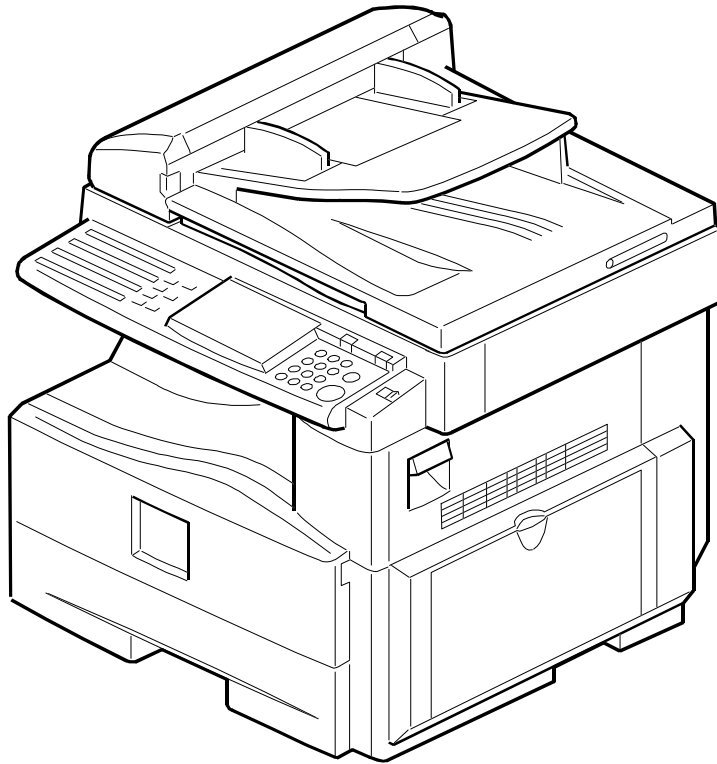


*Gestetner*<sup>®</sup> **LANIER**  **RICOH**<sup>®</sup> **SAVIN**<sup>®</sup>



# **B044/B045/B046** **SERVICE MANUAL**

001209MIU

RICOH GROUP COMPANIES





**B044/B045/B046  
SERVICE MANUAL**

**RICOH GROUP COMPANIES**



*Gestetner*<sup>®</sup> **LANIER**  **RICOH**<sup>®</sup> **SAVIN**<sup>®</sup>

# **B044/B045/B046 SERVICE MANUAL**



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*Ricoh Corporation*



# LEGEND

| PRODUCT CODE | COMPANY   |        |              |       |
|--------------|-----------|--------|--------------|-------|
|              | GESTETNER | LANIER | RICOH        | SAVIN |
| B044         | 1302      | 5613   | Aficio 1013  | 2513  |
| B045         | –         |        | Aficio 120   | –     |
| B046         | 1302f     | 5613F  | Aficio 1013f | 2513f |
|              |           |        |              |       |
|              |           |        |              |       |
|              |           |        |              |       |

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# **B044/B045/B046**

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**DOCUMENT FEEDER B444**

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SEE SECTION B444 FOR A DETAILED TABLE OF CONTENTS

**PAPER TRAY UNIT B421**

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SEE SECTION B421 FOR A DETAILED TABLE OF CONTENTS

**FAX UNIT B465**

---

SEE SECTION B465 FOR A DETAILED TABLE OF CONTENTS

**PRINTER CONTROLLER UNIT B441**

---

SEE SECTION B411 FOR A DETAILED TABLE OF CONTENTS



## **IMPORTANT SAFETY NOTICES**

### **PREVENTION OF PHYSICAL INJURY**

1. Be sure that the power cord is unplugged before disassembling or assembling parts of the copier or peripherals.
2. The wall outlet should be near the copier and easily accessible.
3. Note that electrical voltage is supplied to some components of the copier and the paper tray unit even while the main power switch is off.
4. If you start a job before the copier completes the warm-up or initializing period, keep hands away from the mechanical and electrical components until job execution has started. The copier will start making copies as soon as warm-up or initialization is finished.
5. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

### **HEALTH SAFETY CONDITIONS**

Toner and developer are nontoxic, but getting either of these into your eyes may cause temporary eye discomfort. Try to remove with eye drops or flush with water. If material remains in eye or if discomfort continues, get medical attention.

### **OBSERVANCE OF ELECTRICAL SAFETY STANDARDS**

The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those relevant models.

### **LITHIUM BATTERIES**

Incorrect replacement of lithium battery(s) on the FCU may pose risk of explosion. Replace only with the same type or with an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

### **SAFE AND ECOLOGICAL DISPOSAL**

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly if exposed to an open flame.
2. Dispose of used toner, developer, and organic photoconductors in accordance with local regulations. (These are nontoxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

## LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.

### WARNING

**Use of controls not specified in this manual, or performance of adjustments or procedures not specified in this manual, may result in hazardous radiation exposure.**

### WARNING FOR LASER UNIT

**WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can cause serious damage to eyes.**

**CAUTION MARKING:**



## Symbols and Abbreviations

This manual uses the symbols and abbreviations shown below.

| Symbol                                                                              | Meaning                |
|-------------------------------------------------------------------------------------|------------------------|
|  | "See," "Refer to"      |
|  | Clip ring              |
|  | Screw                  |
|  | Connector              |
| SEF                                                                                 | Short Edge Feed        |
| LEF                                                                                 | Long Edge Feed         |
|  | Core Technology manual |

|                                           |  |
|-------------------------------------------|--|
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| DOCUMENT FEEDER B444                      |  |
|                                           |  |
| PREVENTIVE MAINTENANCE B044/B045/B046     |  |
| PAPER TRAY UNIT B421                      |  |
|                                           |  |
| REPLACEMENT AND ADJUSTMENT B044/B045/B046 |  |
| FAX UNIT B465                             |  |
|                                           |  |
| TROUBLESHOOTING B044/B045/B046            |  |
| PRINTER B441                              |  |
|                                           |  |
| SERVICE TABLES B044/B045/B046             |  |
|                                           |  |
|                                           |  |
| DETAILED DESCRIPTIONS B044/B045/B046      |  |
|                                           |  |
|                                           |  |
| SPECIFICATIONS B044/B045/B046             |  |
|                                           |  |
|                                           |  |
|                                           |  |
|                                           |  |

|                   |
|-------------------|
| TAB<br>POSITION 1 |
| TAB<br>POSITION 2 |
| TAB<br>POSITION 3 |
| TAB<br>POSITION 4 |
| TAB<br>POSITION 5 |
| TAB<br>POSITION 6 |
| TAB<br>POSITION 7 |
| TAB<br>POSITION 8 |





# **INSTALLATION**



# 1. INSTALLATION

## ⚠ CAUTION

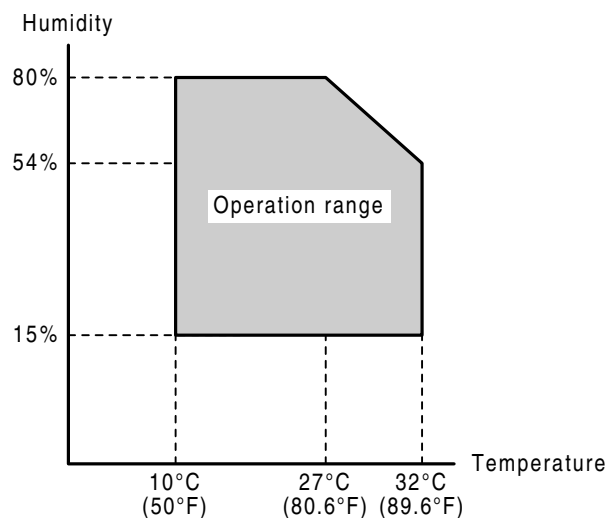
Before installing options, please do the following:

1. If there is a fax unit on the machine, print out all messages stored in the memory, all user-programmed items, and a system parameter list.
2. If there is a printer option on the machine, print out all data in the printer buffer.
3. Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.

## 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

–Temperature and Humidity Chart–



1. Temperature Range: 10°C to 32°C (50°F to 89.6°F)
2. Humidity Range: 15% to 80% RH
3. Ambient Illumination: Less than 1,500 lux (Do not expose to direct sunlight.)
4. Ventilation: Room air should turn over at least 3 times/hr/person
5. Ambient Dust: Less than 0.1 mg/m<sup>3</sup>
6. Do not install the machine where it will be exposed to direct sunlight or to direct airflow (from a fan, air conditioner, air cleaner, etc.).
7. Do not install the machine where it will be exposed to corrosive gas.
8. Place the machine on a firm and level base.
9. Do not install the machine where it may be subjected to strong vibration.

## INSTALLATION REQUIREMENTS

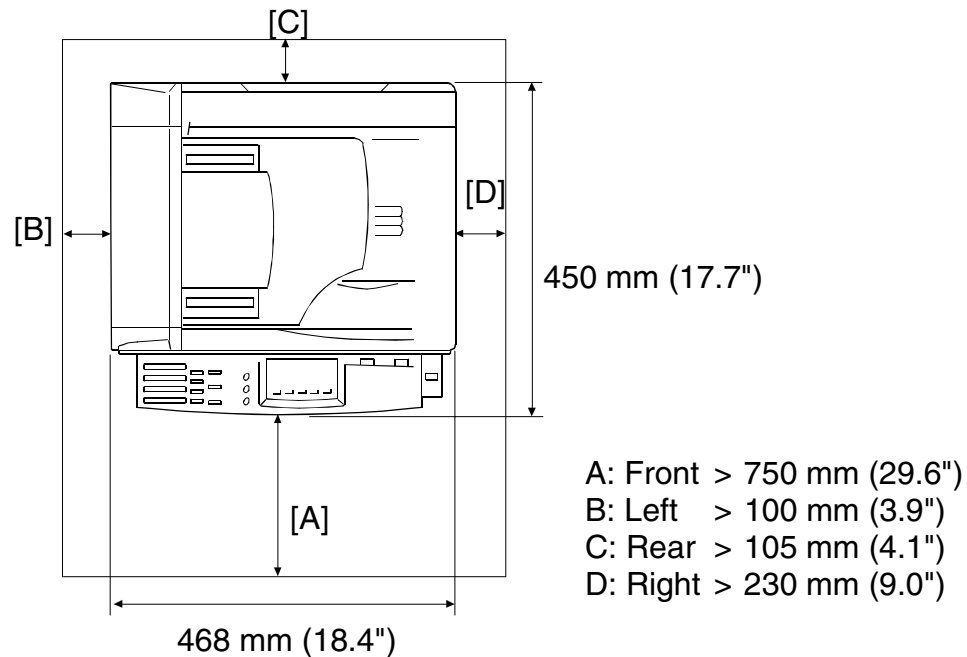
### 1.1.2 MACHINE LEVEL

Front to back: Within 5 mm (0.2") of level

Right to left: Within 5 mm (0.2") of level

### 1.1.3 MINIMUM OPERATIONAL SPACE REQUIREMENTS

Place the machine near the power source, providing clearance as shown.



- NOTE:** 1) The 750-mm front space indicated above is sufficient to allow the paper tray to be pulled out. Additional space is required to allow an operator to stand at the front of the machine.
- 2) Actual minimum space requirement for left, rear, and right sides is 10mm (0.4") each, but note that this will not allow room for opening of the bypass tray, right door, platen cover, or ADF unit.

### 1.1.4 POWER REQUIREMENTS

**⚠ CAUTION**

1. **Make sure that the wall outlet is near the machine and easily accessible. After completing installation, make sure the plug fits firmly into the outlet.**
2. **Avoid multi-wiring.**
3. **Be sure to ground the machine.**

Input voltage:

North America: 110 – 120 V, 50/60 Hz, 10 A

Europe: 220 – 240 V, 50/60 Hz, 5 A

Image quality guaranteed at rated voltage  $\pm 10\%$ .

Operation guaranteed at rated voltage  $\pm 15\%$ .

## 1.2 COPIER

### 1.2.1 ACCESSORY CHECK

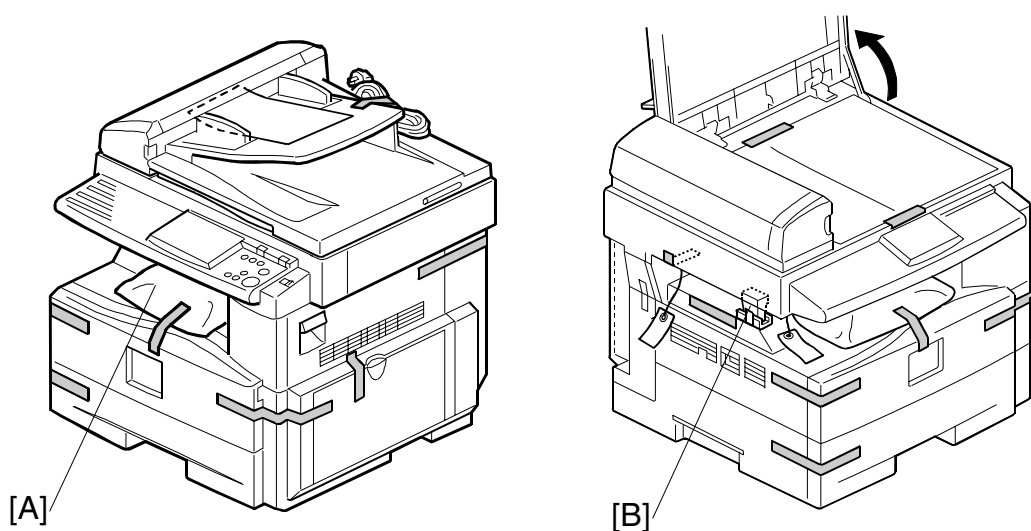
Check that you have the accessories indicated below. Note that accessories vary according to model and location.

| No. | Description                                   | Q'ty  |
|-----|-----------------------------------------------|-------|
| 1   | Copier Operating Instructions (-17, -26, -29) | 1     |
| 2   | EU safety sheet (-22, -24, -26, -27)          | 1     |
| 3   | NECR (-17, -27, -29)                          | 1     |
| 4   | Paper-size decals                             | 1 set |
| 5   | Energy Star seal (-26)                        | 1     |
| 6   | Branding plaques (-22)                        | 1 set |
| 7   | Brand decals                                  | 1 set |
| 8   | Handset bracket (B046)                        | 1     |

### 1.2.2 INSTALLATION PROCEDURE

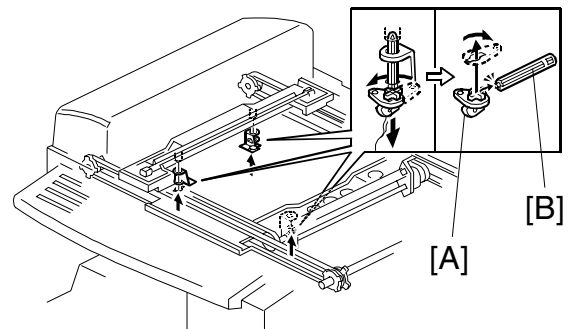
#### CAUTION

Make sure that the copier remains unplugged during installation.



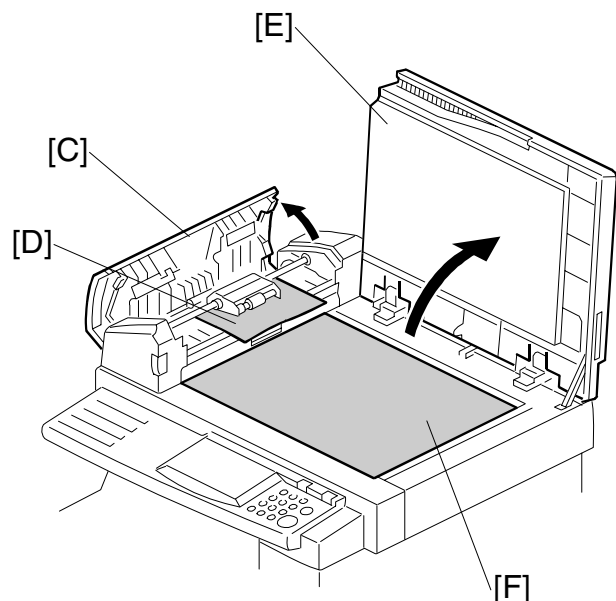
1. Remove the strips of tape.
2. Remove the bag [A] holding the included accessories.
3. Remove the spacing wedge [B].

4. Remove the 3 scanner lock pins. (A tag is hanging from each pin.) To remove: Grasp the base of the pin [A], turn 90 degrees, and pull down and out.



5. Remove the tags from the pins. Then break each pin off of its base [A], discard the pin part [B], and set each base [A] back into its original hole, turning it 90° to lock it into place. (Be sure to do this for all three pins.)

6. **If installing a DF-equipped model (B046):** Raise the DF upper guide [C] and remove the protective paper [D] at the feed unit. Then lower the guide.

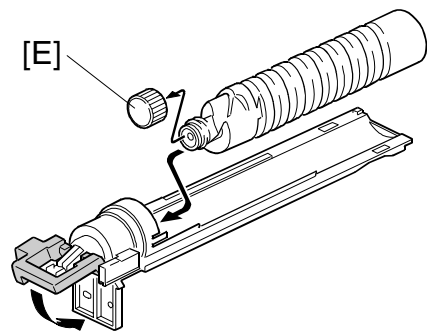
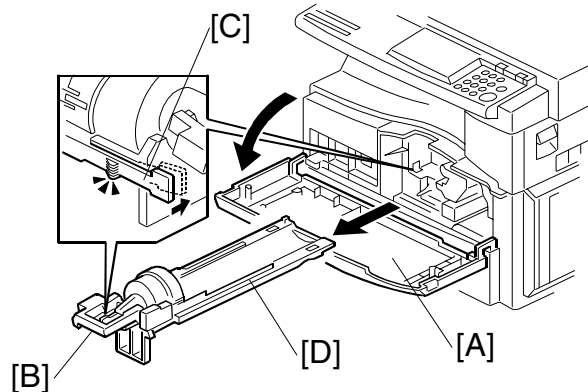


7. Open the platen cover [E] and remove the protective paper [F] covering the exposure glass. Then close the platen cover.

8. Open the front door [A].

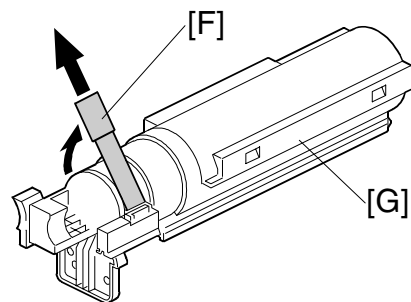
9. ***If installing a toner-bottle model (B044 or B046):***

- Lift lever [B], press in on latch [C] and pull the bottle holder [D] out. (It is not necessary to pull it completely out of the machine, however.)
- Take a new bottle of toner, *shake it several times*, remove its outer cap [E], and load as shown. Then push the bottle holder back into the machine, and press the latch down to lock it.



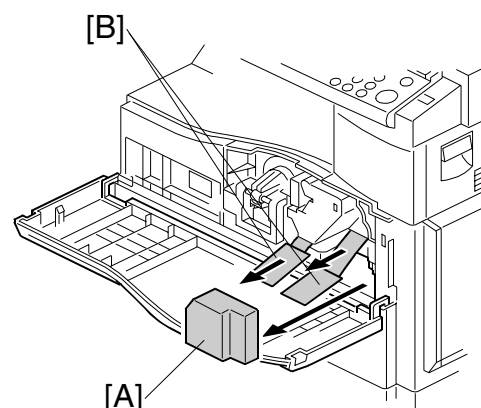
***If installing a toner-hopper magazine (THM) model (B045):***

- *Shake the magazine several times*, then peel off the paper [F] from a new THM [G], and load the THM into the machine.



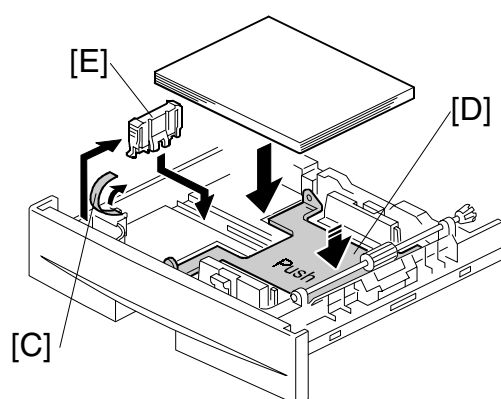


10. Remove the foam cushion [A] and pull the tabbed strips [B] all the way out of the PCU. Then close the front door.



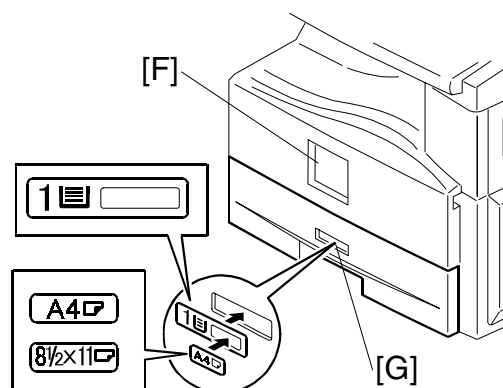
11. Pull open the paper tray, and remove the tape [C] securing the end fence in the compartment.

12. Push the bottom plate [D] down, load paper, and adjust the side fences. If loading paper shorter than A4, remove the end fence [E] from its compartment, set it into the tray, and adjust it to the correct length.



13. Push the tray back in.

14. Adhere the appropriate branding decal (not shown) to the center of the front door [F], and adhere the tray number decal and appropriate paper-size decal to the front of the paper tray (at [G]) as shown.



15. **Hong Kong only:**  
**If installing model B046 in Hong Kong,** you must change the position of the TB1 jumper on the NCU. Turn to the fax service manual and carry out steps 4 to 8 of the installation procedure (fax service manual, section 1.2.2).

16. Plug in the machine and turn on the main switch located on the left side of the unit.
17. Enter SP mode (See 5.1 Accessing SP Mode), and run SP7-825 to initialize the electrical total counter to 0.

**NOTE:** 1) After selecting SP7-825, enter "1" and then hold down the *Original Type* key and press the *OK* key to initialize the counter. If initialization is successful, the screen displays "Action completed."

2) SP7-825 is effective only once, at time of machine installation.

18. **Model B046 only:** Access SP5-992 and select "2" to print out a full SMC report. Confirm that the report shows a "YES" for SP7-801-3.
19. **Modes B046 only:** After connecting the telephone line to the appropriate telephone wall jack and LINE press the On Hook key on the fax operation panel, and confirm that you hear a dial tone coming from the monitor speaker.
20. Program the required items, as indicated below.

**Initial Programming: Faxless models (B044, B045)**

| Items to Program (Service Level – SP Mode) <sup>*1</sup> | SP No. |
|----------------------------------------------------------|--------|
| Date and time                                            | 5-302  |
| Language replacement (Firmware download)                 | 5-827  |

\*1: See Section 5 for SP-mode usage instructions.

| Items to Program (User Level) <sup>*2</sup> | User Tools                      |
|---------------------------------------------|---------------------------------|
| Display contrast                            | User Tools →<br>System Settings |
| Energy saver level (low power mode)         |                                 |
| Reception mode                              |                                 |
| Other items, as necessary                   | <b>*2</b>                       |

\*2: Refer to the Operating Instructions for details.

**Initial Programming: Fax-equipped models (B046)**

| Items to Program (Service Level – Service Functions) <sup>*3</sup> | Function No. |
|--------------------------------------------------------------------|--------------|
| Country code (System switch 0F)                                    | 01           |
| Protocol requirements (G3 switch 0B) - EU only                     | 01           |
| PM call (System switch 01 – bit 0)                                 | 01           |
| Country code (NCU parameter 00)                                    | 07           |
| Service station's fax number                                       | 09           |

\*3: See Section 5.1.1 of the fax service manual for information about using service functions.

| Items to Program (Service Level – SP Mode) <sup>*4</sup> | SP No. |
|----------------------------------------------------------|--------|
| Machine's serial number                                  | 5-811  |
| Language replacement (Firmware download)                 | 5-827  |
| PSTN access code (RAM address 4000DB)                    | 7-955  |
| PSTN access method (RAM address 4000CD)                  |        |
| Periodic service call (RAM addresses 40054F to 400553)   |        |

\*4: See Section 5 for SP-mode usage instructions.

| Items to Program (User Administrator Level) <sup>*5</sup> | User Tools              |
|-----------------------------------------------------------|-------------------------|
| Monitor volume                                            | Fax Features<br>→ Setup |
| Display contrast                                          |                         |
| Date and Time                                             |                         |
| Reception mode                                            |                         |
| Fax Header/Own Name/Own No. (TTI/RTI/CSI)                 |                         |
| Reports on/off                                            | Key Op. Tools           |
| Country Code (except NA)                                  |                         |
| Fusing power control during energy saver mode             | System Settings         |
| Language selection                                        | Language                |
| Other initial programming items                           | *5                      |

\*5: Refer to the Operating Instructions for details.

