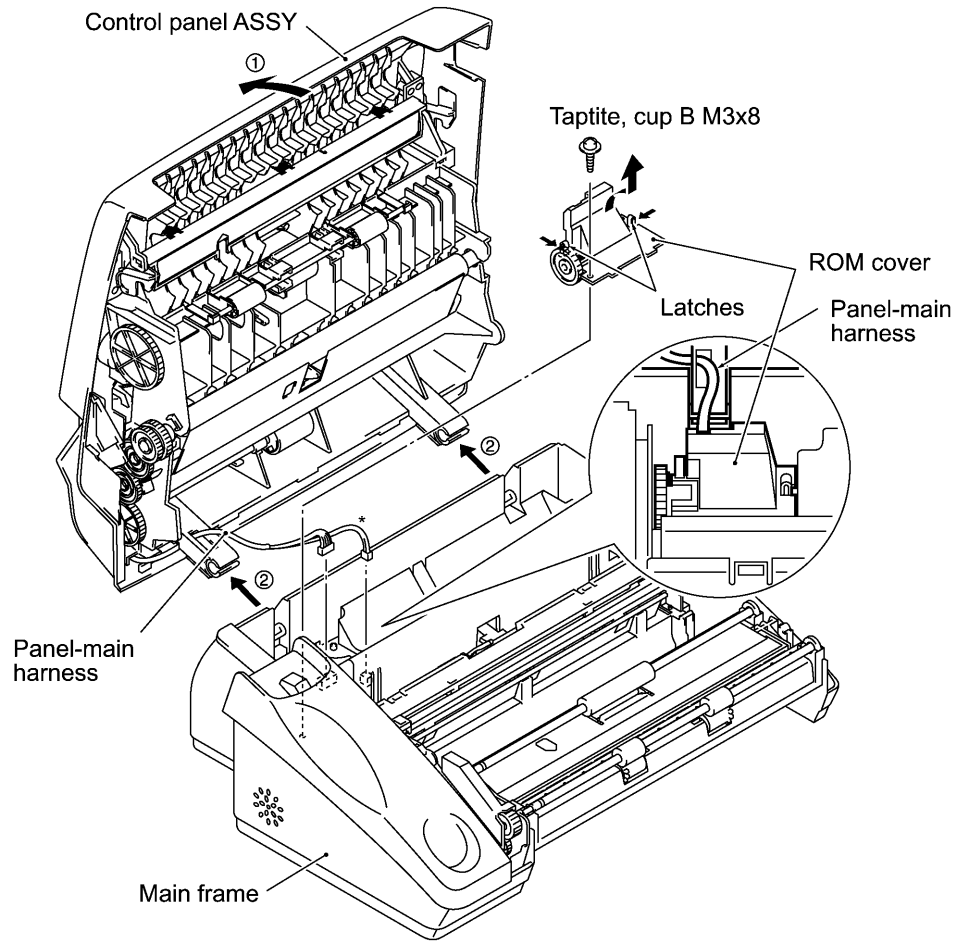
(NOTE 3) On the main PCB is the ribbon sensor.

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 *f*) 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.

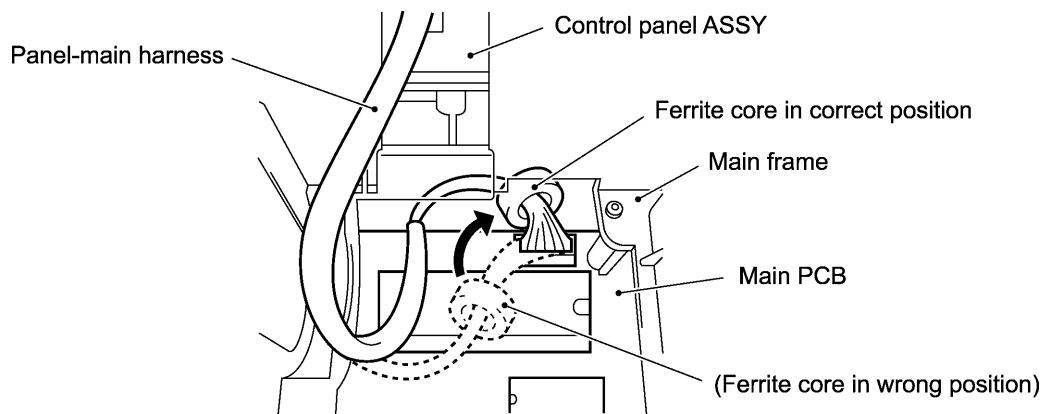


- (4) Remove the screw from the ROM cover. Unlatch the ROM cover and take it up.
- (5) Disconnect the panel-main harness from the main PCB.



n Reassembling Notes

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

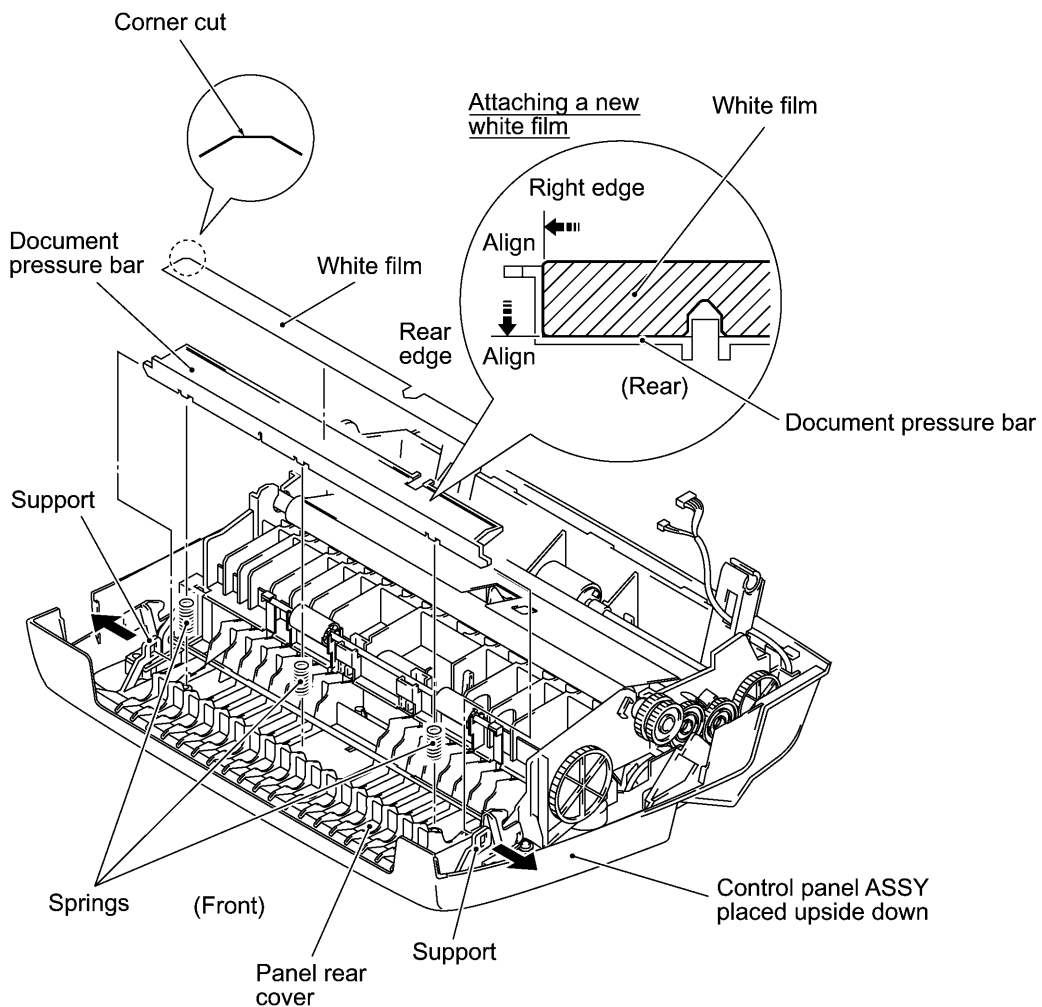


1.2 Disassembly of the Control Panel ASSY (Document pressure bar and chute cover ASSY)

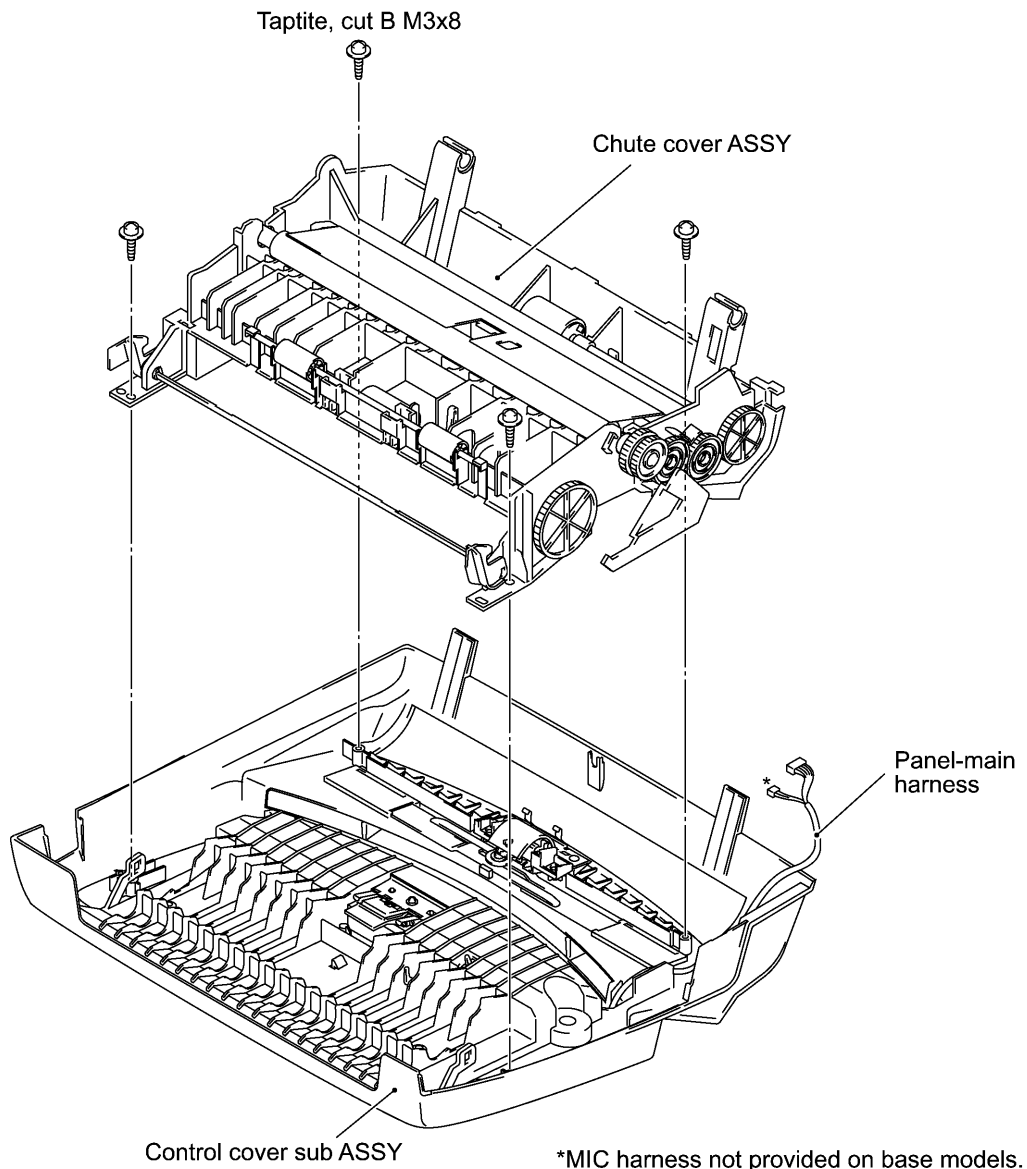
- (1) Place the control panel ASSY upside down.
- (2) Pull either of the supports provided on the panel rear cover outwards and lift up the document pressure bar. The three springs also come off.
- (3) To replace the white film of the document pressure bar, remove it.

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.



- (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.

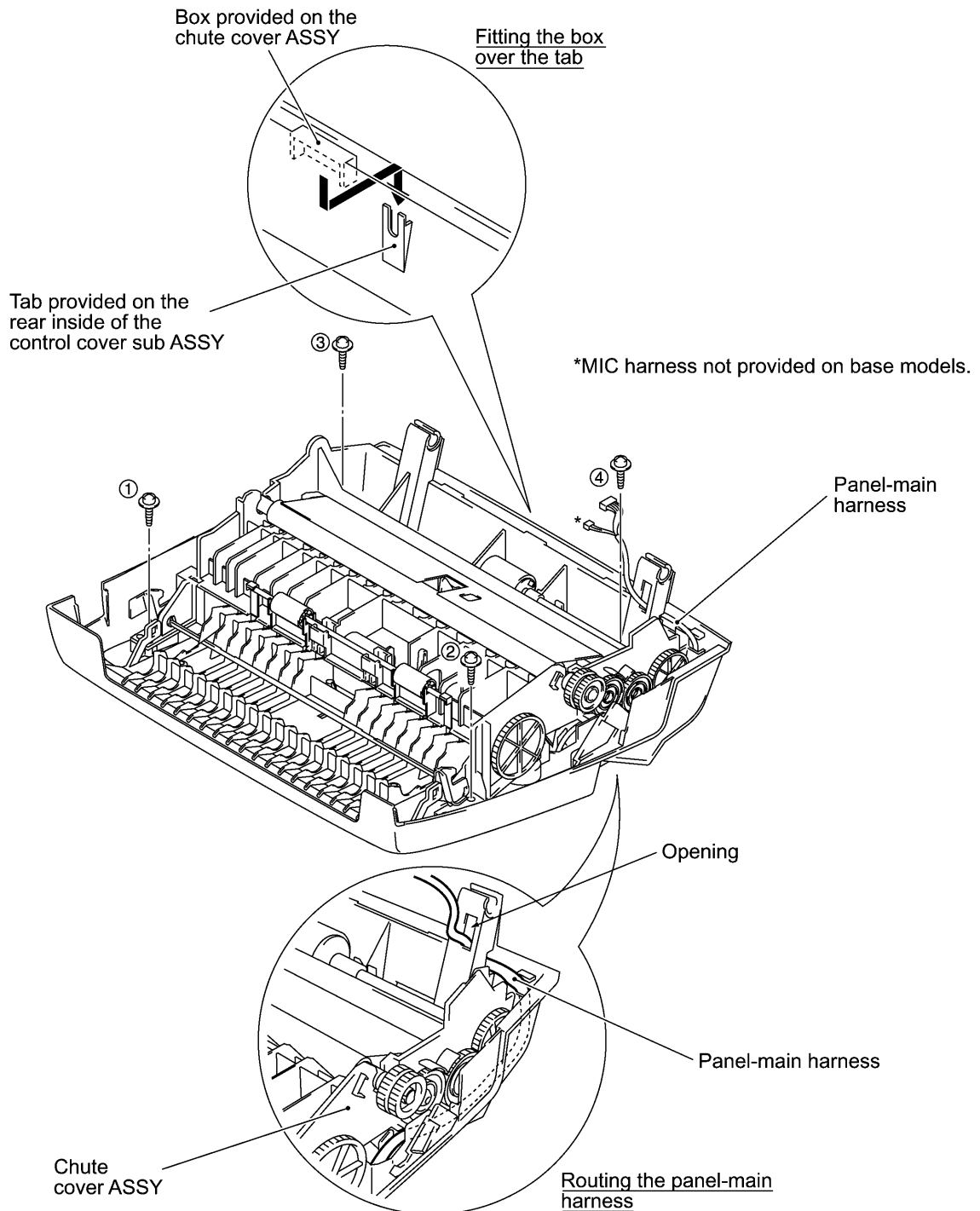


n Reassembling Notes

- 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.

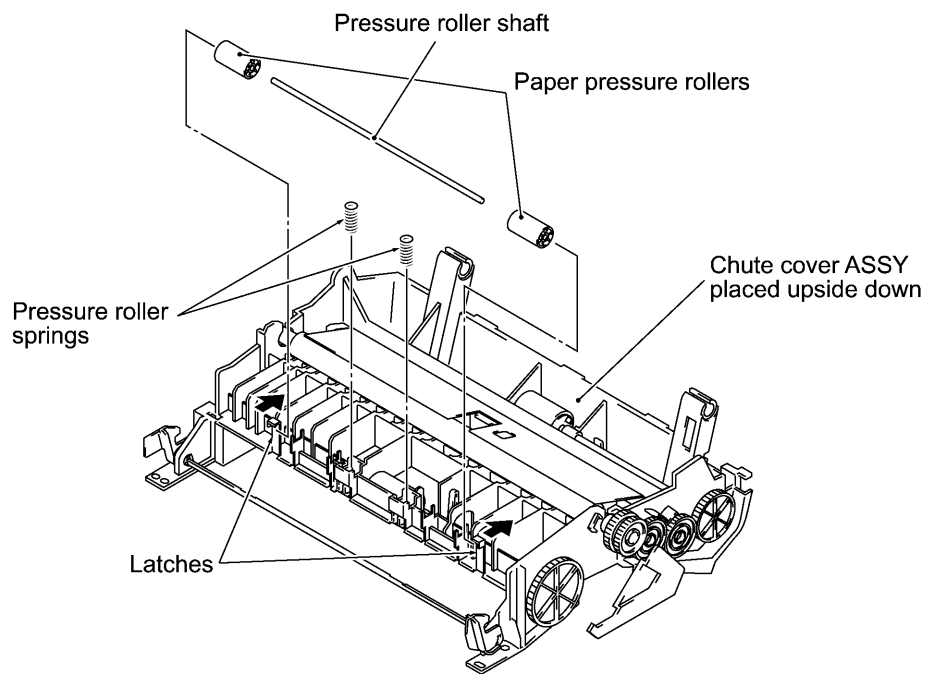
Tighten four screws in the order shown below.



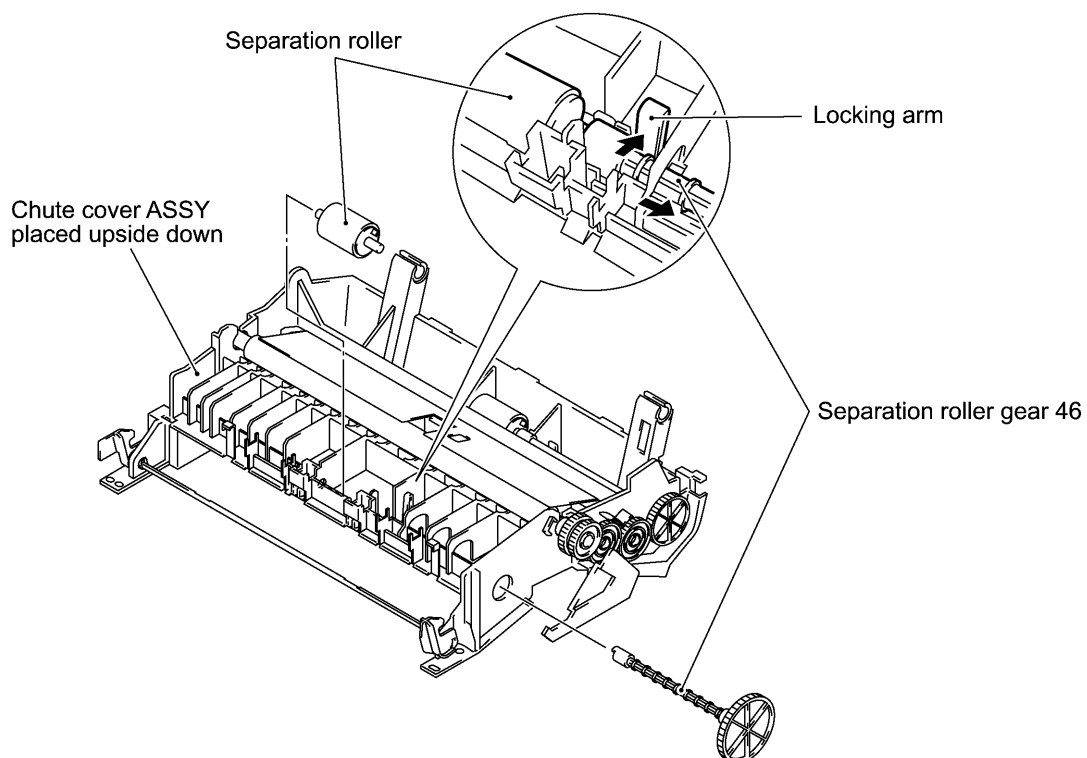
1.3 Disassembly of the Chute Cover ASSY

(Paper pressure rollers, separation roller, paper feed roller 32, platen, registration sensor actuator, and lock bar & lock levers)

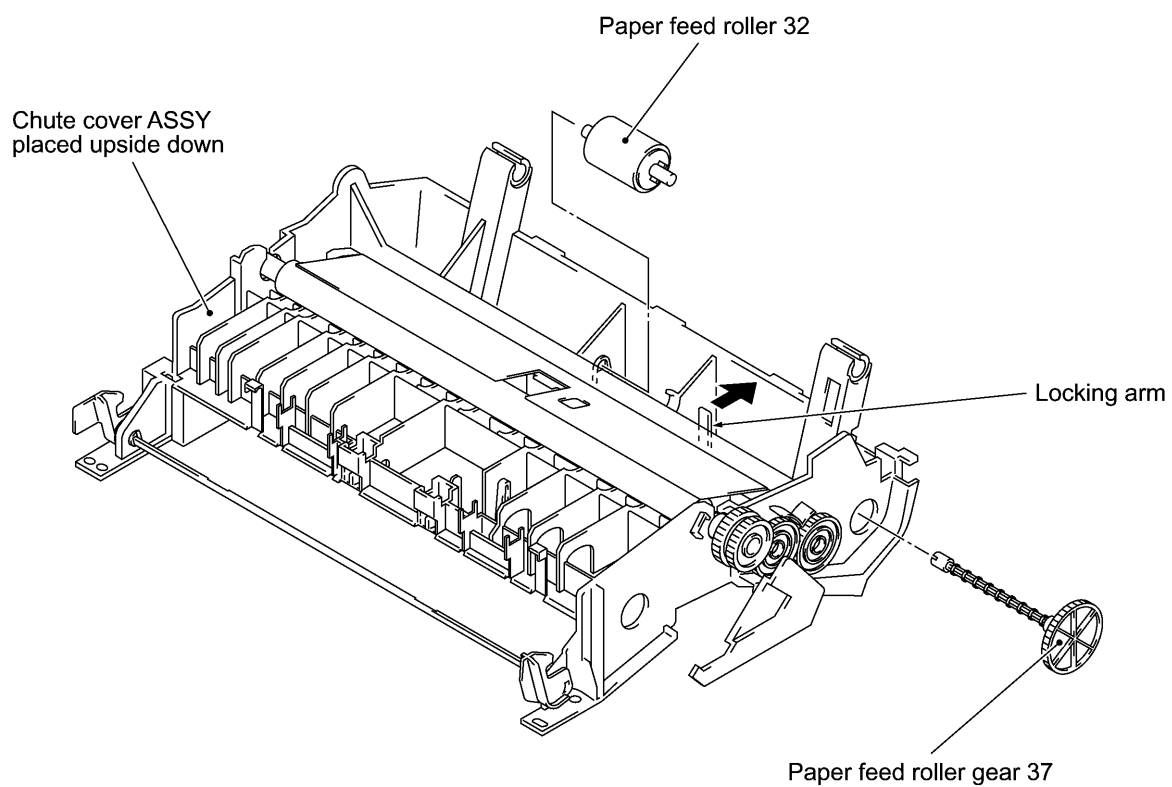
- (1) Press the latches to release the pressure roller shaft and take out the paper pressure rollers and their shaft. The springs also come off.



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

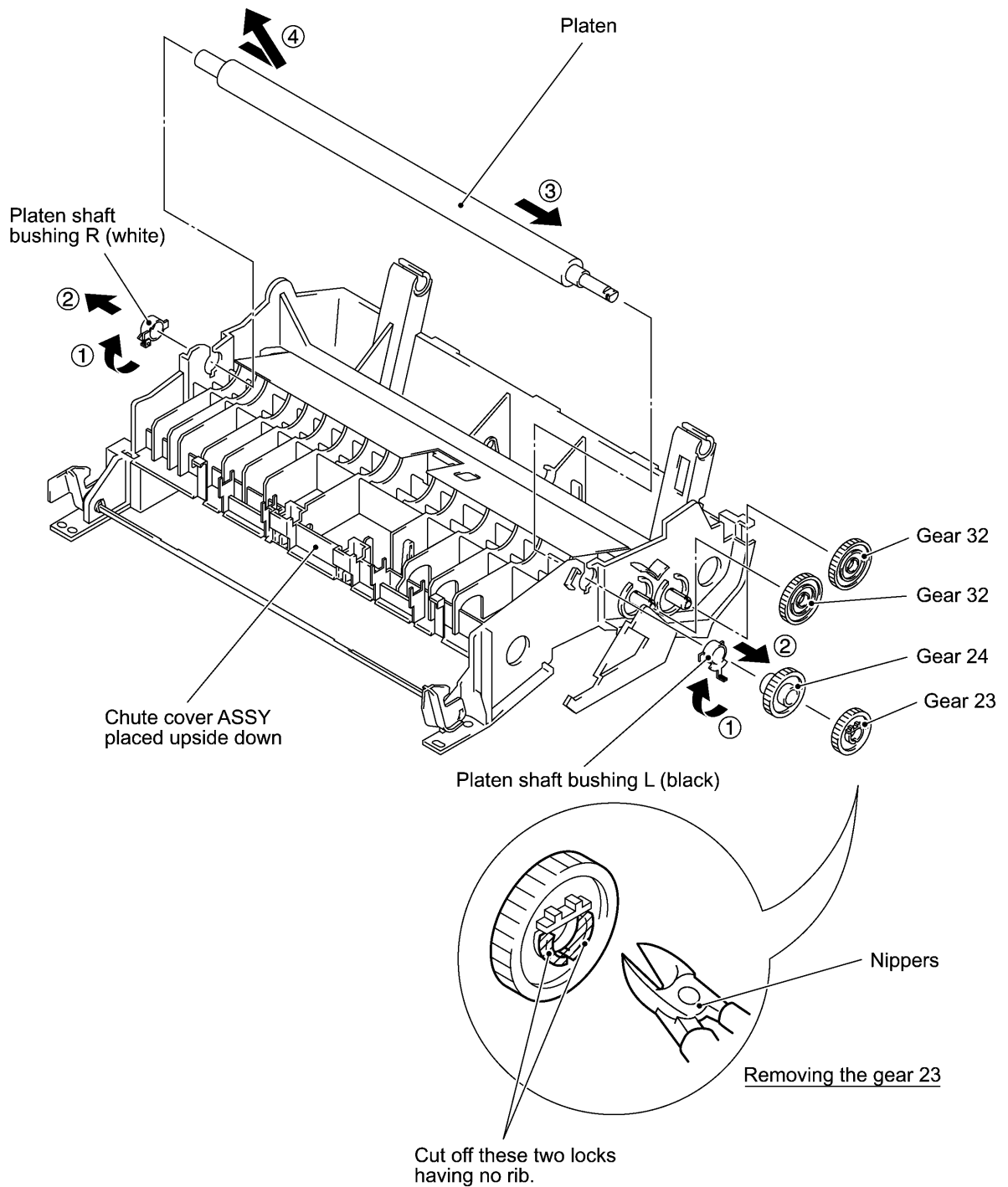


- (3) Press the locking arm and pull out the paper feed roller gear 37. Take out the paper feed roller 32.



- (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.

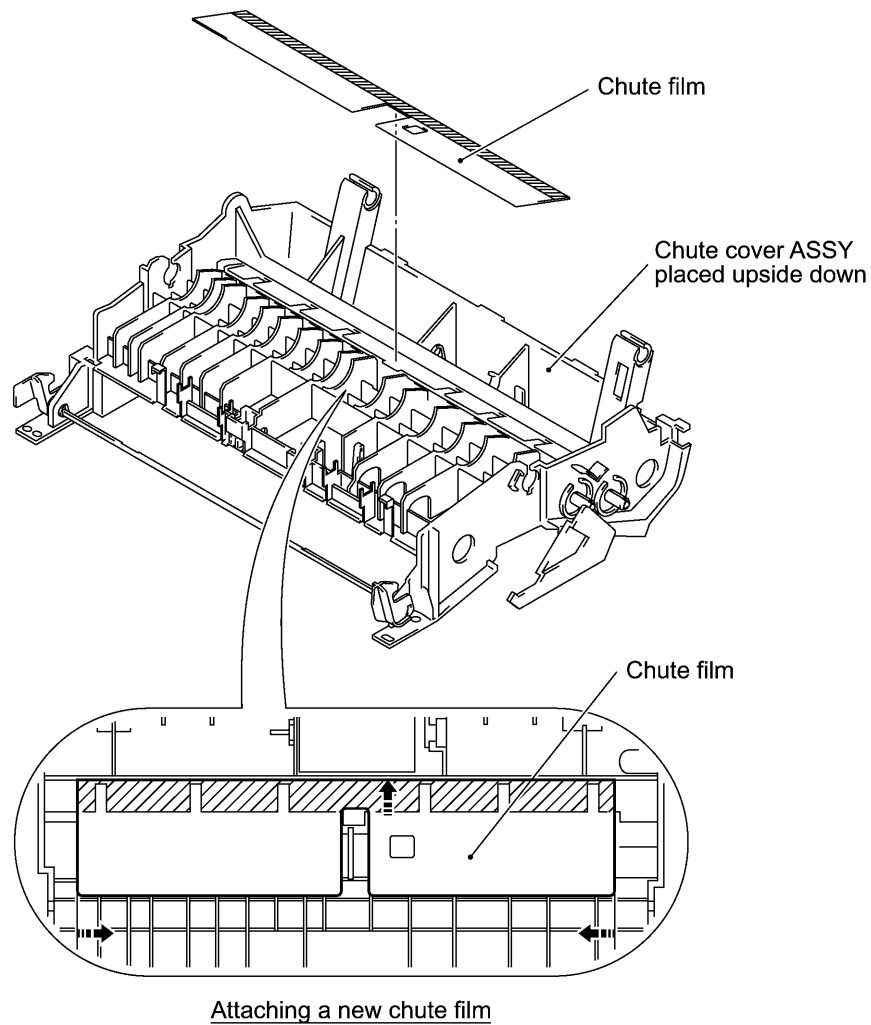
NOTE: Do not remove the platen except when the platen is defective and requires replacement. When placing an order for a platen, also order gear 23.



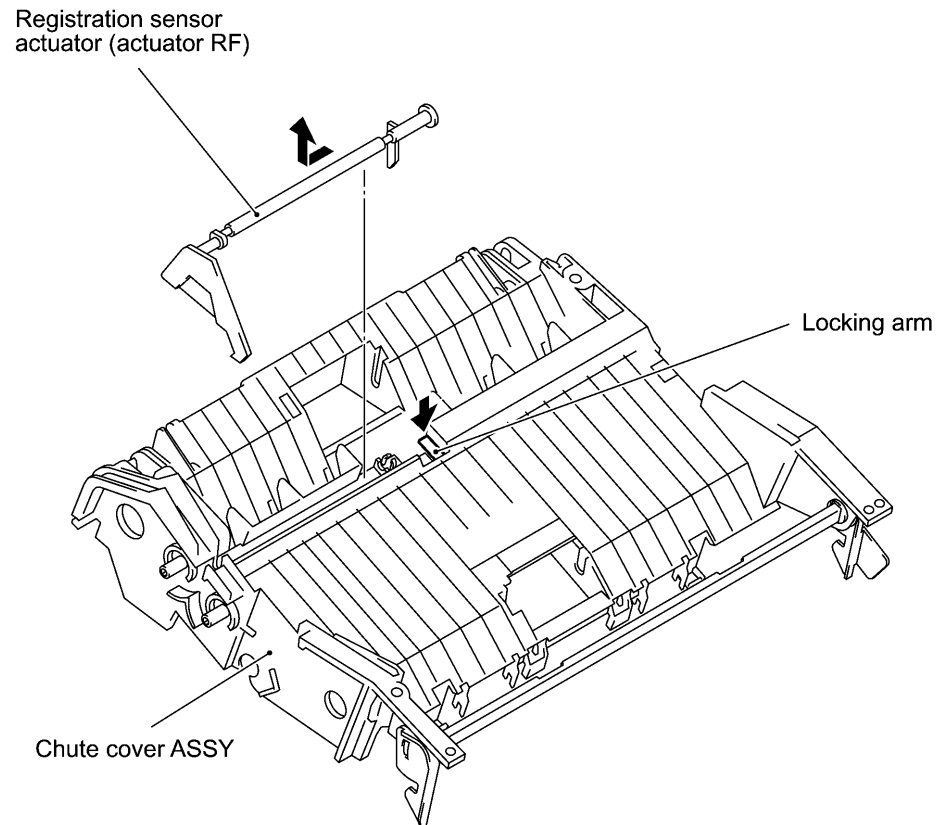
(5) Remove the chute film.