## 1.3 PAPER TRAY UNIT

### 1.3.1 ACCESSORY CHECK

Confirm that you have the accessories indicated below.

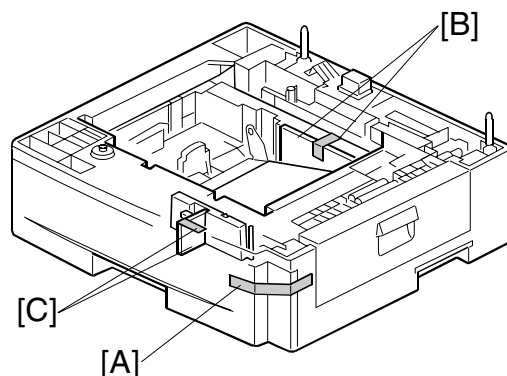
| No. | Description                                 | Q'ty    |
|-----|---------------------------------------------|---------|
| 1   | Paper-size decals                           | 1 sheet |
| 2   | Installation Procedure (for service person) | 1       |
| 3   | Installation Procedure (for user)           | 1       |

### 1.3.2 INSTALLATION PROCEDURE

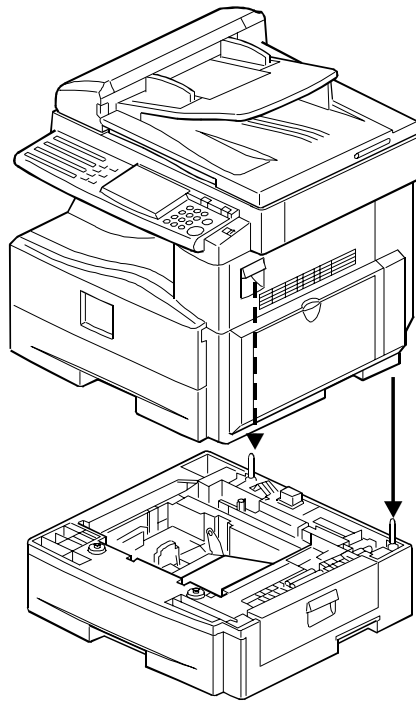
#### **⚠ CAUTION**

**Unplug the main machine's power cord before starting the following procedure.**

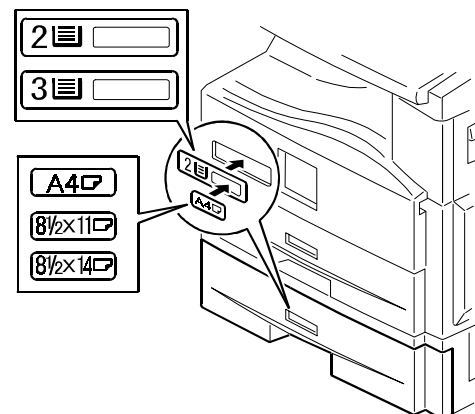
1. Remove the tape at [A], and the tape and cardboard at [B].
2. Pull the paper tray part way out of the unit, remove the tape and cardboard at [C], and push the tray back in.



3. Set the machine onto the paper tray unit.



4. Remove the paper tray from the paper tray unit.
5. Load paper into the paper tray. Adjust the side and end fences as necessary. If loading 8 1/2" x 14" paper, remove the end fence and set it into the special compartment.
6. Set the paper tray back into the paper tray unit.
7. Stick on the appropriate tray-number decal and paper-size decal, at the locations indicated in the illustration.

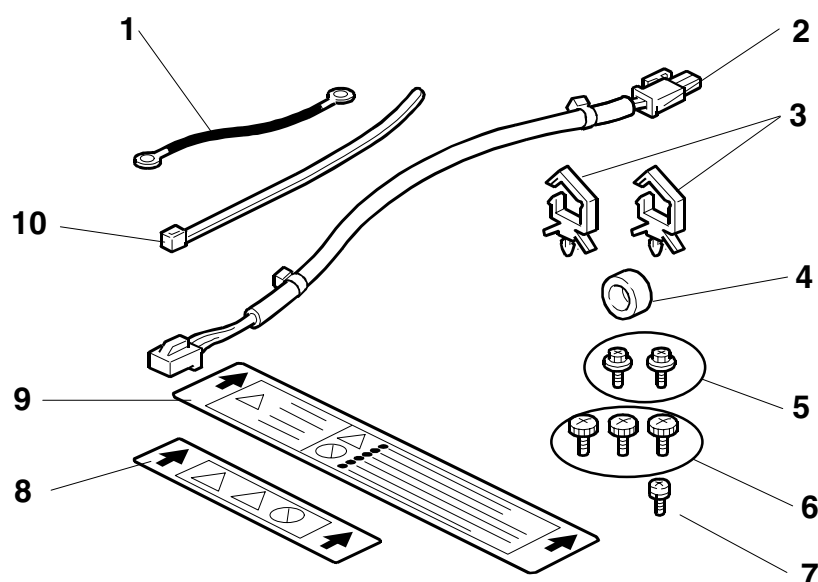


## 1.4 PAPER TRAY UNIT HEATER

### 1.4.1 ACCESSORY CHECK

Confirm that you have the accessories indicated below.

| No. | Description             | Q'ty |
|-----|-------------------------|------|
| 1   | Grounding wire          | 1    |
| 2   | Relay harness           | 1    |
| 3   | Clamps                  | 2    |
| 4   | Ferrite core            | 1    |
| 5   | Heater fastening screws | 2    |
| 6   | PTU fastening screws    | 3    |
| 7   | Grounding screw         | 1    |
| 8   | Decal for copier        | 1    |
| 9   | Decal for paper unit    | 1    |
| 10  | Tie wrap                | 1    |



### 1.4.2 INSTALLATION PROCEDURE

#### **⚠ CAUTION**

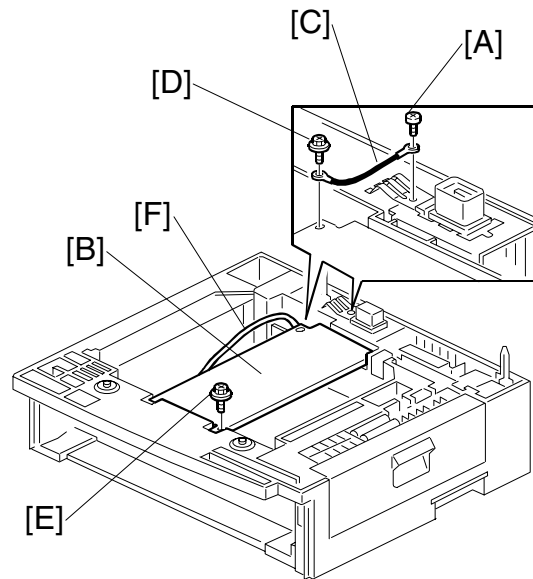
**Unplug the main machine's power cord before starting the following procedure.**

1. If the paper tray unit is already installed, uninstall it by lifting the copier off of it. (Refer to illustrations for Procedure 1.3.2, above.)
2. Remove both paper trays—the one from the copier, and the one from the paper tray unit.

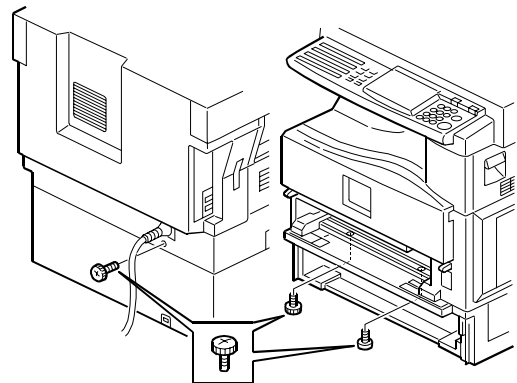
3. Remove the ground screw [A] at the rear of the paper tray unit.

4. Fasten the heater [B] and the supplied ground wire [C] to the paper tray unit with 3 screws as shown. Note that [A] is the grounding screw you removed at Step 3 (returned to its original hole), and [D] and [E] are the two supplied heater fastening screws.

**NOTE:** Be sure to position the ground wire [C] and heater harness [F] so that they will be out of the way of the copier when you set it onto the paper tray unit.

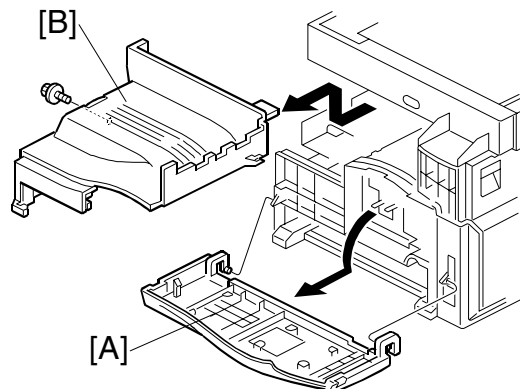


5. Set the copier onto the paper tray unit.
6. Screw the paper tray unit into place using three supplied PTU fastening screws.

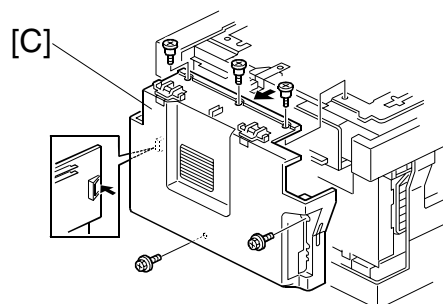


## PAPER TRAY UNIT HEATER

7. Open the front door [A] and remove the copy tray [B] (⚙️×1). Then close the front door.



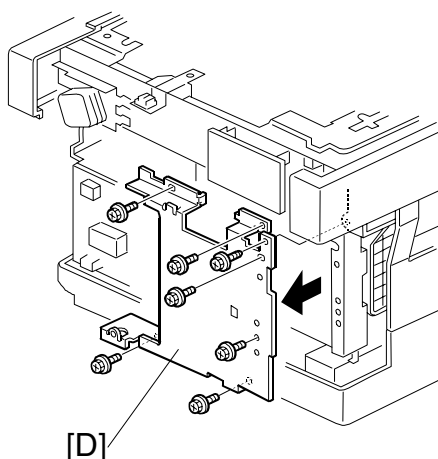
8. Remove the rear cover [C] (⚙️ x 5).



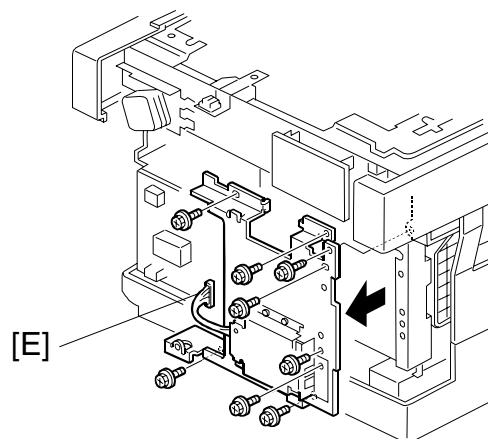
9. Remove the FCU cover plate [D] (7 screws on faxless machines, 8 screws on fax-equipped machines).

**NOTE:** On fax-equipped machines, detach the NCU connector [E] first.

*Faxless machines:*



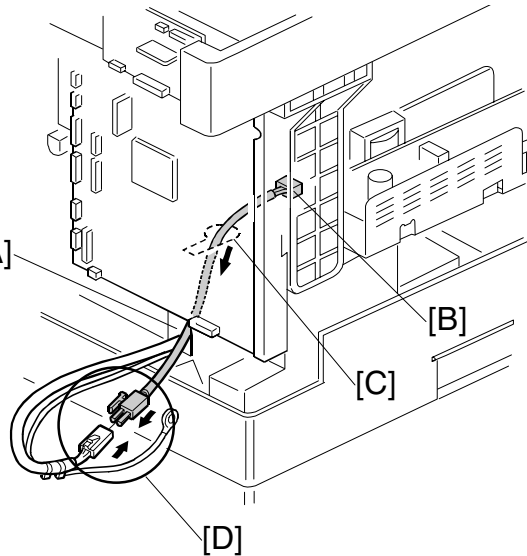
*Fax-equipped machines:*





10. Pass the heater's harness through the hole [A] at the rear of the copier.

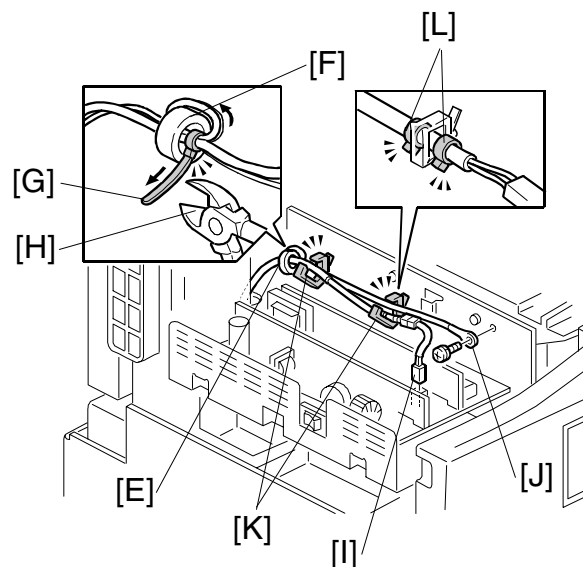
11. Pass relay harness [B] through the circular opening at [C] (at the rear of the PSU board bracket), and then through the hole at [A]. Then connect the relay harness to the heater's harness [D].



12. Pull the relay harness back into the copier. Then set the ferrite core [E] over the relay harness, and push it back so that it is over the heater's harness.

13. Wrap the heater's harness once around the core (see [F]). Adjust so that the core is located toward the rear of the copier (at position [E], behind the rear clamp). Secure the core into position using the supplied tie wrap [G].

14. Clip off the excess length of the tie wrap [H].



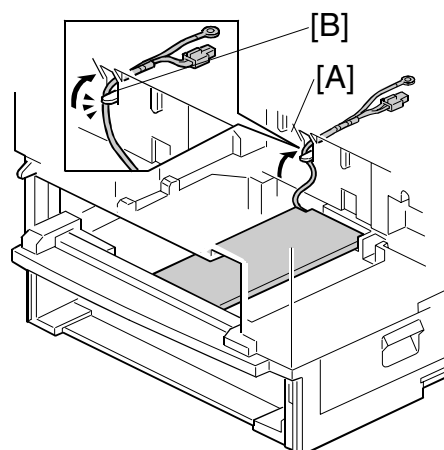
15. Connect the relay harness connector [I] to the large connector at the front center of the PSU board. Screw the ground wire [J] to the PSU board bracket, using the included grounding screw.

16. Attach the supplied clamps [K] to corresponding holes on the PSU board bracket, and set the heater harness through the clamps. Position the harness so that the front clamp is between the two bindings [L] on the harness. Then fasten the clamps.

## PAPER TRAY UNIT HEATER

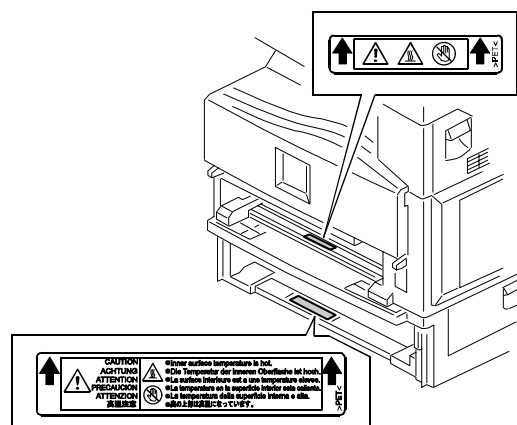
17. Pull the excess length of the heater's harness out the hole at the rear [A].

**NOTE:** Be sure that the harness passes to the side of the grounding plate [B] at the bottom of the hole. (The front of the grounding plate must remain clear.)



18. Arrange the excess harness length so that it sits beneath the FCU cover plate.

19. Attach the caution decals to the locations shown in the illustration.



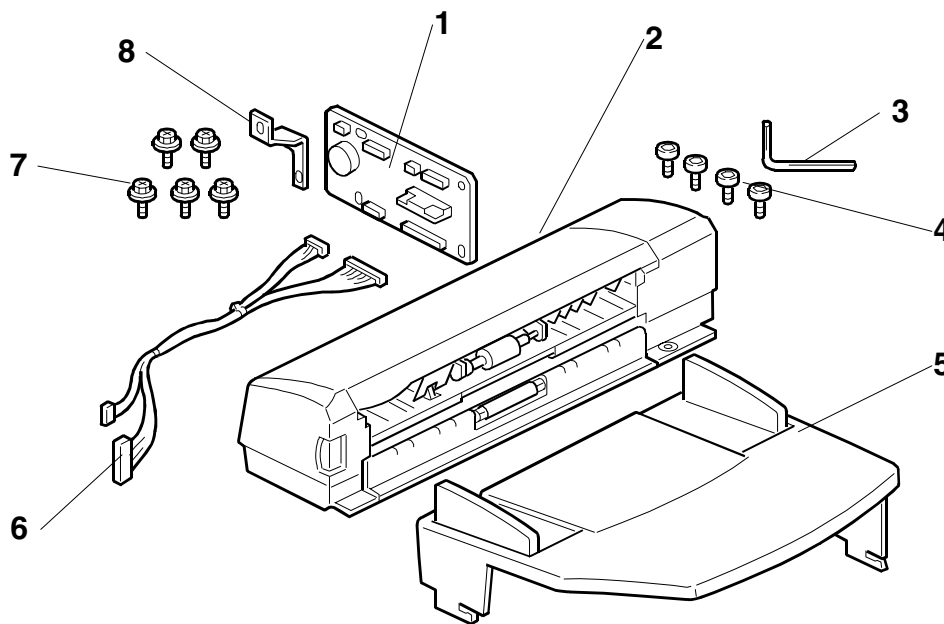
20. Reinsert the paper trays, and reattach the copy tray and the rear cover.

## 1.5 DOCUMENT FEEDER

### 1.5.1 ACCESSORY CHECK

Confirm that you have the components and accessories indicated below.

| No. | Description            | Q'ty |
|-----|------------------------|------|
| 1   | DF connection board    | 1    |
| 2   | DF body                | 1    |
| 3   | Hex wrench             | 1    |
| 4   | Hex screws             | 4    |
| 5   | DF original table      | 1    |
| 6   | Wire harness           | 1    |
| 7   | Phillips-head screws   | 5    |
| 8   | Bracket                | 1    |
| —   | Installation Procedure | 1    |



### 1.5.2 INSTALLATION PROCEDURE

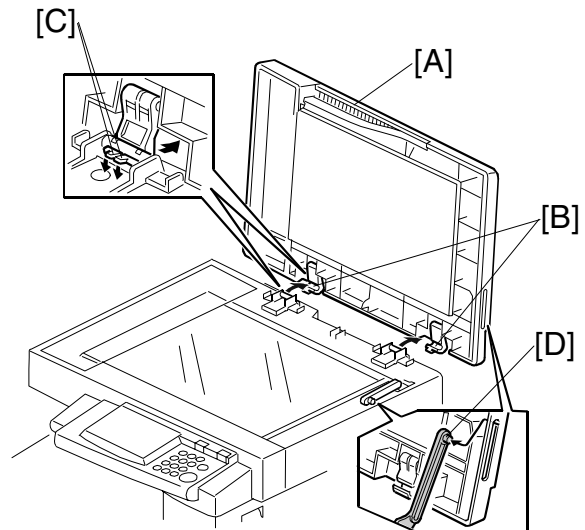
#### **⚠ CAUTION**

**Unplug the main machine's power cord before starting the following procedure.**

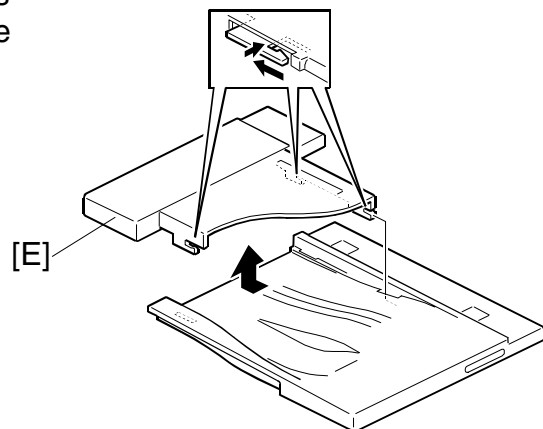
## DOCUMENT FEEDER

1. Unpack the ADF and remove the packing tape from the bottom of the ADF body.

2. Remove the platen cover [A]. To remove: Lift the cover, unlatch the two latches [B] (press down on the tabs [C] and push the latch back), and detach the cover from the hook [D].

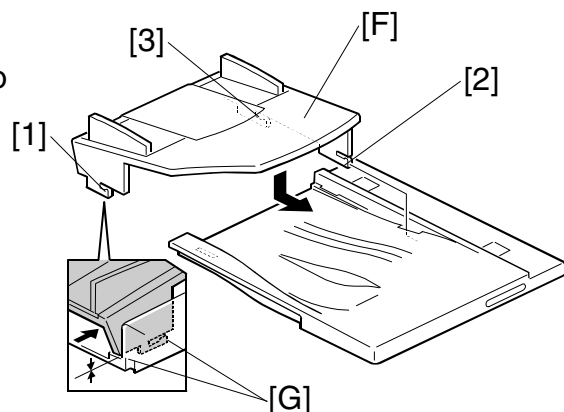


3. Remove the left piece [E] of the copier's platen cover by pushing the piece to the left and then pulling it up and off.

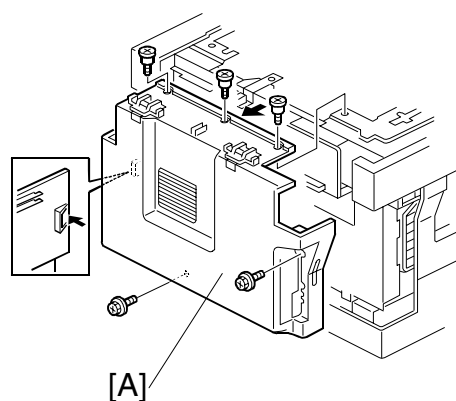


4. Place the DF original table [F] flat onto the platen cover, so that the 3 latches go all the way into the openings and so that the contact area [G] around each latch is flush against the cover. Then push so that latch [1] locks into place, then latch [2], and then latch [3] (at the rear left).

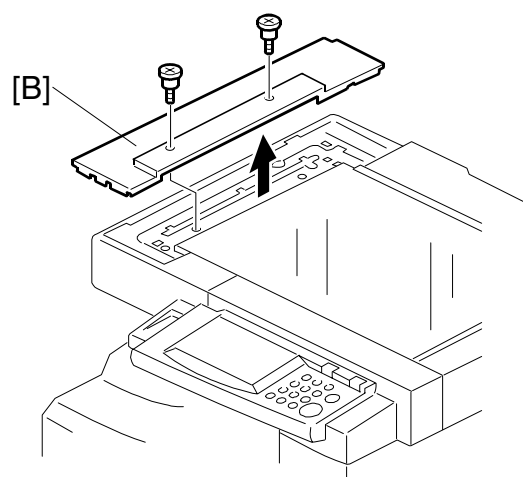
**NOTE:** The latches may break if you try to push the table in at an angle.



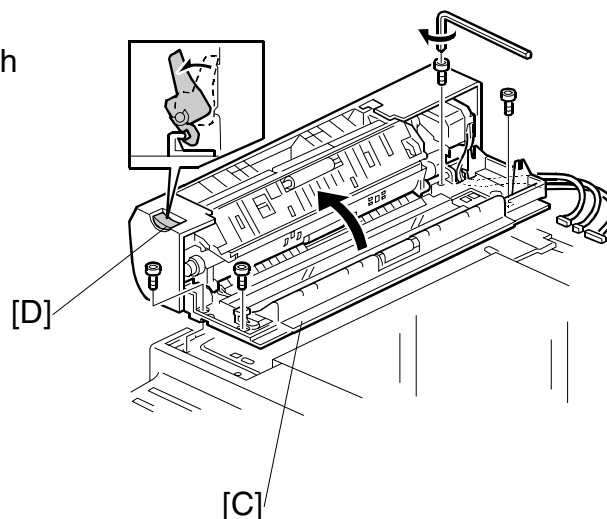
5. Remove the rear cover [A] (⚙ x 5).



6. Remove the left scale plate [B] (⚙ x 2).

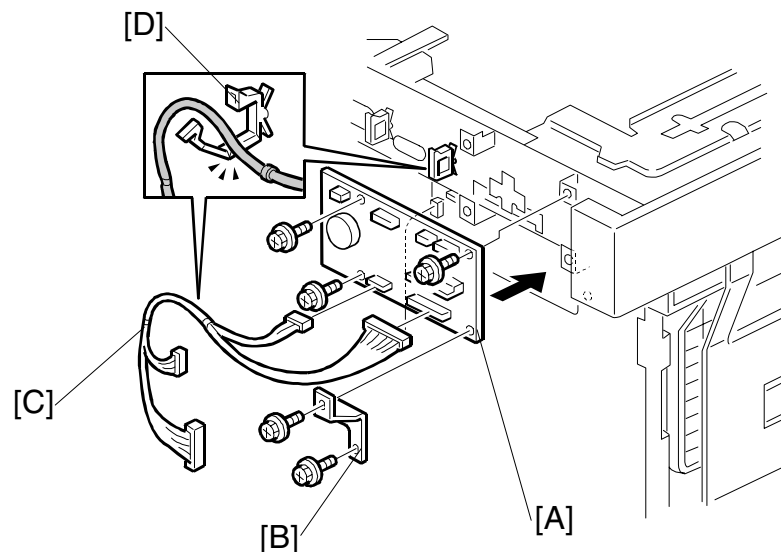


7. Set the DF body [C] onto the copier in its correct position. Press the latch [D] to raise the top half of the body, and fasten to the copier with the 4 hex screws (using the included hex wrench).



## DOCUMENT FEEDER

8. Install the DF connection board [A] and DF board bracket [B]. (⚙ x 5)



9. Connect the four wire sets from the DF body to CN103, CN105, CN106, and CN107 on the DF connection board. (Not shown in illustration.)
10. Connect one end of the supplied wire harness [C] to CN101 and CN102 on the DF connection board, and connect the other end to connectors CN9 and CN10 on the FCU. Secure the wire harness into the clamp [D] located to the side of the DF board.
11. Reattach the rear cover and the platen cover.
12. Plug in the power cord, and turn on the main switch.
13. Make a full-size copy from the first tray using the ADF, and check the side-to-side and leading edge registrations. If the registration is incorrect, adjust as necessary (➡ 3.13.3).

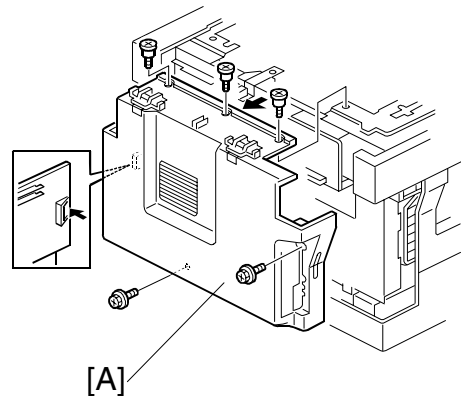
## 1.6 DIMM

### 1.6.1 INSTALLATION PROCEDURE

#### CAUTION

Unplug the main machine's power cord before starting the following procedure.

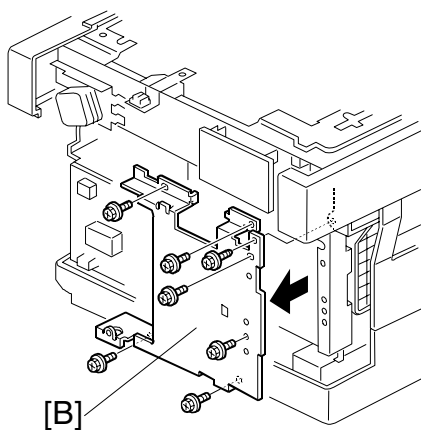
1. Remove the rear cover [A] (⌀ x 5).



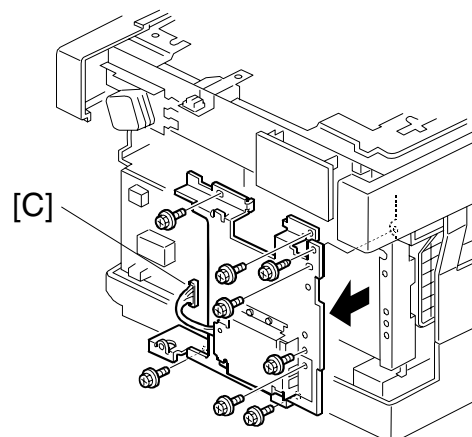
2. Remove the FCU cover plate [B] (7 screws on faxless machines, 8 screws on fax-equipped machines).

**NOTE:** On fax-equipped machines, detach the NCU connector [C] first.

*Faxless machines:*

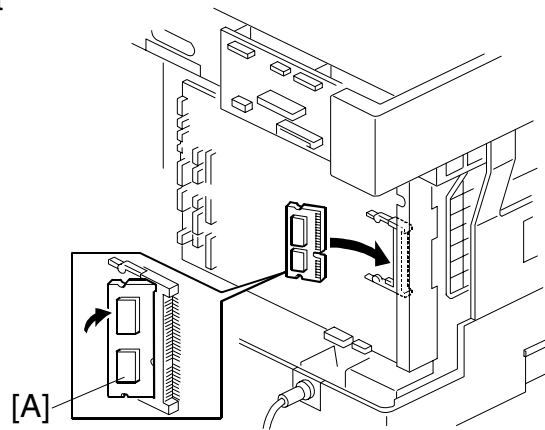


*Fax-equipped machines:*



## DIMM

3. Insert the DIMM [A] at an angle into slot CN2 on the FCU.
4. Press the free end of the DIMM toward the FCU, so that the DIMM snaps into place parallel to the FCU.
5. Reinstall the FCU cover plate and the rear cover.





# **PREVENTIVE MAINTENANCE**



## 2. PREVENTIVE MAINTENANCE SCHEDULES

### 2.1 PM TABLES

**NOTE:** 1) After carrying out PM, clear the PM counter (SP7-804).  
 2) PM intervals (45k, 90k) indicate the number of prints.  
 3) After performing the PM the copy adjustments should be checked and adjusted as necessary.

Key: AN: As necessary C: Clean R: Replace I: Inspect

|                           | Every<br>45k | Every<br>90k | AN | NOTE                                              |
|---------------------------|--------------|--------------|----|---------------------------------------------------|
| <b>OPTICS</b>             |              |              |    |                                                   |
| Reflector                 | C            |              | C  | Optics cloth                                      |
| 1st mirror                | C            |              | C  | Optics cloth                                      |
| 2nd mirror                | C            |              | C  | Optics cloth                                      |
| 3rd mirror                | C            |              | C  | Optics cloth                                      |
| Platen cover              | C            |              | C  | Dry cloth                                         |
| Exposure glass            | C            |              | C  | Dry cloth                                         |
| Toner shield glass        | C            |              | C  | Dry cloth                                         |
| <b>DRUM AREA</b>          |              |              |    |                                                   |
| PCU                       | R            |              |    | On B044 and B046: Also clean toner-bottle holder. |
| Transfer roller           |              | R            |    |                                                   |
| Discharge plate           |              | R            |    |                                                   |
| <b>PAPER FEED</b>         |              |              |    |                                                   |
| Paper feed roller         |              | R            | C  | Water or alcohol.                                 |
| Friction pad              |              | R            | C  | Dry cloth                                         |
| Bottom-plate pad          | C            |              | C  | Water or alcohol.                                 |
| Registration roller       | C            |              | C  | Water or alcohol.                                 |
| <b>FUSING UNIT</b>        |              |              |    |                                                   |
| Hot roller                |              | R            |    |                                                   |
| Pressure roller           |              | R            |    |                                                   |
| Hot roller bearings       |              | R            |    |                                                   |
| Pressure-roller bushings  |              | I            |    |                                                   |
| Inlet guide               |              | C            |    |                                                   |
| Outlet guide              |              | C            |    |                                                   |
| Hot roller stripper pawls |              | R            |    |                                                   |
| Thermistor                |              | C            |    |                                                   |

## HOW TO CLEAR THE PM COUNTER

|                    | Every<br>90k | AN | NOTE             |
|--------------------|--------------|----|------------------|
| <b>DF</b>          |              |    |                  |
| Separation roller  | R            | C  | Water or alcohol |
| Pick-up roller     | R            | C  | Water or alcohol |
| White plate        |              | C  | Water or alcohol |
| DF exposure glass  |              | C  | Water            |
| Rollers R0, R1, R2 |              | C  | Water or alcohol |

|                        | Every<br>120k | AN | NOTE      |
|------------------------|---------------|----|-----------|
| <b>PAPER TRAY UNIT</b> |               |    |           |
| Paper feed roller      | R             |    |           |
| Bottom-plate pad       |               | C  | Dry cloth |
| Friction pad           | R             |    |           |

## 2.2 HOW TO CLEAR THE PM COUNTER

After finishing PM, clear the PM counter as follows.

1. Access SP mode 7-804.
2. Hold down the *Original Type* key and press the *OK* key (or  key) to reset the counter. If the reset is successful, the display shows “Action completed.” If the reset fails, the display shows “Error!!!”

# **REPLACEMENT AND ADJUSTMENT**



## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 PRECAUTIONS

#### 3.1.1 GENERAL

##### CAUTION

**Turn off the main power switch and unplug the machine before starting any of the replacement procedures described in this section.**

Note that you should not turn off the main switch while mechanical parts are active, as this may cause parts to stop out of home position. Attempting to remove or install the PCU or other such units while parts are out of home position may result in damage. Wait for operation to stop before turning off the machine.

#### 3.1.2 LITHIUM BATTERIES

##### CAUTION: Lithium Batteries

**Incorrect replacement of lithium battery(s) on the FCU poses risk of explosion. Replace only with the same type or with an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.**

#### 3.1.3 PCU (PHOTOCONDUCTOR UNIT)

The PCU consists of the OPC (Organic Photo Conductor) drum, charge roller, development unit, and cleaning components. Observe the following precautions when handling the PCU.

1. Never touch the drum surface with bare hands. If the drum surface is dirty or if you have accidentally touched it, wipe it with a dry cloth, or clean it with wet cotton and then wipe it dry with a cloth.
2. Never use alcohol to clean the drum. Alcohol will dissolve the drum surface.
3. Store the PCU in a cool dry place.
4. Do not expose the drum to corrosive gases (ammonia, etc.).
5. Do not shake a used PCU, as this may cause toner and developer to spill out.
6. Dispose of used PCU components in accordance with local regulations.

#### 3.1.4 TRANSFER ROLLER

1. Never touch the surface of the transfer roller with bare hands.
2. Be careful not to scratch the transfer roller, as the surface is easily damaged.

### **3.1.5 SCANNER UNIT**

1. Use alcohol or glass cleaner to clean the exposure and scanning glass. This will reduce the static charge on the glass.
2. Use a blower brush or a water-moistened cotton pad to clean the mirrors and lenses.
3. Take care not to bend or crease the exposure lamp's ribbon cable.
4. Do not disassemble the lens unit. Doing so will throw the lens and copy image out of focus.
5. Do not turn any of the CCD positioning screws. Doing so will cause the CCD to be misaligned.

### **3.1.6 LASER UNIT**

1. Do not loosen or adjust the screws securing the LD drive board on the LD unit. Doing so will cause the LD unit to be out of adjustment.
2. Do not adjust the variable resistors on the LD unit, as these are permanently adjusted at the factory. If replacement of the LD drive board is necessary, replace the entire LD unit.
3. Keep the polygon mirror and toroidal lens free of dust. Laser performance is very sensitive to dust on these components.
4. Do not touch the shield glass, the lenses, or the surface of the polygon mirror with bare hands.

### **3.1.7 FUSING UNIT**

1. After installing the fusing thermistor, make sure that it is in contact with the hot roller and that the roller can rotate freely.
2. Be careful to avoid damage to the hot roller stripper pawls and their tension springs.
3. Do not touch the fusing lamp and rollers with bare hands.
4. Make sure that the fusing lamp is positioned correctly and that it does not touch the inner surface of the hot roller.

### **3.1.8 PAPER FEED**

1. Do not touch the surface of paper feed rollers.
2. To avoid misfeeds, the side and end fences in each paper tray must be positioned correctly to align with the loaded paper size.



### 3.1.9 IMPORTANT

1. The machine will automatically start toner agitation when you install a new PCU. Be sure to wait for initialization to finish before reopening the front cover or turning off the main switch.
2. If the optional anti-condensation heater (for the optional paper tray unit) is installed, keep the copier's power cord plugged in even while the main switch is off, so that the heater remains energized.

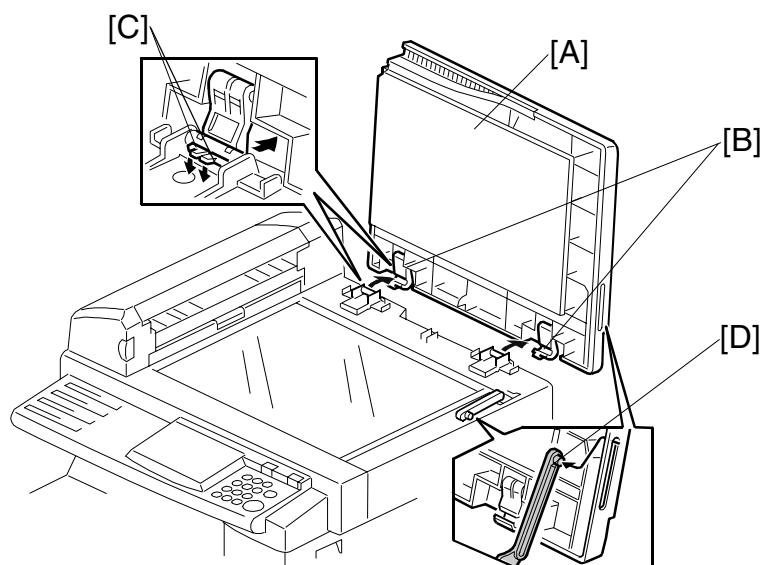
## 3.2 SPECIAL TOOLS AND LUBRICANTS

| Part Number | Description                         | Q'ty  |
|-------------|-------------------------------------|-------|
| A1849501    | Optics Adjustment Tools (2 pcs/set) | 1 set |
| A2929500    | Test Chart – S5S (10 pcs/set)       | 1 set |
| A0299387    | Digital Multimeter – Fluke 87       | 1     |
| N8036701    | Flash Memory Card (4MB)             | 1     |
| N8031000    | Case for Flash Memory Card          | 1     |
| A2579300    | Grease Barrierta – S552R            | 1     |
| 52039501    | Silicone Grease G-501               | 1     |
| G0219350    | Loopback connector                  | 1     |

## 3.3 EXTERIOR COVER AND OPERATION PANEL

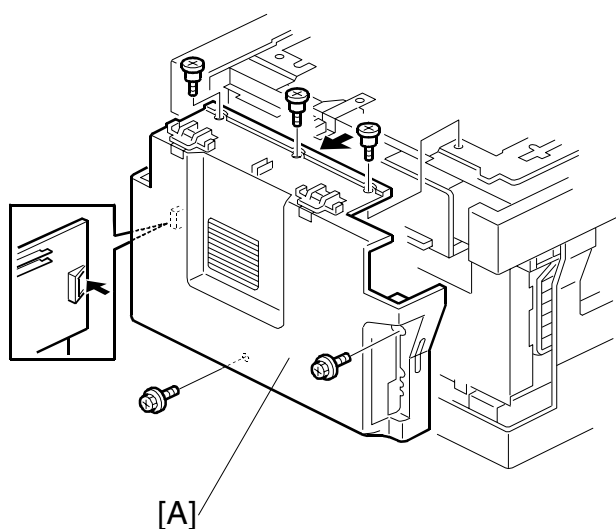
### 3.3.1 PLATEN COVER

1. Lift the platen cover [A].
2. Unlatch the two latches [B].  
**NOTE:** To unlatch, press down on the tabs [C] and then push the latch back.
3. Detach the cover from the hook [D].



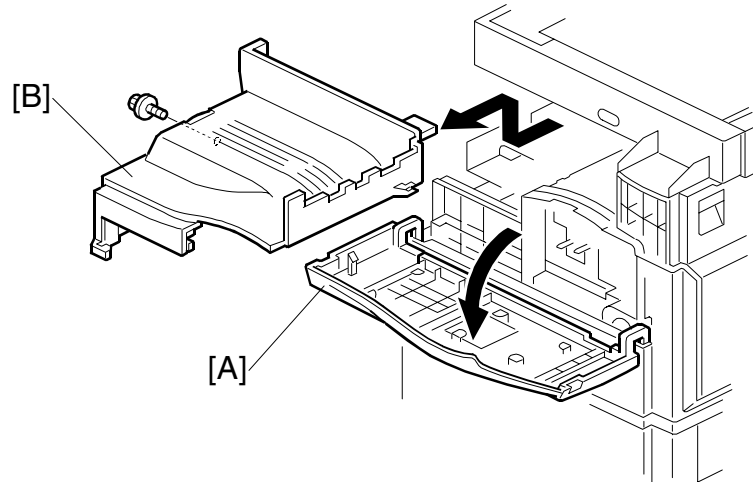
### 3.3.2 REAR COVER

1. Platen cover (☛ 3.3.1)
2. Rear cover [A] (⚙ x 5)



### 3.3.3 COPY TRAY

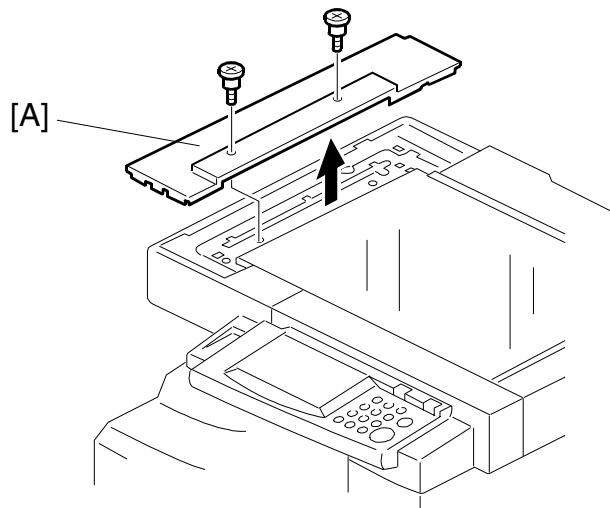
1. Open the front door [A].
2. Copy tray [B] (⌀ x 1)



Replacement  
and  
Adjustment

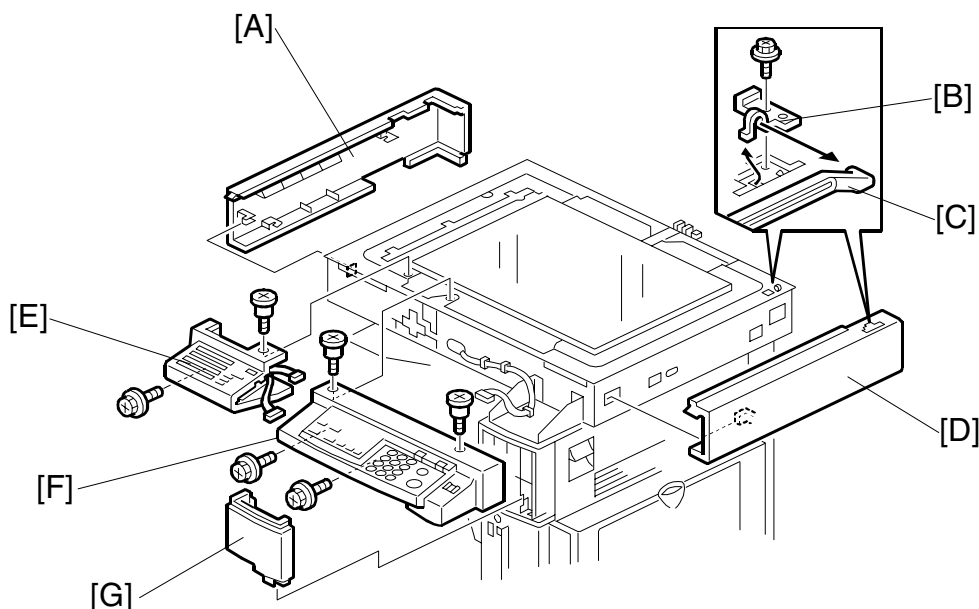
### 3.3.4 SCALE PLATE (B044 AND B045 ONLY)

1. Scale plate [A] (⌀ x 2)



### 3.3.5 LEFT COVER

1. Rear cover (☛ 3.3.2)
2. Slide the left cover [A] toward the rear to remove it.



### 3.3.6 RIGHT COVER

1. Rear cover (☛ 3.3.2)
2. Remove the metal fitting [B], and the platen-cover arm [C].
3. Slide the right cover [D] toward the rear to remove it.