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

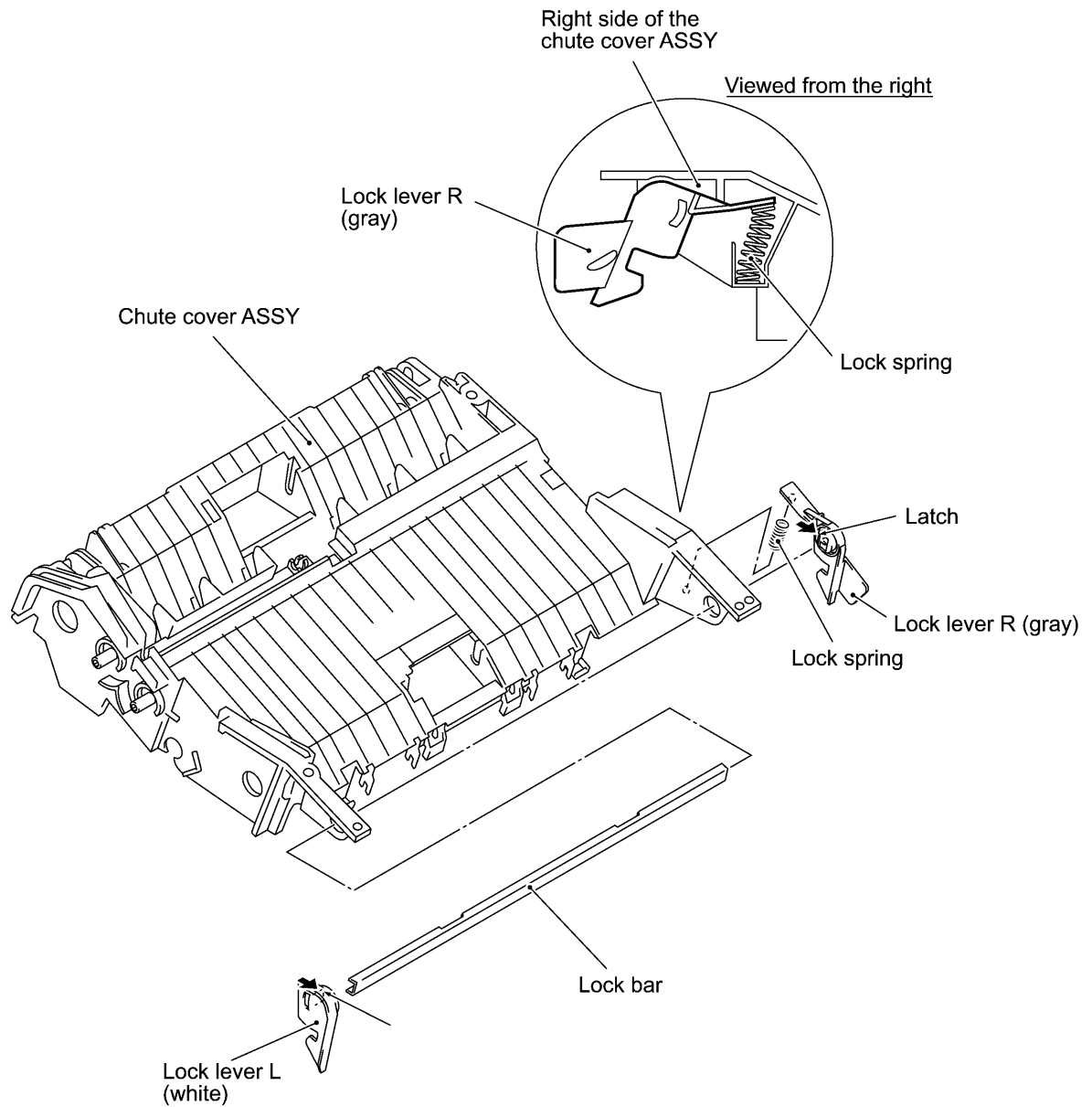
NOTE: When attaching a new chute film to the chute cover ASSY, fit the rear edge as shown below.



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



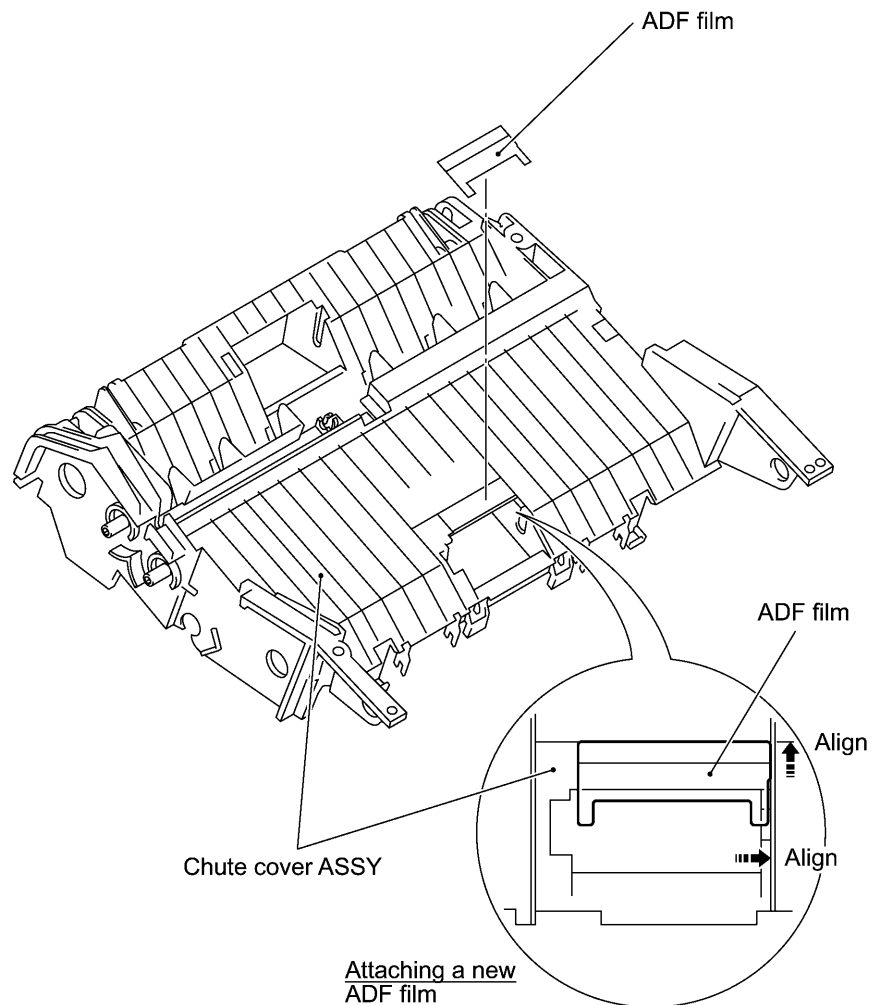
- (7) At the right end of the lock bar, release the latch of the lock lever R (gray) and pull it out to the right. The lock spring also comes off. At the left side, release the latch of the lock lever L (white) and pull it out to the left.



(8) Remove the ADF film.

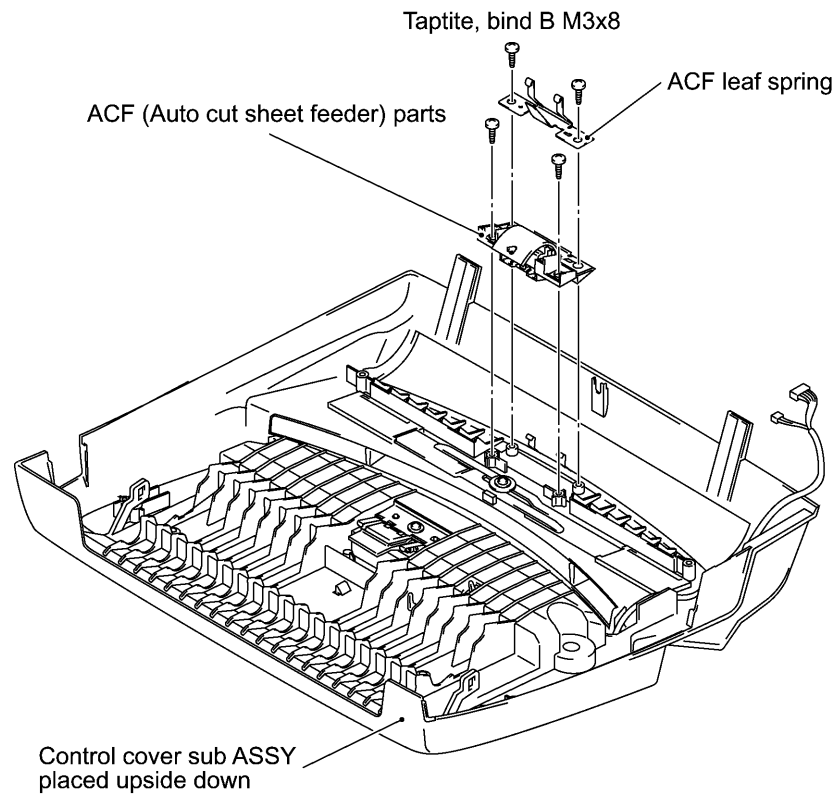
NOTE: Once removed, the ADF film will become unusable and a new one will have to be put back in.

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

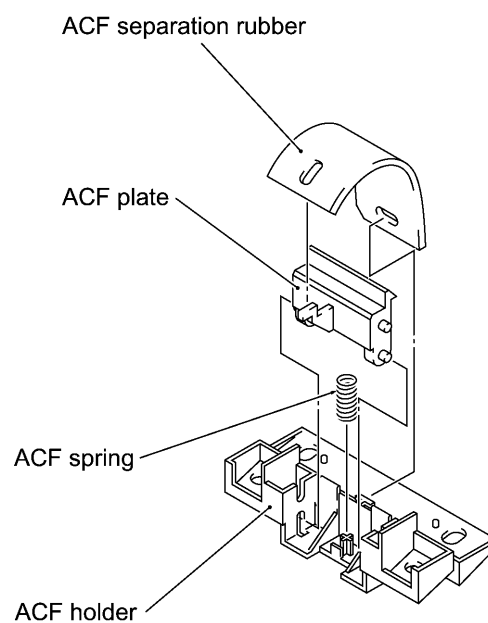


1.4 Disassembly of the Control Cover Sub ASSY (ACF parts, ADF parts, panel rear cover, control panel PCB, FPC key, LCD, and keys)

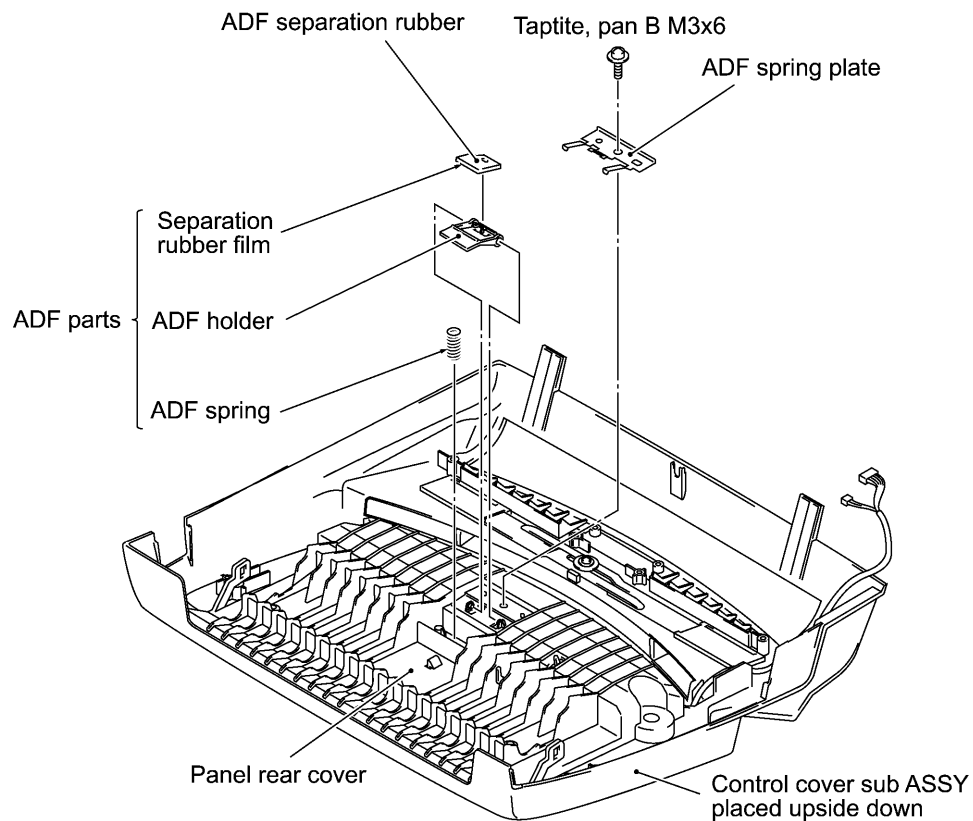
- (1) Remove the two screws to release the ACF (auto cut sheet feeder) leaf spring.
- (2) Remove two screws to release the ACF parts.



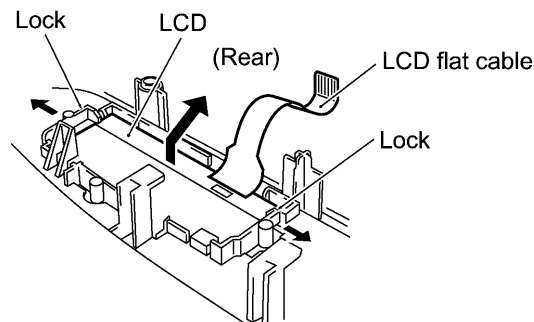
- (3) Disassemble the ACF parts as illustrated below.

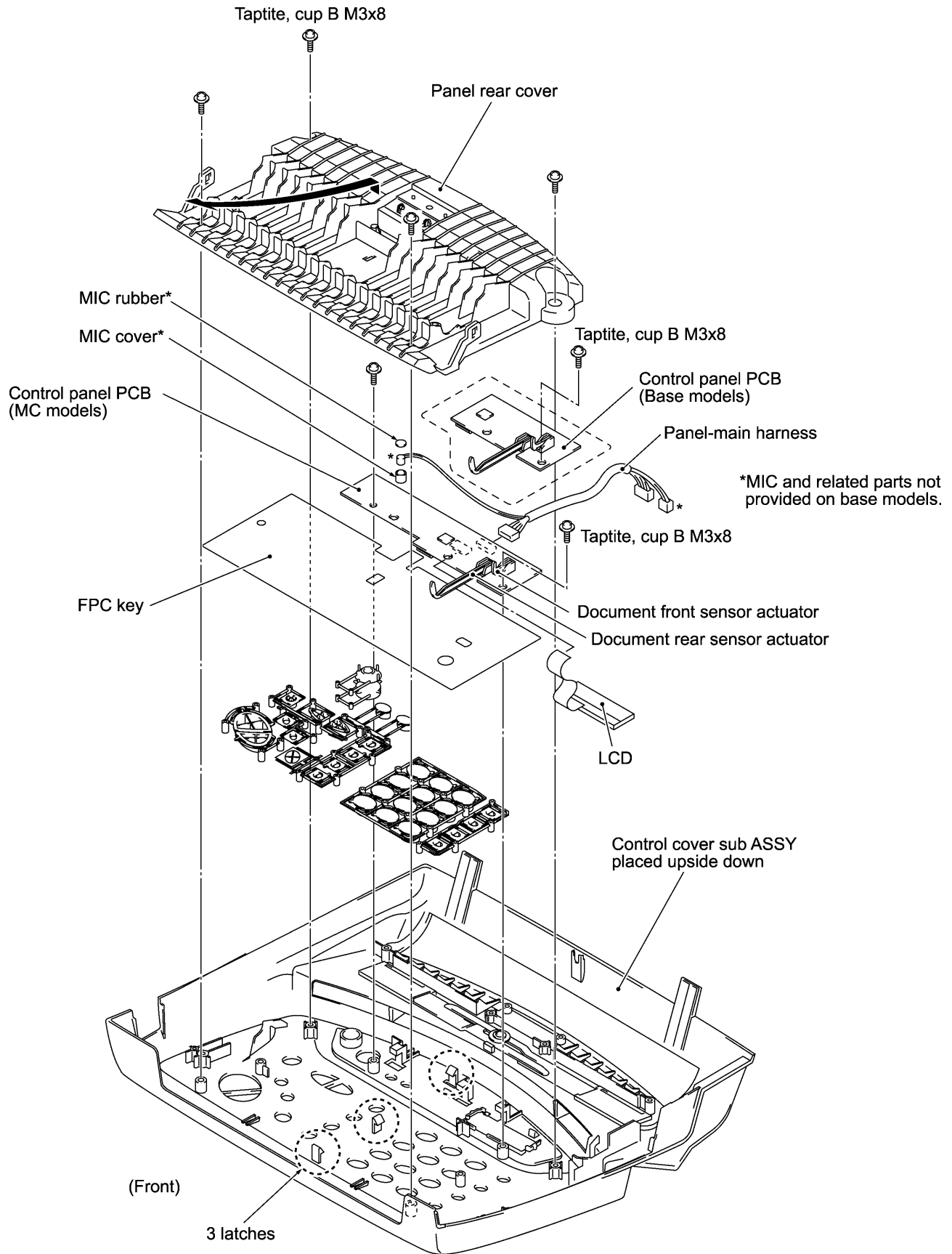


- (4) Remove the screw and disassemble the ADF parts as illustrated below.



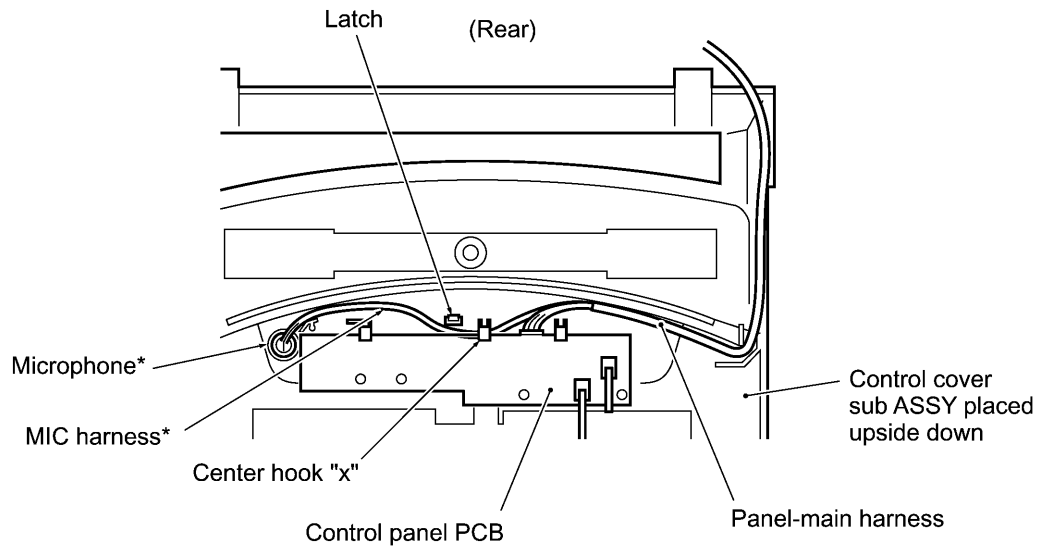
- (5) Remove the four screws from the panel rear cover. (See the illustration given on the next page.)
- (6) Unhook the panel rear cover from the three latches provided on the control cover sub ASSY, then slide the panel rear cover to the front to prevent it from catching the document front and rear 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.





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."



*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.

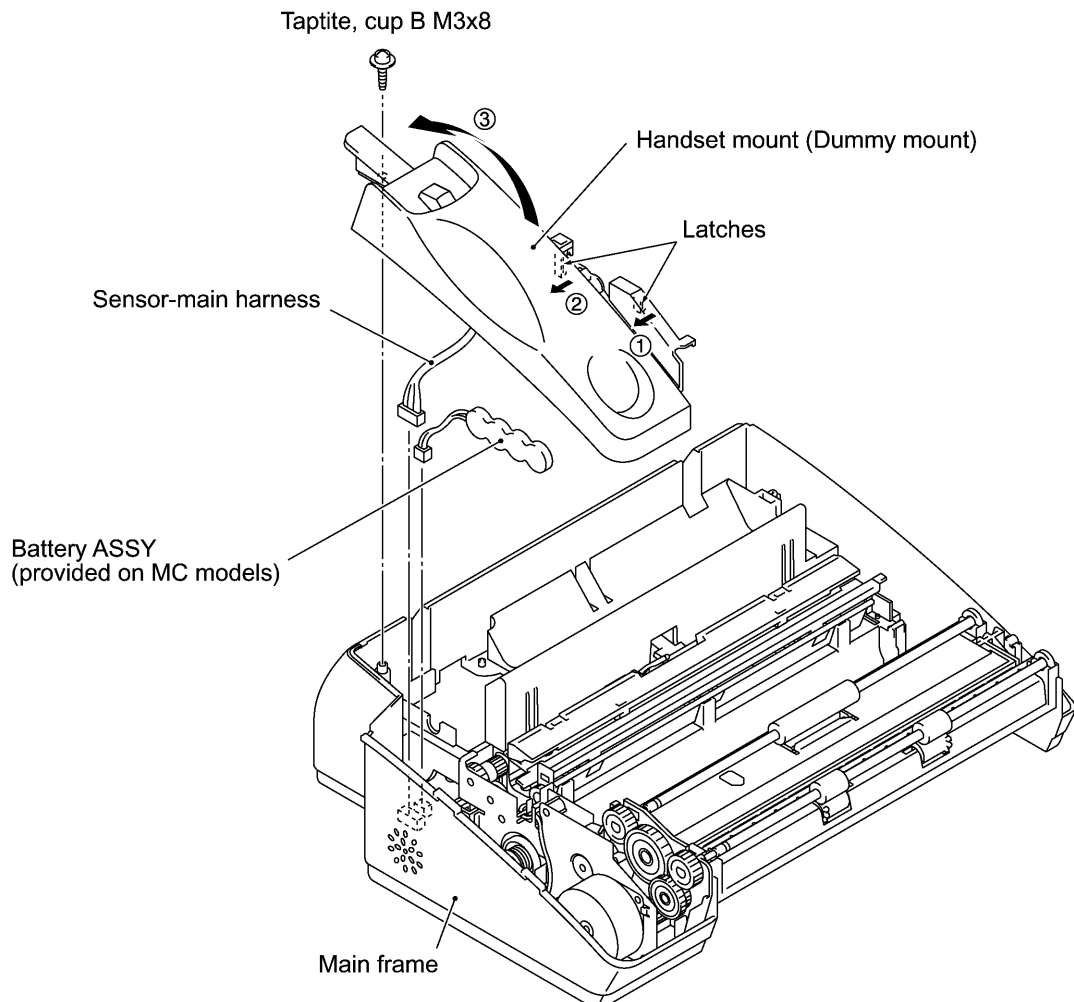
1.5 Handset Mount^{*1}, Dummy Mount^{*2}, Battery ASSY^{*3}, Sensor PCB, Cover Sensor Actuator, and Hook Switch Actuator^{*1}

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

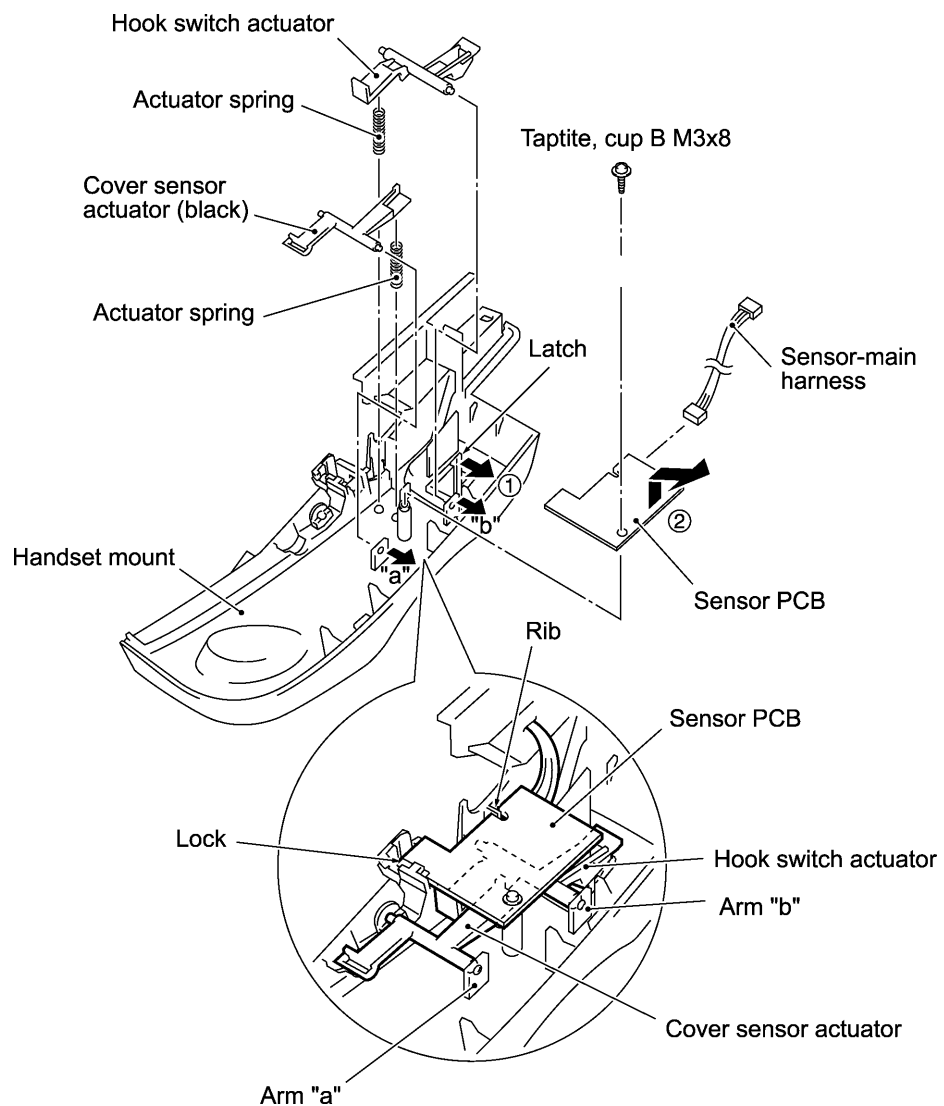
- (1) Release the latches with a flat screwdriver in the order of ① and ②, while twisting the handset mount^{*1} or dummy mount^{*2} so that it tilts over to the left.
- (2) MC models: To replace the battery ASSY (Ni-MH battery), plug the power cord of the facsimile equipment into a power outlet, disconnect 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.

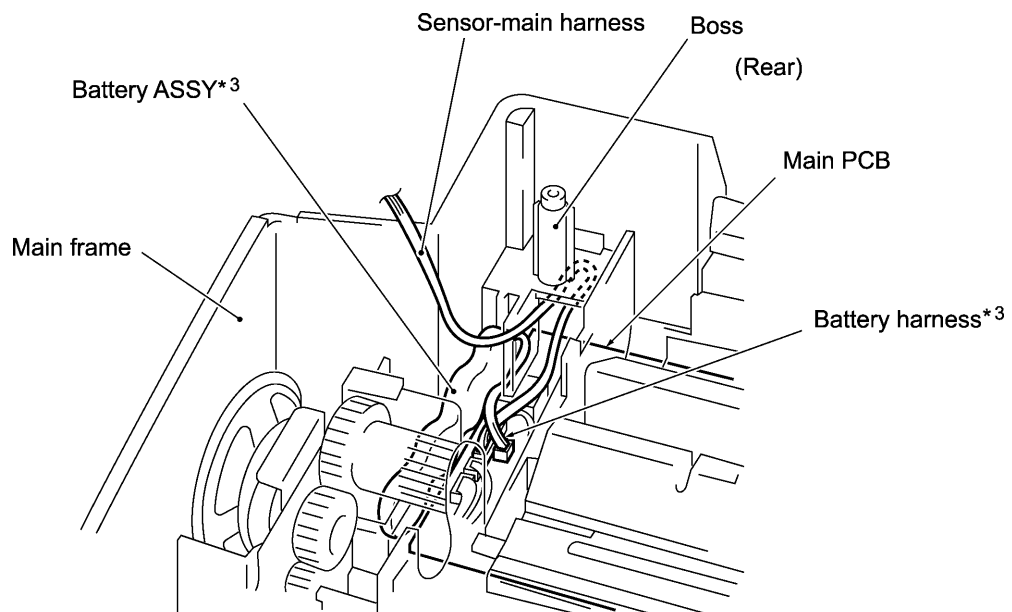


- (3) Disconnect the sensor-main harness from the sensor PCB.
- (4) Remove the screw, release the latch, and take out the sensor PCB in the direction of arrows • and , .
- (5) Pull arm "a" to release the cover sensor actuator (black). The spring also comes off.
- (6) Pull arm "b" to release the hook switch actuator*¹. The spring also comes off.



n Reassembling Notes

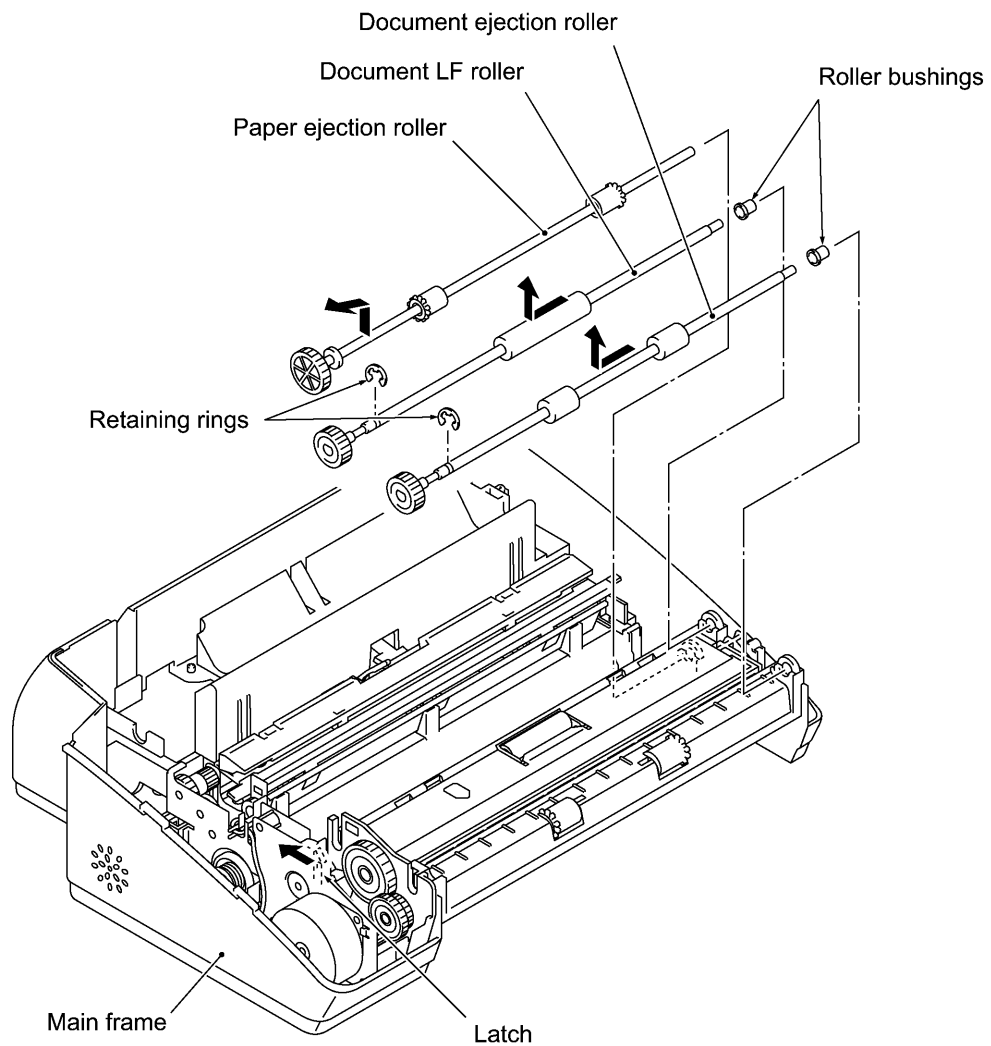
- When setting the battery ASSY*³ back into place, route the battery harness as illustrated below.
- When setting the handset mount back into place, route the sensor-main harness around the boss as illustrated below.



*³ Provided on MC models.