### 3.3.7 FRONT LEFT COVER AND OPERATION PANEL

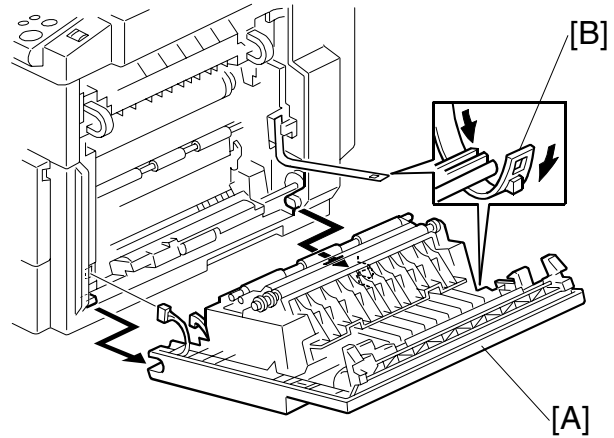
1. Front left cover [E] (On B044/5: × 2) (On B046: × 2, × 2)  
**NOTE:** The illustration shows B046.
2. Operation panel [F] ( × 4, × 1)

### 3.3.8 FRONT RIGHT COVER

1. Operation panel (☛ 3.3.7)
2. Open the right door.
3. Front right cover [G]

### 3.3.9 RIGHT DOOR

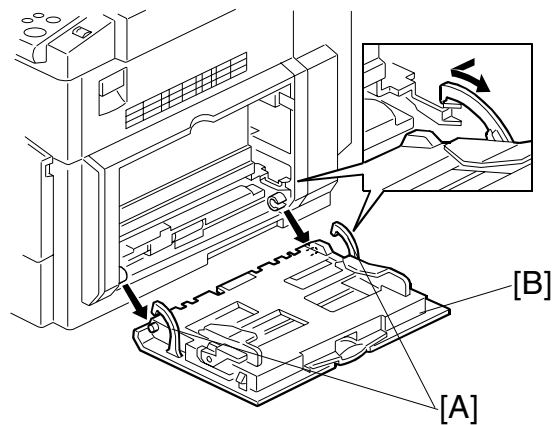
1. Open the right door [A].
2. Undo the strap [B].
3. Right door (🔑 × 1)



Replacement  
and  
Adjustment

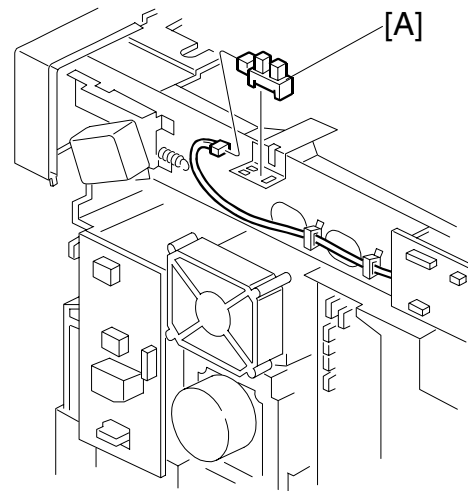
### 3.3.10 BYPASS TRAY (B044 AND B046 ONLY)

1. Press the stopper rails [A] inward and remove the bypass tray [B].



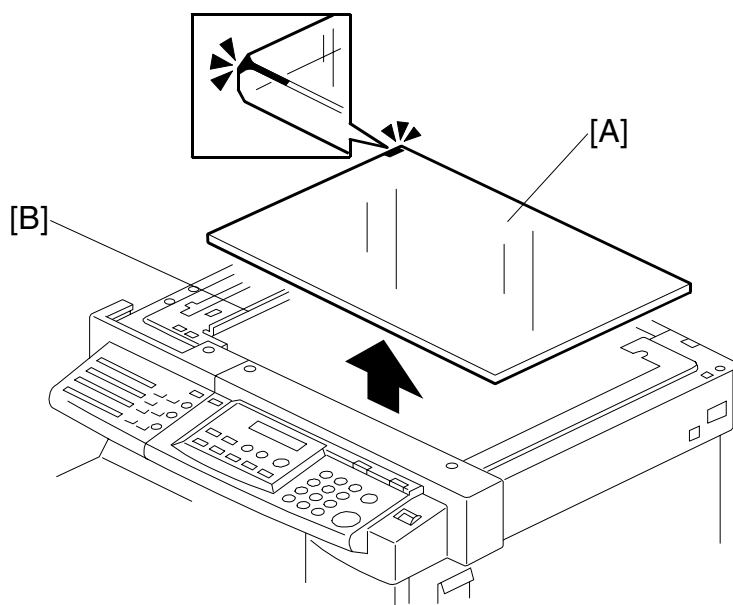
### 3.3.11 PLATEN COVER SENSOR

1. Rear cover (☞ 3.3.2)
2. Platen cover sensor [A] (🔌 × 1)



## 3.4 SCANNER SECTION

### 3.4.1 EXPOSURE GLASS



Replacement  
and  
Adjustment

#### ***Non-DF machines***

1. Rear cover (➡ 3.3.2)
2. Scale plate (➡ 3.3.4)
3. Exposure glass [A]

#### ***DF-equipped machines***

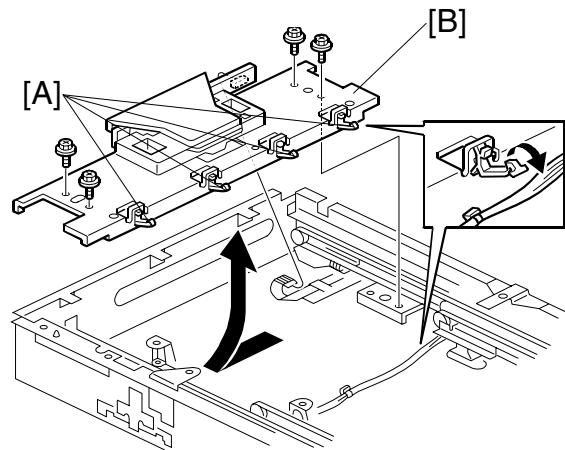
1. Rear cover (➡ 3.3.2)
2. Right cover (➡ 3.3.6)
3. Exposure glass [A]

**NOTE:** When reinstalling, be sure that the marking on the glass is at the rear left corner, and be sure the left edge of the glass is aligned flush against the support ridge [B] on the frame.

### 3.4.2 LENS BLOCK

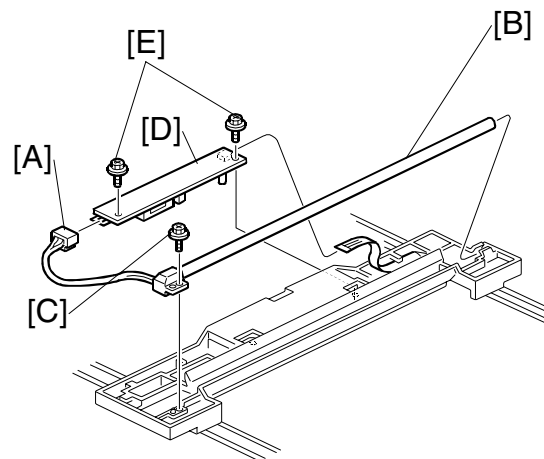
1. Exposure glass (☛ 3.4.1)
2. Unclamp four clamps [A], and take the wire out of the clamps.
3. Lens block [B] (⚙ × 4, 1 flat cable)

**NOTE:** 1) Do not loosen the paint-locked screws holding the lens unit in place.  
 2) After installing a new lens block, carry out copy adjustments. (☛ 3.13)



### 3.4.3 EXPOSURE LAMP, LAMP STABILIZER BOARD

1. Exposure glass (☛ 3.4.1)
2. Operation panel (☛ 3.3.7)
3. Slide the 1st scanner to a position where the lamp and scanner are clear of the metal lids.
4. Disconnect the lamp connector [A].
5. Remove either or both of the following:
  - Exposure lamp [B] (1 screw at [C])
  - Lamp stabilizer board [D] (2 screws at [E], 1 flat cable)

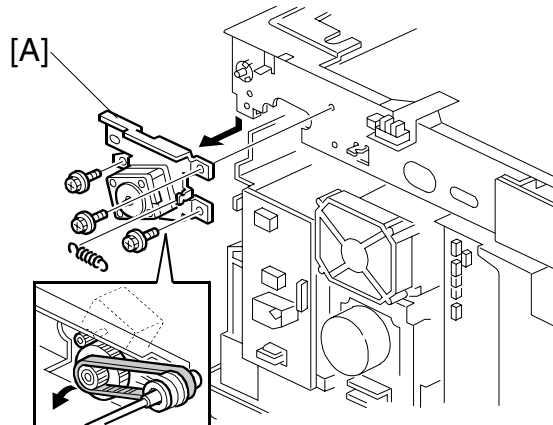




### 3.4.4 SCANNER MOTOR

1. Right cover (➡ 3.3.6)
2. Scanner motor [A] (⚙ × 4, 1 spring,  × 1)

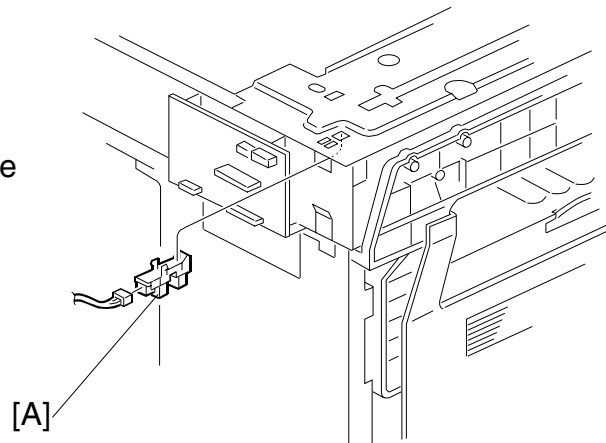
**NOTE:** When reinstalling fasten the screws loosely, then set the spring in place, then tighten the screws.



Replacement  
and  
Adjustment

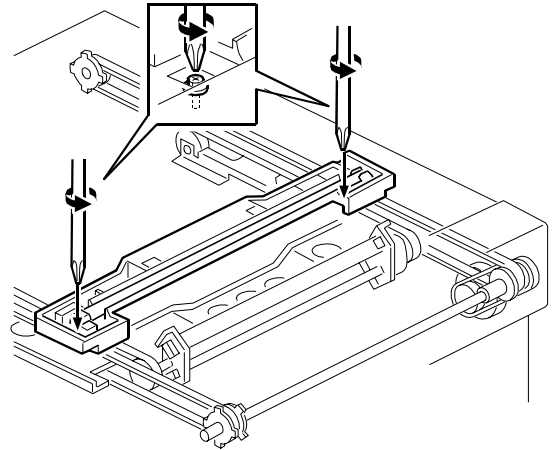
### 3.4.5 SCANNER HP SENSOR

1. Left cover (➡ 3.3.6)
2. *If non-DF machine:* Scale plate (➡ 3.3.4)  
*If DF-equipped machine:* Press on the DF latch and open the DF.
3. Scanner HP sensor [A] ( × 1)

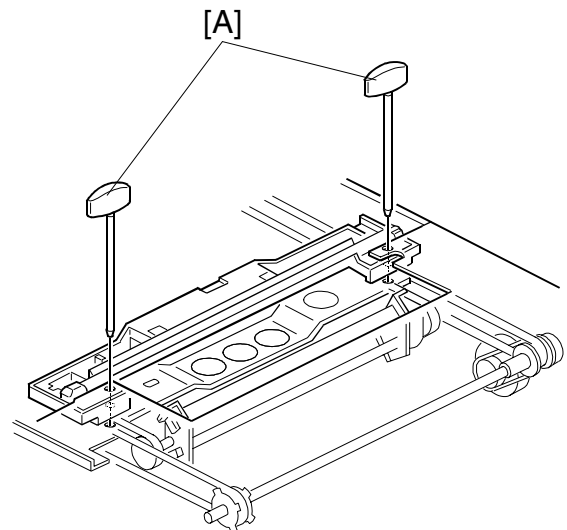


### 3.4.6 SCANNER ALIGNMENT ADJUSTMENT

1. Remove the rear cover (➡ 3.3.2), operation panel (➡ 3.3.7), and exposure glass (➡ 3.4.1).
2. Loosen the 2 screws holding the 1st and 2nd scanner belts in place.



3. Slide the 1st and 2nd scanners so that all four of the following are roughly aligned on both the front and back sides:
  - The hole on the copier's lid
  - The hole on the 1st scanner
  - The corner right hole on the 2nd scanner
  - The hole at the base of the scanner
4. Insert the two optics adjustment tools [A], and adjust the scanners as necessary so that the tools go through all four holes.
5. Tighten the two screws that you loosened at step 2 above, so that the belts are firmly clamped into place.
6. Remove the adjustment tools.



## 3.5 FUSING

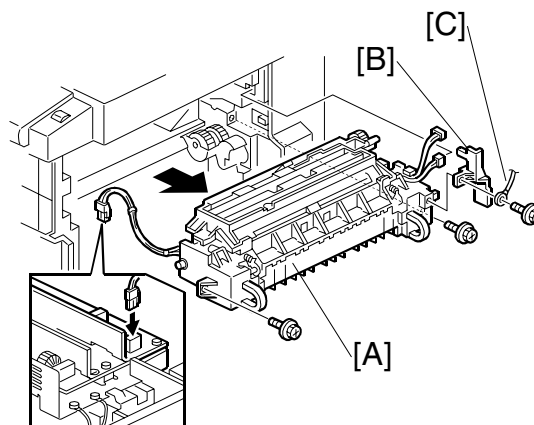
### 3.5.1 FUSING UNIT

#### CAUTION

The fusing unit can become very hot. Be sure that it has cooled down sufficiently before handling it.

1. Turn off the main switch, and unplug the machine.
2. Copy tray (☞ 3.3.3)
3. Fusing unit [A] ( × 3,  × 3)

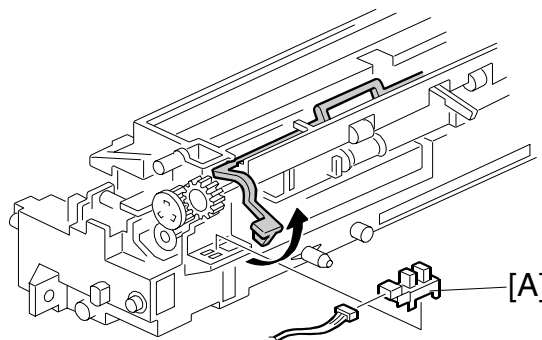
**NOTE:** When reinstalling the unit replace the spacer [B] in the correct position, and remember to set the grounding wire [C] into place.



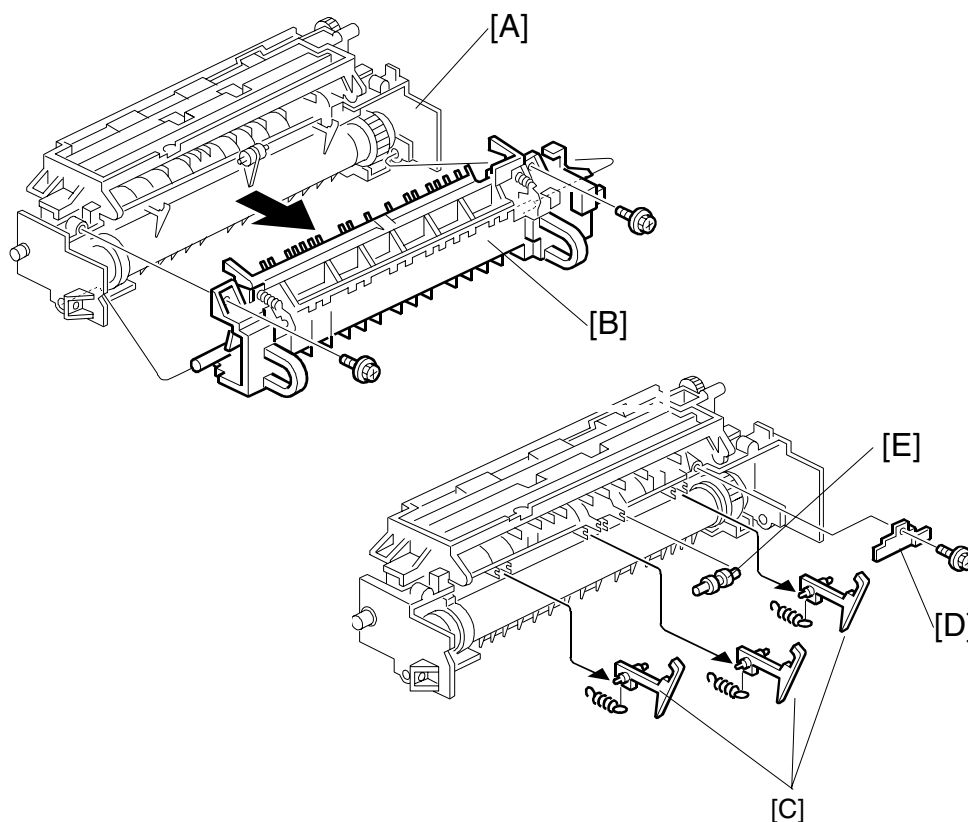
Replacement  
and  
Adjustment

### 3.5.2 EXIT SENSOR

1. Fusing unit (☞ 3.5.1)
2. Exit sensor [A] ( × 1)



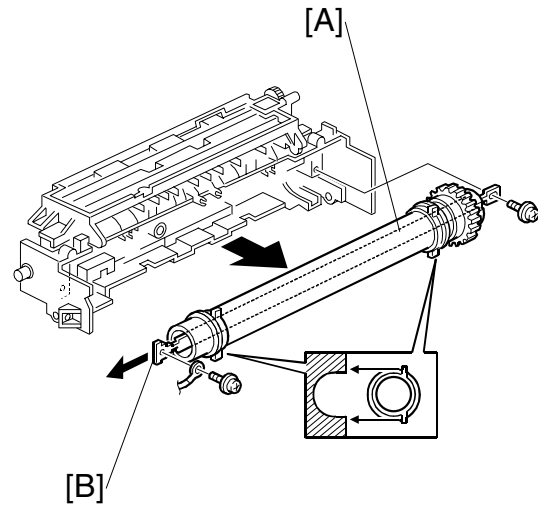
### 3.5.3 HOT ROLLER STRIPPER PAWLS



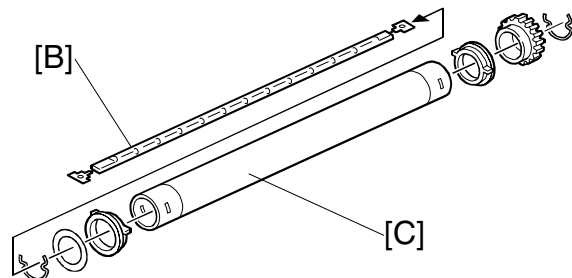
1. Fusing unit (☛ 3.5.1)
2. Separate the fusing unit into two sections: the hot roller section [A], and the pressure roller section [B]. (☛ × 2)  
**NOTE:** After removing the screws, lower the pressure roller section about halfway and then slide it toward the front side to detach it.
3. Hot roller stripper pawls [C] (1 spring for each pawl)  
**NOTE:** 1) To remove the right pawl, first remove the plastic spacer at [D] (☛ × 1).  
 2) When reinstalling the center pawl, be sure to set roller [E] back into place.

### 3.5.4 HOT ROLLER & FUSING LAMP

1. Hot roller stripper pawls (☛ 3.5.3)
2. Hot roller assembly [A] (☛ × 2)  
**NOTE:** 1) Each of the screws has a washer.  
 2) After removing the screws, lift the hot roller assembly out from the rear side.
3. Fusing lamp [B]



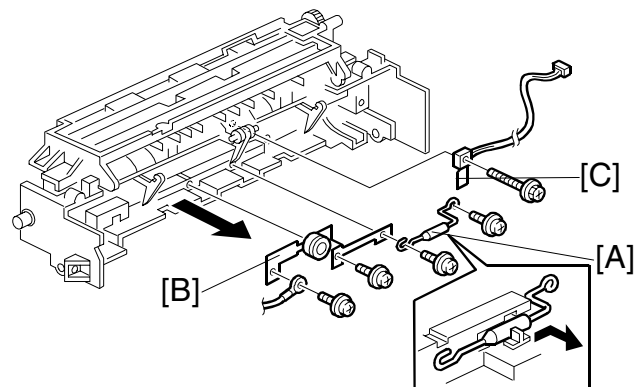
4. Hot roller [C] (2 C-rings, 1 spacer, 1 gear, 2 bushings)



Replacement  
and  
Adjustment

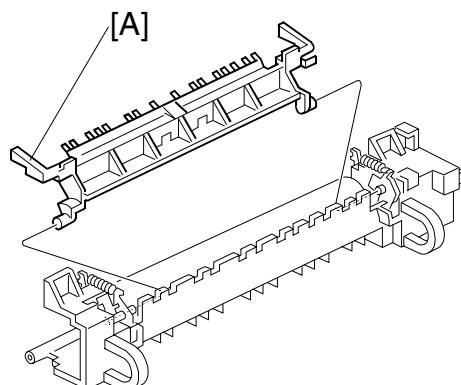
### 3.5.5 THERMOFUSE, THERMOSWITCH, AND THERMISTOR

1. Remove the hot roller assembly from the hot roller section.  
 (☛ 3.5.3)
2. Thermofuse [A] (☛ × 2).
3. Thermoswitch [B] (☛ × 2)  
**NOTE:** You must remove the thermofuse first.
4. Thermistor [C] (☛ × 1)

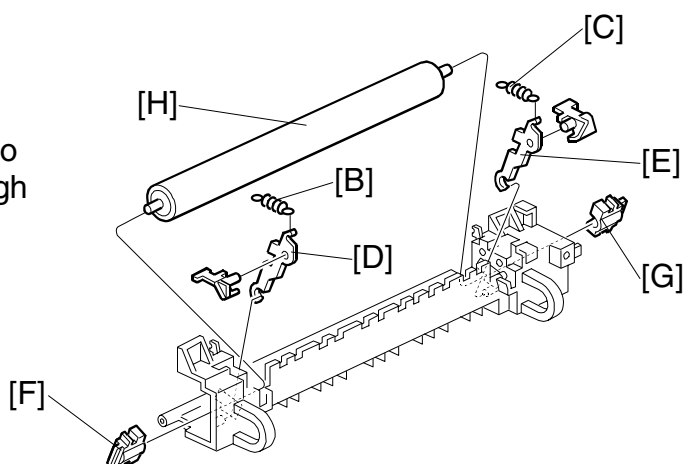


### 3.5.6 PRESSURE ROLLER

1. Fusing unit (☛ 3.5.1)
2. Separate the fusing unit into two sections: the hot roller section and the pressure roller section (☛ 3.5.3, Step 2). Carry out the remaining steps on the pressure roller section.
3. Fusing entrance guide [A]

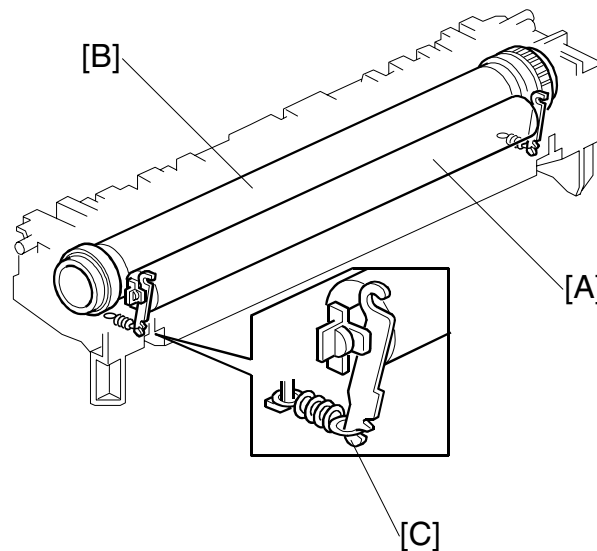


4. 2 springs ([B], [C])
5. 2 pressure arms ([D], [E])  
**NOTE:** Manipulate each arm so that it comes out through the slit in the casing.
6. 2 bushings ([F], [G])
7. Pressure roller [H]



### 3.5.7 NIP BAND WIDTH ADJUSTMENT

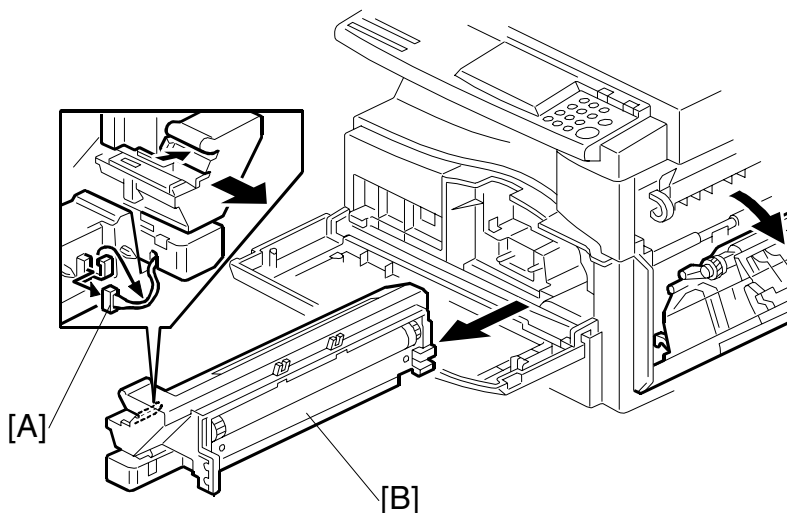
- NOTE:** 1) The fusing unit must be at operating temperature when this adjustment is carried out.  
 2) Place an OHP sheet on the by-pass feed table before starting this procedure.  
 3) Use only A4/LT LEF. (Other OHP sheet sizes may cause a paper jam.)



[A]: Pressure roller  
 [B]: Hot roller

1. Enter SP mode, and run SP1-109.
2. Press . The machine feeds the OHP sheet into the fusing section, stops it there for 20 seconds, then ejects it to the copy tray.
3. Check that the nip band (the opaque stripe) across the ejected OHP sheet is symmetrical, with both ends slightly thicker than the center.  
**NOTE:** There is no standard value for the nip band on this machine. Make the adjustment based on the band's appearance.
4. If the band is not as described above, change the position of the spring hooks [C] (one on each side), and then check the band again.  
**NOTE:** The higher hook position produces greater tension.

### 3.6 PCU



1. Open the right door.

**NOTE:** *Do not forget to open the right door.* The PCU may become stuck if you try to remove it while the front door is closed.

2. Open the front door.

3. Remove the toner bottle holder or THM.

**NOTE:** If working on a toner-bottle model, clean away all spilled toner from the toner bottle area and from the inside of the front door.

4. Detach the connector [A] and pull out the PCU [B].

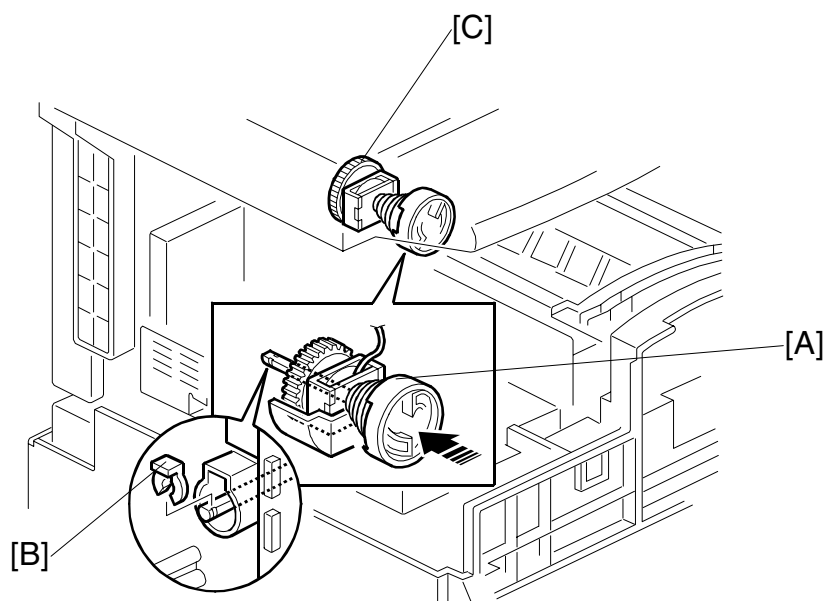
**NOTE:** 1) After installing the new PCU, be sure to remove the Styrofoam piece and to pull off the two tags. (➡ 1.1.2, Step 10)

2) The machine will automatically detect the new PCU and begin toner initialization. (➡ 6.10.4)

**NOTE:** If you accidentally touch the surface of the OPC with your fingers, clean with a dry cloth. Do not use alcohol, it will dissolve the drum surface.



### 3.7 TONER SUPPLY CLUTCH



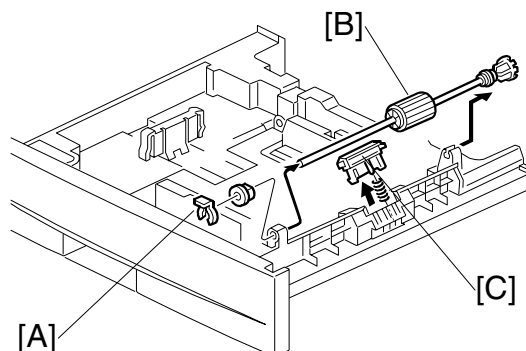
1. Remove the toner bottle or THM.
2. Copy tray (☛ 3.3.3)
3. Rear cover (☛ 3.3.2)
4. Disconnect the connector on C19 on the FCU.
5. Reach into the machine and push the clutch coupler [A] toward the rear, and at the same time reach around the back and remove the clip ring [B].
6. Remove the cone and spring, then lift the toner supply clutch mechanism [C] out of its housing and remove it.

**NOTE:** When removing, note how the wire goes through the clamp, and also note where it passes through the rear of the machine.

## 3.8 PAPER FEED SECTION

### 3.8.1 PAPER FEED ROLLER AND FRICTION PAD

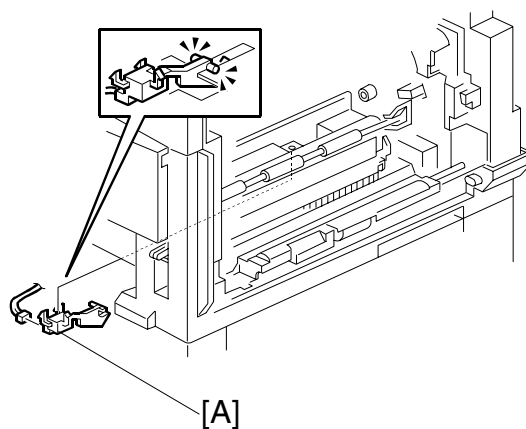
1. Take out the paper tray.
2. Clip ring [A]
3. Pull the shaft back, and lift it out.
4. Remove either or both of the following:
  - Paper feed roller [B]
  - Friction pad [C]



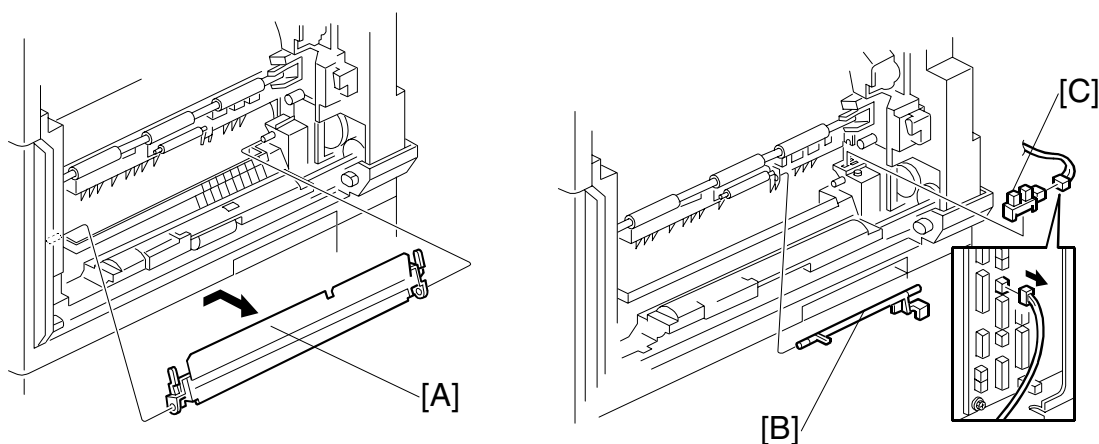
### 3.8.2 PAPER END SENSOR

1. Take out the paper tray.
2. Open the right door.
3. PCU (☞ 3.5)
4. Paper end sensor [A] (☞ × 1)

**NOTE:** When installing the new sensor, reach your left hand in through the front and your right hand in through the right side, and view from the right side.



### 3.8.3 REGISTRATION SENSOR

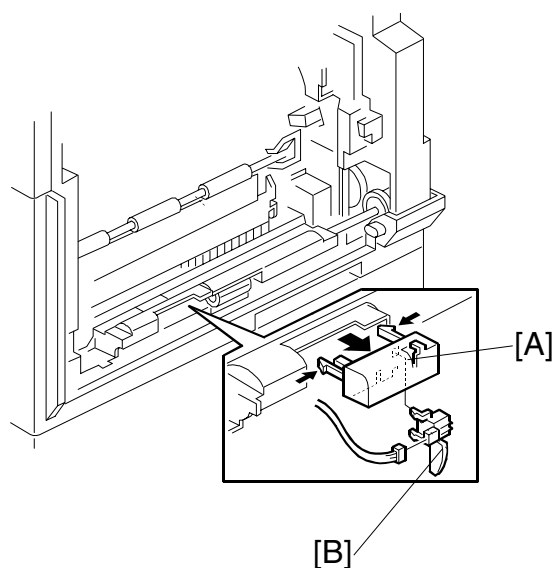


1. Take out the paper tray.
2. Open the right door.
3. Black guide piece [A]
4. Registration sensor feeler [B]
5. Registration sensor [C] (🔌 × 1)

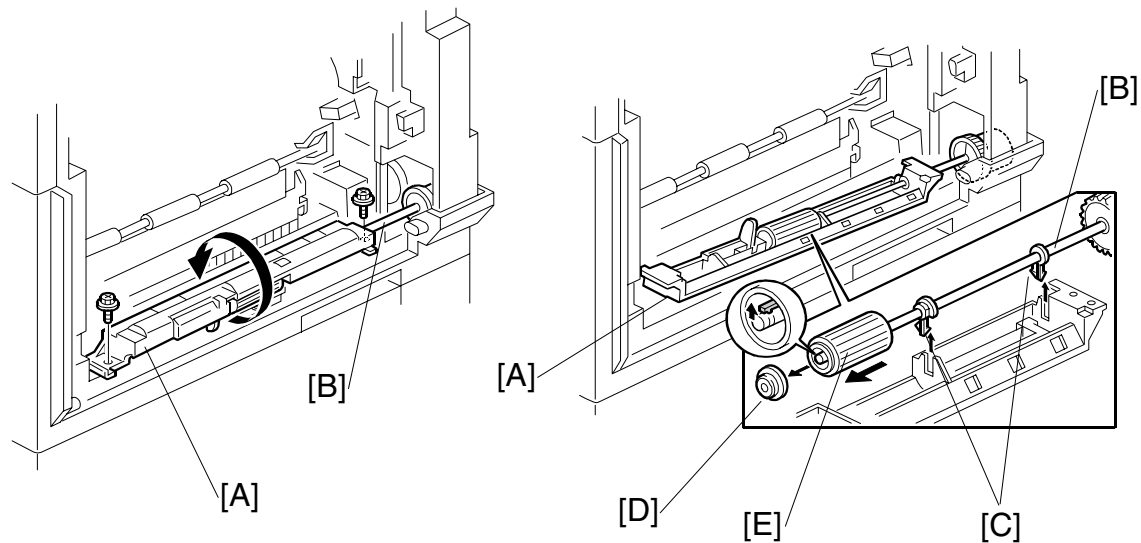
Replacement  
and  
Adjustment

### 3.8.4 BYPASS PAPER END SENSOR (B044 AND B046 ONLY)

1. Right door (➡ 3.3.9)
2. Detach the sensor compartment [A].
3. Bypass paper end sensor [B] (🔌 × 1)



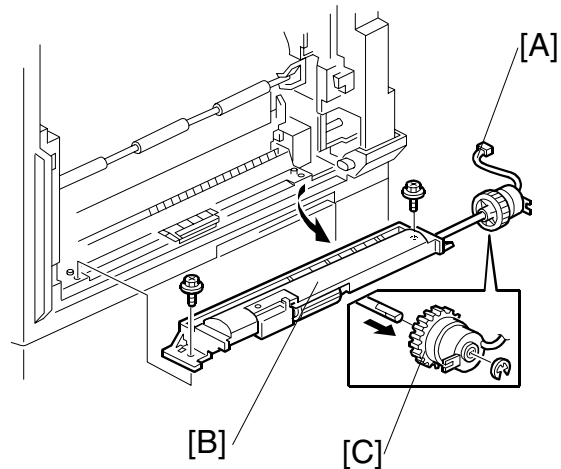
### 3.8.5 BYPASS FEED ROLLER (B044 AND B046 ONLY)



1. Right door (☛ 3.3.9)
2. Unscrew the feed roller frame [A] ( $\text{⌘} \times 2$ ) and rotate it about the feed roller shaft [B] so that it is upside down.
3. Detach the feed roller shaft [B] from the feed roller frame (unsnap the two snap pawls [C] and remove the spacer [D]).
4. Bypass feed roller [E]

### 3.8.6 BYPASS FEED CLUTCH (B044 AND B046 ONLY)

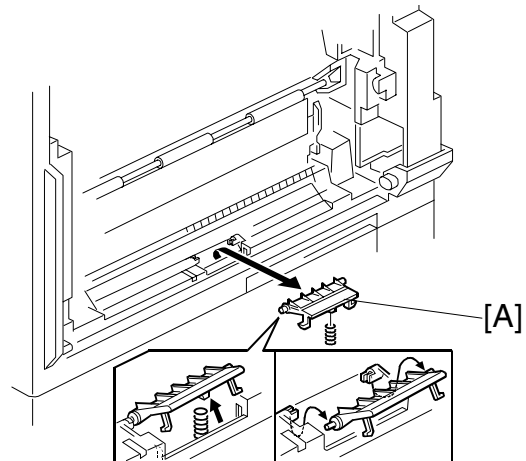
1. Rear cover (☞ 3.3.2)
2. Right door (☞ 3.3.9)
3. Detach the bypass feed clutch connector [A] from CN3 on the high-voltage power supply board.
4. Unscrew the bypass feed roller housing [B] (⚙ × 2), and pull it out of the machine.  
**NOTE:** It is not necessary to remove or disconnect the bypass paper end sensor.
5. Bypass feed clutch [C] (Ⓒ × 1)



Replacement  
and  
Adjustment

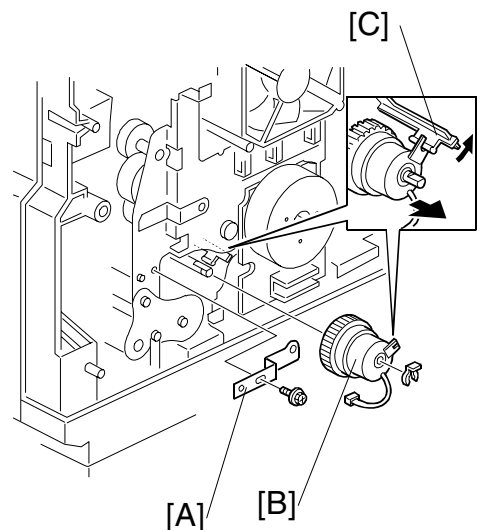
### 3.8.7 BYPASS FRICTION PAD (B044 AND B046 ONLY)

1. Right door (☞ 3.3.9)
2. Detach the roller housing [B] (⚙ × 2), and move it out of the way.
3. Bypass friction pad [A]

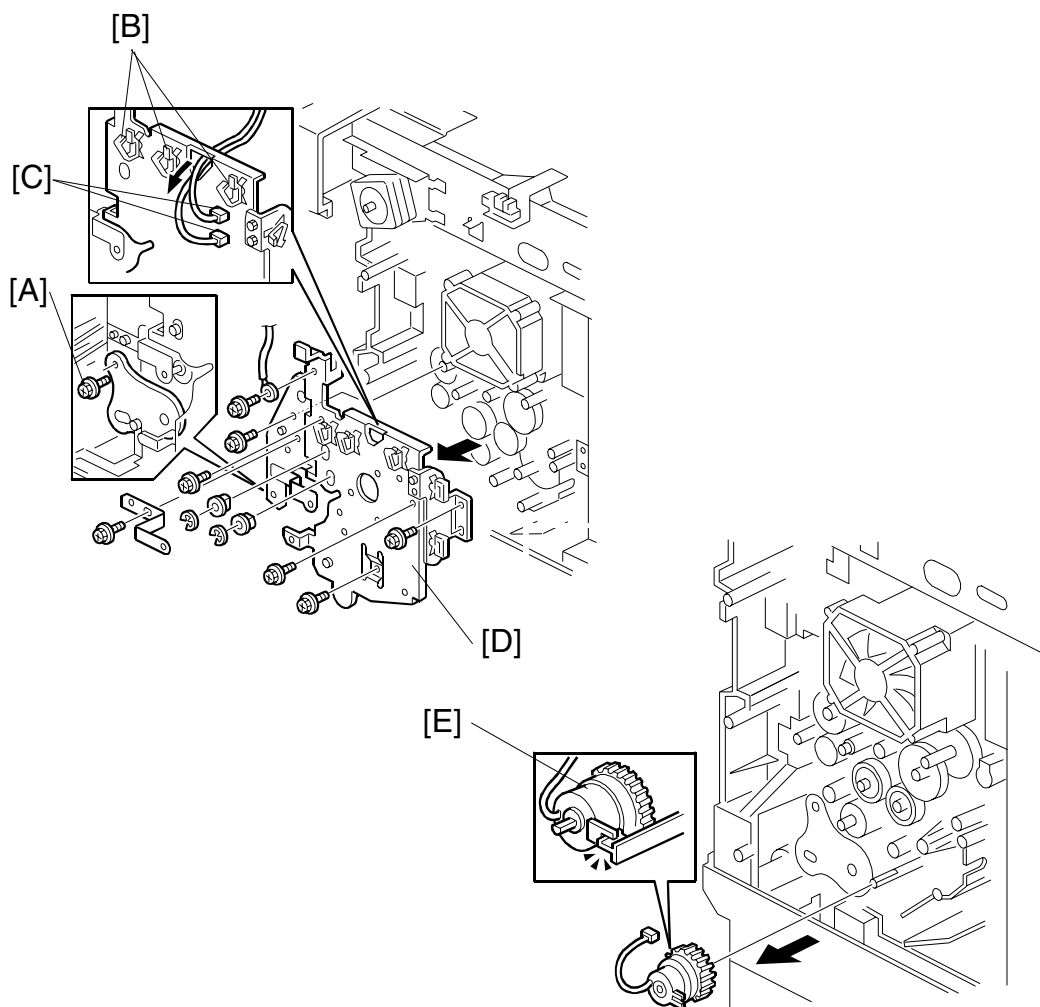


### 3.8.8 REGISTRATION CLUTCH

1. Rear cover (☞ 3.3.2)
2. High-voltage power supply board (☞ 3.12.2)
3. Ground plate [A] (⚙)
4. Registration clutch [B] (Ⓒ × 1, Ⓓ × 1)  
**NOTE:** To free the clutch, pry clip [C] gently away from it using a screwdriver.



### 3.8.9 PAPER FEED CLUTCH



1. Pull the paper tray partially out of the unit.
2. High-voltage power supply board (☛ 3.12.2)
3. Main motor (☛ 3.12.4)
4. Remove 1 screw [A] from the small cover plate.
5. Open 3 clamps [B] on the large cover plate, and remove the wiring.
6. Detach two connectors [C] from the FCU.
7. Large cover plate [D] (⌀ × 7, ⌀ × 2, 2 bushings)
8. Paper feed clutch [E]

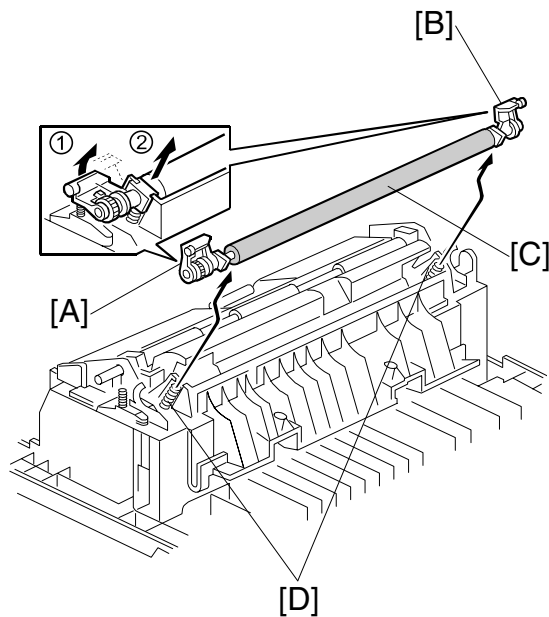
## 3.9 IMAGE TRANSFER

### 3.9.1 IMAGE TRANSFER ROLLER

1. Right door (☛ 3.3.9)
2. Raise the levers ([A], [B]) at the ends of the image transfer roller, and remove the roller [C].

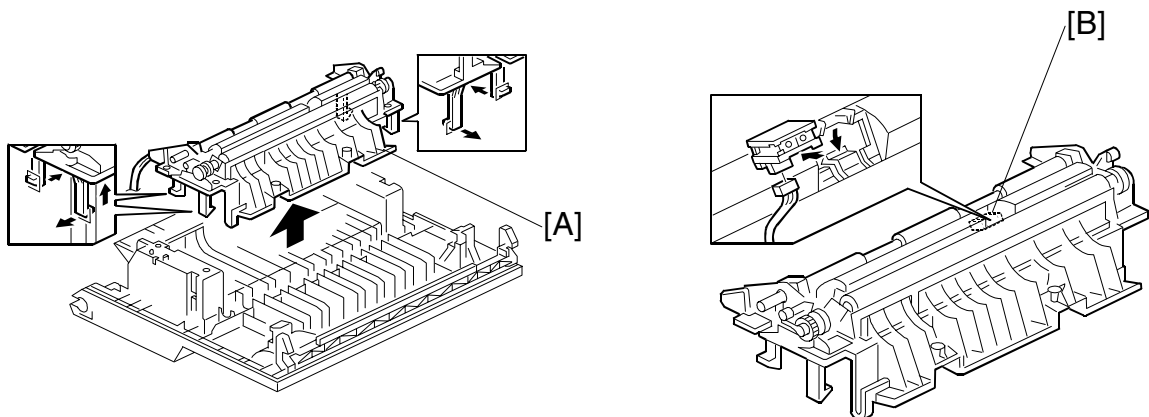
**NOTE:** 1) Note the position of the 2 springs [D] at each end. When reinstalling the roller, be sure that the pegs on the plastic end pieces fit into the springs.

2) Do not touch the transfer roller surface with bare hands.



Replacement  
and  
Adjustment

### 3.9.2 ID (IMAGE DENSITY) SENSOR

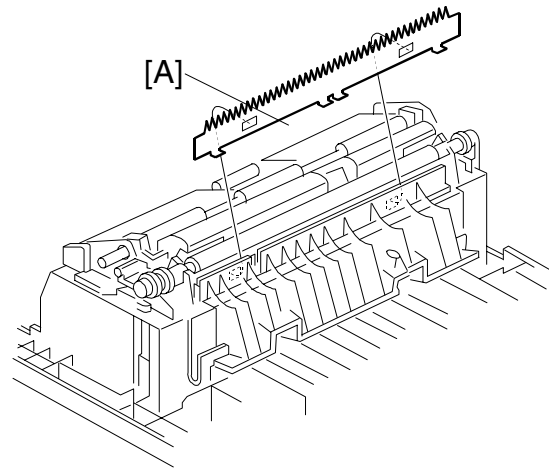


1. Right door (☛ 3.3.9)
2. Push in the latches as shown, and pry off the entire section [A].
3. ID sensor [B] (☞ × 1)

**NOTE:** This machine has no SC codes for ID sensor errors. If imaging problems occur, such as dirty background, use SP2-221. Use SP7-911 to check the number of ID sensor errors.

### 3.9.3 DISCHARGE PLATE

1. Right door (➔ 3.3.9)
2. Use a tweezers to remove the discharge plate [A].

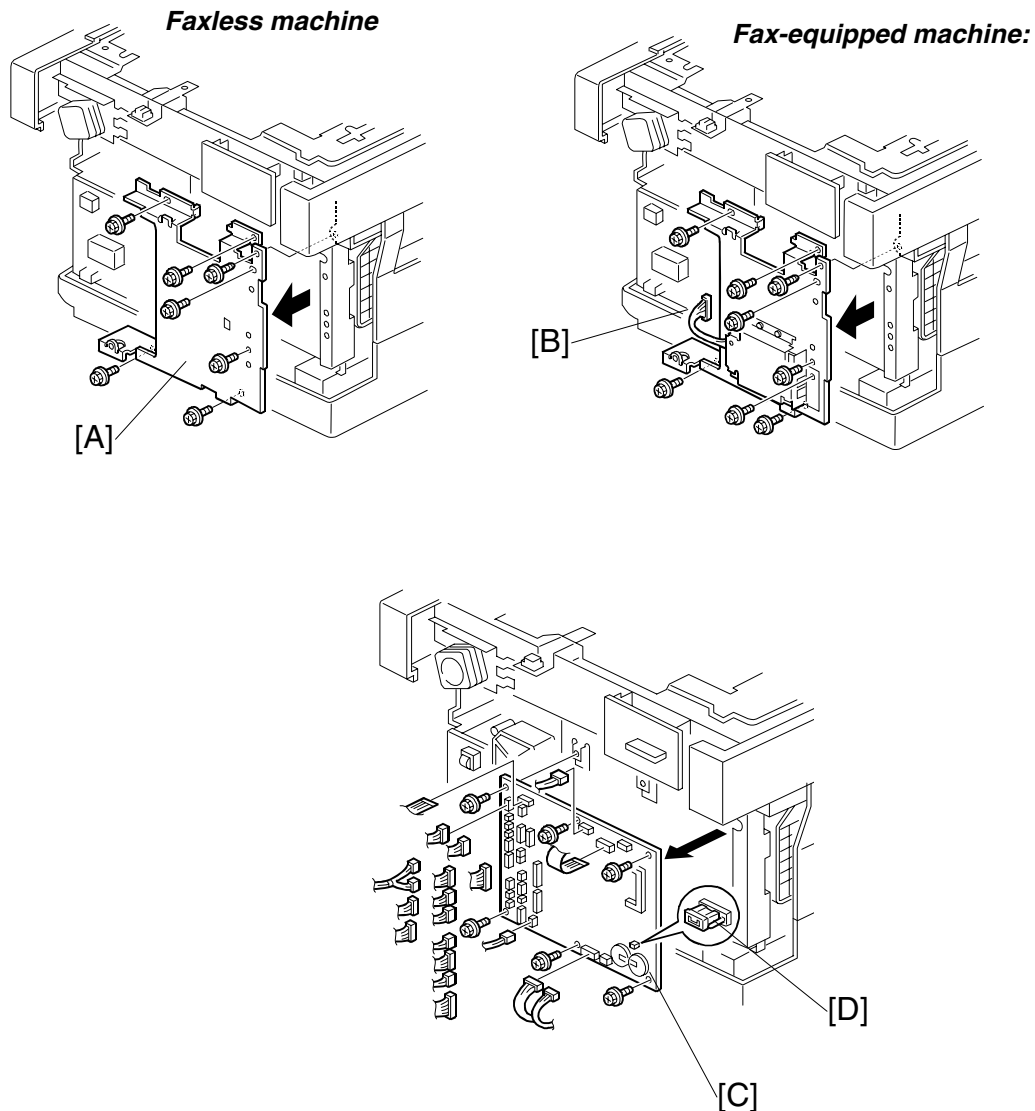


### 3.10 FUNCTION CONTROL UNIT (FCU)

- NOTE:** 1) Before starting replacement, use SP5-824 to save SRAM user data from the existing FCU into a flash memory card. After finishing the replacement, use SP5-825 to reload the data from the card into the SRAM on the new FCU. For instructions, see Section 5.1.8.
- 2) Replacement FCUs ship with the battery jumper switch set to the OFF position. Be sure to change the jumper switch to the ON position before installing the replacement FCU.