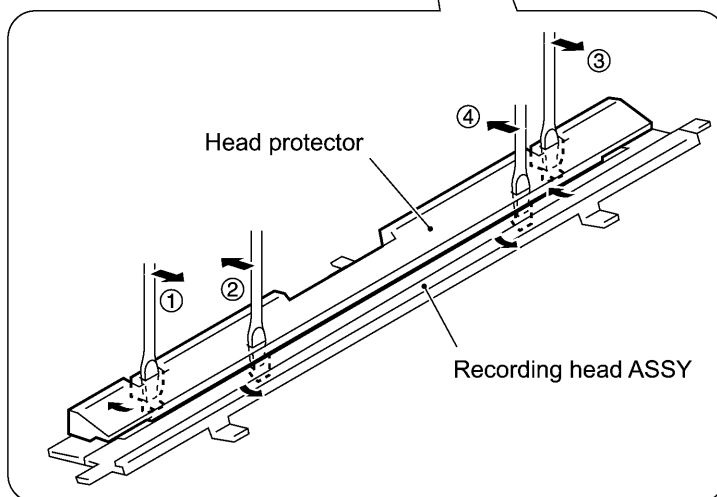
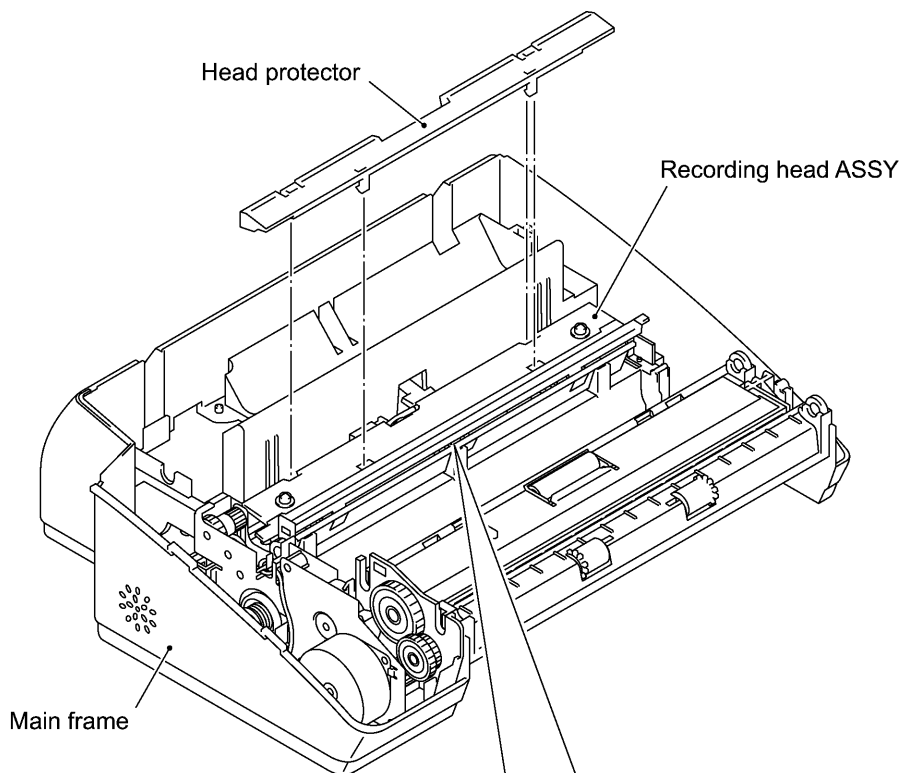
1.6 Paper Ejection Roller, Document LF Roller, and Document Ejection Roller

- (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.



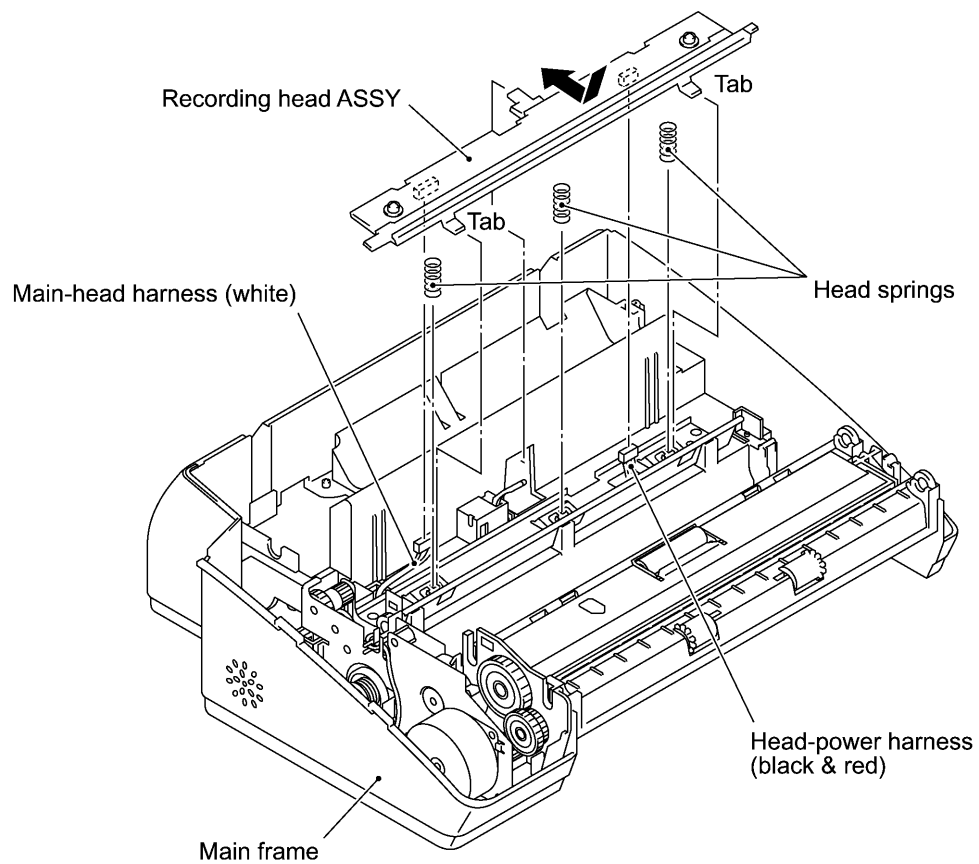
1.7 Head Protector, Recording Head ASSY, and Recorder Frame

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

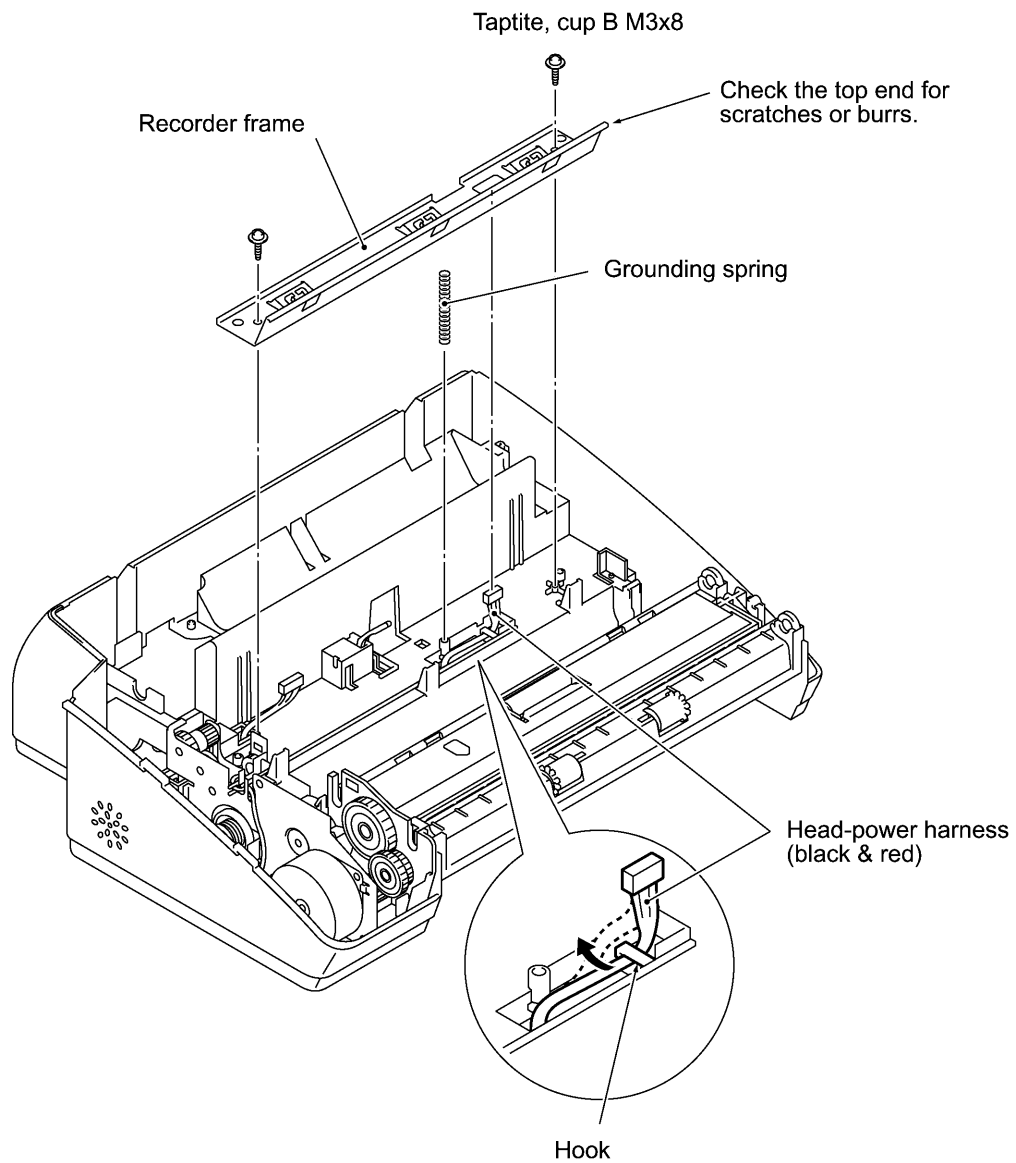


Unhooking the latches of the head protector

- (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.



- (5) Remove two screws to release the recorder frame.
- (6) Remove the grounding spring.
- (7) Unhook the head-power harness from the main frame.

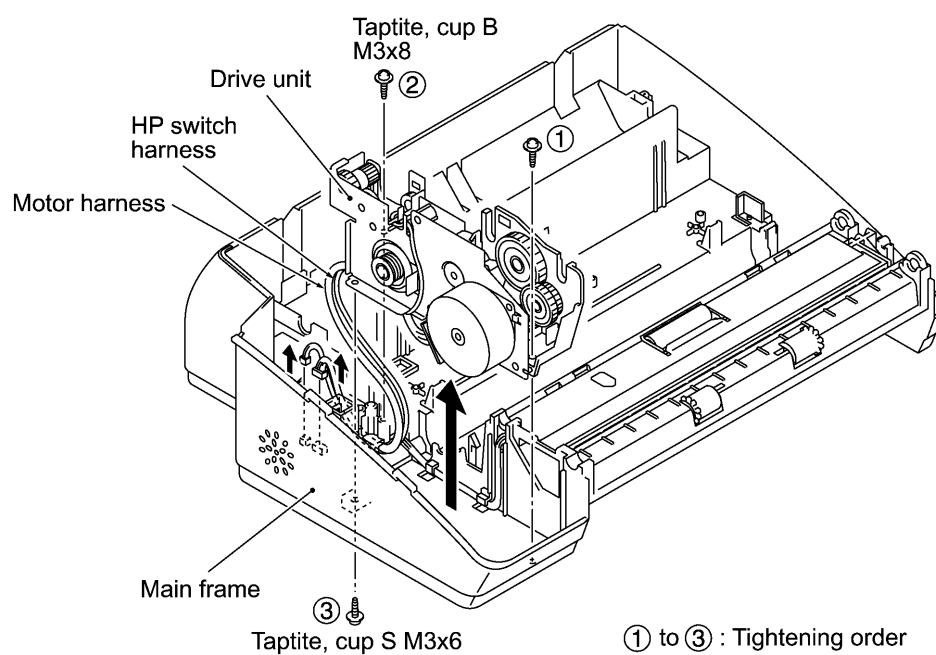


n Reassembling Notes

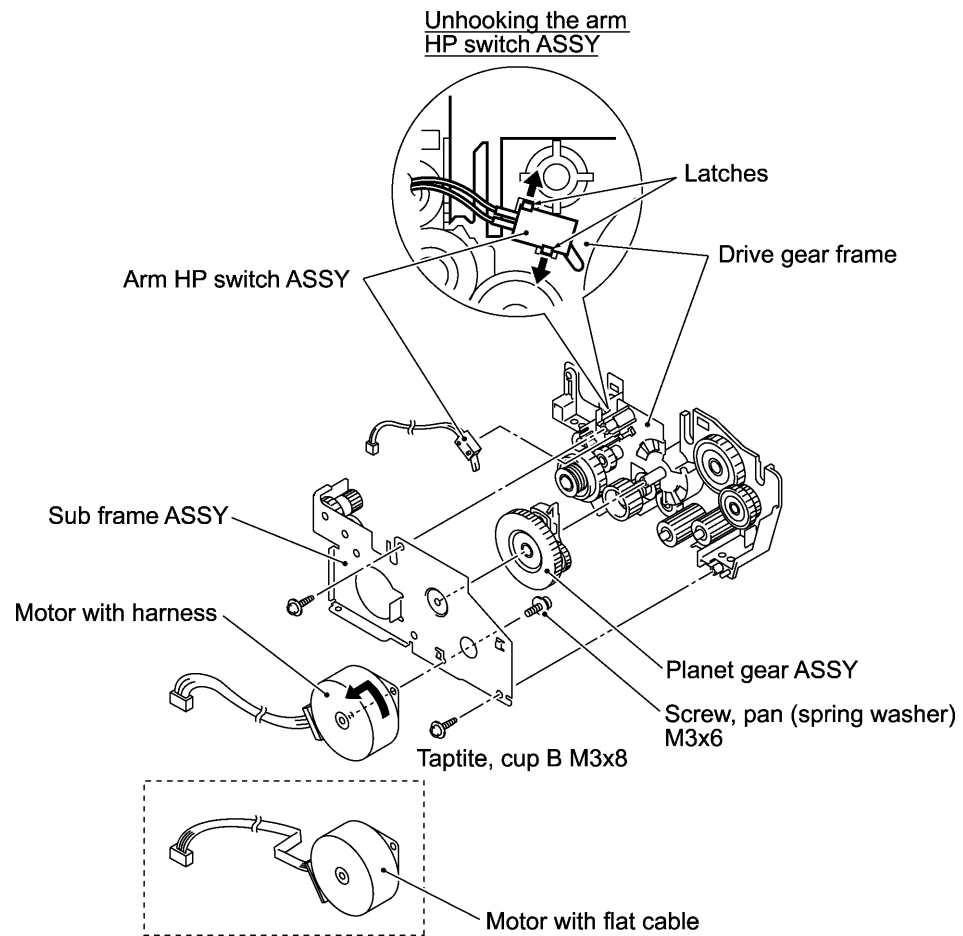
- Before reinstalling the recorder frame, check its top end (on which paper and ribbon pass) for scratches or burrs. Those on the top end will affect the printed image.
- When reinstalling the recording head ASSY, make sure that the three head springs are set into place.

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.

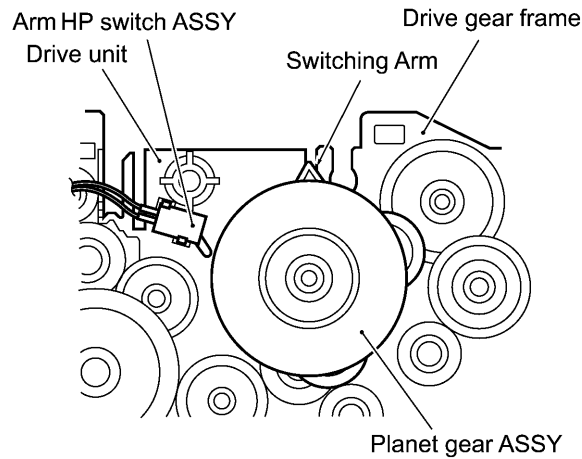


- (4) Remove the two screws to release the sub frame ASSY.
- (5) Remove the screw from the sub frame ASSY to release the motor.
- (6) Remove the planet gear ASSY from the drive unit.
- (7) Unhook the arm HP switch ASSY.

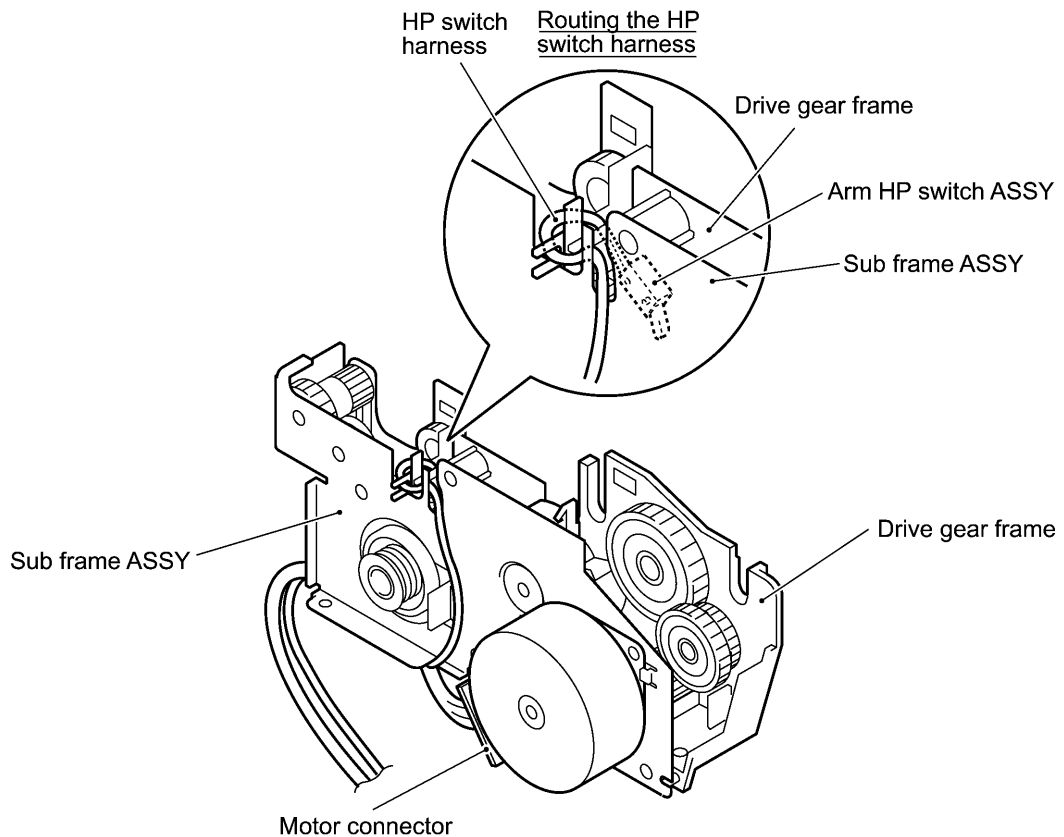


n Reassembling Notes

- 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.

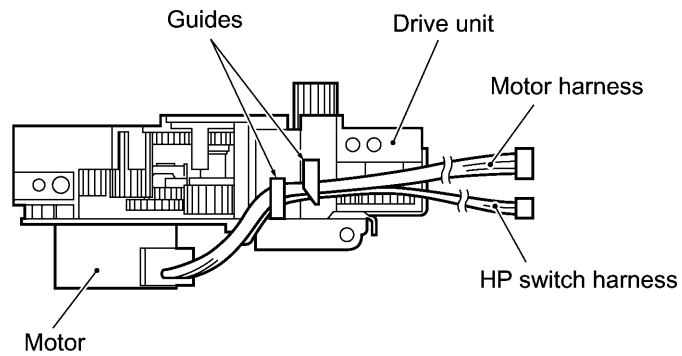


- Reinstall the motor with its connector facing downwards as shown below.
- When fitting the sub frame ASSY to the drive gear frame, route the HP switch harness as illustrated below.

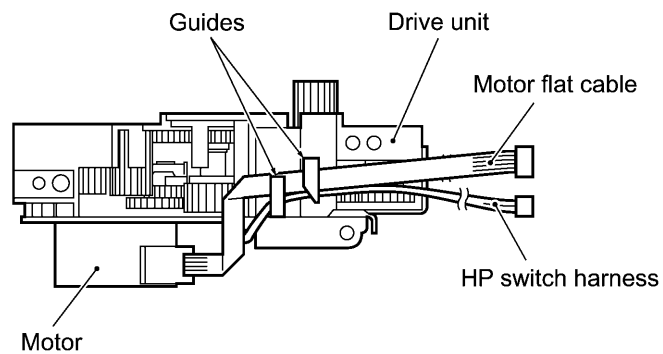


- Route the motor harness (or motor flat cable) and HP switch harness along the guides on the bottom of the drive unit.

For motor with harness



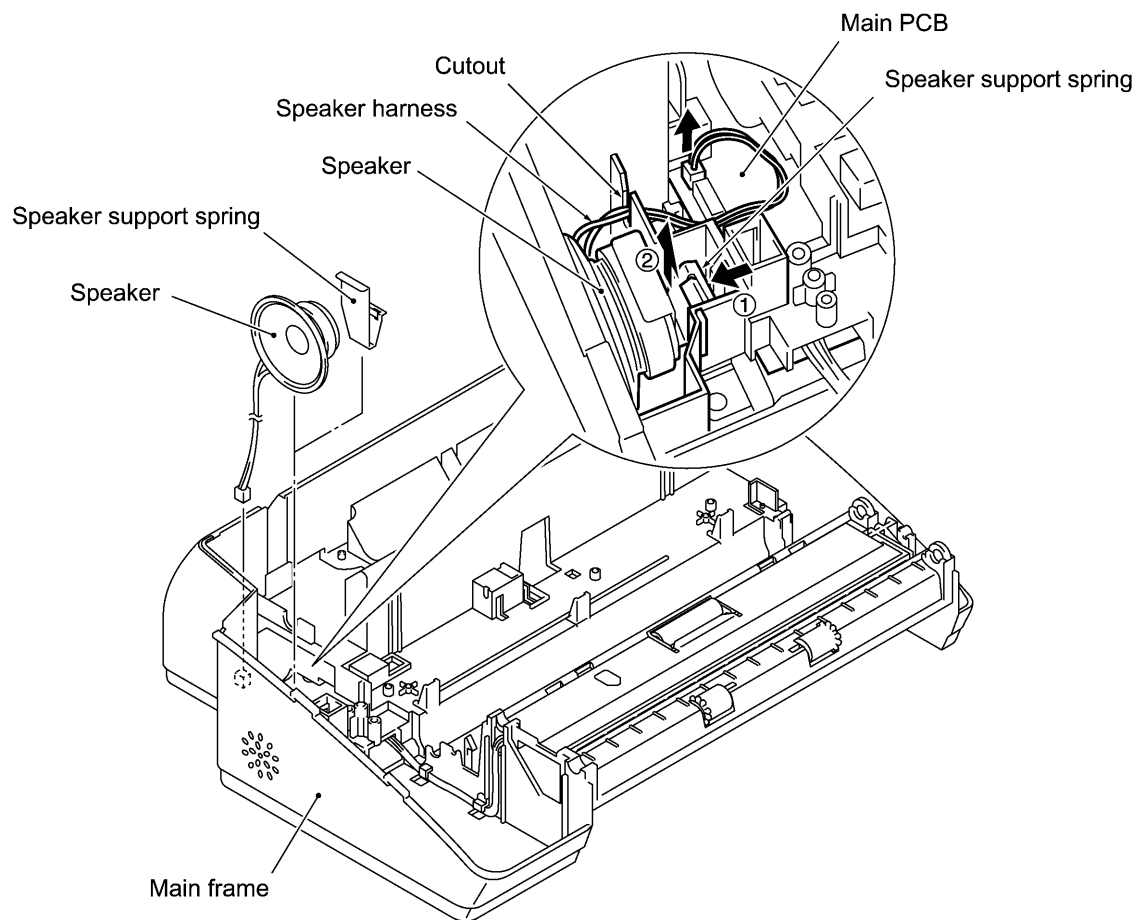
For motor with flat cable



- When securing the drive unit to the main frame, tighten the three screws in the order of • to *f* shown on page IV-28.

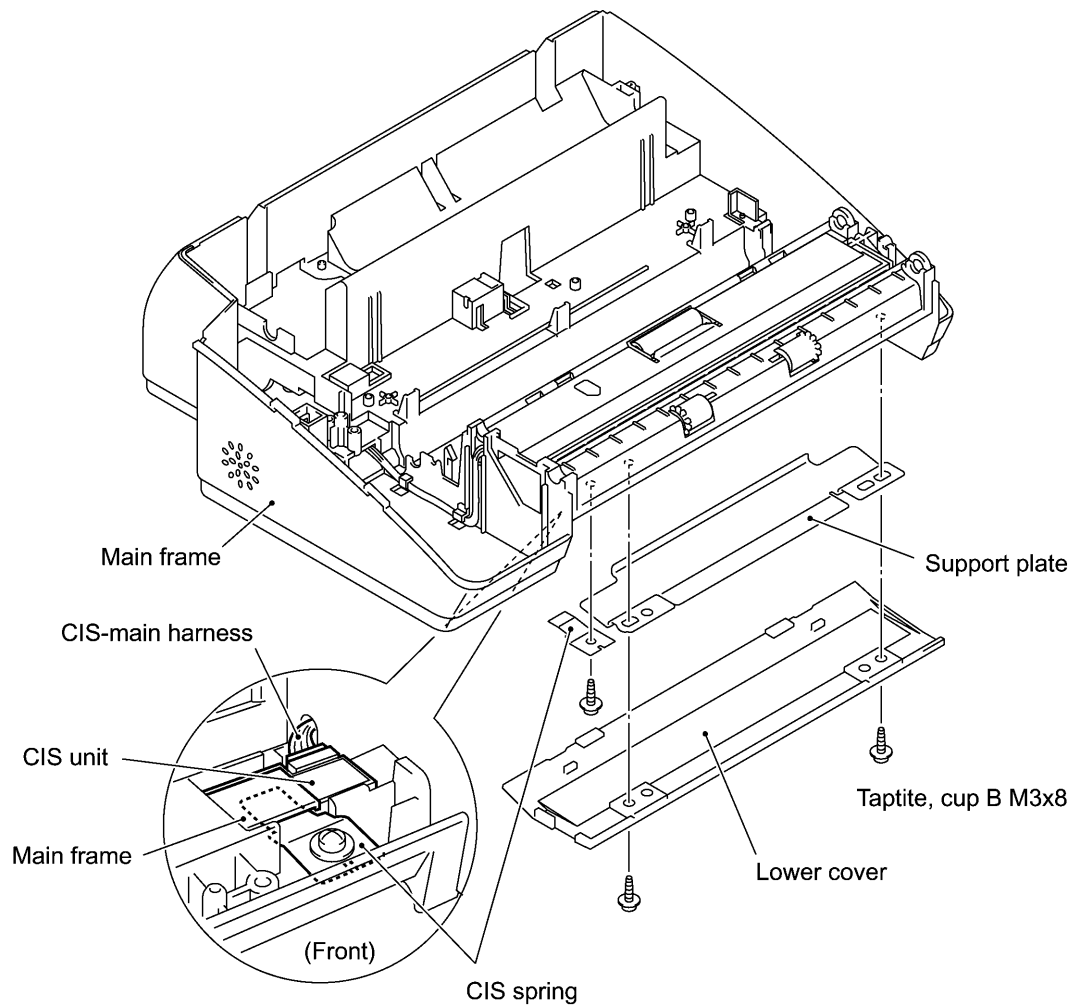
1.9 Speaker

- (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.



1.10 Lower Cover, Support Plate, and CIS Spring

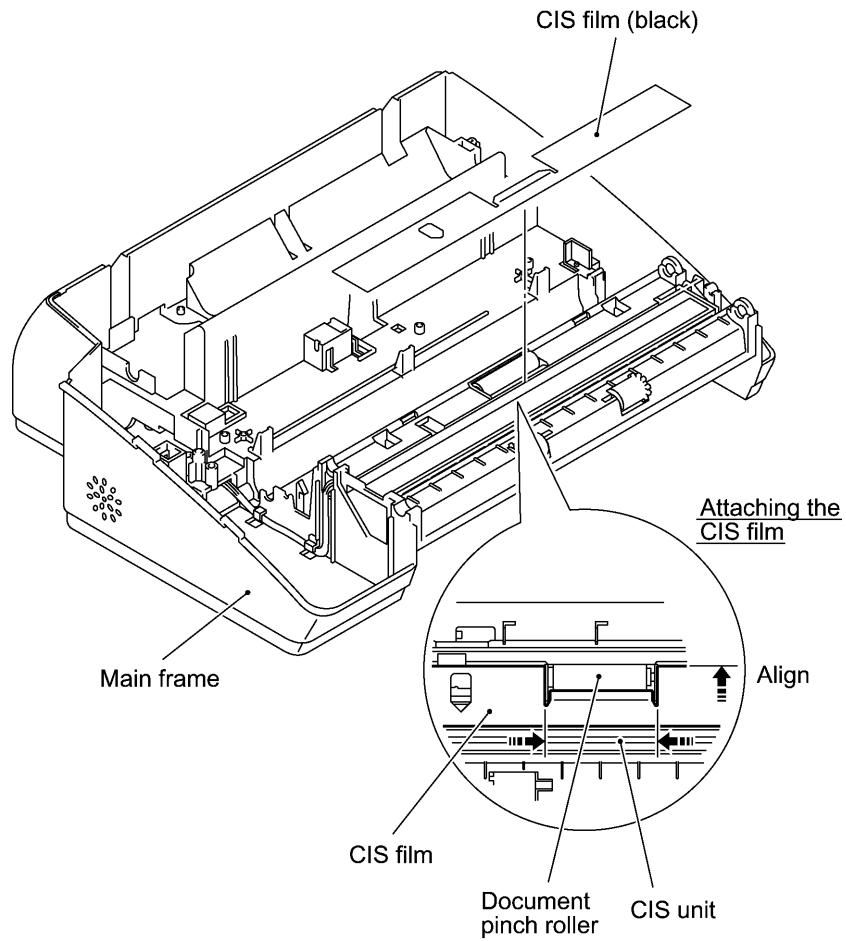
- (1) Remove the two screws to release the lower cover. The support plate also comes off.
- (2) Remove the screw to release the CIS spring.



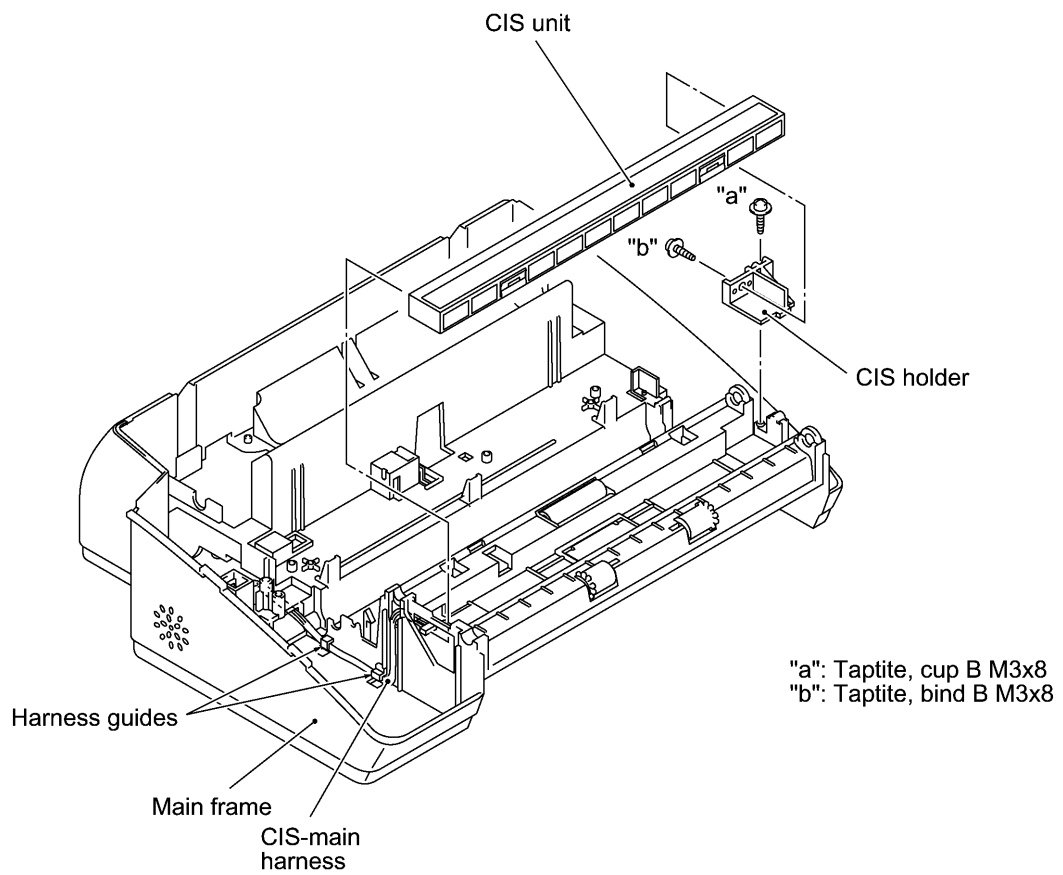
1.11 CIS Film and CIS Unit

- (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.

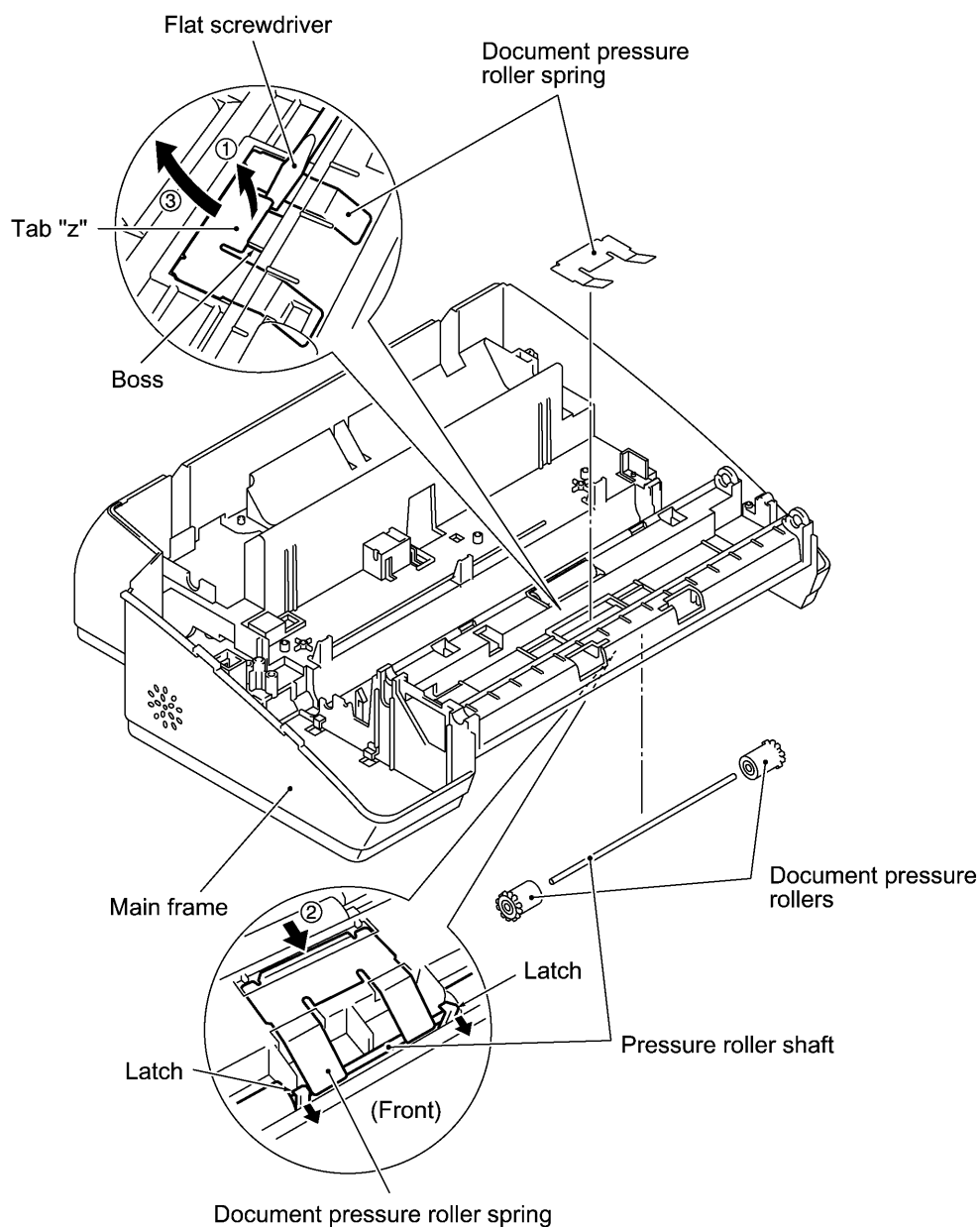


- (2) Remove screw "a" from the CIS holder.
- (3) Push up the rear end of the CIS holder, slightly lift up the CIS unit, and disconnect the CIS-main harness from the CIS unit.
- (4) Remove screw "b" to release the CIS holder.

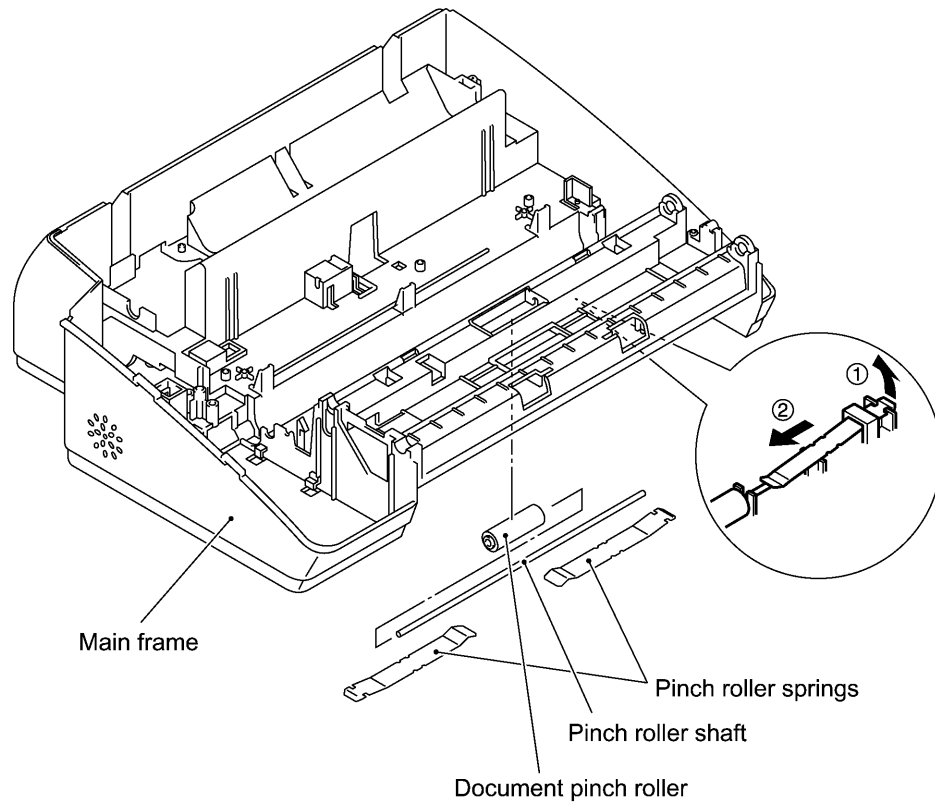


1.12 Document Pressure Rollers and Document Pinch Roller

- (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.

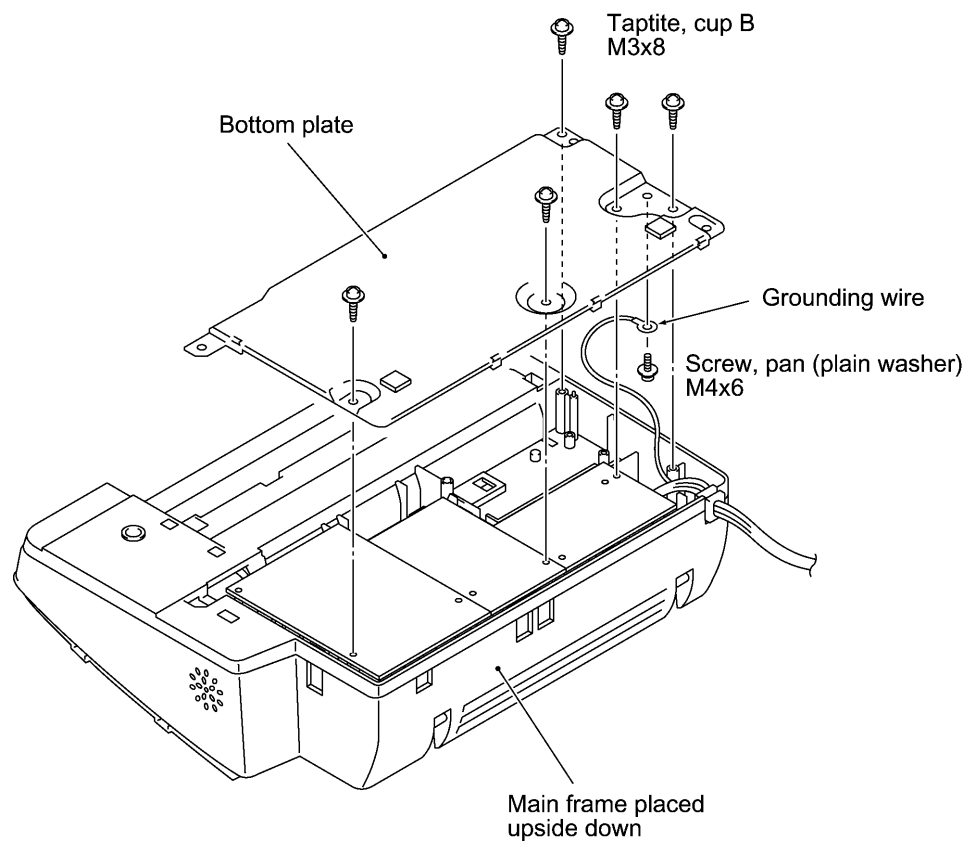


- (3) Pull up the outer end of each pinch roller spring (in the direction of arrow •) and press it inwards (arrow ,).
- (4) Remove the document pinch roller and its shaft.

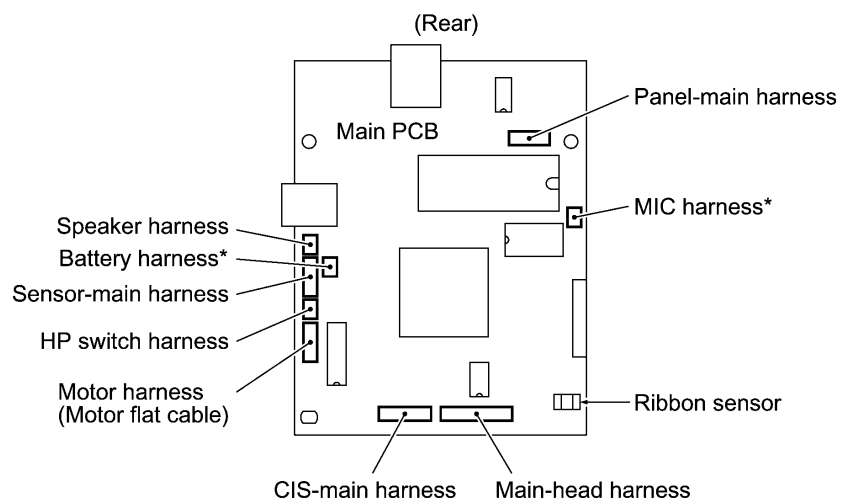
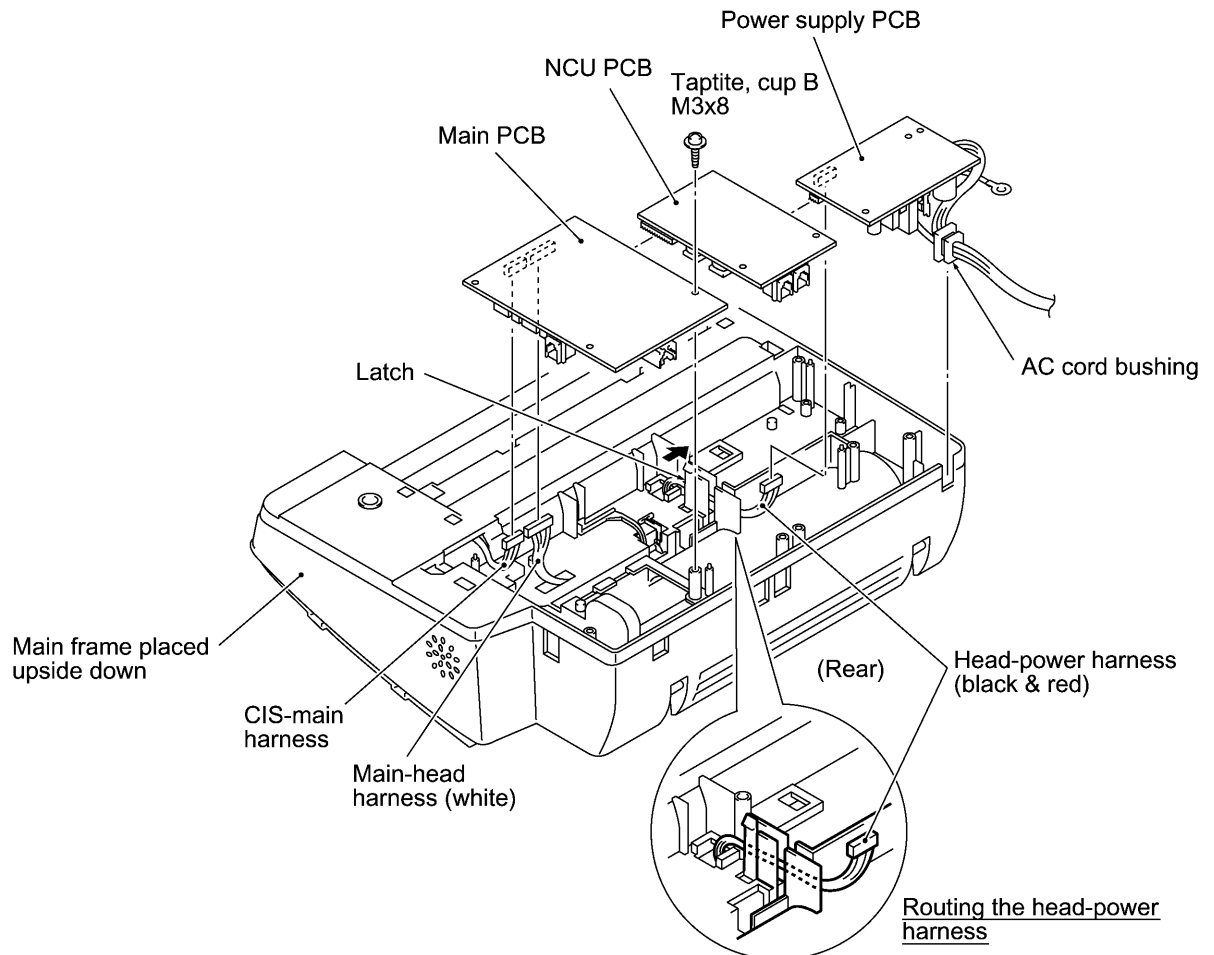


1.13 Bottom Plate, Main PCB, NCU PCB, Power Supply PCB, and Ribbon Sensor Actuator

- (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.

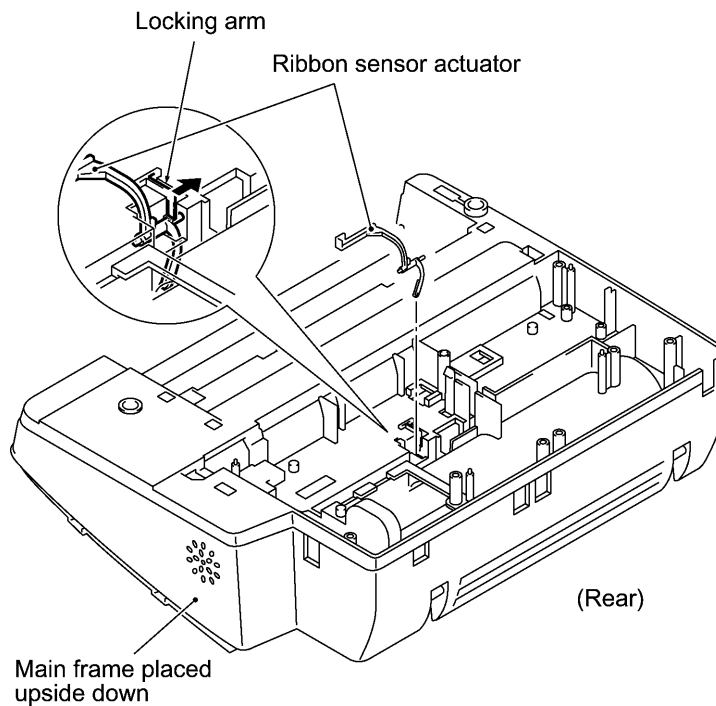


- (4) Remove the screw from the main PCB.
- (5) Unhook the NCU PCB.
- (6) Slightly lift up the main PCB, disconnect it from the NCU PCB, and disconnect the harnesses from the main PCB.
- (7) Slightly lift up the NCU PCB and disconnect it from the power supply PCB.
- (8) Slightly lift up the power supply PCB and disconnect the head-power harness.



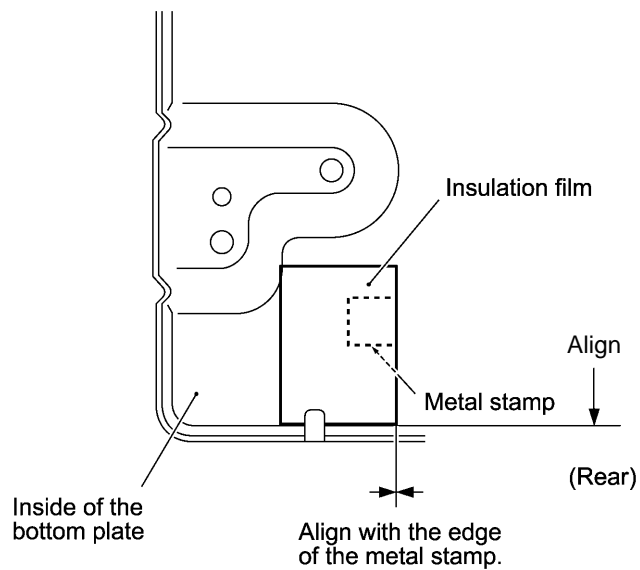
*Provided on MC models.

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

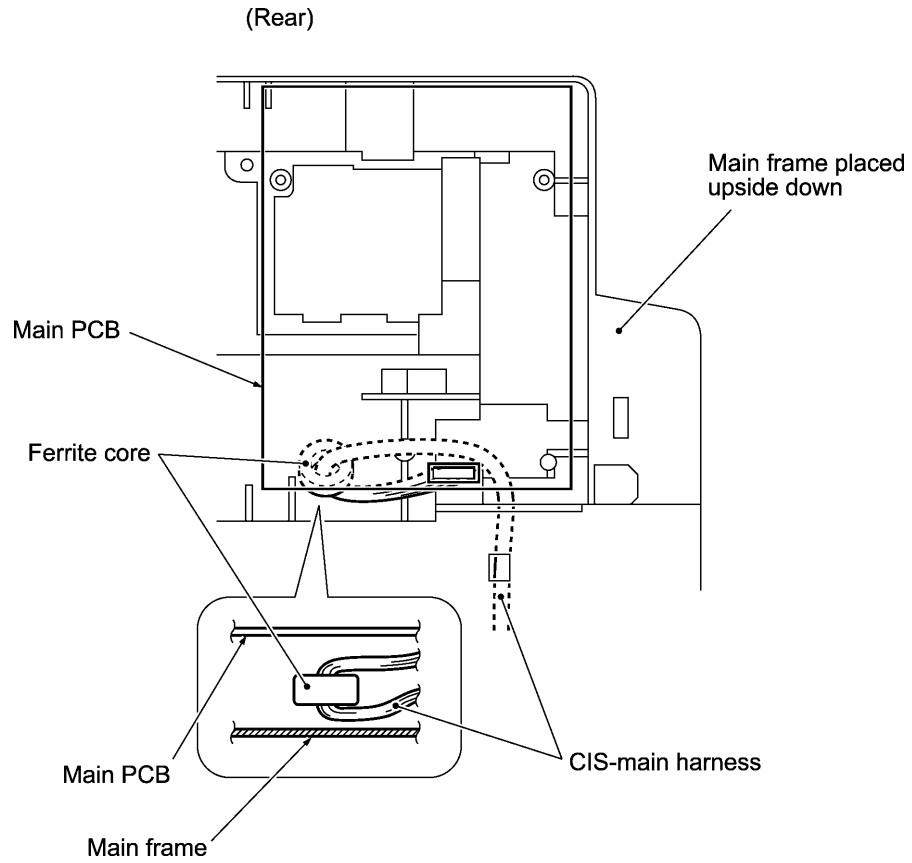


n Reassembling Notes

- 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.

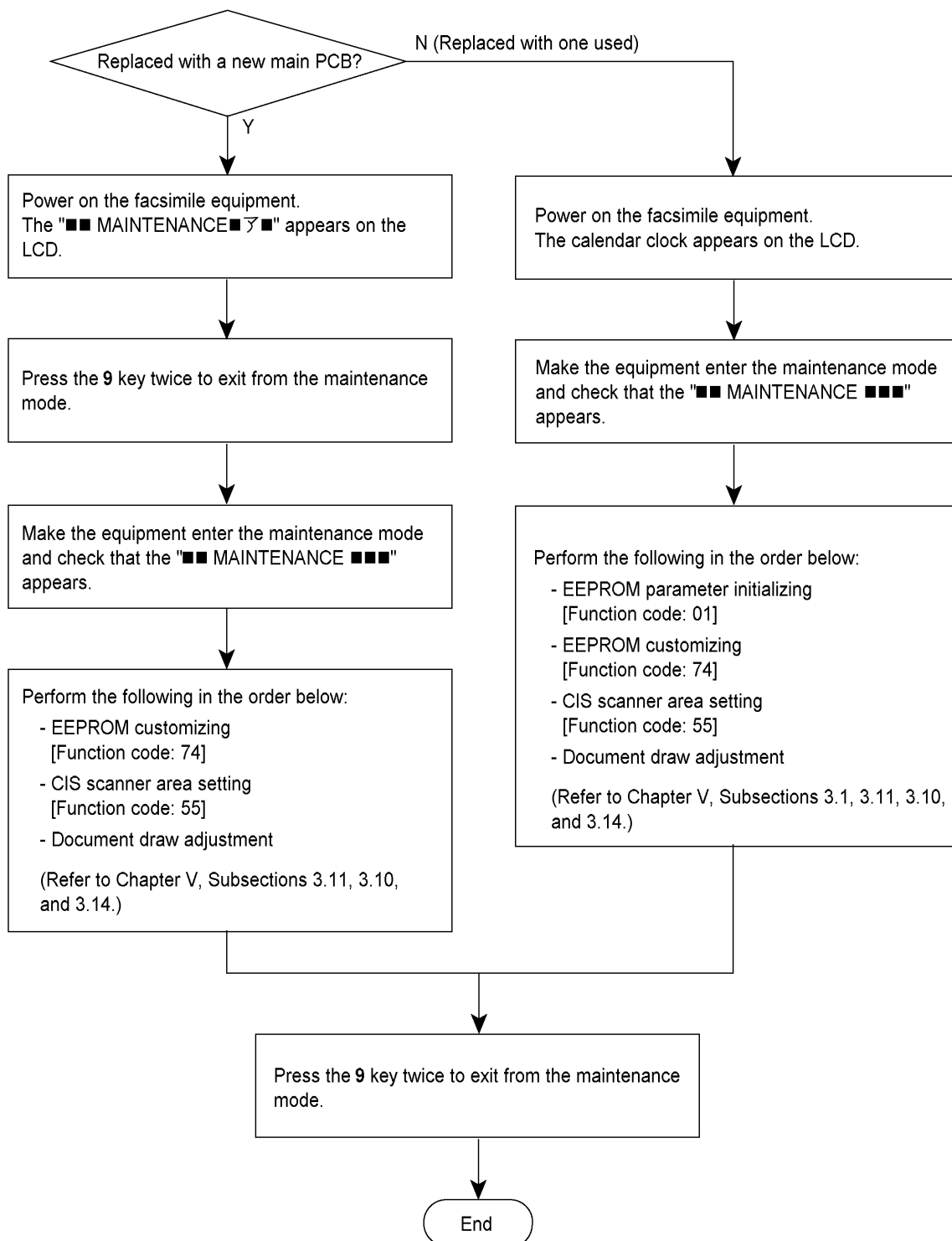


- When setting the main PCB back into place, route the CIS-main harness to place the ferrite core as illustrated below. Make sure that the ferrite core lies horizontally.



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

Setting up the main PCB after replacement



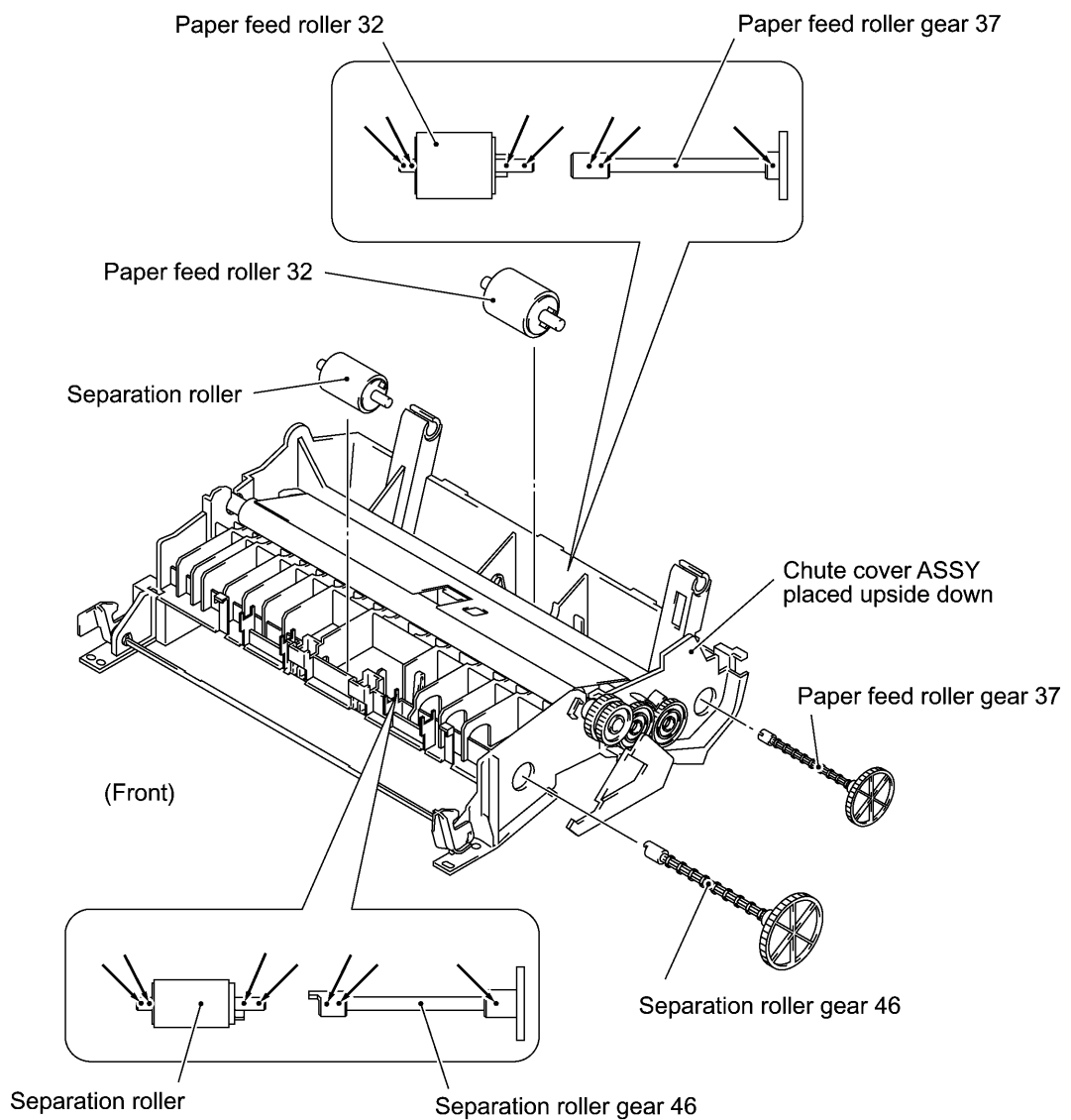
2. LUBRICATION

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

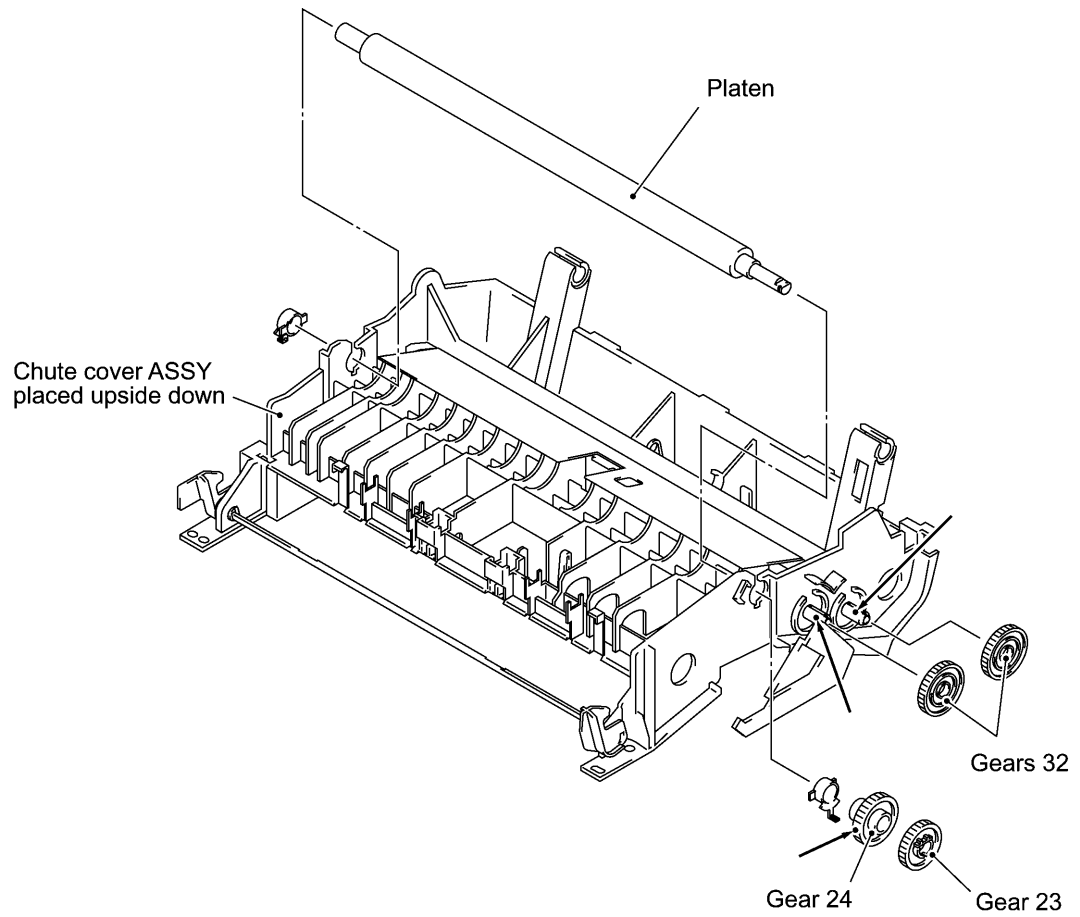
Lubricant type (Manufacturer): Molykote EM-30L (Dow Corning) or
Floil BG-11 (Kanto-Kasei Ltd.)