## FUNCTION CONTROL UNIT (FCU)



Replacement  
and  
Adjustment

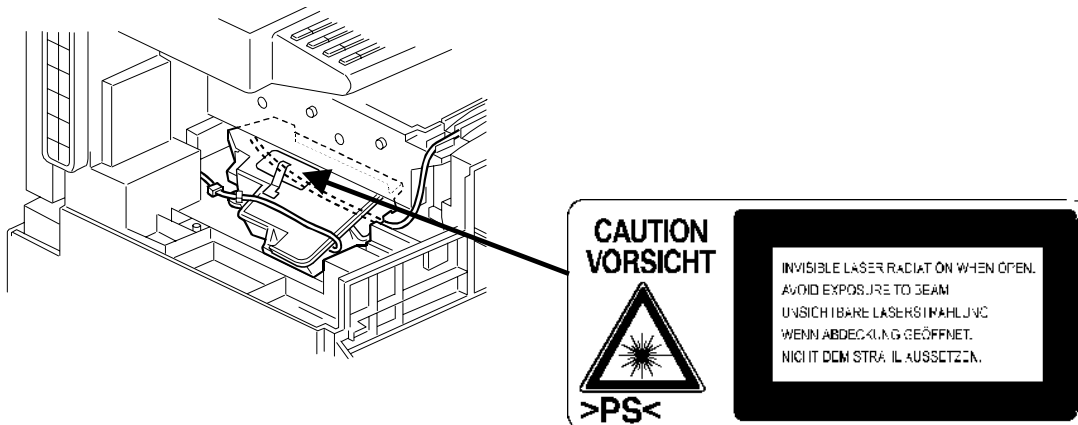
1. Rear cover (➡ 3.3.2)
2. FCU cover plate [A] (7 screws on faxless machines, 8 on fax-equipped machines)  
**NOTE:** On fax-equipped machines, detach the NCU connector [B] first, then unscrew the cover plate and remove the cover plate together with the NCU.
3. FCU [C] (all connectors, 2 flat cables, ⚙ x 6)  
**NOTE:** If an optional DIMM is installed on the FCU, remove it and install it on the new FCU. (➡ 1.6)
4. Before installing the new board, set the new board's TB1 battery jumper switch [D] to the ON position.

## 3.11 LASER UNIT

### WARNING

The laser beam can cause serious eye damage. Be sure that the main power switch is off and that the machine is unplugged before accessing the laser unit.

### 3.11.1 LOCATION OF “CAUTION” DECAL

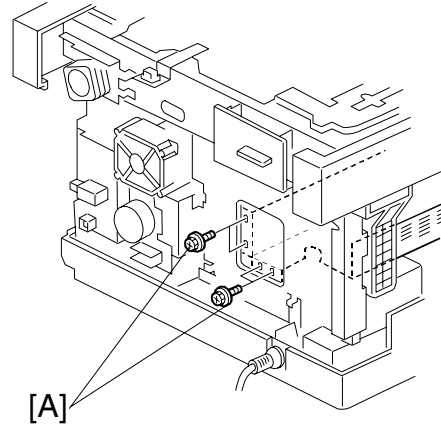


### 3.11.2 PSU BRACKET

1. FCU (☞ 3.10)

**NOTE:** After removing the copy tray, leave the front door open.

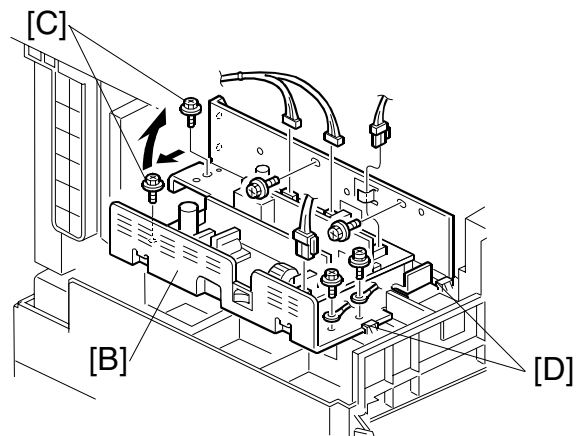
2. Remove the 4 screws at [A].



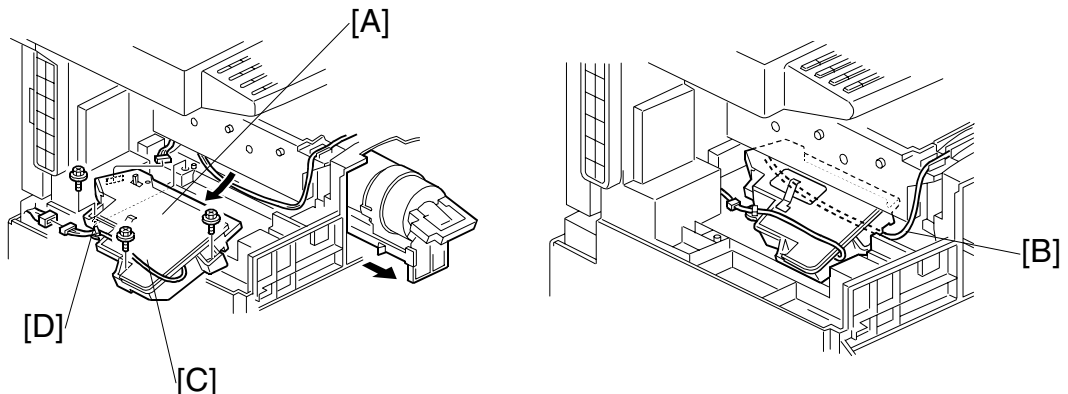
3. Unscrew the 6 screws securing the PSU bracket [B], and detach the 4 connectors.

**NOTE:** Use a stubby screwdriver to remove the 2 screws at [C].

4. Hold the PSU bracket at the rear (viewing from the front of the machine), pull the rear end out to the left slightly, then lift the bracket upward at the rear so that it comes free of the hooks [D] at the front.
5. Pull the PSU bracket out.



### 3.11.3 LASER UNIT



1. PSU bracket (☛ 3.11.2)

**NOTE:** After removing the PSU bracket, leave the front door open.

2. Release the toner bottle holder (if model B044 or B046) or THM (if model B045), and pull it out slightly. (Illustration shows toner-bottle model.)

3. Laser unit [A] (⚙ x 3, 📏 x 2)

**NOTE:** When reinstalling the laser unit, be sure that the wire at [B] passes under the unit. In particular, be certain that the wire does not pass in front of the glass area on the unit.

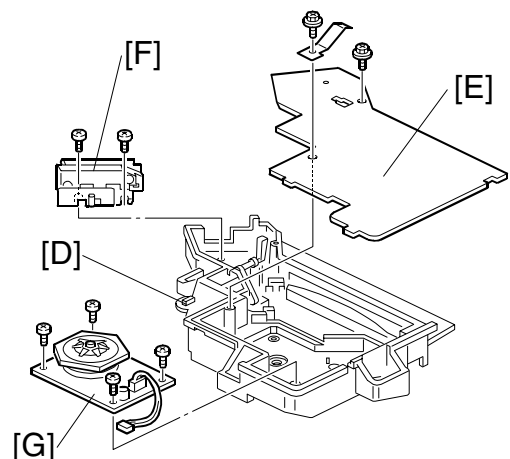
### 3.11.4 LD UNIT

1. Laser unit (☛ 3.11.3)
2. Remove the harness ([C] in figure above) from the clamp [D].

3. Laser unit cover [E] (⚙ x 2)

4. LD unit [F] (⚙ x 2)

**NOTE:** The LD drive board itself is not adjustable, and is not a replaceable part. You must replace the entire bracket.



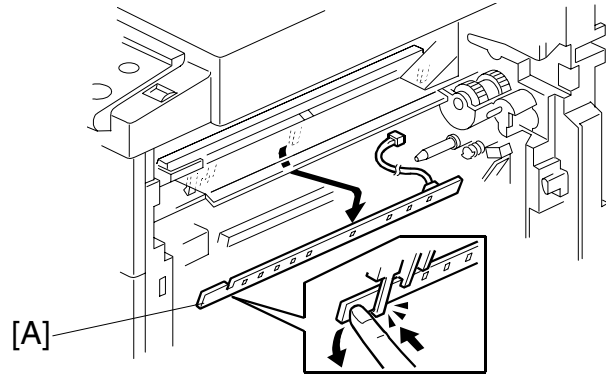
### 3.11.5 POLYGON MIRROR MOTOR

1. Laser unit (☛ 3.11.3)
2. Remove the harness ([C] in figure above) from the clamp [D].
3. Laser unit cover [E] (⚙ x 2)
4. Polygon mirror motor [G] (⚙ x 4)

## 3.12 OTHER REPLACEMENTS

### 3.12.1 QUENCHING LAMP

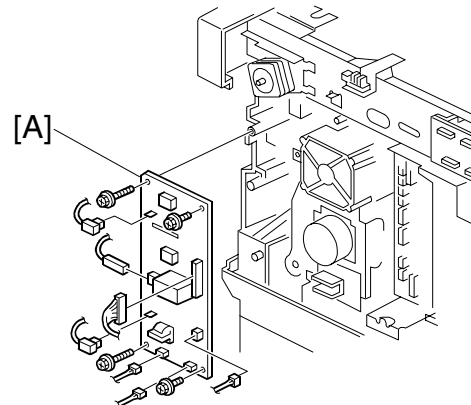
1. PCU (☛ 3.1.3)
2. Quenching lamp [A] (☛ × 1)



Replacement  
and  
Adjustment

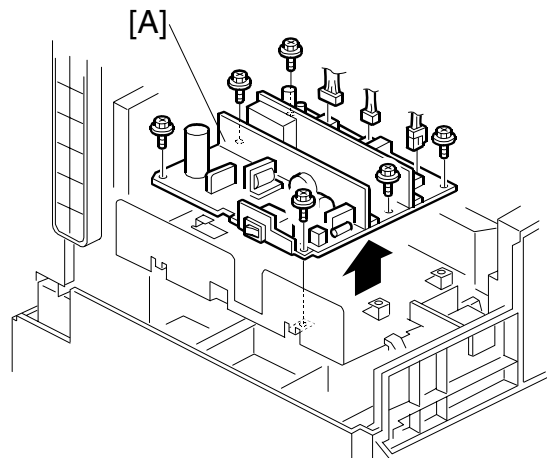
### 3.12.2 HIGH-VOLTAGE POWER SUPPLY BOARD

1. Rear cover (☛ 3.3.2)
2. High-voltage power supply board [A] (☛ × 4, all connectors)



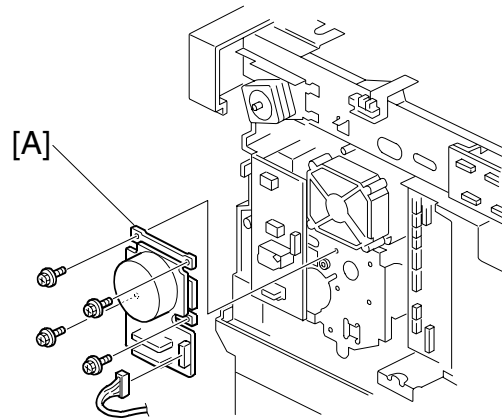
### 3.12.3 PSU

1. Copy tray
2. PSU [A] (☛ × 6, all connectors)



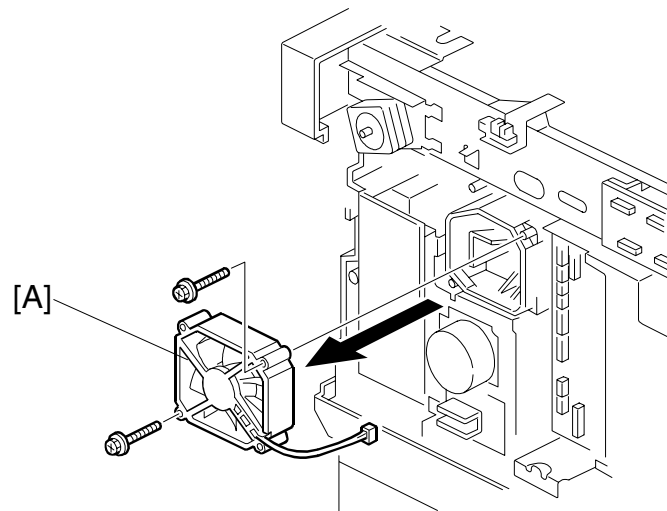
### 3.12.4 MAIN MOTOR

1. Rear cover (☛ 3.3.2)
2. Main motor [A] (⚙ × 4, 📡 × 1)



### 3.12.5 EXHAUST FAN

1. Rear cover (☛ 3.3.2)
2. Exhaust fan [A] (⚙ × 2, 📡 × 1)



### 3.13 COPY IMAGE ADJUSTMENTS: PRINTING/SCANNING

**NOTE:** 1) You need to perform these adjustment after executing a Memory All Clear, and after replacing or adjusting any of the following parts.

- First or second scanner
- Lens Block
- Scanner Motor
- Polygon Mirror Motor
- Paper Tray

2) For detailed explanations about how to access and use SP mode, see Section 5.

#### 3.13.1 PRINTING

**NOTE:** 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.

2) Use the Trimming Area Pattern (SP5-902, No.10) to print the test pattern for the printing adjustments below.

3) Reset SP5-902 to 0 after completing these printing adjustments.

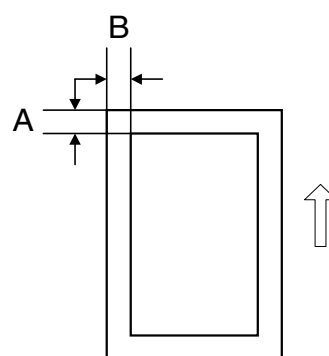
#### *Registration - Leading Edge/Side-to-Side*

1. Check the leading edge registration [A] for each paper feed station, and adjust each of these registrations using SP1-001.

| Tray             | SP mode   | Specification |
|------------------|-----------|---------------|
| Paper tray(s)    | SP1-001-1 | $0 \pm 2$ mm  |
| 100-sheet bypass | SP1-001-2 | $0 \pm 2$ mm  |
| 1-sheet bypass   |           | $0 \pm 4$ mm  |

2. Check the side-to-side registration [B] for each paper feed station, and adjust these registrations using SP1-002. (Adjust the trays in order: the 1st tray first, then the 2nd tray [if installed], then the bypass).

| Tray             | SP mode   | Specification |
|------------------|-----------|---------------|
| 1st tray         | SP1-002-1 | $0 \pm 2$ mm  |
| 2nd tray         | SP1-002-2 |               |
| 100-sheet bypass | SP1-002-5 | $0 \pm 2$ mm  |
| 1-sheet bypass   |           | $0 \pm 4$ mm  |



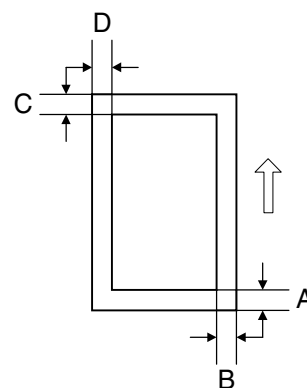
A: Leading Edge Registration  
B: Side-to-side Registration

**Blank Margin**

**NOTE:** If the leading edge or side-to-side registration cannot be adjusted to within the specification, then adjust the leading-edge blank margin or the left-side blank margin.

1. Check the trailing edge and right side edge blank margins, and adjust them using the following SP modes.

|                                           | SP mode    | Specification    |
|-------------------------------------------|------------|------------------|
| Trailing edge (except for 1-sheet bypass) | SP2-101-4  | $3 \pm 2$ mm     |
| Trailing edge for 1-sheet bypass          | SP2-101-12 | $5 \pm 3$ mm     |
| Right edge                                | SP2-101-6  | $2 +2.5/-1.5$ mm |
| Leading edge (except for 1-sheet bypass)  | SP2-101-1  | $3 \pm 2$ mm     |
| Leading edge for 1-sheet bypass           | SP2-101-11 | $5 \pm 3$ mm     |
| Left edge                                 | SP2-101-5  | $2 \pm 1.5$ mm   |



A: Trailing Edge Blank Margin  
 B: Right Edge Blank Margin  
 C: Leading Edge Blank Margin  
 D: Left Edge Blank Margin

**Main-Scan Magnification**

1. Print the single-dot grid pattern (SP5-902-5).
2. Check the magnification (the grid size should be  $2.7 \times 2.7$  mm), and if necessary use SP2-998 to adjust it. The specification is  $100 \pm 1\%$  in both directions.

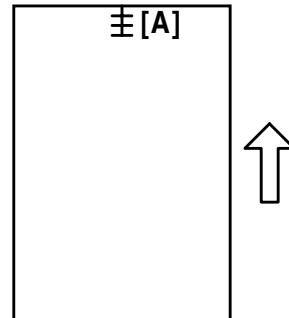


### 3.13.2 SCANNING

- NOTE:** 1) Before doing the following scanner adjustments, check and adjust the printing leading-edge and side-to-side registrations and the printing blank margins (as described above).  
2) Use an A4 test chart to perform the following adjustments.

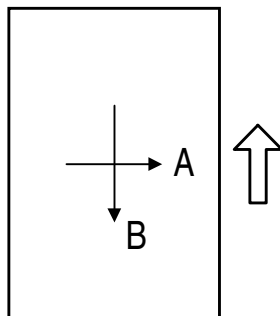
#### ***Registration: Platen Mode***

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge registration [A], and adjust as necessary using SP4-010. (Specification is  $0 \pm 2\text{mm}$ .)



Replacement  
and  
Adjustment

#### ***Magnification***



A: Main scan magnification  
B: Sub-scan magnification

#### ***Main Scan Magnification***

1. Place the A4 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

|                         | SP mode | Specification |
|-------------------------|---------|---------------|
| Main Scan Magnification | SP4-008 | $\pm 1.0\%$   |

***Sub-scan Magnification***

1. Place the A4 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

|                        | <b>SP mode</b> | <b>Specification</b> |
|------------------------|----------------|----------------------|
| Sub-scan magnification | SP4-101        | $\pm 1.0\%$          |

***Standard White Density Adjustment***

This procedure adjusts the standard white density level. Carry out this adjustment after doing any of the following:

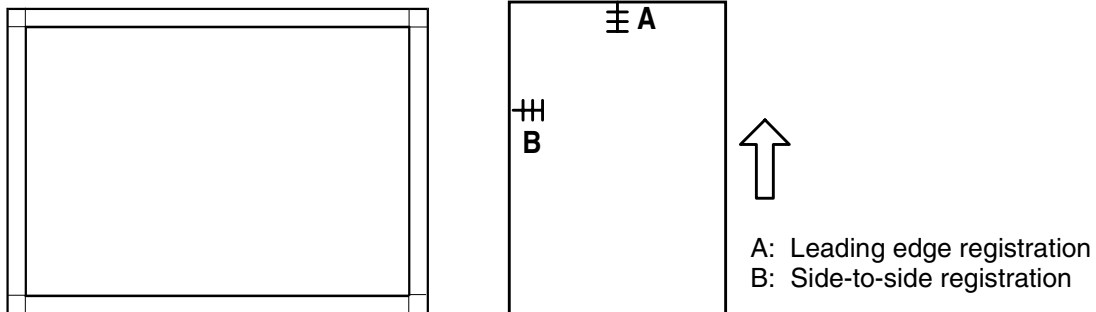
- After replacing the standard white plate.
- After replacing the FCU.
- After replacing the lens block.
- After performing a memory all clear (SP5-801).

Procedure:

1. Place 10 sheets of new A4 paper on the exposure glass, and close the platen cover.
2. Access SP4-908, enter "1", and press *OK*. The machine automatically adjusts the standard white density.

### 3.13.3 DF IMAGE ADJUSTMENT

#### *Registration and Blank Margin*

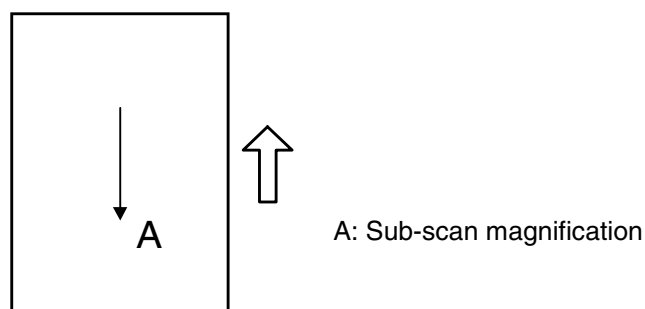


**NOTE:** Make a temporary test chart as shown above, using A4 / 8 1/2"x11" paper.

1. Place the temporary test chart on the DF and make a copy from one of the feed stations.
2. Check the registrations, and adjust as necessary using SP mode, as follows.

|                                    | SP mode   |
|------------------------------------|-----------|
| Side-to-side registration          | SP6-006-1 |
| Leading edge registration          | SP6-006-2 |
| Blank margin for the trailing edge | SP6-006-3 |

#### *Sub-scan Magnification*



**NOTE:** Make a temporary test chart as shown above, using A4 / 8 1/2"x11" paper.

1. Place the temporary test chart on the DF and make a copy from one of the feed stations.
2. Check the registration, and if necessary adjust it using SP6-007. The specification is  $\pm 1.0\%$ .



# **TROUBLESHOOTING**



## 4. TROUBLESHOOTING

### 4.1 SERVICE CALL CONDITIONS

#### 4.1.1 SUMMARY

There are two service-call levels, as follows.

| Level | Definition                                                                                                                                                                               | Reset Procedure                                                                                                                                                                                                                                                              |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A     | To prevent possible damage to the machine, level-A service calls can be cleared only by a service representative. The machine will not operate until the representative clears the call. | Enter SP 5-810 (SC code reset) and select "1". Then simultaneously press the <i>Original Type</i> key and the <i>OK</i> (or  ) key. (There is no need to turn the main switch off and on.). |
| B     | These SCs can be cleared by turning the main power switch off and on.                                                                                                                    | Turn the main power switch off and on.                                                                                                                                                                                                                                       |

**NOTE:** 1) *If a problem involves circuit boards:* Before deciding to replace a circuit board, first see if you can solve the problem by disconnecting and then reconnecting all connectors.

2) *If a problem involves a motor lock:* Check the mechanical load first, before deciding whether to replace motors or sensors.

3) If working on a fax-equipped machine, keep in mind that switching power off and back on may in some cases cause loss of data stored in SAF memory.