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

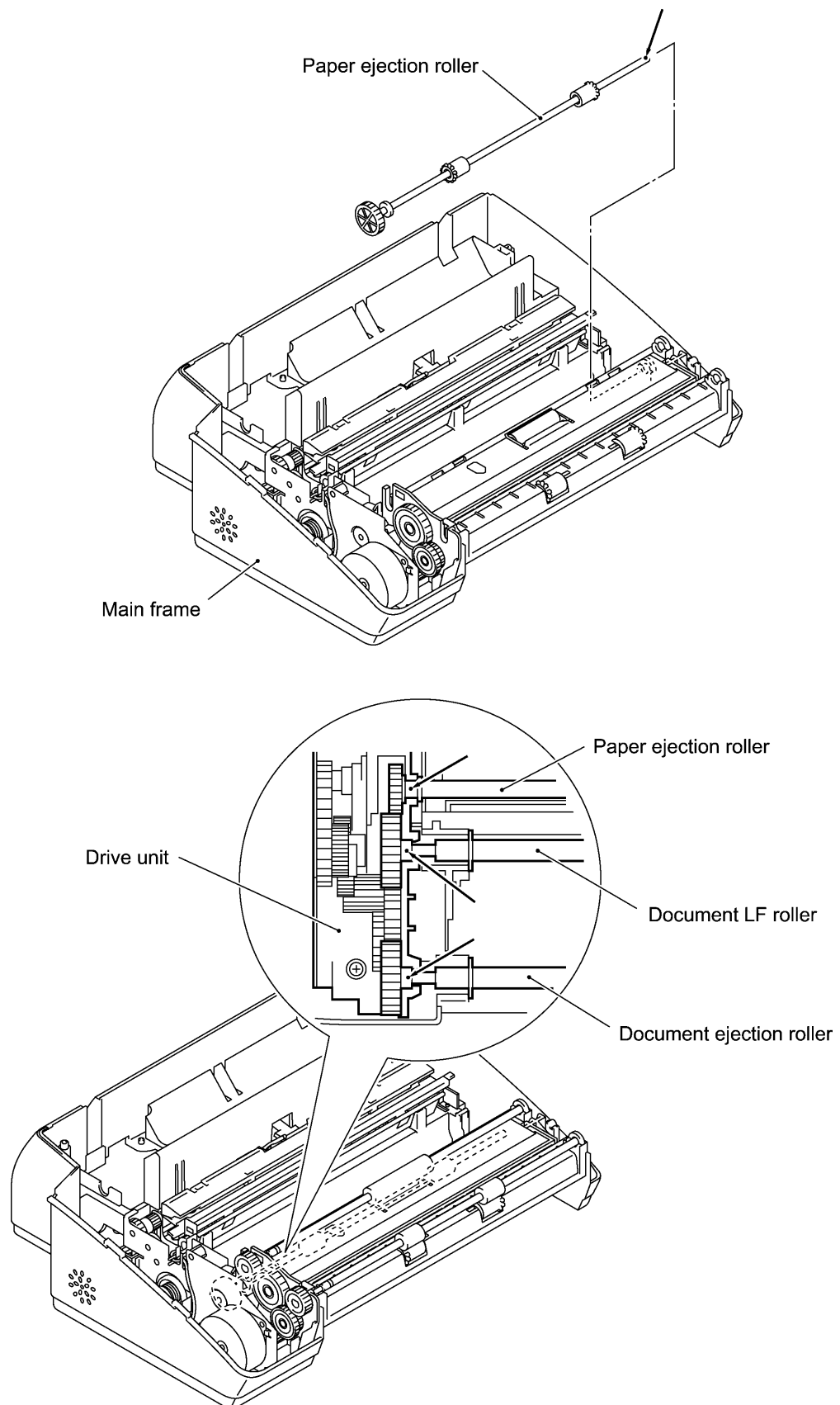
[1] Separation roller and its gear and paper feed roller 32 and its gear



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



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



CHAPTER V.

MAINTENANCE MODE

CHAPTER V. MAINTENANCE MODE

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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.

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

----- IMPORTANT -----

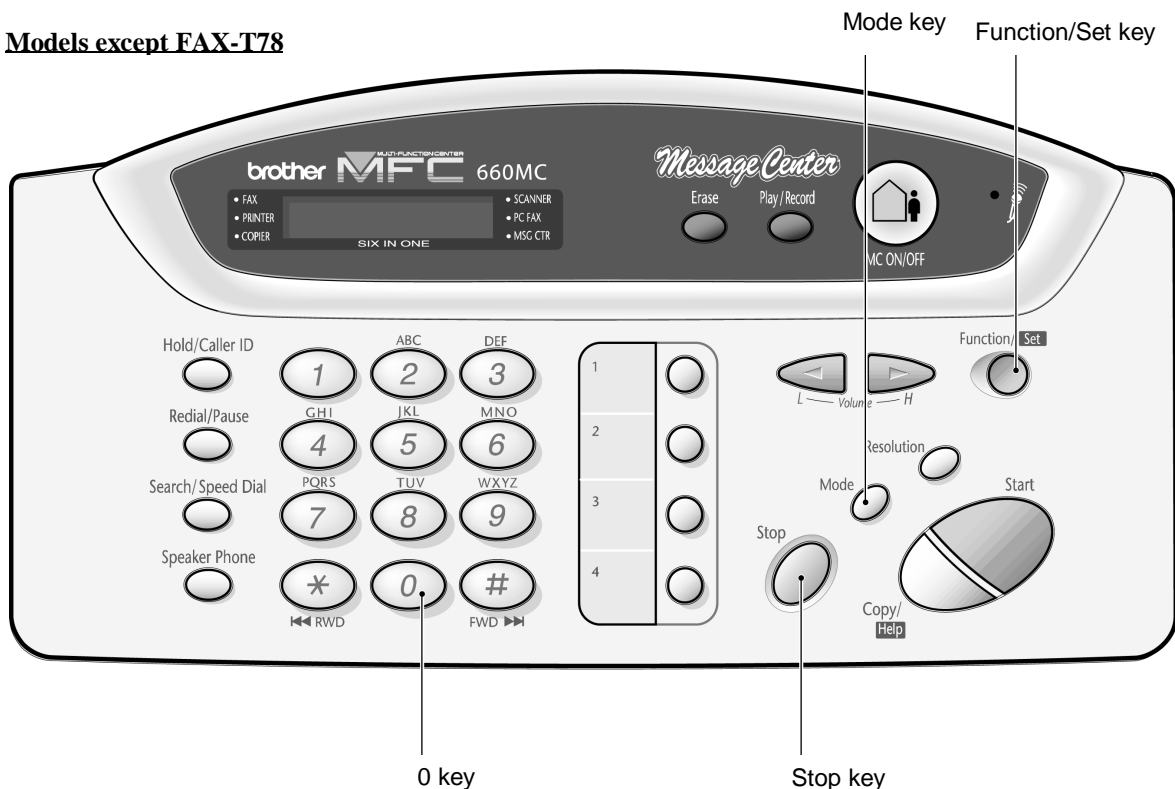
Basically, the maintenance-mode functions listed on the previous page should be accessed by service personnel only. However, you may allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 10, 11, 12, 82, 87 and 91) are shaded 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 shaded in the firmware switch tables in Section 3.5.

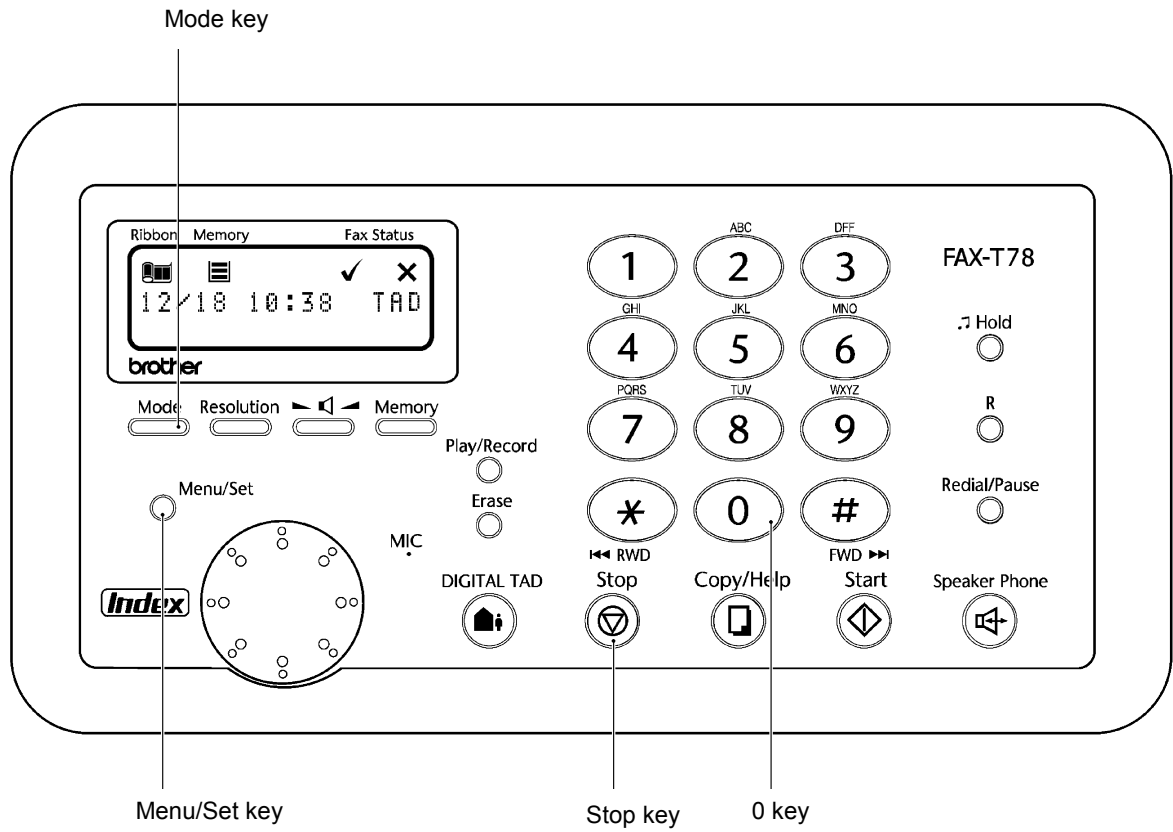
The service personnel should instruct end users to follow the procedure given below.

- (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



FAX-T78



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.

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

NOTE: If you replace the main PCB with 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 : 04 32 35 37 37 38 32 08 07 07 0B 07 0E 0E 0E 0B
 5F10 : 0B 0B 37 39 3A 39 3A 3B 04 07 07 0A 36 39 3B 3B
 5F20 : 3B 3C 0F 0B 0B 07 12 3B 3B 3B 3B 39 34 12 0B 0B
 5F30 : 1B 1A 39 3B 3C 3C 3C 1D 0B 0B 0B 0B 37 3A 3A 3F
 5F40 : 3E 3E 0A 0B 0B 38 3F 3F 3F 3E 3E 3F 0B 0B 0B 0B
 5F50 : 0C 0E 3F 3F 3E 3C 33 0B 0B 0B 0B 0B 0B 0B 0B
 5F60 : 07 0B 07 0B
- 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

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

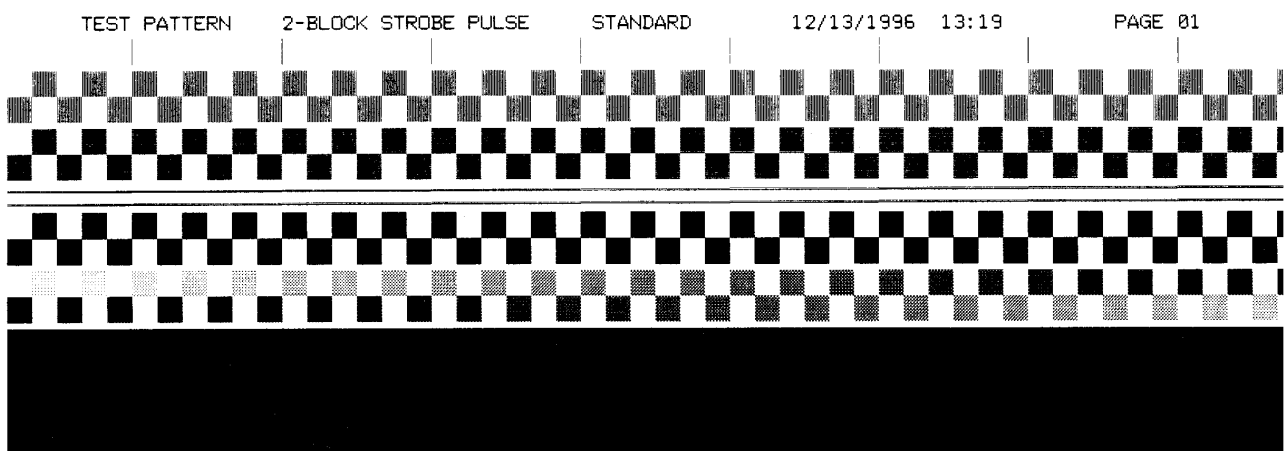
■ Function

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.

■ 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.)

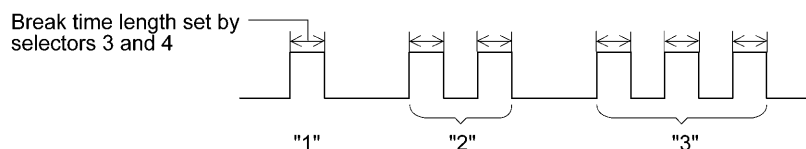
N + 1: Dialing "N" generates "N + 1" pulses.

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.

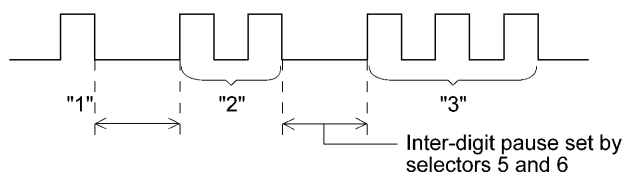
(Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



● 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.)



- **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.

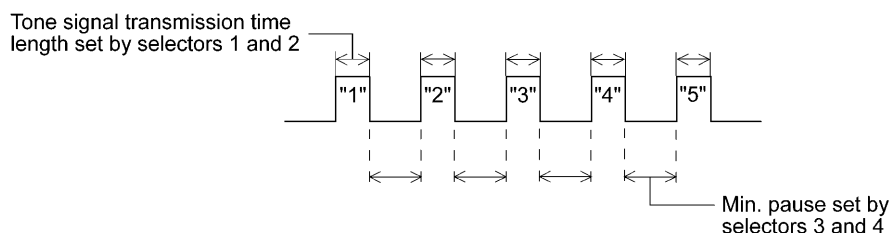
WSW02 (Tone signal setting)

| 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."

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 detection add 1: No 1st dial 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).

- **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.

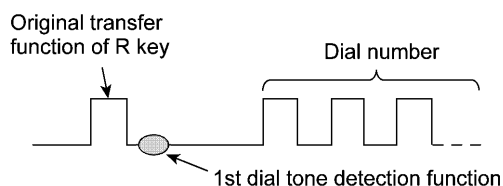
Setting both of these selectors to “1” activates the dial tone detection function so that the equipment starts dialing upon detection of a dial tone when a line is connected.

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.

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.

- **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.

- **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 | 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. |
| 0 | 1 | 0 | |
| 0 | 1 | 1 | |
| 1 | 0 | 0 | |
| 1 | 0 | 1 | When these selectors are set to "1, 0, 1": |
| 1 | 1 | 0 | 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. |
| 1 | 1 | 1 | 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.

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.

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.

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."

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.

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 0 1 1 : 9,600 bps 1 0 0 : 12,000 bps * 1 0 1 : } 14,400 bps * 1 1 0 : 1 1 1 : |
| 4 6 | Last transmission speed choice for fallback | |
| 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.

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%.

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.

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.

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.

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 |
| | <div style="display: flex; align-items: center; justify-content: space-between;"> <div>Low (light)</div> <div>→</div> <div>High (dark)</div> </div> | | | |

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.

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.

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 transmission 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.

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.

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. 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).

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 | |
| WSW01 = 00000010 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 4. REMOTE ID DETECTION TIMEOUT : 2 SEC 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 WSW20 = 01001011 1-4. 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 | 0:10 ER.A 3:10 ER.A |

Configuration List

3.6 Operational Check of LCD

■ Function

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

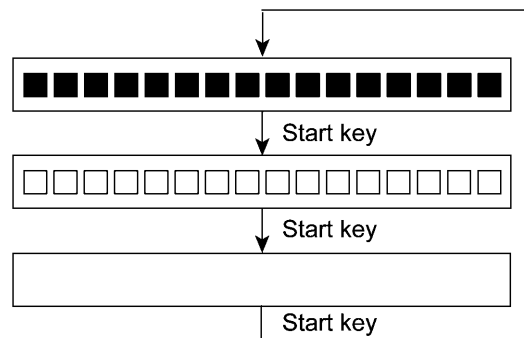
■ Operating Procedure

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.



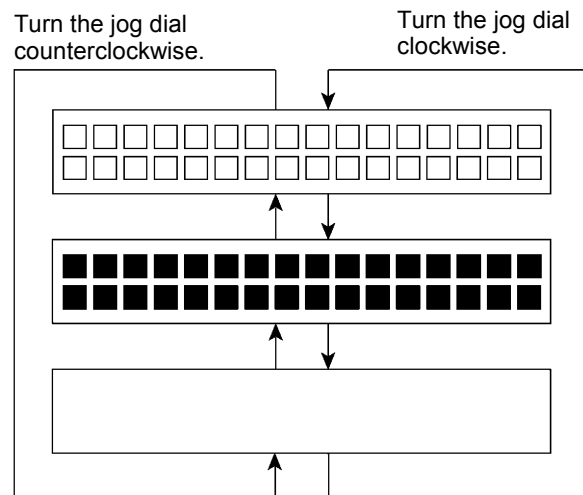
- (3) Press the **Stop** key in any process of the above pattern cycle. The equipment beeps for one second and returns to the initial stage of the maintenance mode.

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.



- (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.

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

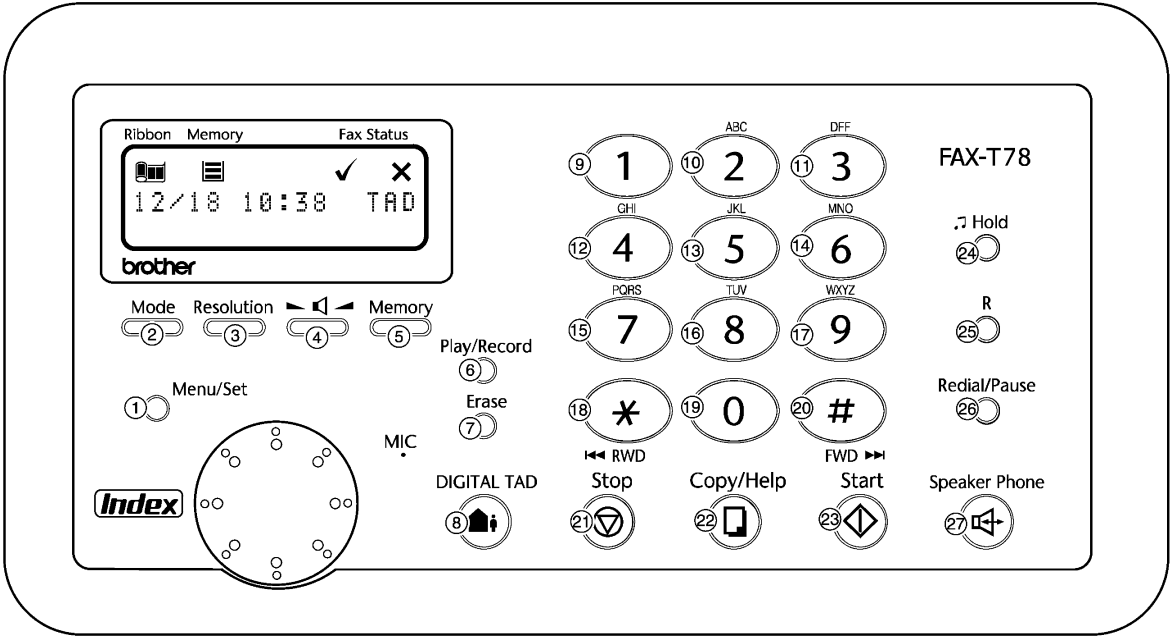


Key & Button Entry Order (1)

Models except FAX-T78, equipped with a built-in TAD



FAX-T78



Key & Button Entry Order (2)

3.8 Sensor Operational Check

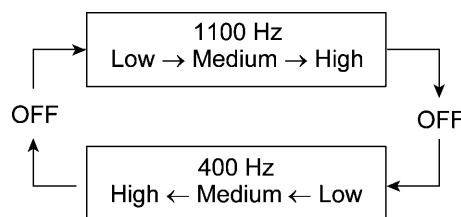
■ Function

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

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

■ Operating Procedure

- (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.



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.

3.9 Fine Adjustment of Scanning Start/End Position

■ Function

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

■ Operating Procedure

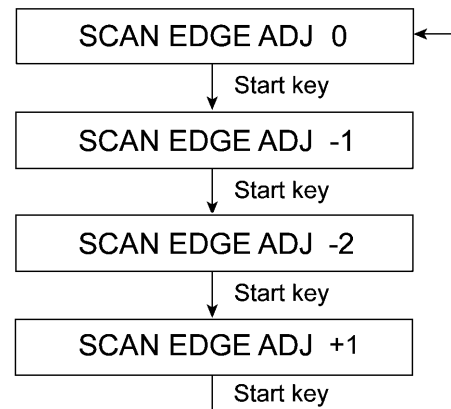
- (1) Press the **5** and **4** keys in this order in the initial stage of the maintenance mode.

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.

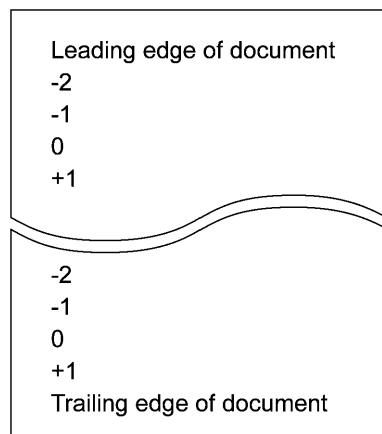
That is, pressing this key cycles through the correction values (mm) as shown below.

0 → -1 → -2 → +1



- (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.



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.

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.

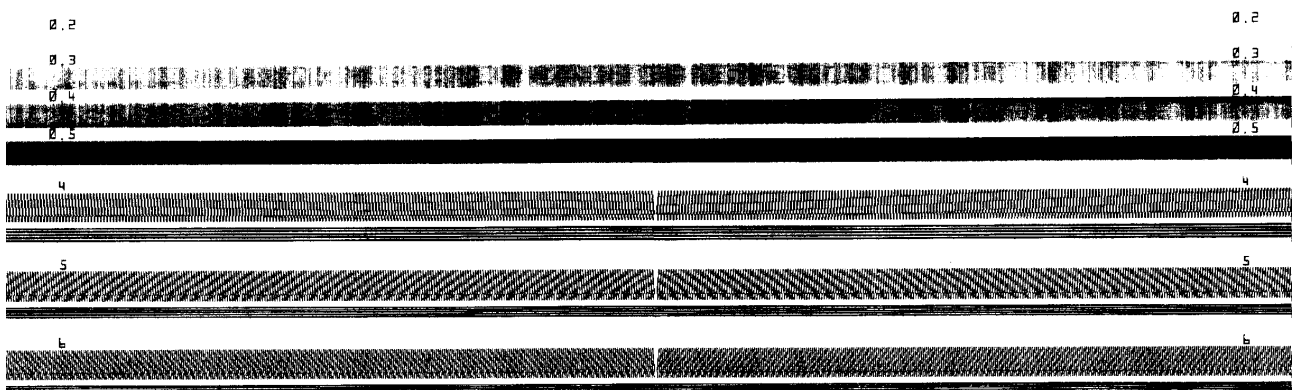
The equipment beeps and draws in the TC-027 chart to the scanning start position. While drawing it in, the equipment counts patterns on the chart to determine the amount of draw.

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.

TC-027

1997.1.14



REAR SENSOR IS ADJUSTED.

Printout after Normal Completion of Document Draw Adjustment

CHAPTER VI.

ERROR INDICATION AND TROUBLESHOOTING

CHAPTER VI. ERROR INDICATION AND TROUBLESHOOTING

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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 | <p>■ Document jam</p> <p>(1) The document length exceeds the limitation (400 or 90 cm) registered by firmware switch WSW16. (Refer to Chapter V, Section 3.5.)</p> <p>(Both the document front and rear sensors stay ON even after the document has been fed by the registered length.)</p> <p>(2) The document rear sensor detects no trailing edge of a document after the document has been fed by 400 cm.</p> <p>(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.)</p> <p>■ Document loading error</p> <p>(1) The document rear sensor detects no leading edge of a document within 10 seconds from the start of document loading operation.</p> <p>(The document rear sensor stays OFF even after the document has been fed when the document front sensor was ON.)</p> <p>(2) The loaded document is too short.</p> <p>(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.)</p> |
| 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 | <p>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.</p> <p>(This message may appear only in the maintenance mode.)</p> |

| Messages on the single-row LCD | | Probable Cause |
|--------------------------------|---|---|
| On early models | On recent models | |
| TOP COVER OPEN | <div> <div>TOP COVER OPEN</div> <div>PLS CLOSE COVER</div> </div> | 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. |
| <div> <div>CHECK DOCUMENT REMOVE DOCUMENT</div> <div>CHECK DOCUMENT PRESS STOP KEY</div> </div> | <p>■ Document jam</p> <p>(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.)</p> <p>(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.)</p> <p>■ Document loading error</p> <p>(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.)</p> <p>(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.)</p> |
| <div> <div>CHECK PAPER RELOAD PAPER</div> <div>CHECK PAPER PRESS START KEY</div> </div> <p>(NOTE 1)</p> | 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 |
|--|--|
| <div> <div>CHECK PAPER RELOAD PAPER</div> <div>CHECK PAPER PRESS STOP KEY</div> </div> <p>(NOTE 1)</p> | 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. |
| <div>MACHINE ERROR__</div> <p>or</p> <div>MACHINE ERR----</div> | "__" indicates an error code. Refer to [2] in this section. |
| <div>PAPER JAM PLS OPEN COVER</div> <div>PAPER JAM REMOVE PAPER</div> <p>(NOTE 1)</p> | The registration sensor detects paper present when no paper should exist at the sensor detection area. |
| <div>PC BUSY OR FAIL CHECK PC CABLE</div> <div>PC BUSY OR FAIL PRESS STOP KEY</div> | 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.

[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.

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.

■ 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 | Overflow detected. |
| 20 | 05 | A frame for 3 seconds or more received. |
| 20 | 06 | CRC error in answerback. |
| 20 | 07 | Undefined command received. |
| 20 | 08 | Invalid command received. |
| 20 | 09 | Command ignored once for document setting or for dumping-out at turn-around transmission. |
| 20 | 0A | T5 time-out error |
| 20 | 0B | CRP received. |
| 20 | 0C | EOR and NULL received. |

(3) Compatibility [checking the NSF and DIS]

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

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

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

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

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

(6) ID checking

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

(7) DCN reception

| Code 1 | Code 2 | Causes |
|--------|--------|---------------|
| 74 | | DCN received. |
| | | |
| | | |
| | | |

(8) TCF transmission/reception

| Code 1 | Code 2 | Causes |
|--------|--------|----------------------|
| 80 | 01 | Fallback impossible. |
| | | |
| | | |
| | | |
| | | |
| | | |

(9) Signal isolation

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

(10) Video signal reception

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

* Available in Germany and Austria only

(11) General communications-related

| Code 1 | Code 2 | Causes |
|--------|--------|---|
| B0 | 02 | Unable to receive the next-page data. |
| B0 | 03 | Unable to receive polling even during turn-around transmission due to call reservation. |
| B0 | 04 | PC interface error. |
| | | |

(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 | ⓧ ⓧ | Equipment error (For ⓧ ⓧ, refer to Section 1.1 [2].) |
| | | |
| | | |

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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• Main PCB (Not supported by the U.S.A. versions.) |
| (5) Telephone does not ring. | <ul style="list-style-type: none">• Speaker• NCU PCB• Main PCB |

[3] Communications related

| Trouble | Check: |
|-----------------------------|--|
| (1) No tone is transmitted. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• 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 <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• Main PCB• CIS unit• CIS-main harness• Main-head harness and head-power harness• Compression springs beneath the recording head• Recording head• Main PCB |
| (2) White vertical streaks <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• CIS unit• Recording head |
| (3) All black <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• CIS-main harness• CIS unit• Main PCB• Main-head harness and head-power harness• Recording head• Main PCB |
| (4) Black vertical streaks <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• CIS unit• Recording head |
| (5) Light or dark <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• CIS unit• Main PCB• Compression springs beneath the recording head• Position of the head adjuster |
| (6) Faulty image registration <u>At the scanner</u> <u>At the recorder</u> | <ul style="list-style-type: none">• CIS-main harness• CIS unit• Main PCB• Main-head harness and head-power harness• Main PCB• Recording head |

| Trouble | Check: |
|--|---|
| <p>(7) Image distortion</p> <p><u>In communications</u></p> <p><u>At the scanner</u></p> <p><u>At the recorder</u></p> | <ul style="list-style-type: none"> • Error code displayed (Refer to Section 1, "ERROR INDICATION" in this chapter.) • NCU PCB • Main PCB • 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 • 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. | <div>• Main PCB</div> <div>TIP: The beeper sounds with one of the following three beep codes:</div> <table><tr><th>Beep code</th><th>In approx. 2-second cycle of</th><th>Defective device</th></tr><tr><td>Beep code 1</td><td>LHLHLHLHm</td><td>RAM</td></tr><tr><td>Beep code 2</td><td>HLHLLHLHm</td><td>EEPROM</td></tr><tr><td>Beep code 3</td><td>HLHLHLHLm</td><td>Program ROM</td></tr></table> <div>H: Beeps at 1.5 kHz for 0.1 second</div> <div>L: Beeps at 1.2 kHz for 0.1 second</div> <div>m: 0.5-second mute</div> <div>Between L and H, H and L, or L and L is a 0.1-second pause each.</div> | 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 |
| 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 | | | | | | | | | | | |

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

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

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 |

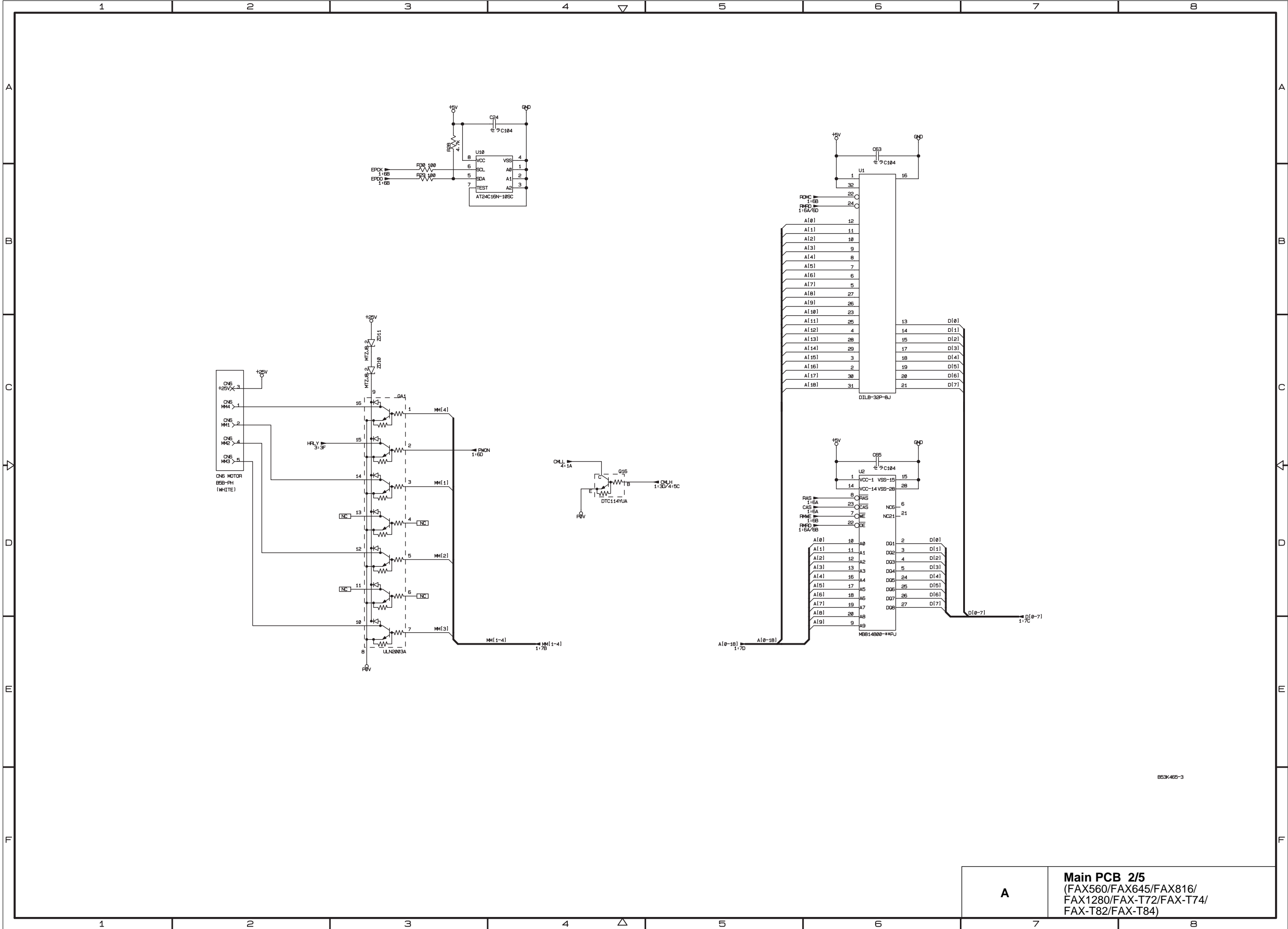
| Versions | Model | | |
|--------------|---------|---------|---------|
| | FAX-T82 | FAX-T84 | FAX-T86 |
| GERMANY | 0003 | 0003 | 0003 |
| UK | — | 0004 | 0004 |
| FRANCE | 0005 | 0005 | 0005 |
| NORWAY | — | 0007 | 0007 |
| BELGIUM | — | 0008 | 0008 |
| NETHERLANDS | — | 0009 | 0009 |
| SWITZERLAND | 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 |

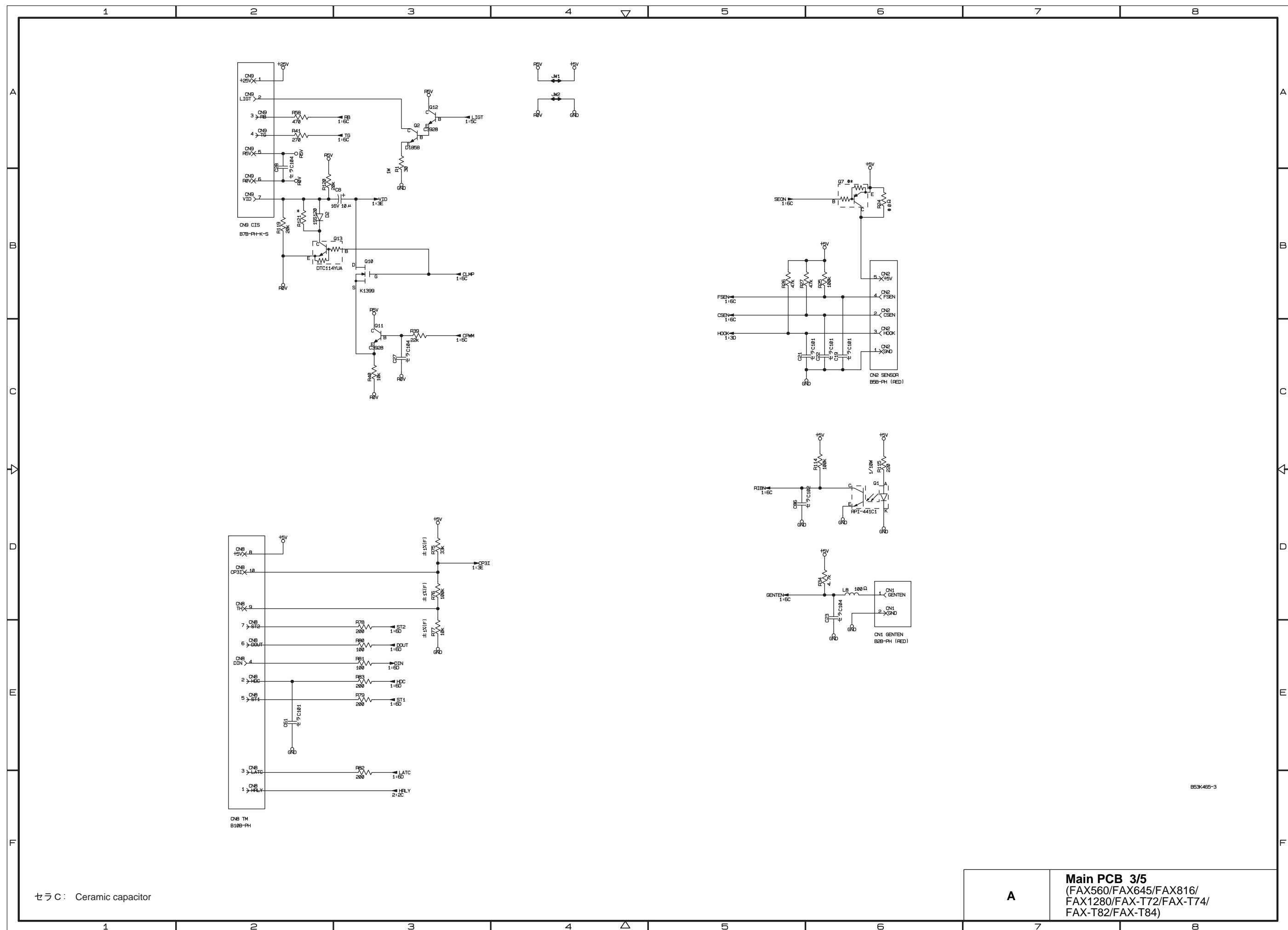
FAX560/FAX580MC/MFC660MC
FAX-T72/FAX-T74/FAX-T76/FAX-T78
FAX-T82/FAX-T84/FAX-T86
FAX645/FAX685MC/MFC960MC
FAX1280/FAX1980MC/FAX816

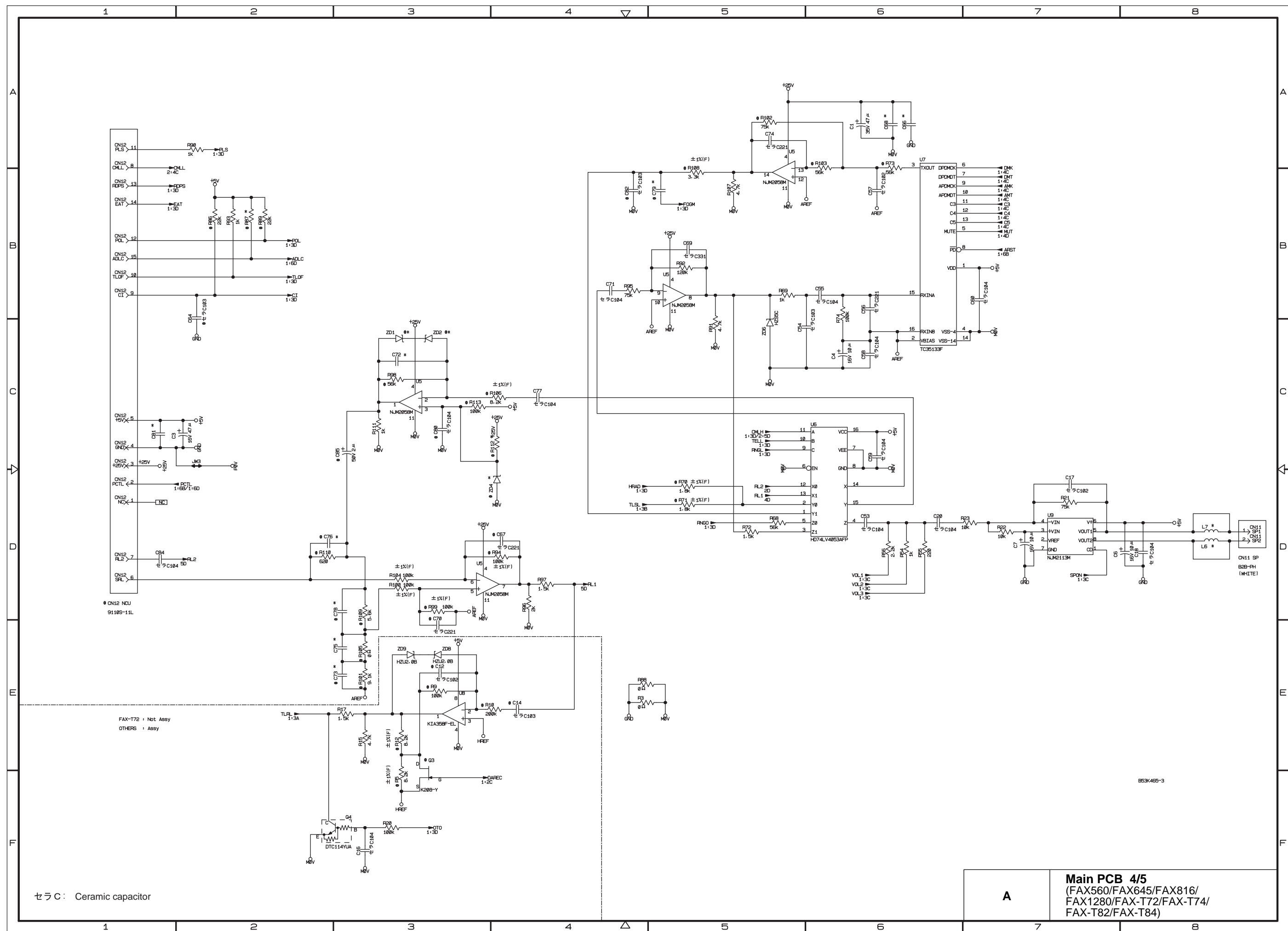
Appendix 2. Circuit Diagrams

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

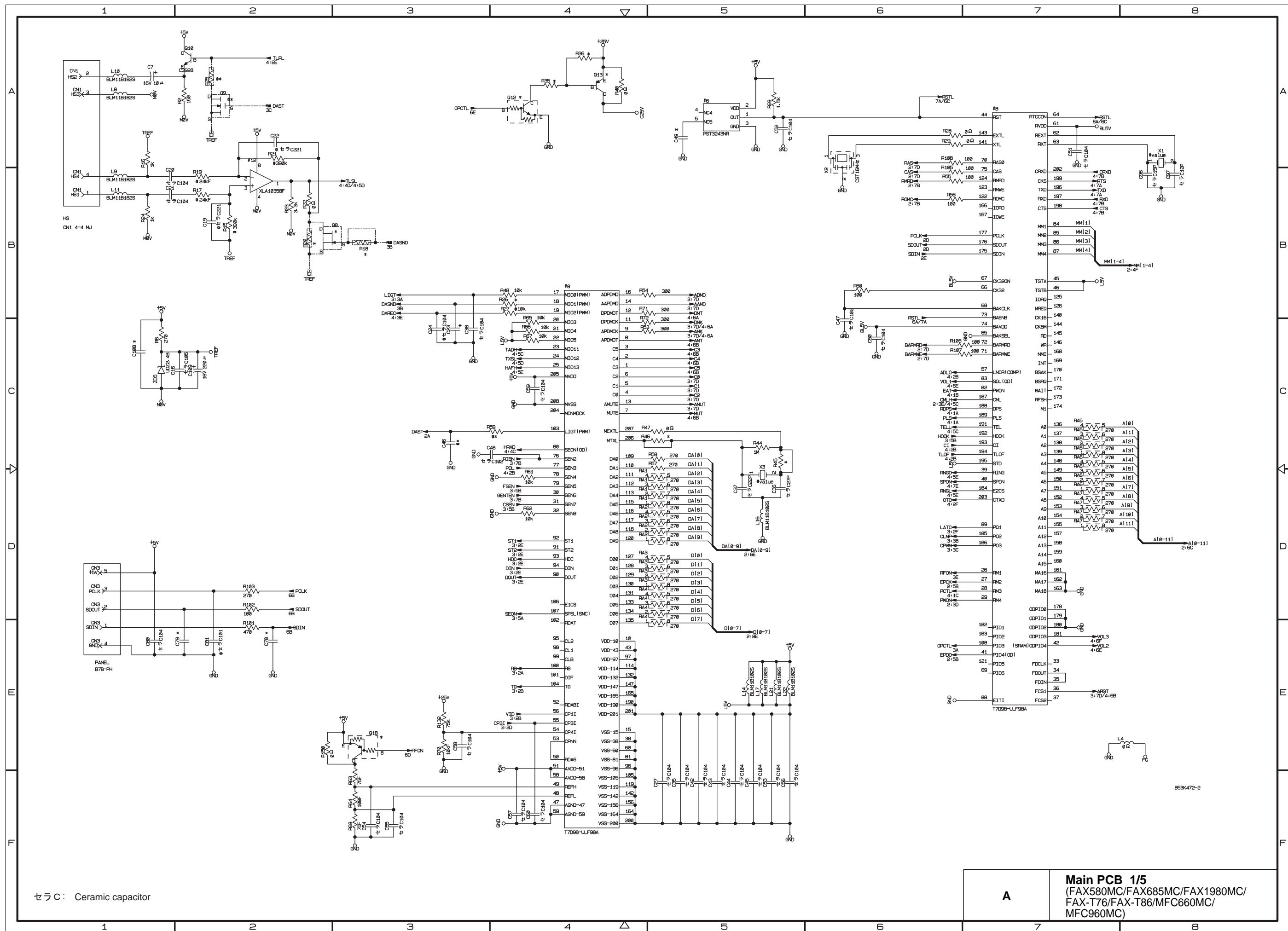


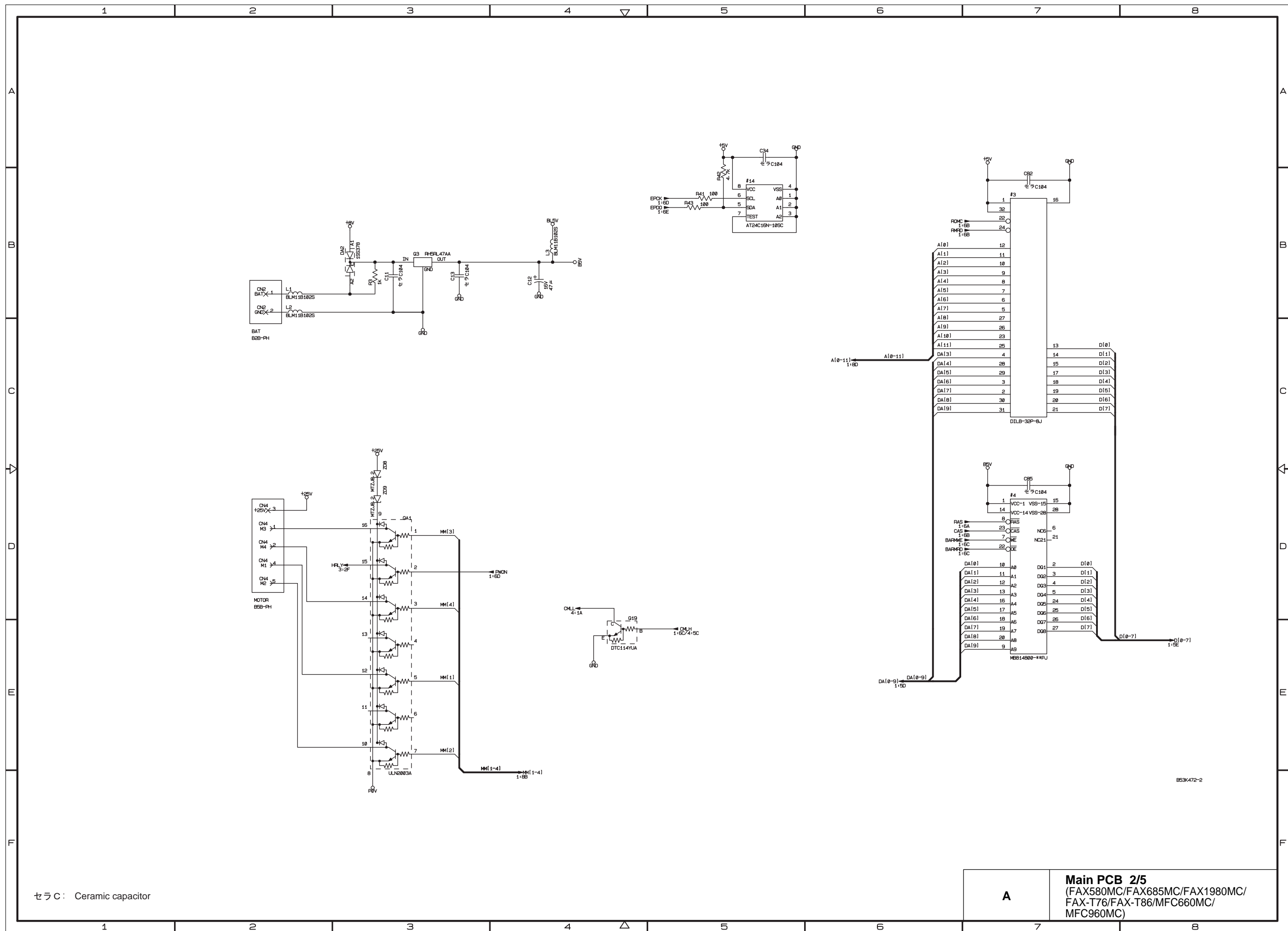


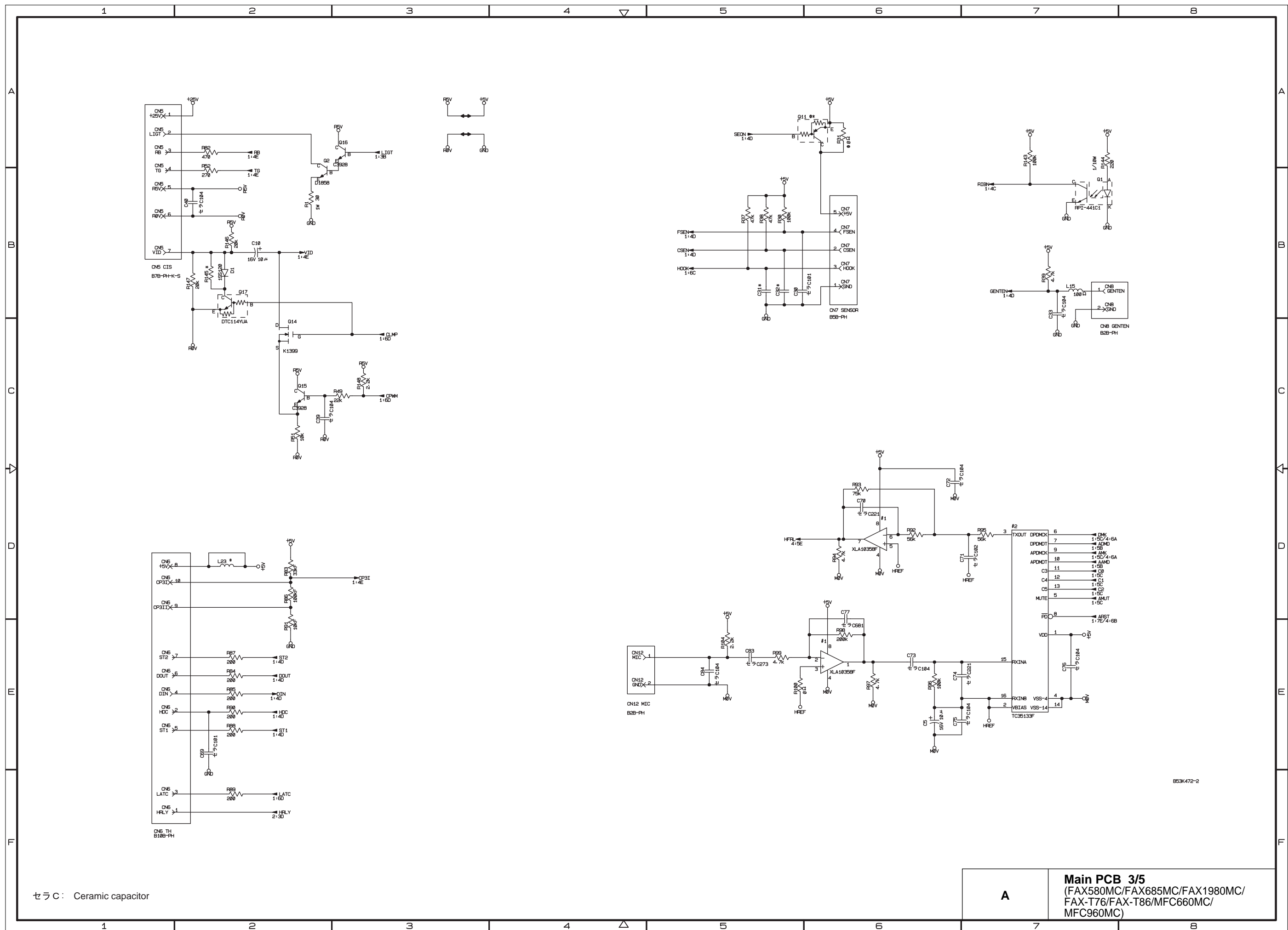




| | | '00.3.9 | | '00.3.9 | | '00.5.26 | | '00.6.30 | | '00.6.19 | | '00.6.19 | | '00.7.25 | | '00.7.18 | | '00.7.18 | | '00.7.18 | | | | | | | | | | | | | | | | | | | | | | | | |
|------|---------|-----------------|-----------|---------------------------|--|-----------|---------------------------|----------|-----------|-------------------------------|--|-----------|--------------------------------|----------|-----------|--------------------------------|--|-----------|--------------------------------|----------|-----------|--------------------------------|-----------|-------------|--------------------------------|-----------|-----------|-------------------------------------|--|-----------|-------------------------------------|-----------|-------------|-------------------------------------|-----------|-------------|-------------------------------------|-------------------|-------------|-------------|-----------|-------------|-------------|--|
| | | 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 | | PART CODE | PART NAME | | PART CODE | PART NAME | | PART CODE | PART NAME | | | | |
| | | | LG2572001 | MAIN PCB ASSY B53K465S | | LG2572001 | MAIN PCB ASSY B53K465S | | LG2780001 | MAIN PCB ASSY B53K465 (NZ) | | LG2724021 | MAIN PCB ASSY B53K465 (EUR) | | LG2735022 | MAIN PCB ASSY B53K465 (ASA) | | LG2724023 | MAIN PCB ASSY B53K465 (EUR) | | LG2735024 | MAIN PCB ASSY B53K465 (ASA) | | LG2724025 | MAIN PCB ASSY B53K465 (EUR) | | LG2877026 | MAIN PCB ASSY B53K465 W/O TEL | | LG2877028 | MAIN PCB ASSY B53K465 W/O TEL | | LG2877028 | MAIN PCB ASSY B53K465 W/O TEL | | LG2877028 | MAIN PCB ASSY 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 | | | Not assy | | 094103020 | GR-C116J103 | | Not assy | | | | | | Not assy | | | | | | | | | | | | |
| | | C31 | Y81042402 | CC25C104 | | Y81042402 | CC25C104 | | Y81042402 | CC25C104 | | Not assy | | | Not assy | | | Not assy | | | Not assy | | Y81042402 | CC25C104 | | Not assy | | | | | | Not assy | | | | | | | | | | | | |
| | DAST | R33 | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | 094103020 | GR-C116J103 | | Not assy | | | | | | Not assy | | | | | | | | | | | | |
| | | C25 | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | Y81042402 | CC25C104 | | 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 | | UG1595000 | EC5.5B473 | | UG1595000 | EC5.5B473 | | UG1595000 | EC5.5B473 | | UG1595000 | EC5.5B473 | |
| | TLSL | R8,R11 | 094243000 | GR-C116F243 | | 094243000 | GR-C116F243 | | 094243000 | GR-C116F243 | | 094243000 | GR-C116F103 | | 094203000 | GR-C116F203 | | 094103000 | GR-C116F103 | | 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 | | 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 | | Y73912112 | CC50C391CH | | Not assy | | | | | Not assy | | | | | | | | | |
| | TLRL | Q5 | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | UG3551000 | FET2SK1399 | | Not assy | | | | | | Not assy | | | | | | | | | | | | |
| | | R19 | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | 094152020 | GR-C116J152 | | 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 | | W00329001 | B2B-PH | | 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 | | 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 | | | Not assy | | Not assy | | YF0144240 | DTA123YUA | | Not assy | | | | | Not assy | | | | | | | | | | | |
| | | R61 | 094000020 | GR-C116J000 | | 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 | | 094000020 | GR-C116J000 | | 094000020 | GR-C116J000 | | 094000020 | GR-C116J000 | | |
| 3 | SEON | Q7 | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | | Not assy | | Not assy | | YF0144240 | DTA123YUA | | Not assy | | | | | YF0144240 | DTA123YUA | | YF0144240 | DTA123YUA | | 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 | | 094000020 | GR-C116J000 | | Not assy | | | | | 094000020 | GR-C116J000 | | 094000020 | GR-C116J000 | | 094000020 | GR-C116J000 | | 094000020 | GR-C116J000 | | |
| 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 | | 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 | | 094124020 | GR-C116J124 | | 094124020 | GR-C116J124 | | | | | | | | | | | | | | | | | | | |

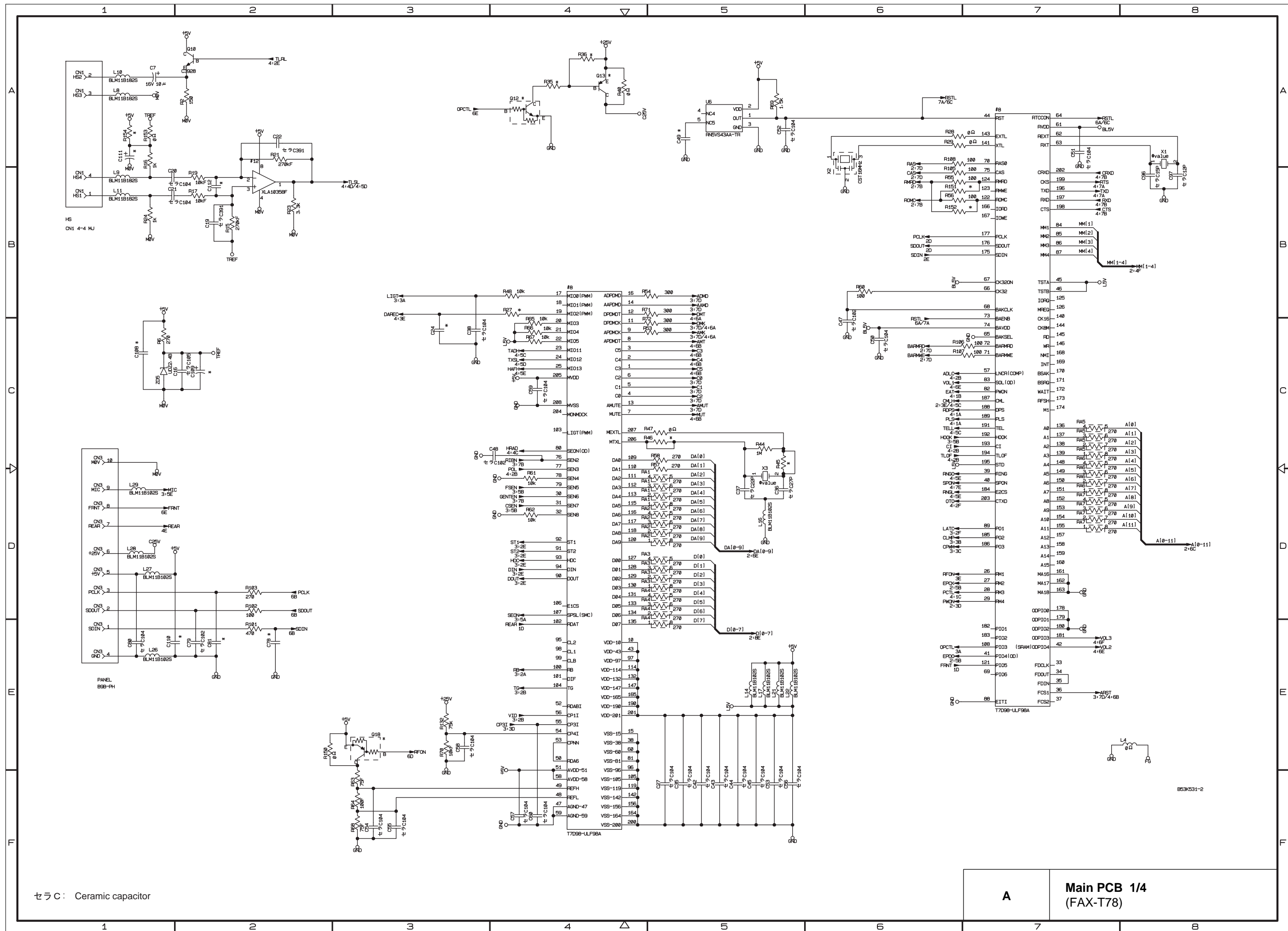






| | | '00.3.9 | | | '00.5.26 | | | '00.6.29 | | | '00.6.19 | | | '00.6.19 | | |
|------|--------|------------|-----------|------------------------|-----------|----------------------------|--|-----------|----------------------------|--|-----------|-----------------------------|--|-------------|-----------------------------|--|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

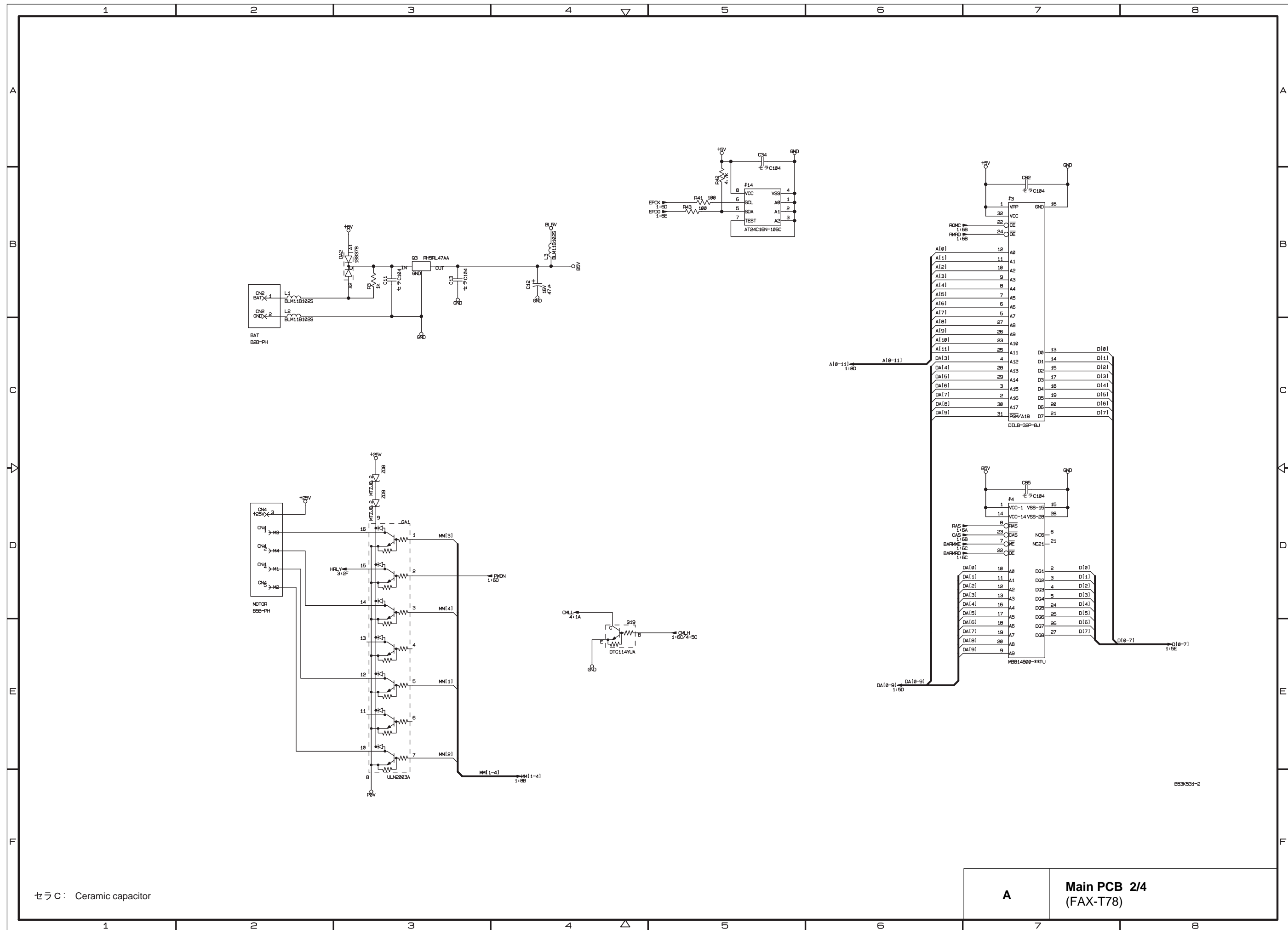
CC: Ceramic capacitor
EC: Aluminum electrolytic capacitor
CN: Connector