## 4.1.2 SC CODE DESCRIPTIONS

| No. Definition |            |       | Symptom                                                                                      | Possible Cause                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|------------|-------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC Code        | Error Code | Level |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 101            | 1-04       | B     | Exposure Lamp Error                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                |            |       | Insufficient white level detected when scanning the white plate.                             | <ul style="list-style-type: none"> <li>• Exposure lamp defective</li> <li>• SBU harness defective</li> <li>• Bad connection</li> <li>• Defect in optics system (dirty scanner mirror, mirror out of position, etc.)</li> <li>• Lamp stabilizer board (or connector) defective</li> <li>• Incorrect start position or length for white plate scanning (☛ SP4-015)</li> <li>• Scanner HP sensor out of position</li> </ul> |
| 120            | 9-93       | B     | Scanner home position error 1                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                |            |       | Scanner home position sensor did not detect OFF condition during initialization or copying.  | <ul style="list-style-type: none"> <li>• Forgot to remove one or more of the scanner stoppers</li> <li>• Scanner motor defective</li> <li>• Scanner HP sensor (or connector) defective</li> <li>• FCU defective</li> <li>• Scanner belt loose or detached</li> </ul>                                                                                                                                                     |
| 121            | 9-92       | B     | Scanner home position error 2                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                |            |       | Scanner home position sensor did not detect ON condition during initialization or copying.   | <ul style="list-style-type: none"> <li>• Forgot to remove one or more of the scanner stoppers</li> <li>• Scanner motor defective</li> <li>• Scanner HP sensor (or connector) defective</li> <li>• FCU defective</li> <li>• Scanner belt loose or detached</li> </ul>                                                                                                                                                     |
| 122            | 9-91       | B     | Scanner home position error 3                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                |            |       | Scanner home position sensor did not detect OFF condition during book or ADF scan operation. | <ul style="list-style-type: none"> <li>• Forgot to remove one or more of the scanner stoppers</li> <li>• Scanner motor defective</li> <li>• Scanner HP sensor (or connector) defective</li> <li>• FCU defective</li> <li>• Scanner belt loose or detached</li> </ul>                                                                                                                                                     |
| 123            | 9-90       | B     | Scanner home position error 4                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                |            |       | Scanner home position sensor did not detect ON condition during book or ADF scan operation.  | <ul style="list-style-type: none"> <li>• Forgot to remove one or more of the scanner stoppers</li> <li>• Scanner motor defective</li> <li>• Scanner HP sensor (or connector) defective</li> <li>• FCU defective</li> <li>• Scanner belt loose or detached</li> </ul>                                                                                                                                                     |



| No. Definition |            |       | Symptom                                                                                                                                                                  | Possible Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC Code        | Error Code | Level |                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 192            | 1-05       | B     | SBU auto-adjustment error                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | During SBU auto-adjustment (☛ SP4-908), the detected white level was out of range.                                                                                       | <ul style="list-style-type: none"> <li>• SBU auto adjustment was not done correctly (☛ 3.13)</li> <li>• Exposure lamp defective</li> <li>• SBU harness defective</li> <li>• Bad connection</li> <li>• Defect in optics system (dirty scanner mirror, mirror out of position. etc.)</li> <li>• Defective stabilizer board (or connector)</li> <li>• Incorrect start position or length for white plate scanning (☛ SP4-015)</li> <li>• Scanner HP sensor out of position</li> </ul> |
| 302            | 9-17       | B     | Charge roller current leak                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | Current leak at the charge roller was detected.                                                                                                                          | <ul style="list-style-type: none"> <li>• Charge roller damaged</li> <li>• High voltage supply board defective</li> <li>• Poor connection of the PCU</li> </ul>                                                                                                                                                                                                                                                                                                                     |
| 320            | 9-23       | B     | Polygon mirror motor error                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | Did not detect lock signal from polygon mirror motor within 10 seconds after motor ON signal; or, lost lock signal for continuous 1.5 seconds after signal was detected. | <ul style="list-style-type: none"> <li>• Polygon mirror motor (or harness) defective</li> <li>• FCU defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |
| 322            | 9-20       | B     | Laser synchronization error                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | Detected LD error signal for continuous 1.5 seconds while polygon mirror motor was running at constant speed.                                                            | <ul style="list-style-type: none"> <li>• Synchronization detection mirror defective</li> <li>• LD unit defective</li> <li>• FCU defective</li> <li>• LD harness damaged</li> <li>• THM not in place</li> </ul>                                                                                                                                                                                                                                                                     |
| 390            | 9-73       | B     | TD sensor error                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | The TD sensor output less than 0.33 V or greater than 2.64 V ten times in succession.                                                                                    | <ul style="list-style-type: none"> <li>• TD sensor defective</li> <li>• Bad connection</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                  |
| 391            | 9-29       | B     | Development bias leak                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | Development bias leak signal was detected.                                                                                                                               | <ul style="list-style-type: none"> <li>• Development roller defective</li> <li>• High voltage supply board defective</li> </ul>                                                                                                                                                                                                                                                                                                                                                    |
| 392            | 9-74       | B     | Developer initialization error                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                |            |       | Error reading ID sensor pattern during developer initialization.                                                                                                         | <ul style="list-style-type: none"> <li>• Forgot to remove heat seal from replacement PCU</li> <li>• ID sensor defective</li> <li>• TD sensor defective</li> <li>• Drum is not turning</li> <li>• Development roller is not turning</li> <li>• Right door not closed firmly</li> </ul>                                                                                                                                                                                              |

## SERVICE CALL CONDITIONS

| No. Definition |            |       | Symptom                                                                                                                                                                 | Possible Cause                                                                                                                                                                                                                      |
|----------------|------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC Code        | Error Code | Level |                                                                                                                                                                         |                                                                                                                                                                                                                                     |
| 401            | 9-29       | B     | Transfer roller leak error 1 ("+" leak)                                                                                                                                 |                                                                                                                                                                                                                                     |
|                |            |       | A current leak signal for the transfer roller was detected. (Current feedback signal was not detected for at least 200ms).                                              | <ul style="list-style-type: none"> <li>• Transfer roller damaged</li> <li>• High voltage supply board defective</li> <li>• Poor connection between transfer unit and machine</li> <li>• Transfer unit set incorrectly</li> </ul>    |
| 402            | 9-29       | B     | Transfer roller leak error 2 ("- " leak)                                                                                                                                |                                                                                                                                                                                                                                     |
|                |            |       | A current leak signal for the transfer roller was detected. (Current feedback signal was not detected for at least 200ms).                                              | <ul style="list-style-type: none"> <li>• Transfer roller damaged</li> <li>• High voltage supply board defective</li> <li>• Poor connection between transfer unit and machine</li> <li>• Transfer unit set incorrectly</li> </ul>    |
| 500            | 9-24       | B     | Main motor lock error                                                                                                                                                   |                                                                                                                                                                                                                                     |
|                |            |       | Failed to detect main motor lock signal for 7 checks in succession (total of 700ms) after main motor started to rotate, or after last lock signal was detected. (☞ 4.4) | <ul style="list-style-type: none"> <li>• Main motor defective</li> <li>• Too much load on the drive mechanism</li> <li>• Motor driver damaged</li> </ul>                                                                            |
| 541            | 9-22       | A     | Fusing thermistor open                                                                                                                                                  |                                                                                                                                                                                                                                     |
|                |            |       | Thermistor generated abnormal values immediately after 24V power on. (☞ 4.4)                                                                                            | <ul style="list-style-type: none"> <li>• Fusing thermistor defective or disconnected</li> <li>• Fusing lamp defective</li> <li>• Fuse blown</li> <li>• PSU defective</li> <li>• Bad connection between fuser and machine</li> </ul> |
| 542            | 9-22       | A     | Fusing temperature warm-up error                                                                                                                                        |                                                                                                                                                                                                                                     |
|                |            |       | During fusing warm-up, fusing temperature failed to reach target range within 22 seconds (when starting at least 25°C below the target temperature). (☞ 4.4)            | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• Fusing lamp defective</li> <li>• Thermofuse blown</li> <li>• PSU defective</li> <li>• Bad connection between fuser and machine</li> </ul>           |
| 543            | 9-22       | A     | Fusing overheat error                                                                                                                                                   |                                                                                                                                                                                                                                     |
|                |            |       | Detected fusing temperature remained above 230°C for 1 second. (☞ 4.4)                                                                                                  | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• PSU defective</li> </ul>                                                                                                                            |
| 544            | 9-22       | A     | Fusing low temperature error                                                                                                                                            |                                                                                                                                                                                                                                     |
|                |            |       | Detected fusing temperature remained abnormally low for 1 second during fusing operation (below 140°C) or during stand-by mode. (☞ 4.4)                                 | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• PSU defective</li> <li>• Bad connection between fuser and machine</li> </ul>                                                                        |

| No. Definition |            |       | Symptom                                                                                                                                                                                       | Possible Cause                                                                                                                                               |
|----------------|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC Code        | Error Code | Level |                                                                                                                                                                                               |                                                                                                                                                              |
| 546            | 9-22       | A     | Unstable fusing temperature                                                                                                                                                                   |                                                                                                                                                              |
|                |            |       | Detected that fusing temperature changed more than $\pm 25^{\circ}\text{C}$ /second two seconds in succession. (☛ 4.4)                                                                        | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• PSU defective</li> <li>• Bad connection between fuser and machine</li> </ul> |
| 547            | 9-22       | B     | Zero-cross detection error                                                                                                                                                                    |                                                                                                                                                              |
|                |            |       | Detection error (detection overflow or busy) occurred 8 times in succession (at 20-ms intervals) while 24V power was on. (☛ 4.4)                                                              | <ul style="list-style-type: none"> <li>• PSU defective</li> <li>• FCU defective</li> </ul>                                                                   |
| 548            | 9-22       | A     | Fusing-temperature range violation (too high)                                                                                                                                                 |                                                                                                                                                              |
|                |            |       | During paper transport, fusing temperature moved above limit ( $200^{\circ}\text{C}$ for plain paper, $210^{\circ}\text{C}$ for thick paper) and remained above limit for 10 seconds. (☛ 4.4) | <ul style="list-style-type: none"> <li>• TRIAC short</li> <li>• Fan not running</li> </ul>                                                                   |
| 549            | 9-22       | A     | Fusing-temperature range violation (too low)                                                                                                                                                  |                                                                                                                                                              |
|                |            |       | During paper transport, fusing temperature fell below lower limit ( $155^{\circ}\text{C}$ ) and remained below limit for 6 seconds. (☛ 4.4)                                                   | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• PSU defective</li> </ul>                                                     |
| 550            | 9-22       | A     | Standby temperature error 1                                                                                                                                                                   |                                                                                                                                                              |
|                |            |       | Fusing temperature failed to drop to expected level within a given time (15 seconds, 15 minutes, or 25 minutes, depending on mode) after entering standby or low-power mode. (☛ 4.4)          | <ul style="list-style-type: none"> <li>• TRIAC short</li> <li>• Fan not running</li> </ul>                                                                   |
| 551            | 9-22       | A     | Standby overheat                                                                                                                                                                              |                                                                                                                                                              |
|                |            |       | Temperature during standby or low-power mode remained too high for a specified interval (10 seconds or 25 seconds, depending on the mode). (☛ 4.4)                                            | <ul style="list-style-type: none"> <li>• TRIAC short</li> </ul>                                                                                              |
| 552            | 9-22       | A     | Standby low temperature error                                                                                                                                                                 |                                                                                                                                                              |
|                |            |       | After reaching expected temperature in low-power mode (level 1) or standby mode, temperature fell and remained below $155^{\circ}\text{C}$ for 20 seconds. (☛ 4.4)                            | <ul style="list-style-type: none"> <li>• Fusing thermistor defective</li> <li>• PSU defective</li> </ul>                                                     |

## SERVICE CALL CONDITIONS

| No. Definition |            |       | Symptom                                                            | Possible Cause                                                                                                                                                          |
|----------------|------------|-------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC Code        | Error Code | Level |                                                                    |                                                                                                                                                                         |
| 692            | 9-49       | B     | Communication error between FCU and printer controller             |                                                                                                                                                                         |
|                |            |       | Printer failed to acknowledge message from FCU within 1.2 seconds. | <ul style="list-style-type: none"> <li>• Printer controller defective</li> <li>• FCU defective</li> <li>• Poor connection between FCU and printer controller</li> </ul> |
| 900            | 9-79       | B     | Electrical total counter error                                     |                                                                                                                                                                         |
|                |            |       | The electrical total counter is not working properly.              | <ul style="list-style-type: none"> <li>• SRAM defective.</li> </ul> <i>The only way to correct this error is to replace the FCU.</i>                                    |
| 901            | 9-78       | B     | Mechanical total counter                                           |                                                                                                                                                                         |
|                |            |       | The mechanical total counter is not working properly.              | <ul style="list-style-type: none"> <li>• Mechanical total counter disconnected</li> </ul>                                                                               |
| 2001           | 9-48       | B     | Printer controller self-diagnostic error                           |                                                                                                                                                                         |
|                |            |       | Printer controller's power-on self-diagnostic detected an error.   | <ul style="list-style-type: none"> <li>• Self-diagnostic error</li> </ul>                                                                                               |
| 2002           | 9-47       | B     | Printer controller: FGATE error                                    |                                                                                                                                                                         |
|                |            |       | Printer application returned FGATE error notification to copier.   | <ul style="list-style-type: none"> <li>• FGATE error</li> </ul>                                                                                                         |

## 4.2 ELECTRICAL COMPONENT DEFECTS

### 4.2.1 SENSOR/SWITCH OPEN ERRORS

| Sensor or Switch                                | CN       | Symptom                                                                        |
|-------------------------------------------------|----------|--------------------------------------------------------------------------------|
| Registration Sensor                             | FCU 27-2 | "A" or "Y" paper jam reported.                                                 |
| Paper End Sensor                                | FCU 29-2 | Paper-end error when attempting to feed from main tray. Fax key blinks red.    |
| Bypass Paper End Sensor<br>(B044 and B046 only) | FCU 30-2 | "Paper End" message when attempting to feed from bypass tray. .                |
| Exit Sensor                                     | FCU 28-2 | "A" or "Y" paper jam reported.                                                 |
| Image Density (ID) Sensor                       | FCU 32-1 | Toner control process changes.                                                 |
| Toner Density (TD) Sensor                       | FCU 23-3 | "Reset PCU Correctly" message appears, and Caution indicator stays on.         |
| Scanner HP Sensor                               | FCU 26-3 | SC120 is displayed.                                                            |
| Platen Cover Sensor                             | FCU 26-5 | Delays start of polygon motor by a few seconds. (Longer time for first copy.)  |
| ADF Guide Open Sensor                           | DF 105-5 | "Close ADF" message appears, and Caution indicator stays on.                   |
| ADF Original Set Sensor                         | DF 105-7 | Fails to detect originals at ADF.                                              |
| ADF Registration Sensor                         | DF 105 2 | "P" paper jam reported.                                                        |
| Front/Right Door Switch                         | FCU 14   | "Close Front/Right Cover" message appears, and the Caution indicator stays on. |

Trouble-  
shooting

## 4.3 BLOWN FUSE CONDITIONS

| Fuse               | Rating     |             | At main switch ON                                   |
|--------------------|------------|-------------|-----------------------------------------------------|
|                    | 120 V      | 220 – 240 V |                                                     |
| Power Supply Board |            |             |                                                     |
| FU1                | 12 A/125 V | 6.3 A/250 V | No response.                                        |
| F2                 | 1 A/250 V  | 1 A/250 V   | Anti-condensation heater (option) does not turn on. |
| F3                 | 4 A/250 V  | 2 A/250 V   | No response.                                        |
| F201               | 5 A/250 V  | 5 A/250 V   | No response.                                        |

## 4.4 DUMPING THE FUSER TEMPERATURE LOG

The FCU monitors the fuser temperature and maintains a log of the most recent temperature values. If a heating-related SC error occurs (error code "9-22"; SCs 541 to 552), you may wish to print out a dump of the logged data before clearing the SC condition. The printout can then be submitted for analysis.

To dump the log, proceed as follows.

1. Before clearing the SC, use SP7-955 to write "02h" into address 40191C. This freezes the log data.
2. Clear the SC.
3. Use SP-992 setting "3" (☛ 5.1.5) to print out a dump of addresses 401900 to 410CFF.
4. Use SP7-955 to write "00h" into 40191C. This will restart temperature logging.

# **SERVICE TABLES**





## 5. SERVICE TABLES

### 5.1 USING SERVICE PROGRAM MODE

Use the service program mode (SP mode) to check electrical data, change operating modes, and adjust values.

#### **Accessing SP Mode**

##### **How to Enter SP Mode**

1. Key in the following sequence.

 → **1** → **0** → **7** → 

- Hold the  key down for longer than 3 seconds.

2. The LCD displays a menu.

```
[Service P-Mode]  No._
1 Copy 2 Fax 3 Printer
```

**NOTE:** Installed applications appear on the menu as follows: “1.Copy”, “2. Fax”, “3. Printer”. If an application is not installed, the corresponding item does not appear.

3. Press the number for the application mode you need. (For example, press “1” to select the copier application mode.) The selected SP mode display appears on the LCD, as shown.

```
SP H5557200  E1 class1
No.1 Feed
```

Service  
Tables

##### **How to Exit SP Mode**

Press  or the *Cancel* key one or more times to return to the standby-mode display.

#### **Accessing Copy Mode from within SP Mode**

1. Press the  key.
2. Select the appropriate copy mode and make trial copies.

**NOTE:** The *User Tools* LED flashes while you are using copy mode from within SP mode.

3. To return to SP mode, press the  key.

## USING SERVICE PROGRAM MODE

### ***How to Select a Program Number***

|             |
|-------------|
| C1 (1) Feed |
| C2 No. 1    |

Each SP number consists of two or three levels (“classes”). To select a program, you need to enter each class number in sequence.

1. Enter the first-class program number with the numeric keypad (or change the number using the *Right* or *Left* cursor key), and then press the  key or the *OK* key.
2. Enter the second-class program number with the numeric keypad (or *Right* or *Left* cursor key), and press  or *OK*.
3. To select a third-class program: select the second-class number and then use the *Right* or *Left* cursor key.
4. To return to the next higher class, press .

**NOTE:** 1) If the screen is not large enough to display information about all of the available selections, the screen displays a solid semicircle mark as shown below. The mark means that you can press the *Darker* key to view the contents for each selection.  
2) An asterisk (\*) to the right of mode name indicates that its value has been changed from the default.

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| SMC Printing                                                                                  |
| (1 - 5)  0 |

### ***To Input a Value or Setting***

1. Enter the required program mode as explained above.
2. Enter the required setting using the numeric keys, and then press  or the *OK* key.

**NOTE:** 1) If you forget to press  or *OK*, the previous value remains in effect.  
2) If necessary, use the  key to select “+” or “–” when entering the value.

## 5.1.1 SP MODE TABLES

- NOTE:** 1) An asterisk (\*) after the SP number means that this SP's value is stored in the SRAM. If you do a RAM reset, all these SP settings will be returned to their factory defaults.
- 2) In the Function/[Setting] column:
- Comments are in *italics*.
  - The setting range is enclosed in brackets, with the default setting written in **bold**.
  - **DFU** stands for **Design/Factory Use** only. Values marked **DFU** should not be changed.
  - **IAJ** means that you should refer to Section 3.13 ("Replacement and Adjustment – Copy Image Adjustments") for more information. **IP** means that you should refer to Section 6.7, (Detailed Descriptions – Image Processing").

### SP1-XXX (Feed)

| 1    | Mode Number/Name           |                               | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|----------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 001* | Leading Edge Registration  |                               | Adjusts the plotter leading-edge registration from each paper feed station. Use the Trimming Area Pattern (SP5-902, No.10) to make the adjustment.)<br>[−9.0 ~ 9.0 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br><br>• <i>Specification: 0 ± 2 mm</i><br>• <i>Use the  key to select “+” or “−” when entering the value.</i>                                                 |
|      | 1                          | Paper tray (copy, fax)        |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 2                          | Bypass (copy fax)             |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 4                          | Paper tray (optional printer) |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 5                          | Bypass (optional printer)     |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 002* | Side-to-Side Registration  |                               | Adjusts the printing side-to-side registration from each paper feed station. (Use Trimming Area Pattern (SP5-902, No.10) to make the adjustment.) The 2nd-tray adjustment is for the optional tray.<br>[−9.0 ~ 9.0 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br><br>• <i>Specification: 0 ± 2 mm</i><br>• <i>Use the  key to select “+” or “−” when entering the value.</i> |
|      | 1                          | 1st tray                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 2                          | 2nd tray                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 5                          | Bypass                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 003* | Paper Feed Timing          |                               | Adjusts the amount of buckle the paper feed clutch applies to the paper (by adjusting delay between triggering of the registration sensor and activation of registration clutch). A higher setting applies greater buckling.<br>[0 ~ 10 / <b>5</b> / 1 mm/step]                                                                                                                                                                                             |
|      | 1                          | 1st tray                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 2                          | Other trays                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|      | 3                          | Bypass                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 106  | Fusing Temperature Display |                               | Displays the fusing temperature.<br><i>Press  to exit the display.</i>                                                                                                                                                                                                                                                                                                   |
|      | 1                          |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## USING SERVICE PROGRAM MODE

| <b>1</b> | <b>Mode Number/Name</b> | <b>Function/[Setting]</b>                                                                                                  |
|----------|-------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 109      | Fusing Nip Band Check   |                                                                                                                            |
|          | 1                       | Checks the fusing nip band.<br>[1 = No / 0 = Yes] <b>DFU</b>                                                               |
| 901      | Auto-Restart Interval   |                                                                                                                            |
|          | 1                       | Sets the time interval between completion of one copy and automatic start of next copy.<br>[0 ~ 9999 / 0 / 1 s] <b>DFU</b> |
| 902      | AC Frequency Display    |                                                                                                                            |
|          | 1                       | Displays the fusing lamp power control frequency (as detected by the zero cross signal generator), in Hz.                  |

### SP2-XXX (Drum)

| <b>2</b> | <b>Mode Number/Name</b> | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                            |
|----------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 001*     | Charge Bias Adjustment  |                                                                                                                                                                                                                                                                                                                      |
|          | 1 Image area            | Adjusts the voltage applied to the charge roller when printing.<br>[−1800 ~ −1500 / <b>−1650</b> / 1 V/step]<br><i>The actually applied voltage changes automatically as charge roller voltage correction is carried out. The value you set here becomes the base value on which this correction is carried out.</i> |
|          | 2 ID sensor pattern     | Adjusts the voltage applied to the charge roller when generating the ID sensor pattern.<br>[0 ~ 400 / <b>200</b> / 1 V/step]<br><i>The actual charge-roller voltage is obtained by adding this value to the value of SP2-001-1.</i>                                                                                  |
|          | 3 Manual                | Use this feature to adjust the voltage to the image area when diagnosing a problem.<br>[−1900 ~ 0 / <b>0</b> / 1 V/step]<br><ul style="list-style-type: none"> <li>• The value is applied as an offset to the value set by SP2-001-001.</li> <li>• This setting is lost at power-off.</li> </ul>                     |
| 005      | Charge Bias Correction  |                                                                                                                                                                                                                                                                                                                      |
|          | 1 Vsdp min.             | Sets lower limit for application of charge-bias correction.<br>[0 ~ 100 / <b>90</b> / 1%/step]<br><i>Correction is applied if Vsdp/Vsg is less than this value.</i>                                                                                                                                                  |
|          | 2 Vsdp max.             | Sets upper limit for application of charge-bias correction.<br>[0 ~ 100 / <b>95</b> / 1%/step]<br><i>Correction is applied if Vsdp/Vsg is greater than this value.</i>                                                                                                                                               |
|          | 3 Correction step       | Sets the correction step (the amount of voltage added or subtracted for each correction).<br>[0 ~ 200 / <b>50</b> / 1V/step]                                                                                                                                                                                         |

| <b>2</b> | <b>Mode Number/Name</b>     |                             | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-----------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 101*     | Erase Margin Adjustment     |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          | 1                           | Leading edge                | Adjusts the leading edge erase margin.<br>[0.0 ~ 9.0 / <b>3.0</b> / 0.1 mm/step] <b>IAJ</b><br><i>Does not apply to 1-sheet bypass feed.</i>                                                                                                                                                                                                                                                                                                                                                                        |
|          | 4                           | Trailing                    | Adjusts the trailing edge erase margin.<br>[0.0 ~ 9.0 / <b>4.0</b> / 0.1 mm/step] <b>IAJ</b><br><i>Does not apply to 1-sheet bypass feed.</i>                                                                                                                                                                                                                                                                                                                                                                       |
|          | 5                           | Left side                   | Adjusts the left edge erase margin.<br>[0.0 ~ 9.0 / <b>2.0</b> / 0.1 mm/step] <b>IAJ</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |
|          | 6                           | Right side                  | Adjusts the right edge erase margin.<br>[0.0 ~ 9.0 / <b>2.0</b> / 0.1 mm/step] <b>IAJ</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |
|          | 11                          | 1-sheet bypass leading edge | Adjusts the leading edge erase margin for 1-sheet bypass.<br>[0.0 ~ 9.0 / <b>4.5</b> / 0.1 mm/step] <b>IAJ</b>                                                                                                                                                                                                                                                                                                                                                                                                      |
|          | 12                          | 1-sheet bypass trailing     | Adjusts the trailing edge erase margin for 1-sheet bypass.<br>[0.0 ~ 9.0 / <b>4.5</b> / 0.1 mm/step] <b>IAJ</b>                                                                                                                                                                                                                                                                                                                                                                                                     |
| 201*     | Development Bias Adjustment |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          | 1                           | Image area                  | Adjusts the voltage applied to the development roller when printing.<br>[–800 ~ 0 / <b>–600</b> / 1 V/step]<br>• <i>This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum.</i>                                                                                                                                                                                                                                                                                        |
|          | 2                           | ID sensor pattern           | Adjusts the voltage applied to the development roller when generating the ID sensor pattern.<br>[ <b>0 = N (200 V)</b> / 1 = H (240 V) / 3 = HH (280 V) / 4 = LL (120V)]<br><i>The actual voltage applied is this setting – 600V.</i>                                                                                                                                                                                                                                                                               |
| 213*     | Copies after Toner Near End |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          | 1                           |                             | Sets the number of copy/print/fax pages that can be made after toner near-end has been detected.<br>[ <b>0 = 50 pages</b> / 1 = 20 pages]<br><i>Reduce the number of pages if the user normally makes copies with a high image ratio.</i>                                                                                                                                                                                                                                                                           |
| 214      | Initial Developer Running   |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                             |                             | Initializes the developer (by forced churning).<br>[ <b>0 = No</b> / 1 = Yes]<br>• <i>To start forced developer initialization, you must turn the machine off and back on.</i><br>• <i>Since the machine automatically initializes the developer when a replacement PCU is installed, there is no need to carry out this SP when replacing the PCU.</i><br>• <i>If the machine has not been used for a long period of time, prints may have a dirty background. In this case, use this SP to mix the developer.</i> |