セラC: Ceramic capacitor

A

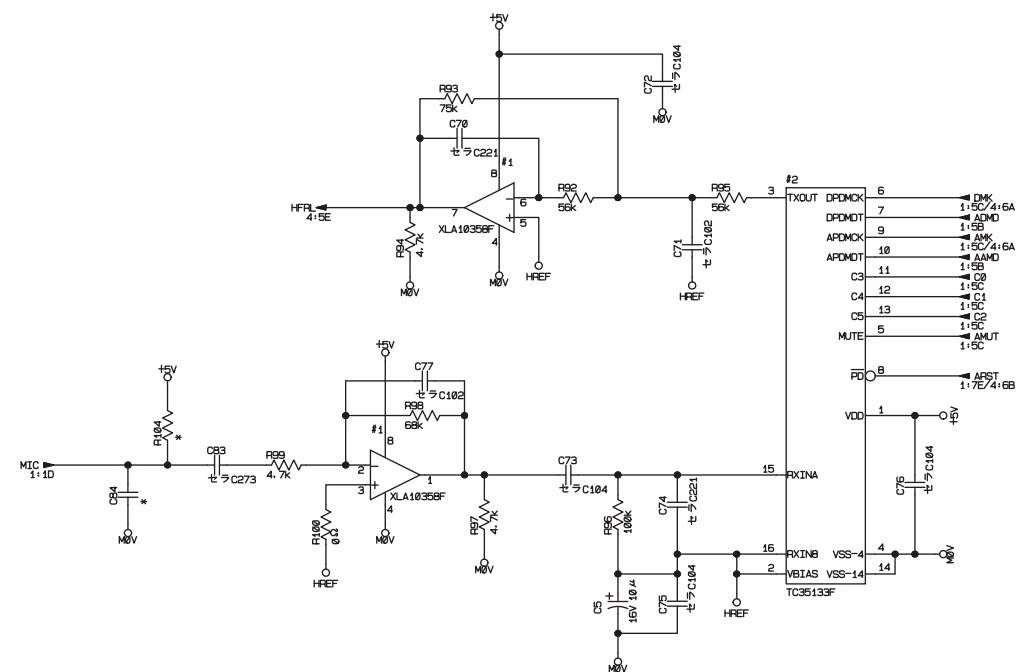
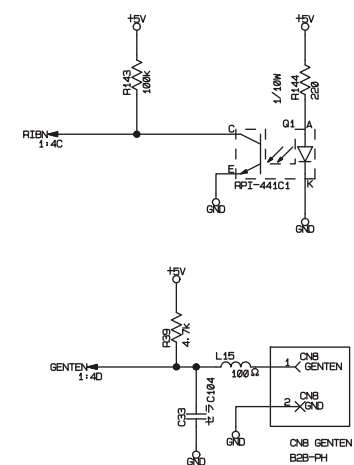
Main PCB 1/4
(FAX-T78)



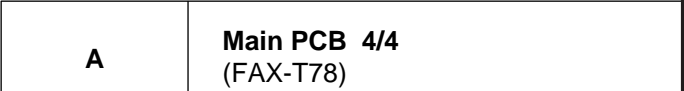
セラC: Ceramic capacitor

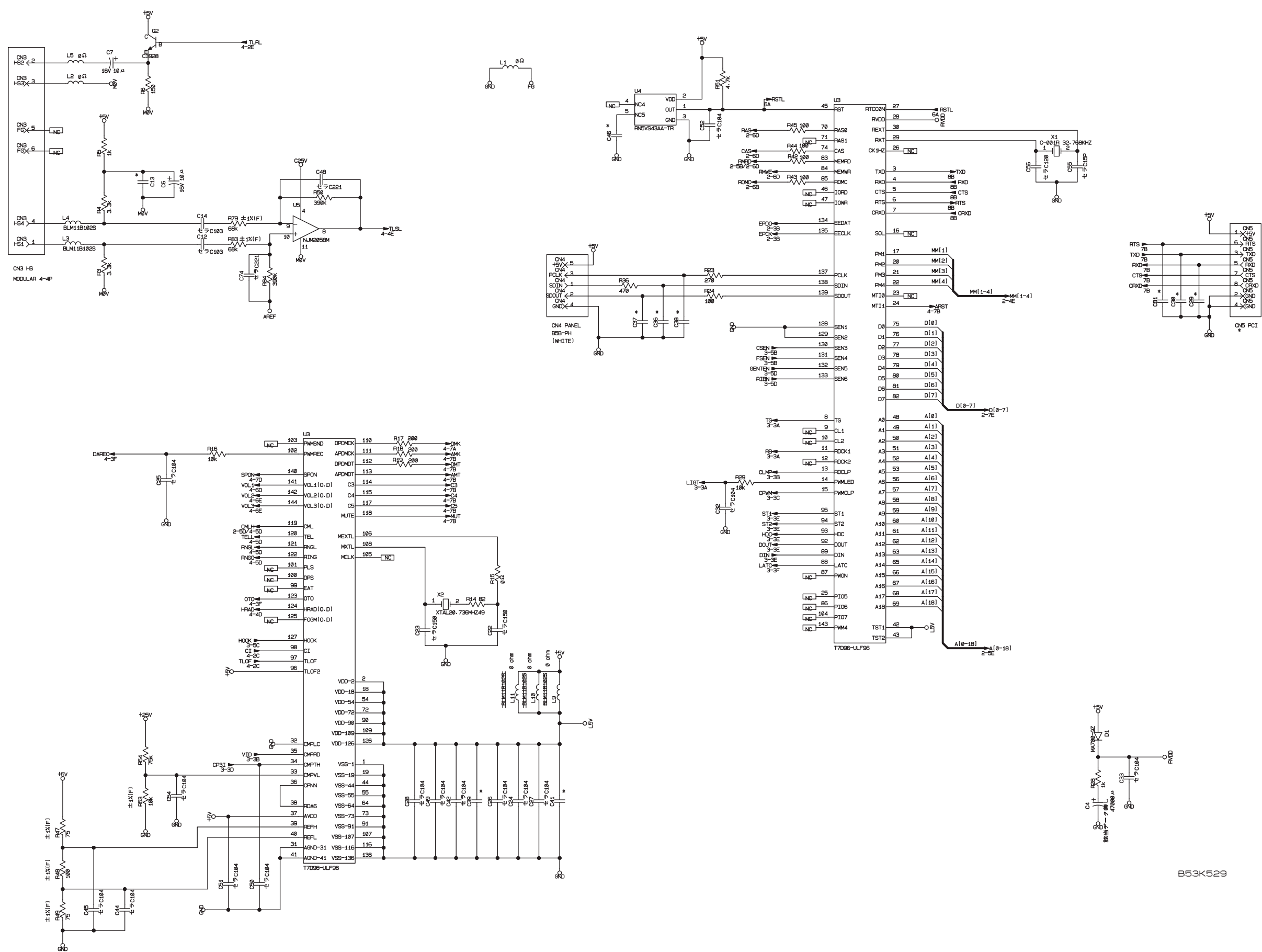
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Main PCB 2/4
(FAX-T78)

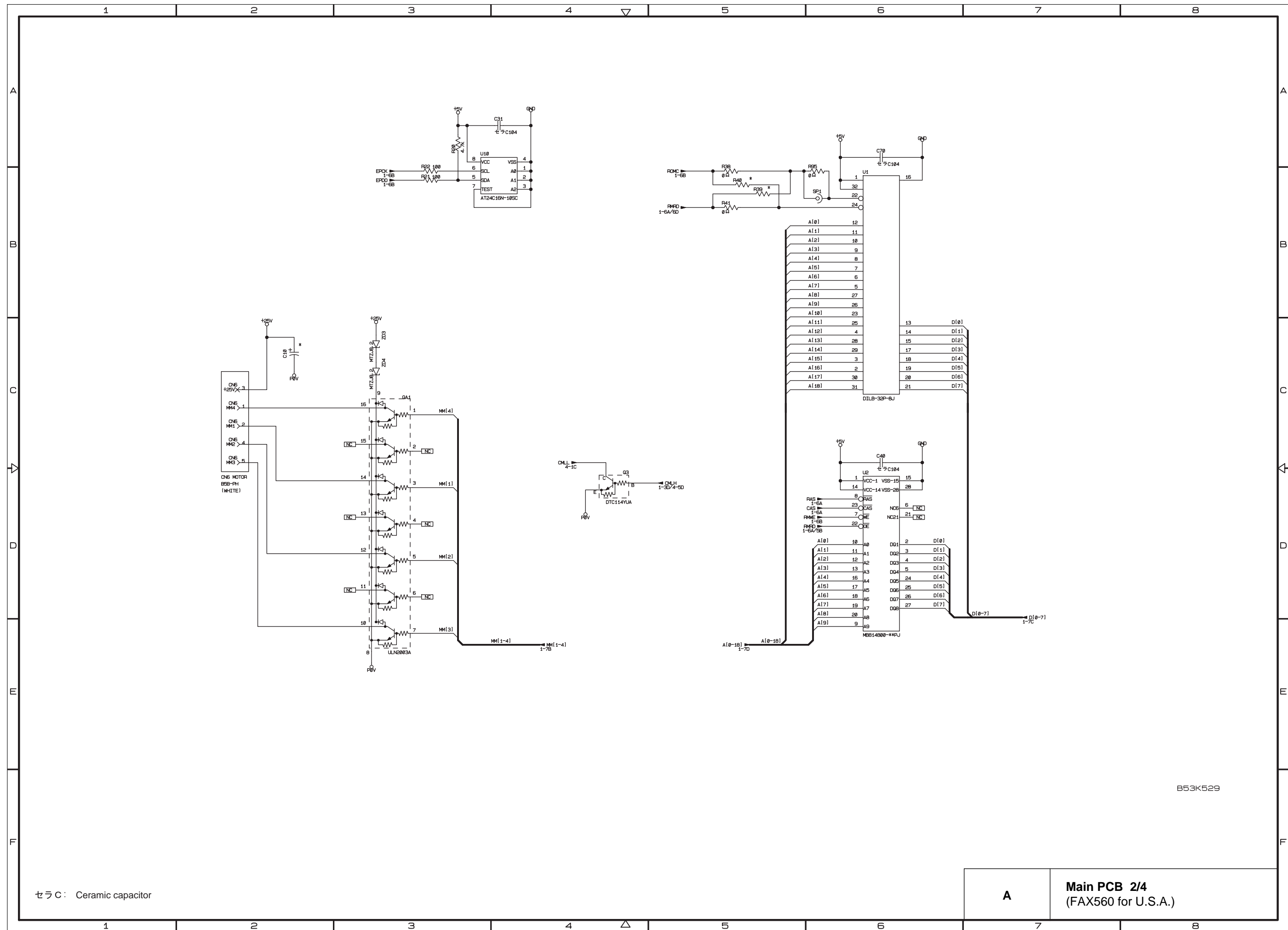


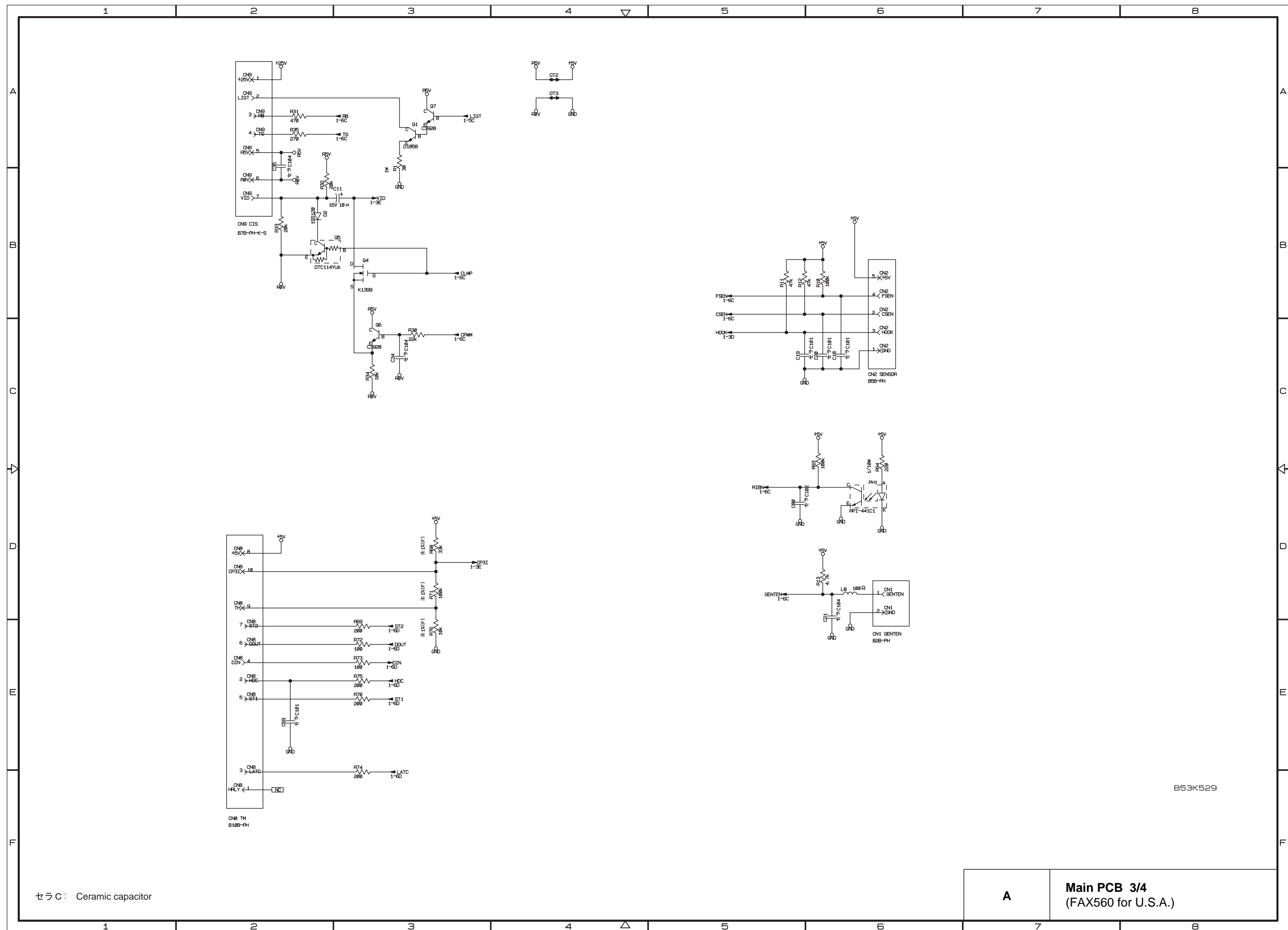
Main PCB 3/4
(FAX-T78)

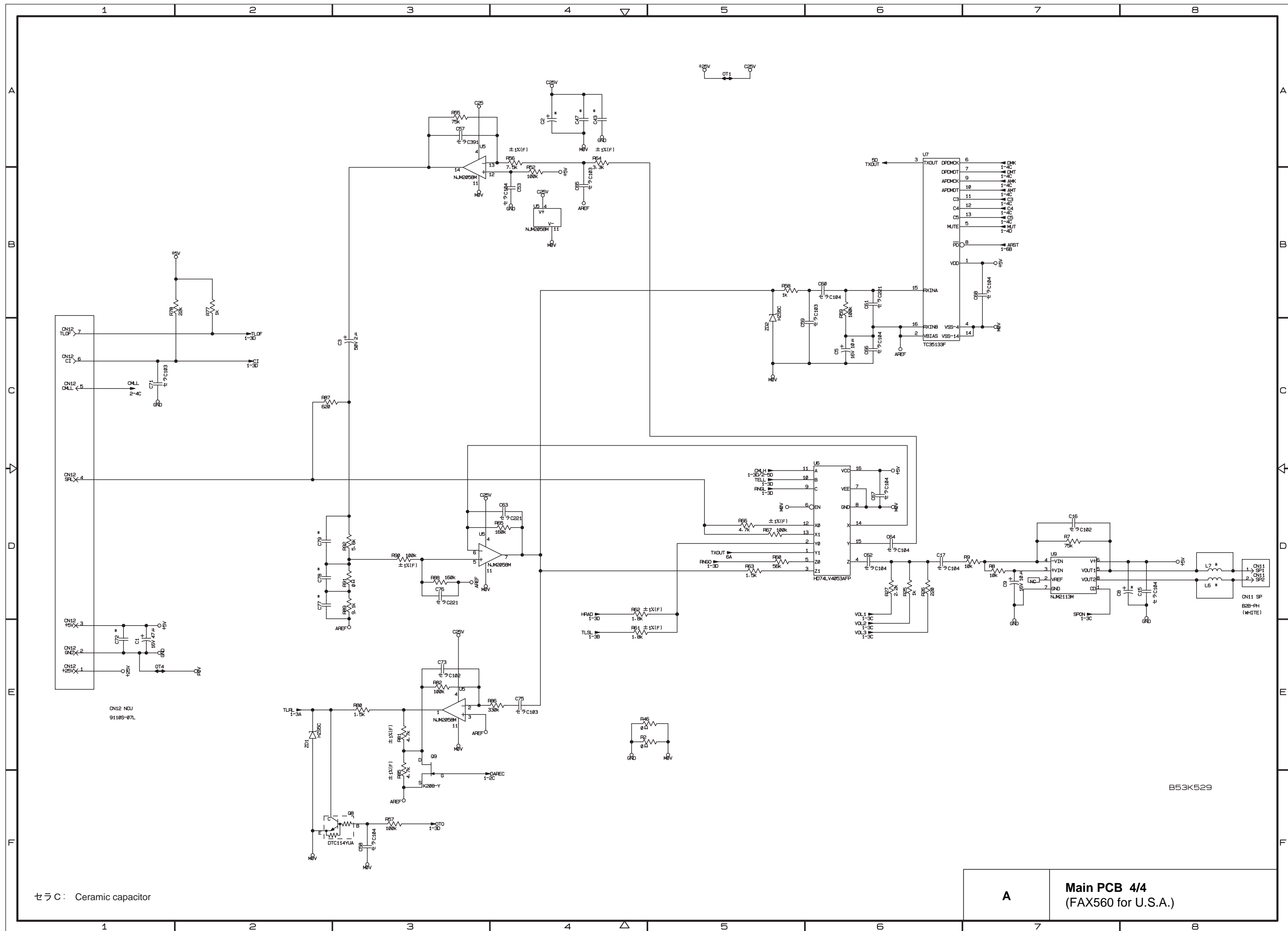




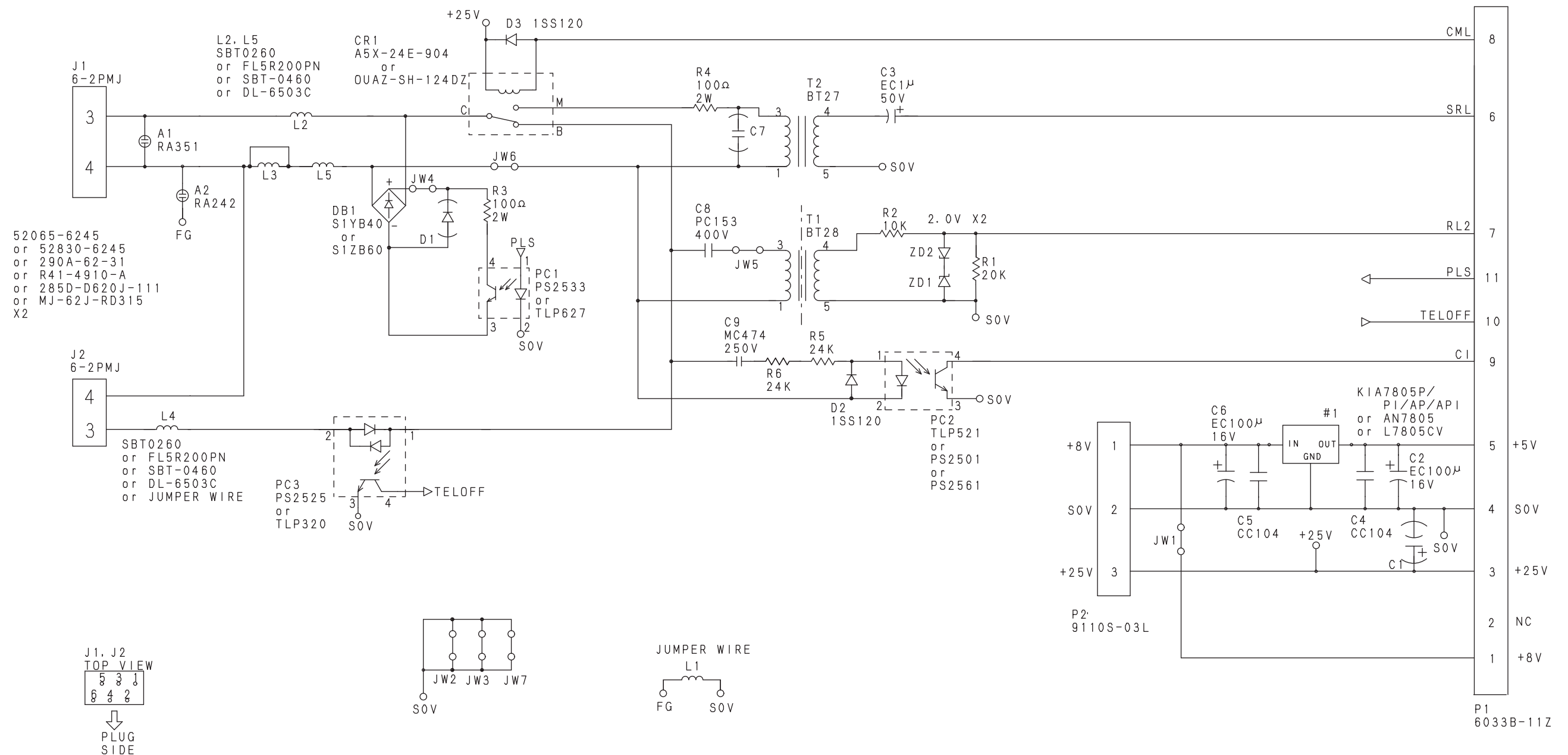
セラC： Ceramic capacitor







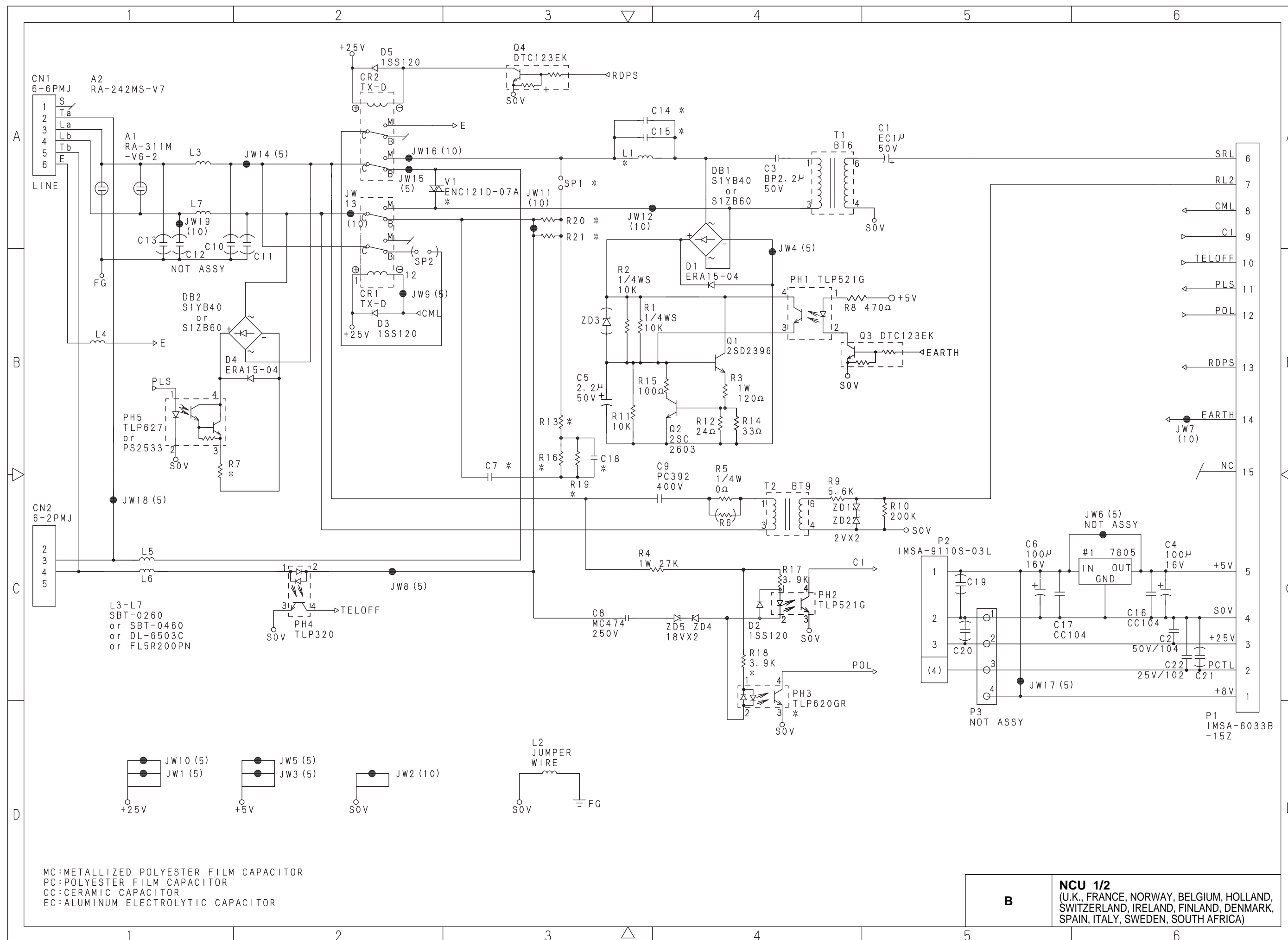
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
4. DB1, R3 AND PC1 ARE NOT MOUNTED FOR US MODEL.
5. ZD1 AND ZD2 ARE MOUNTED ONLY FOR MC MODEL.



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)

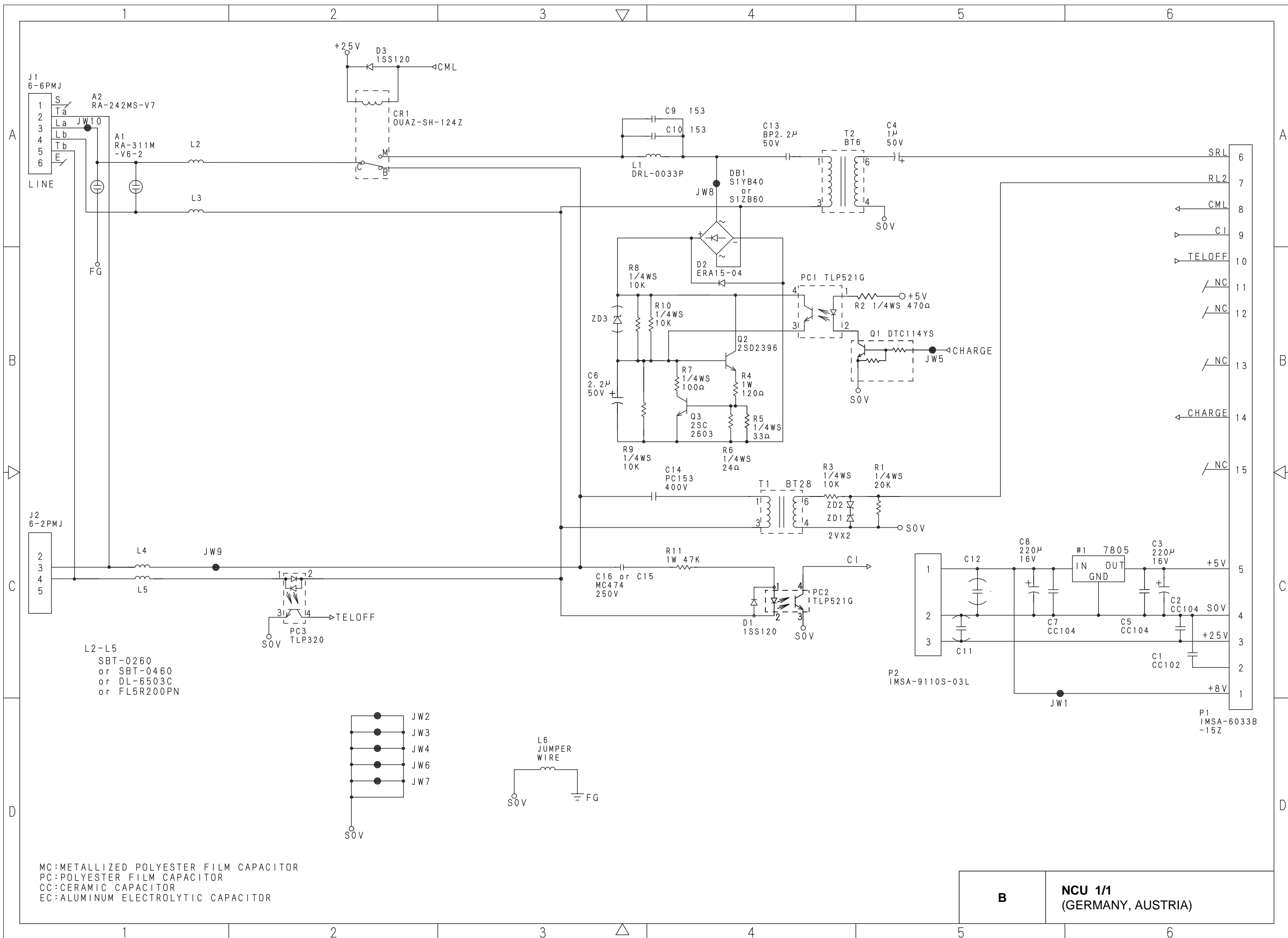


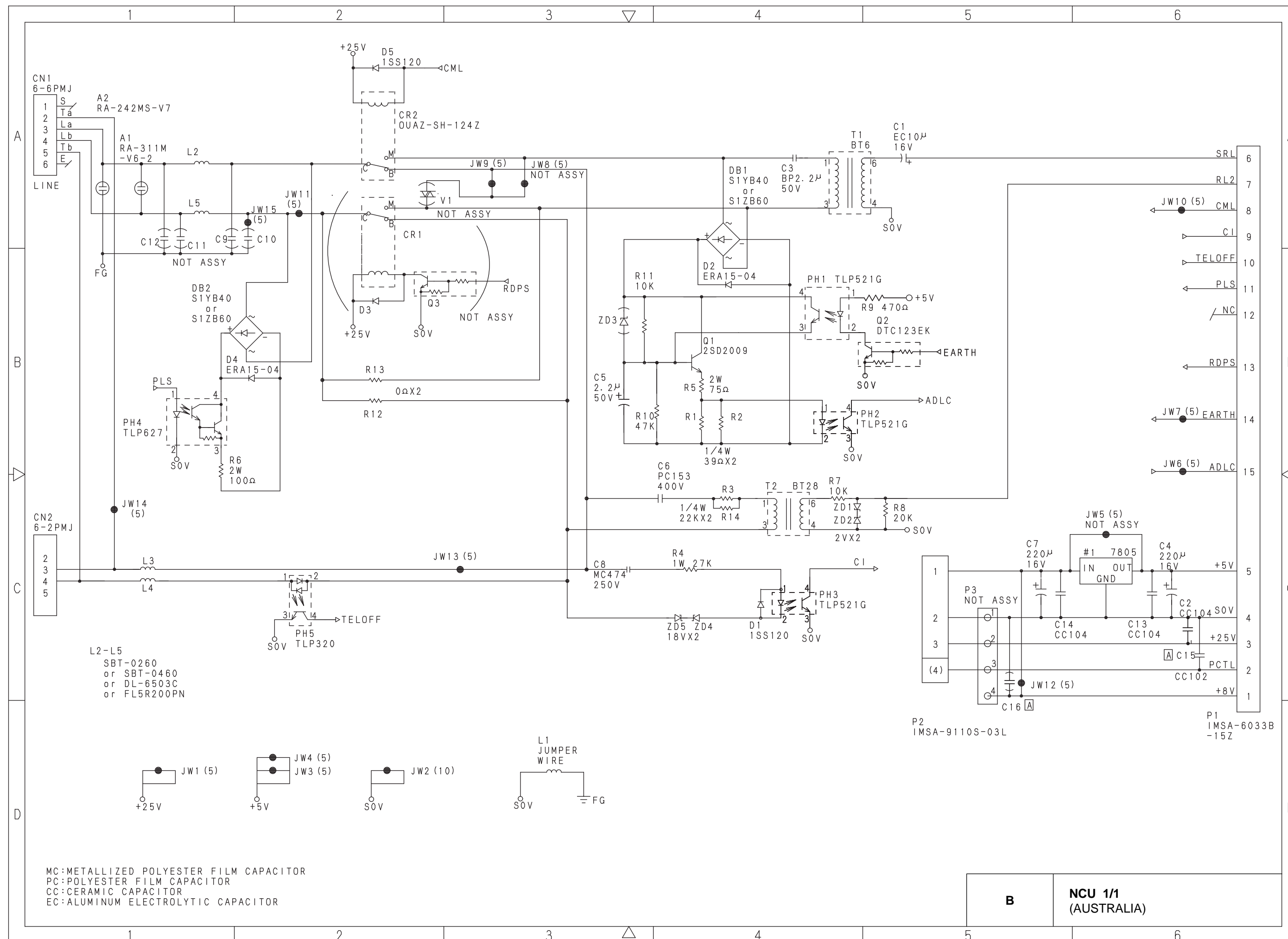
| | ASSY 10 SWITZ | ASSY 04 UK | ASSY 05 FRA | ASSY 26 SWE/HOL | ASSY 07 EXCEPT FOR GER/AUS | ASSY 13 DEN |
|----------|------------------|---------------|----------------|--------------------|----------------------------------|----------------|
| L1 | COIL 3.3mH | JUMPER WIRE | ← | ← | ← | ← |
| C14, 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 |

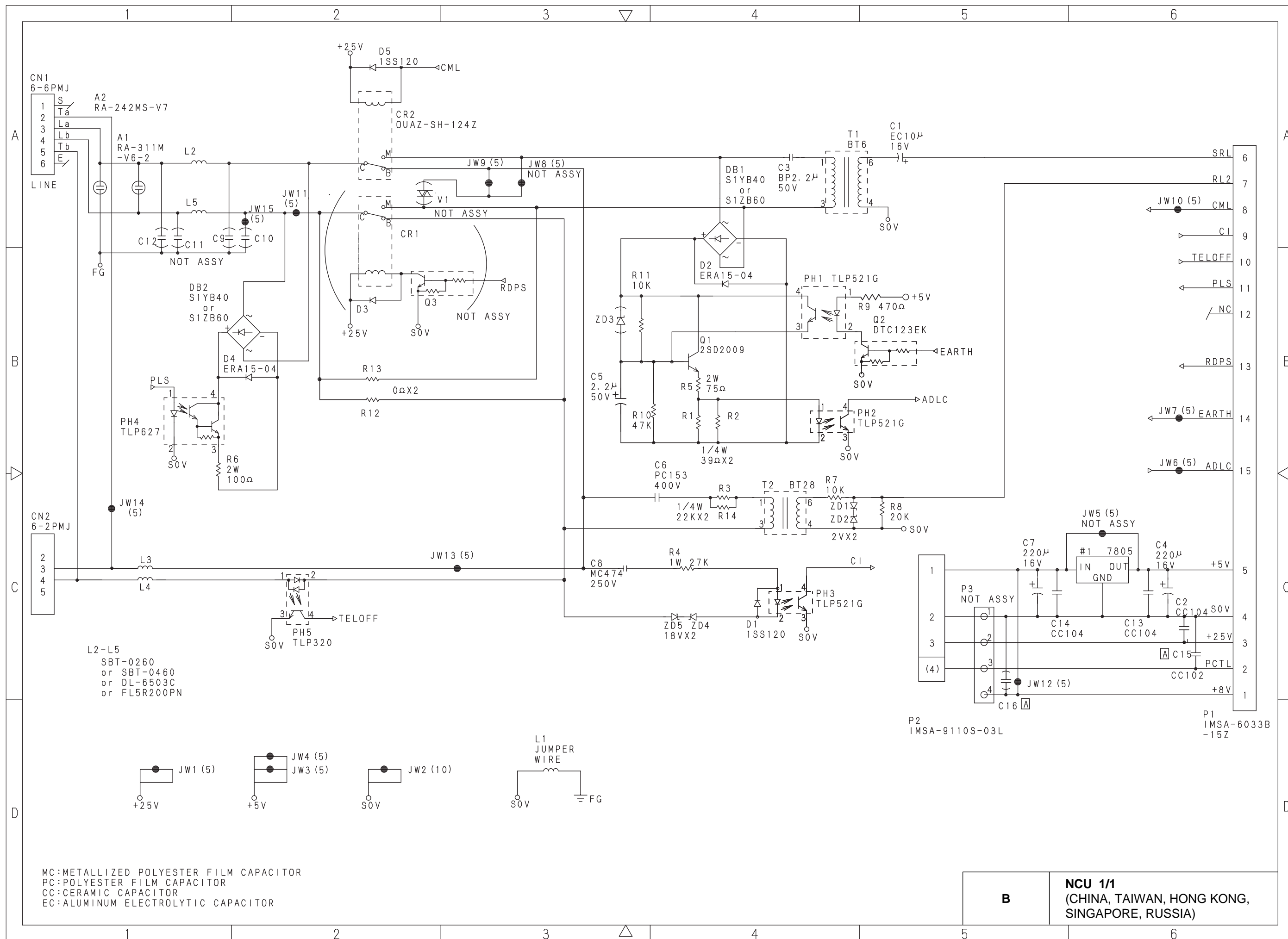
B

NCU PCB 2/2

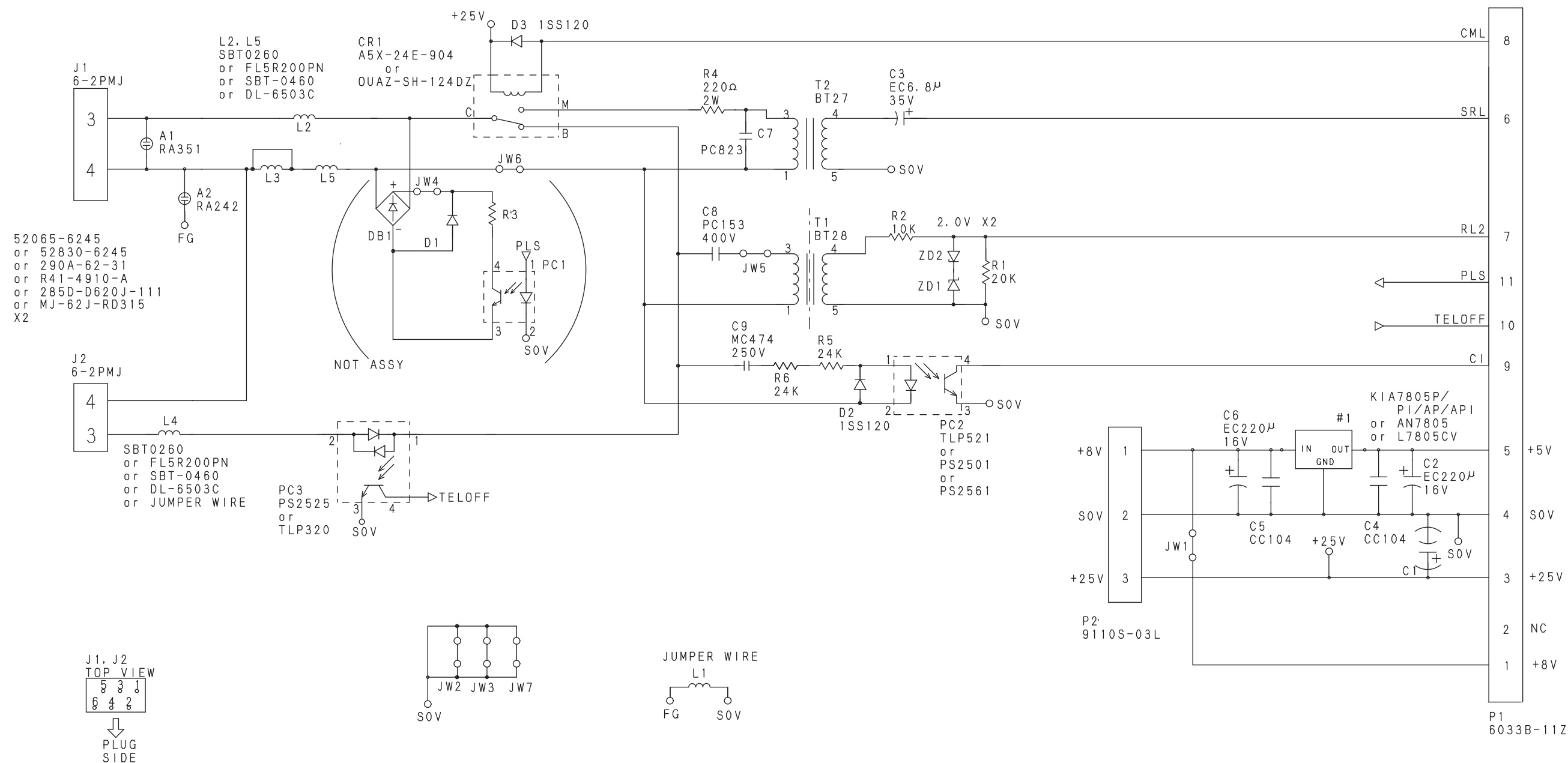
(U.K., FRANCE, NORWAY, BELGIUM, HOLLAND,
SWITZERLAND, IRELAND, FINLAND, DENMARK,
SPAIN, ITALY, SWEDEN, SOUTH AFRICA)







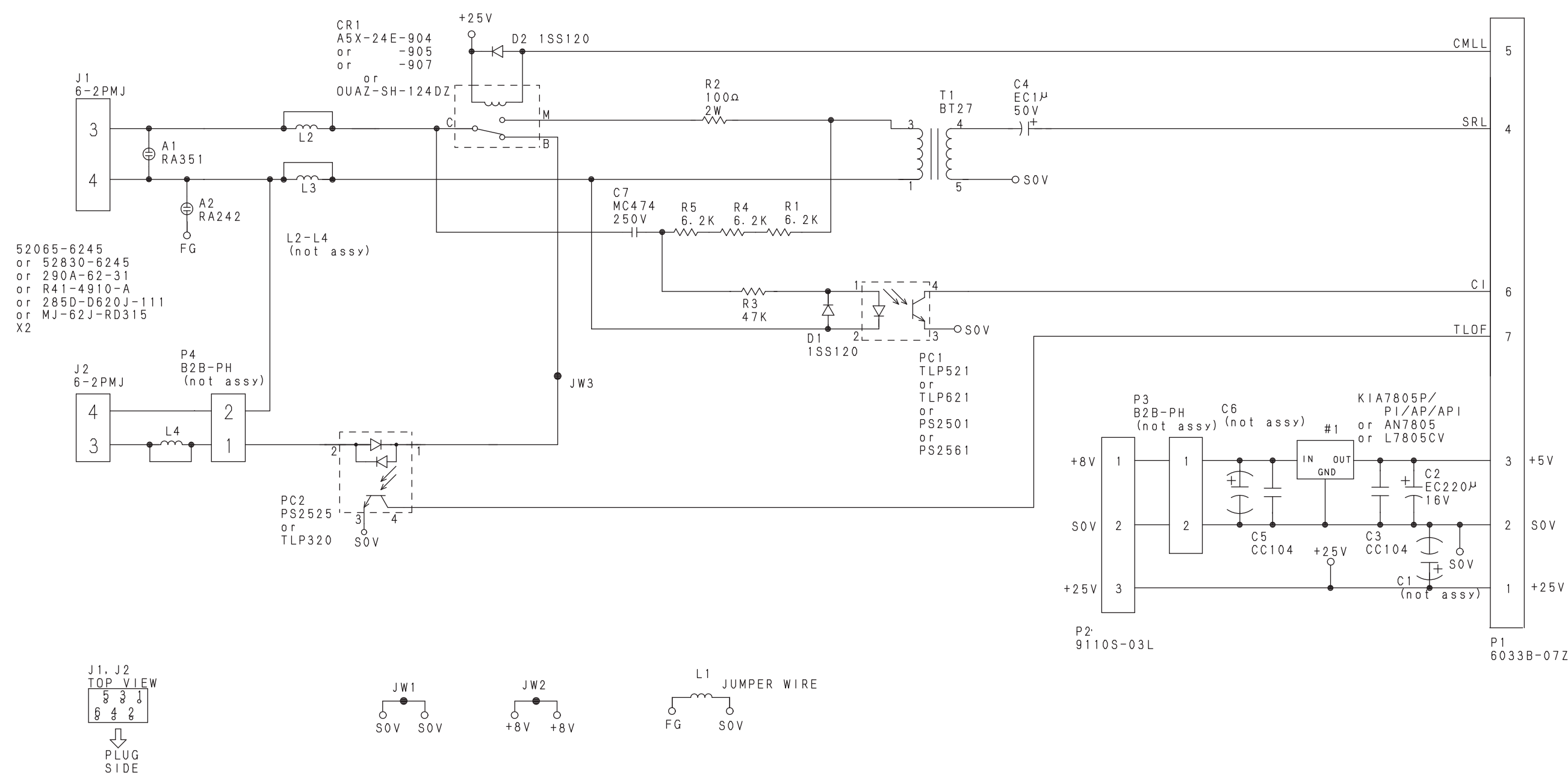
1. UNLESS OTHERWISE SPECIFIED, POWER CONSUMPTION OF RESISTORS IS 1/4W.
2. UNLESS OTHERWISE SPECIFIED, THE VOLTAGE RESISTANCE OF CAPACITORS IS 25V OR 50V.
3. COMPONENTS IN PARENTHESIS NOT TO BE MOUNTED.
4. ZD1 AND ZD2 ARE MOUNTED ONLY FOR MC MODEL.



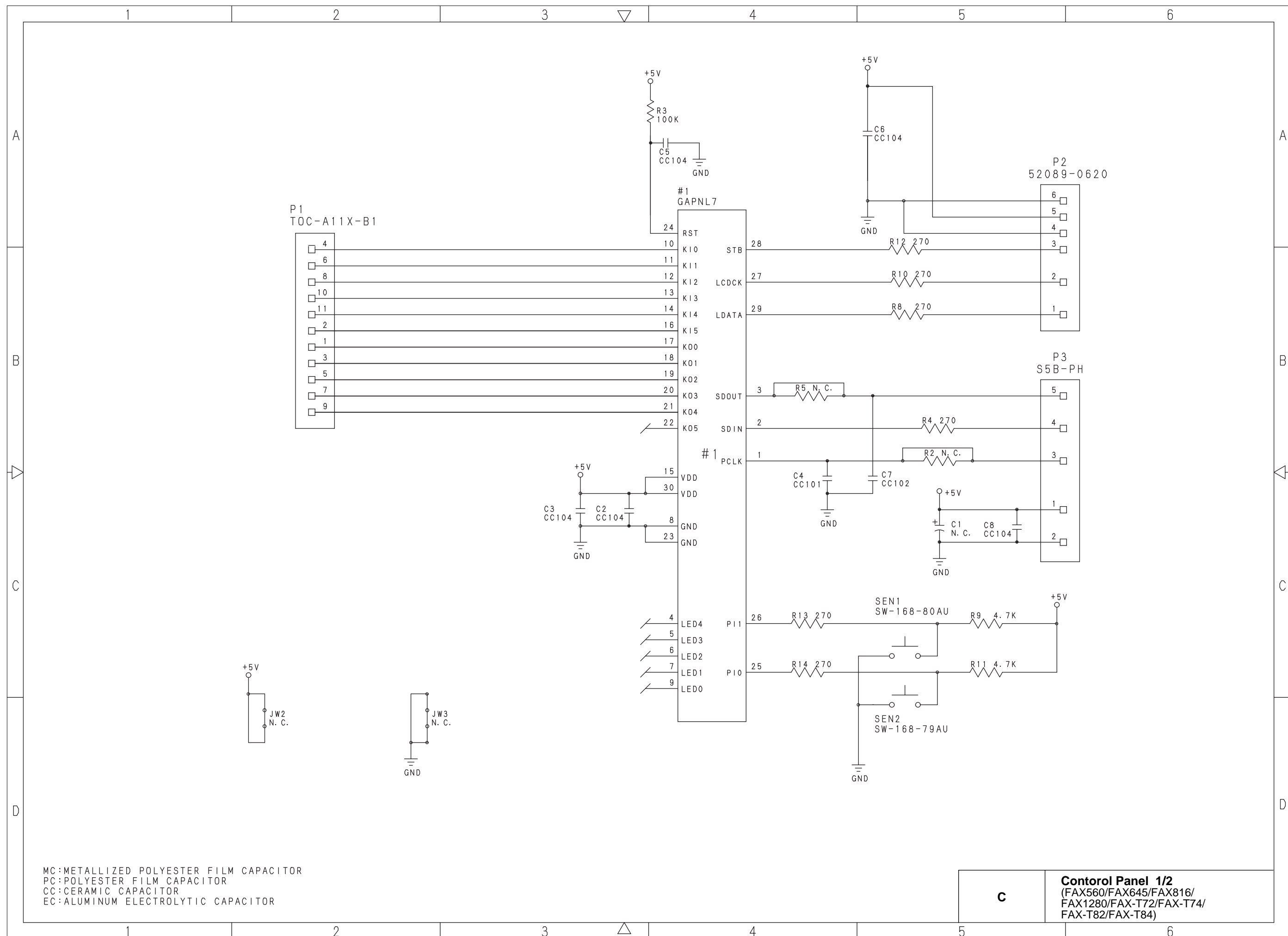
B

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.



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



1

2

3

▽

4

5

6

A

B

C

D

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

1

2

3

△

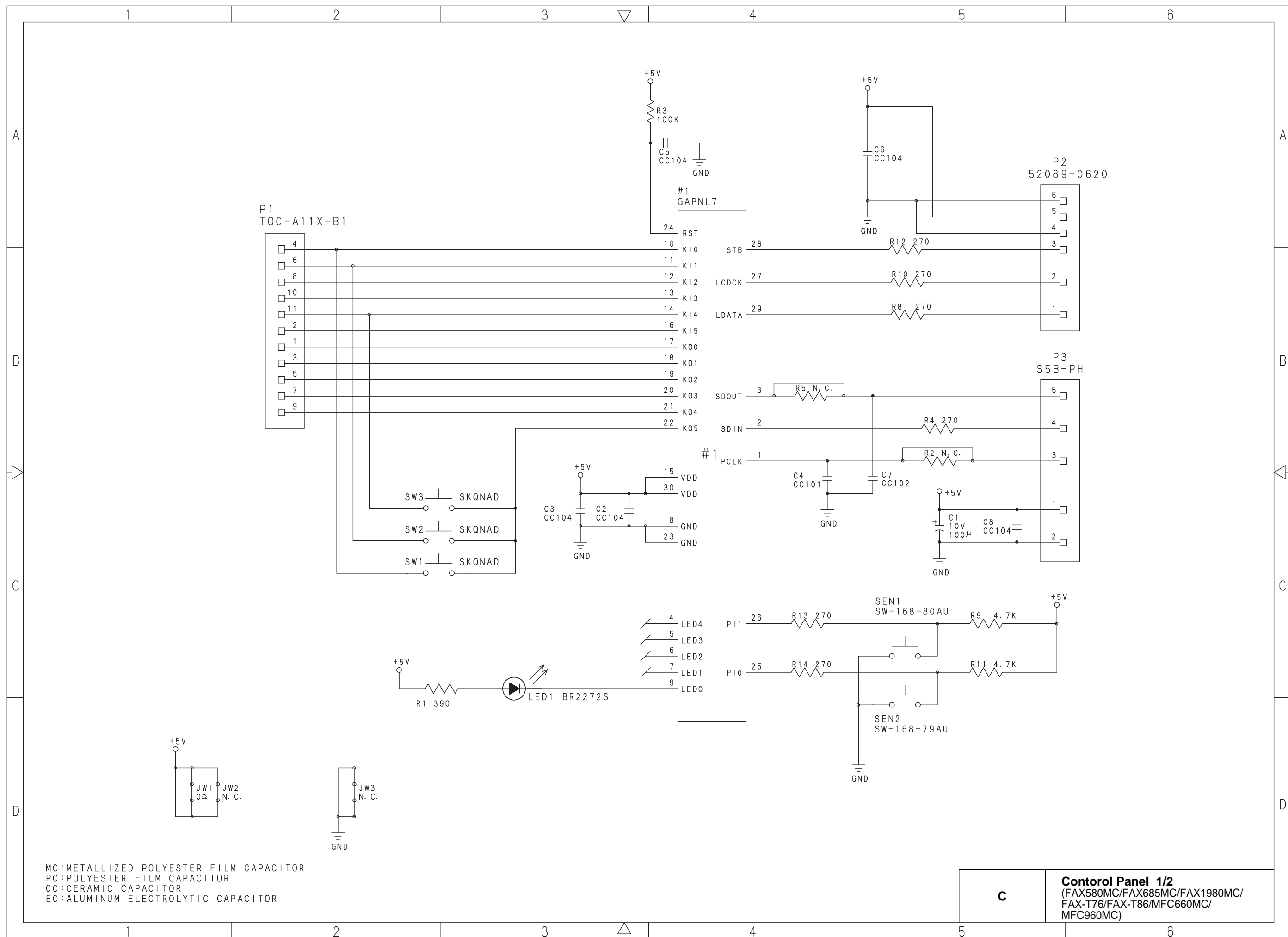
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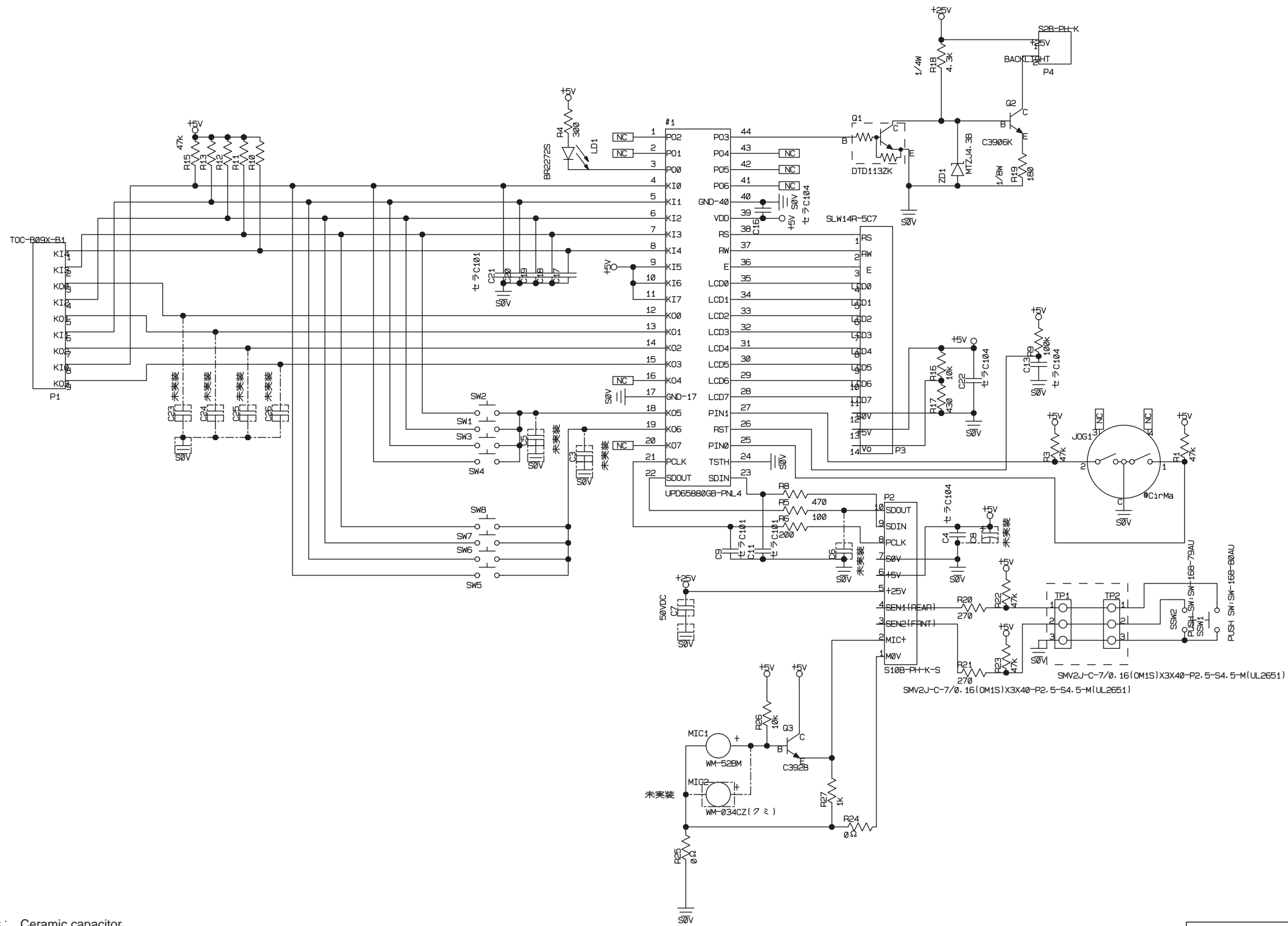
5

6

C

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





セラC: Ceramic capacitor
未実装: Not mounted

C

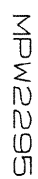
Control Panel 1/2
(FAX-T78)

T7-JPN-CL PANEL KEY MATRIX REFERENCE TABLE 1

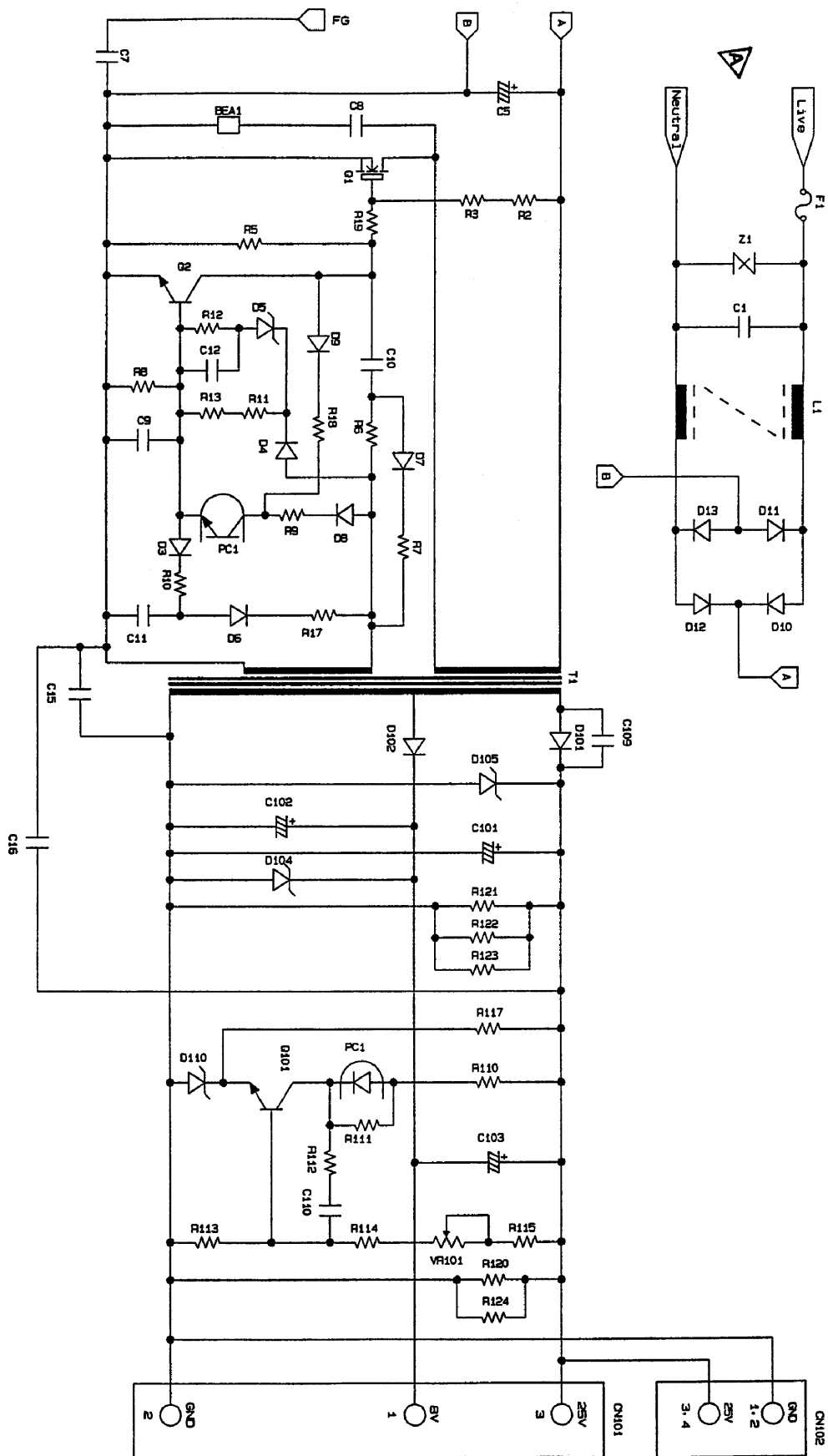
| KEY NO. | KEY NAME | KEY CODE |
|---------|---------------|----------|
| 1 | 10KEY-1 | 19 |
| 2 | 10KEY-2 | 09 |
| 3 | 10KEY-3 | 01 |
| 4 | Hold | 11 |
| 5 | 10KEY-4 | 1A |
| 6 | 10KEY-5 | 0A |
| 7 | 10KEY-6 | 02 |
| 8 | R | 12 |
| 9 | 10KEY-7 | 1B |
| 10 | 10KEY-8 | 0B |
| 11 | 10KEY-9 | 03 |
| 12 | 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

| | K00 | K01 | K02 | K03 | K04 | K05 | K06 |
|--------------|-------|-------|-------|-------|-----|--------|--------|
| | P1-3P | P1-5P | P1-7P | P1-9P | - | #1-18P | #1-19P |
| K10 P1-8P | 3 | 2 | 4 | 1 | - | SW4 | SW5 |
| K11 P1-6P | 7 | 6 | 8 | 5 | - | SW3 | SW6 |
| K12 P1-4P | 11 | 10 | 12 | 9 | - | SW1 | SW7 |
| K13 P1-2P | 15 | 14 | 16 | 13 | - | SW2 | SW8 |
| K14 P1-1P | - | 18 | 19 | 17 | - | - | - |

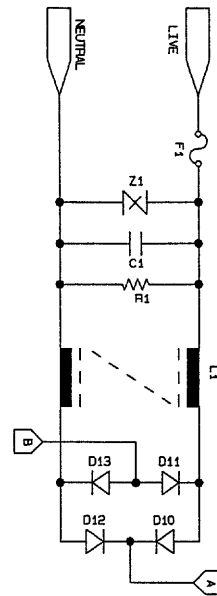


Power supply
100-120V

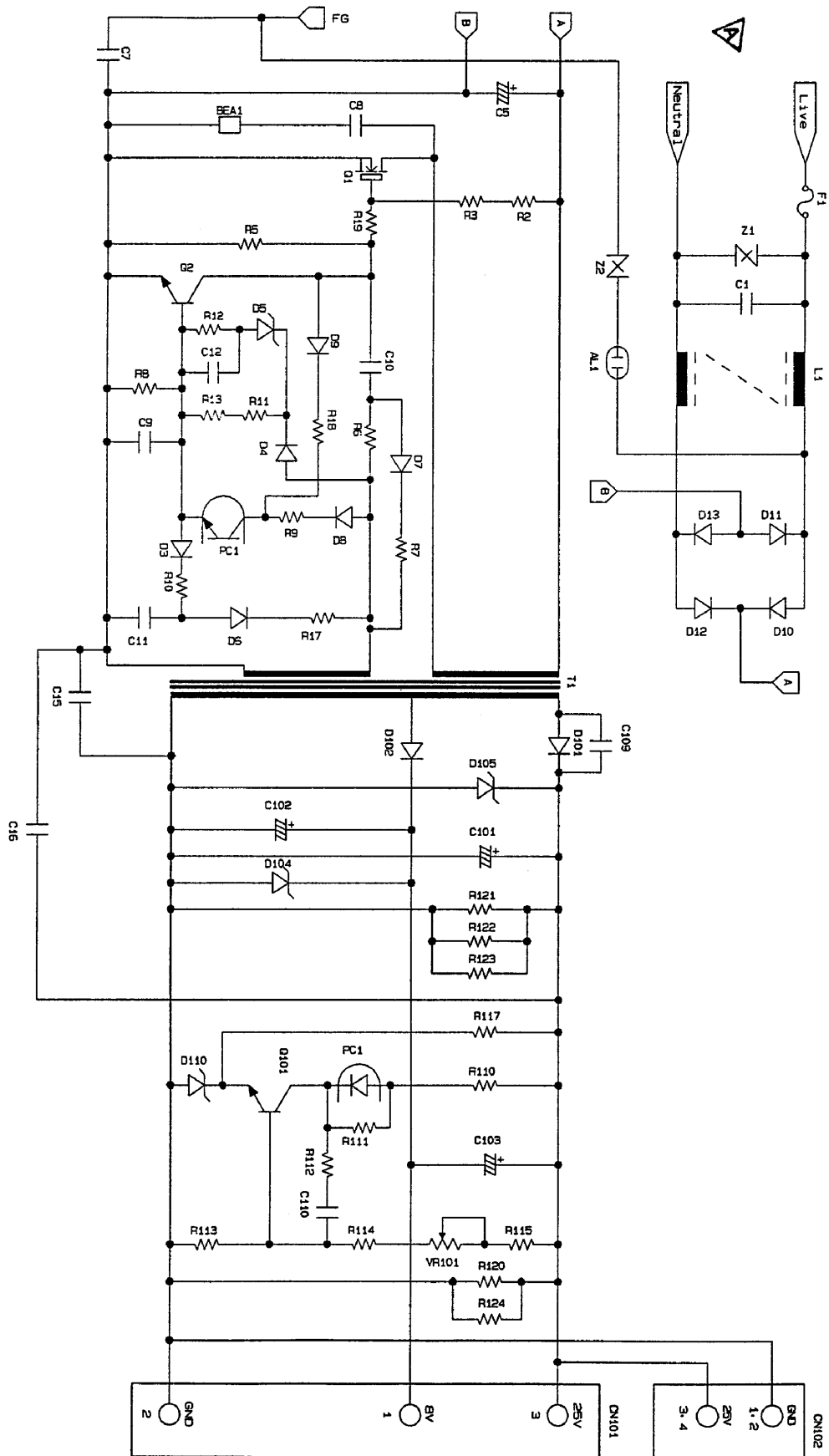


D

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



Power supply
200V (SWITZ)



D

Power supply
200V (ASIA)

brother®

June 2003
SM8X4501(2)
Printed in Japan