## USING SERVICE PROGRAM MODE

| <b>2</b> | <b>Mode Number/Name</b> |                    | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|-------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 220      | TD Sensor Value Display |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|          | 1                       |                    | <p>Displays:</p> <ul style="list-style-type: none"> <li>a) Current TD sensor output value (Vt)</li> <li>b) Target TD output value [Vts corrected by ID sensor output]</li> </ul> <ul style="list-style-type: none"> <li>• <i>The TD sensor output value changes every copy. If <math>a &gt; b</math>, toner is supplied to the development unit.</i></li> <li>• Press  to exit the display.</li> </ul>                                                 |
| 221      | ID Sensor Display       |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|          | 1                       |                    | <p>Displays Vsg, Vsp, Vsdp, Vt, and the ID sensor's PWM output. Use these values to check the operational status of the ID sensor.</p> <p>[0 = No / 1 = Yes]</p> <ul style="list-style-type: none"> <li>• <i>This machine has no SC code for ID sensor errors. If imaging problems occur (such as dirty background), use this SP to determine whether the problem is with toner density control.</i></li> <li>• <i>You can use SP7-911 to check the number of ID sensor errors that have occurred.</i></li> <li>• (☞ 5.1.11)</li> </ul> |
| 301*     | Transfer Current        |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|          | 1                       | Normal paper       | <p>Adjusts the current applied to the transfer roller when feeding from a paper tray.</p> <p>[0 = -2 <math>\mu</math>A / 1 = 0 <math>\mu</math>A / 2 = +2 <math>\mu</math>A / 3 = +4 <math>\mu</math>A]</p> <ul style="list-style-type: none"> <li>• <i>Use a high setting if the user normally feeds relatively thick paper (within spec).</i></li> <li>• (☞ 6.14.2, , "Image Transfer Current Timing")</li> </ul>                                                                                                                     |
|          | 2                       | Thick/Thin paper   | <p>Adjusts the current applied to the transfer roller when feeding from the bypass tray.</p> <p>[0 = -2 <math>\mu</math>A / -1 = 0 <math>\mu</math>A / 2 = +2 <math>\mu</math>A / 3 = +4 <math>\mu</math>A]</p> <ul style="list-style-type: none"> <li>• <i>Use a high setting (a) if the user normally feeds relatively thick paper, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies).</i></li> <li>• (☞ 6.14.2, , "Image Transfer Current Timing")</li> </ul>                          |
|          | 4                       | Cleaning           | <p>Adjusts the current applied to the transfer roller for roller cleaning.</p> <p>[-10 ~ 0 / -4 / 1 <math>\mu</math>A/step]</p> <ul style="list-style-type: none"> <li>• <i>Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.)</i></li> <li>• (☞ 6.14.2, "Image Transfer Current Timing")</li> </ul>                                                                                                                                                    |
|          | 5                       | Manual (Temporary) | <b>DFU</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| 2    | Mode Number/Name                 | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 906* | Tailing Correction               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | 1 Shift value                    | <p>When printing multiple copies, the machine will shift the image writing position by the specified amount after every <i>n</i> copies, where <i>n</i> is given by SP2-906-2.<br/>           [0.0 ~ 1.0 / <b>0.0</b> / 0.1 mm/step]<br/> <i>When making many copies of an original that contains vertical lines (such as in tables), the paper may not separate correctly. This can cause tailing images (ghosts of the vertical lines continuing past the bottom of the table). This SP corrects the problem by shifting the paper after every specified number of copies.</i></p> |
|      | 2 Interval                       | <p>Changes the interval for the image shift specified by SP2-906-1.<br/>           [1 ~ 10 / <b>1</b> / 1 page/step]<br/> <i>If the setting is <i>n</i>, the machine executes the shift after the first <i>n</i> copies, then shifts back to standard position after the next <i>n</i> copies, and so on.</i></p>                                                                                                                                                                                                                                                                    |
| 908  | Forced Toner Supply              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | 1                                | <p>Forces the toner bottle (or toner hopper) to supply toner to the toner supply unit. Press "1" to start.<br/> <b>[0 = No / 1 = Yes]</b><br/> <i>The machine supplies toner over a total of 15 seconds (1.5 second on, 1.5 second off, repeated 5 times).</i></p>                                                                                                                                                                                                                                                                                                                   |
| 915* | Polygon Mirror Motor Idling Time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | 1                                | <p>Selects the polygon mirror motor idling time.<br/>           [0 = None / <b>1 = 15 s</b> / 2 = 25 s]<br/> <i>To increase the speed of the first copy, the mirror motor begins idling when the user sets an original, touches a key, or opens the platen cover or DF. If this setting is left at the default (25 s), the motor will stop if the user does nothing for 25 s. If the setting is "0", the motor will not switch off during standby. (Regardless of the setting, the motor will switch off when the machine enters low-power mode.)</i></p>                            |
| 922* | Toner Supply Time                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | 1                                | <p>Adjusts the toner supply motor ON time.<br/>           [0.1 ~ 5.0 / <b>0.6</b> / 0.1 s/step]<br/> <ul style="list-style-type: none"> <li>• <i>Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas.</i></li> <li>• (☞ 6.12.4, "Toner Density Control")</li> </ul> </p>                                                                                                                                                                                       |
| 926* | Standard Vt                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|      | 1                                | <p>Adjusts Vts (the reference voltage used for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process.<br/>           [0.00 ~ 3.3 / <b>1.25</b> / 0.01 V/step] <b>DFU</b></p>                                                                                                                                                                                                                                                                                                                                                   |

## USING SERVICE PROGRAM MODE

| <b>2</b> | <b>Mode Number/Name</b>            |       | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 927*     | ID Sensor Control                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | 1                                  |       | <p>Selects whether the ID sensor is or is not used for toner density control.<br/> <b>[0 = No / 1 = Yes]</b><br/> <i>This value should normally be left at "1". If the value is "0", dirty background may occur after long periods of non-use.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 928      | Toner End Clear                    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | 1                                  |       | <p>Clears the toner end condition without adding new toner. Select "1" then press the  key to clear the condition.<br/> <b>[0 = No / 1 = Yes]</b><br/> <i>Setting this to "1" will clear the following:</i> <ul style="list-style-type: none"> <li>• Toner end and near-end indicator</li> <li>• Toner near-end counter</li> <li>• Toner end counter (sheets)</li> <li>• Toner end counter (level)</li> </ul> <i>This function should generally not be used. If you clear the toner end condition without adding new toner, there is a risk that the drum may eventually begin to attract carrier after toner runs out. This attracted carrier may damage the drum.</i></p> |
| 929*     | Vref Limits                        |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | 1                                  | Upper | <p>Adjust the upper Vref limit.<br/> <b>[0.50 ~ 3.50 / 1.80 / 0.01V/step]</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|          | 2                                  | Lower | <p>Adjust the lower Vref limit.<br/> <b>[0.00 ~ 3.50 / 0.45 / 0.01V/step]</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 995*     | ID Detection Interval              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | 1                                  |       | <p>Sets the interval after which ID detection will be carried out at start of printing (relative to previous ID detection).<br/> <b>[0 ~ 999 / 480 / 1 minute/step]</b><br/> <i>Higher values increase the chance of dirty background. Lower values increase the frequency at which the machine makes ID sensor patterns, increasing the chance that the transfer roller (and rear side of paper) will become dirty.</i></p>                                                                                                                                                                                                                                                                                                                                  |
| 998*     | Main Scan Magnification (Printing) |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | 1                                  |       | <p>Adjusts the magnification along the main scan direction, for all print modes (copy, fax, printing).<br/> <b>[−0.5 ~ +0.5 / 0.0 / 0.1%/step] IAJ</b><br/> <ul style="list-style-type: none"> <li>• Use the  key to select "+" or "−" when entering the value.</li> </ul></p>                                                                                                                                                                                                                                                                                                                                                                                             |



**SP4-XXX (Scanner)**

| <b>4</b> | <b>Mode Number/Name</b>             |                | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|-------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 008*     | Main Scan Magnification (Scanner)   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | 1                                   |                | Adjusts the magnification along the main scan direction, for scanning.<br>[−0.9 ~ +9.0 / <b>0.0</b> / 0.1%/step] <b>IAJ</b><br>• Use the  key to select “+” or “−” when entering the value                                                                                                                                                                                    |
| 010*     | Leading Edge Registration (Scanner) |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | 1                                   |                | Adjusts the leading edge registration for scanning in platen mode.<br>[−2.0 ~ +5.0 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br>• (−): The image moves toward the leading edge.<br>• (+): The image moves toward the trailing edge.<br>• Use the  key to select “+” or “−” when entering the value                                                                               |
| 011*     | Side-to-side Registration (Scanner) |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | 1                                   |                | Adjusts the side-to-side registration for scanning in platen mode.<br>[−0.9 ~ 0.9 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br>• Increasing the value shifts the image to the right<br>• Use the  key to select “+” or “−” when entering the value                                                                                                                               |
| 013      | Scanner Free Run                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          |                                     |                | Performs a scanner free run with the exposure lamp on.<br>[0 = No / 1 = Yes]<br>• For details about free runs:  5.1.7.<br>• After selecting “1”, press OK or  twice to start the run. Press  to stop. |
| 015*     | White Plate Scanning                |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | 1                                   | Start position | Adjusts the scanning start position on the white plate for auto-shading.<br>[−3.0 ~ +6.0 / <b>0.0</b> / 0.1 mm/step]<br>• Positive settings move the position away from HP.                                                                                                                                                                                                                                                                                    |
|          | 2                                   | Scanning area  | Adjusts the end position of the white plate scan, in the main scan direction. The scan begins at the start position [as set by SP4-015-1] and extends for the specified length.<br>[−3.0 ~ +6.0 / <b>0.0</b> / 0.1 mm/step]<br>• The total scanning length (as determined by SP2-015-1 and SP2-105-2) must be at least 2.0mm.                                                                                                                                  |
| 101*     | Sub-Scan Magnification (Scanning)   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|          | 1                                   |                | Adjusts the actual sub-scan scanning magnification. The higher the setting, the lower the scanner motor speed.<br>[−0.9 ~ +0.9 / <b>0.0</b> / 0.1%/step]                                                                                                                                                                                                                                                                                                       |

## USING SERVICE PROGRAM MODE

| 4             | Mode Number/Name                  | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
|---------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------|------------|-------------------------------|-------------|----------------------------------|-------------|-----------------------------------|---------------|----------------------------------|---------------|
| 902*          | Exposure Lamp ON                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
|               |                                   | Lets you turn the exposure lamp on and off.<br>[0 = Lamp Off / 1 = Lamp On] <ul style="list-style-type: none"><li>• To turn the exposure lamp on, press "1". To turn the lamp off, press "0". To exit, press  or Cancel to exit.</li><li>• The scanner moves to the shading position and remains there until you exit the SP.</li><li>• The display also shows the minimum and maximum white-plate values (updated every 0.5 sec.).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 908           | SBU Auto-Adjustment               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
|               | 1                                 | Performs auto scanner adjustment.<br>[0 = No (normal operation) / 1 = Yes (start adjustment)] <ul style="list-style-type: none"><li>• Use this SP after replacing the white plate, FCU, or lens block, and after executing a Memory All Clear (SP5-801).</li><li>• (👁 IAJ, "Standard White Density Adjustment".)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 913*          | DF Shading Interval Time          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
|               | 1                                 | Adjusts the interval used for shading processing in DF mode.<br>[0 ~ 255 / 30 / 1s/step] <ul style="list-style-type: none"><li>• Setting this value to 255 will switch off auto-shading between pages of DF copy jobs.</li><li>• Light and heat may affect scanner response. Reduce this setting if copy quality indicates that the white level is drifting during DF copy jobs.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 921*          | Image Adjustment Selection        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
|               | 1                                 | Use this to select the processing mode (pattern) that you wish to set adjustment parameters for. After selecting the mode, you can set the adjustment parameters for that mode using SPs 4-922 to 4-966. <b>IP</b><br><br>There are 11 modes ("Pattern 1" to "Pattern 11"), as follows.<br><table><tr><td>1 = Text 1</td><td>7 = Special 3</td></tr><tr><td>2 = Text 2</td><td>8 = Fax Text 1 ("text sharp")</td></tr><tr><td>3 = Photo 1</td><td>9 = Fax Photo 1 ("photo smooth")</td></tr><tr><td>4 = Photo 2</td><td>10 = Fax Photo 2 ("photo normal")</td></tr><tr><td>5 = Special 1</td><td>11 = Fax Text 2 ("text dropout")</td></tr><tr><td>6 = Special 2</td><td></td></tr></table><br>First use the right or left cursor key to select the mode ["Pattern 1" to "Pattern 11"], and then press "1" to enable adjustment for that mode. Then press OK, and then proceed to use SPs 4-922 to 4-966 to make adjustments. <ul style="list-style-type: none"><li>• If you press "0" and then press OK, SPs 4-922 to 4-966 will not operate.</li></ul> | 1 = Text 1 | 7 = Special 3 | 2 = Text 2 | 8 = Fax Text 1 ("text sharp") | 3 = Photo 1 | 9 = Fax Photo 1 ("photo smooth") | 4 = Photo 2 | 10 = Fax Photo 2 ("photo normal") | 5 = Special 1 | 11 = Fax Text 2 ("text dropout") | 6 = Special 2 |
| 1 = Text 1    | 7 = Special 3                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 2 = Text 2    | 8 = Fax Text 1 ("text sharp")     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 3 = Photo 1   | 9 = Fax Photo 1 ("photo smooth")  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 4 = Photo 2   | 10 = Fax Photo 2 ("photo normal") |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 5 = Special 1 | 11 = Fax Text 2 ("text dropout")  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |
| 6 = Special 2 |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |            |                               |             |                                  |             |                                   |               |                                  |               |

| <b>4</b> | <b>Mode Number/Name</b>     | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                 |
|----------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 922*     | Scanning Density Adjustment | <p>Selects the gamma table used for linear adjustment by the mode selected by SP4-921.</p> <p><b>[0 = Linear / 1 = 16-bit gray] IP</b></p>                                                                                                                                                                                                                                |
| 923*     | Notch Selection             | <p>Selects the value of the center ID adjustment notch for the ID adjustment LEDs. Applies only to the mode selected by SP4-921.</p> <p><b>[-1 = Light / 0 = Normal / +1 = Dark]</b></p> <p><i>Normally the center notch is 3 (range 1–5). If –1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker).</i></p> |
| 925*     | Sharpness Adjustment        | <p>Adjusts the image sharpness processing (MTF and smoothing coefficients) for the mode selected by SP4-921.</p> <p><b>[-2 ~ 2 / 0 / 1/step] IP</b></p> <p><i>Higher values produce greater sharpness.</i></p>                                                                                                                                                            |
| 926*     | Texture Removal Threshold   | <p>Adjusts the texture removal threshold for the mode selected by SP4-921. <b>IP</b></p> <p><b>[0 ~ 4 / 0], where:</b></p> <p>0: The mode's default value is used.<br/> 1: Fixed threshold.<br/> 2: Varying threshold (low variance)<br/> 3: Varying threshold (medium variance)<br/> 4: Varying threshold (photo error diffusion)</p>                                    |
| 927*     | Line Width Correction       | <p>Adjusts the line width correction algorithm for the mode selected by SP4-921. Positive settings produce thicker lines; negative settings produce thinner lines.</p> <p><b>[-2 ~ 2 / 0 / 1/step] IP</b></p>                                                                                                                                                             |
| 928*     | Independent Dot Erase       | <p>Selects the dot erase level for the mode selected by SP4-921. Higher settings provide greater erasure.</p> <p><b>[-2 ~ 2 / 0 / 1/step] IP</b></p>                                                                                                                                                                                                                      |
| 930      | Binary Data Select          | <p>Not effective on this machine. <b>DFU</b></p>                                                                                                                                                                                                                                                                                                                          |
| 931*     | Uneven Dot Adjustment       | <p>Selects the bad-dot correction method used by the mode selected by SP4-921.</p> <p><b>[0 = selected mode's default / 1 = off / 2 = 1-dot correct / 3 = 2-dot correct / 4 = 3-dot correct / 5 = 4-dot correct]</b></p> <p><b>DFU</b> (Not effective on this machine.)</p>                                                                                               |

## USING SERVICE PROGRAM MODE

| <b>4</b> | <b>Mode Number/Name</b>            | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 932*     | Auto Density Adjustment            |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | [-2 ~ 2 / <b>0</b> / 1/step] <b>DFU</b> (Not effective on this machine.)                                                                                                                                                                                                                                                                                                                                                            |
| 933*     | Blank-Page Sensor Level Adjustment |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | [-2 ~ 2 / <b>0</b> / 1] <b>DFU</b> (Not effective on this machine.)                                                                                                                                                                                                                                                                                                                                                                 |
| 934*     | Peak Setting                       |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Sets adjustment the machine will use when setting white peak prior to start of scanning, for the mode selected by SP4-921.<br>[-128 ~ 127 / <b>0</b> / 1/step]<br><ul style="list-style-type: none"> <li>• If AE tracking is enabled, the applied peak becomes:<br/>[(detected peak + this setting) x approx. 40%]</li> <li>• If AE tracking is disabled, the applied peak becomes:<br/>[(detected peak + this setting)]</li> </ul> |
| 935*     | AE Tracking Speed                  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Adjusts the white-peak tracking speed for the mode selected by SP4-921.<br>[-2 ~ 2 / <b>0</b> / 1/step]<br><i>Negative settings reduce the speed; positive settings increase it.</i>                                                                                                                                                                                                                                                |
| 936*     | Peak Offset Select                 |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Sets the peak correction offset for the mode selected by SP4-921.<br>[-2 ~ 2 / <b>0</b> / 1/step] <b>IP</b><br><i>Negative settings produce better reproduction of low-contrast originals. Positive settings provide better elimination of dirty background.</i>                                                                                                                                                                    |
| 961*     | Plotter Mode Select                |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Selects the plotter mode used by the processing mode selected by SP4-921. <b>IP</b><br><b>[0 = Selected processing mode's default /</b><br>1 = Normal (no correction) / 2 = Toner save /<br>3 = FCI<br><ul style="list-style-type: none"> <li>• The default varies according to the processing mode selected by SP4-241</li> </ul>                                                                                                  |
| 962*     | Marking Image Density Conversion   |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Selects the image density conversion for the processing mode selected by SP4-921.<br>[-2 ~ 2 / <b>0</b> / 1/step] <b>IP</b><br><i>A setting of "0" sets conversion OFF. Negative settings reduce the black marking size, while positive values magnify it.</i>                                                                                                                                                                      |
| 963*     | Marking Image Density Setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                                    | Sets the density adjustment type for the mode selected by SP4-921. <b>IP</b><br>[0 ~ 5 / <b>0</b> / 1/step], where:<br>0: The mode's default value is used.<br>1: Distortion prevention<br>2: Distortion prevention and edge correction<br>3: Normal<br>4: Light edge correction<br>5: Dense edge correction                                                                                                                        |

# USING SERVICE PROGRAM MODE

| <b>4</b> | <b>Mode Number/Name</b>     | <b>Function/[Setting]</b>                                                                                                                                                                                                                                 |
|----------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 964*     | Spot Dot Enhancement Select |                                                                                                                                                                                                                                                           |
|          |                             | Selects emphasis used for lone dots, for the mode selected by SP4-921. <b>IP</b><br>[-2 ~ 2 / <b>0</b> / 1/step]                                                                                                                                          |
| 965*     | Toner Save Level            |                                                                                                                                                                                                                                                           |
|          |                             | Sets the toner save level for the mode selected by SP4-921.<br>[0 ~ 4 / <b>0</b> / 1/step], where:<br>0: The mode's default value is used.<br>1: Thin lines<br>2: Mask 1 (with edge detect)<br>3: Mask 2 (no edge detect)<br>4: Mask 3 (with edge detect) |
| 966*     | Smoothing Select            |                                                                                                                                                                                                                                                           |
|          |                             | Selects whether smoothing is used for the mode selected by SP4-921. <b>IP</b><br>[0 ~ 4 / <b>0</b> / 1/step], where:<br>0: The mode's default value is used.<br>1: OFF<br>2: ON                                                                           |

## USING SERVICE PROGRAM MODE

### SP5-XXX (Mode)

| 5    | Mode Number/Name  | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 001  | All Indicators On |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Sets on all indicators on the operation panel, and causes the display to blink (empty for five second, all pixels black for five seconds).<br><i>After checking, press  or Cancel to exit.</i>                                                                                                                                                                                                                                                                                            |
| 302* | Date/Time         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Sets the date and time.<br><ul style="list-style-type: none"> <li>• For the year value, you can set the last two digits only. (The first two digits are fixed at "20".)</li> <li>• You cannot set the seconds value directly. Instead, the seconds value automatically resets to 0 when you enter the setting for the minutes value.</li> <li>• Use cursor keys (or OK) to move from field to field (the selected field flashes), and enter values with the numeric keys. Your new settings are saved only if you press OK while the minutes field is selected.</li> </ul> |
| 501* | PM Alarm Mode     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      | 1 Interval        | Sets the base PM interval.<br>[1 ~ 255 / <b>45</b> / 1K copies/step]<br><i>This setting is meaningful only if SP5-501-2 is set to "1".</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|      | 2 On/Off          | Enables/disables the PM alarm for the total number of prints, copies, and faxes.<br>[0 = Disable / <b>1 = Enable</b> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 801  | Memory All Clear  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Resets all SP/UP settings and values to their defaults, with the exception of plug-and-play settings (SP5-907), total print counters (SP7-003), and the serial number setting (SP5-811). (☛ 5.1.6)<br>[0 = No / 1 = Yes]<br><ul style="list-style-type: none"> <li>• Before clearing the SRAM, be sure to output an SMC printout of all current SRAM content. (☛ SP5-992).</li> <li>• This SP mode should generally not be used.</li> </ul>                                                                                                                                |
| 802  | Free Run          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Starts a free run of both the scanner and the printer.<br>[0: = No / 1 = Yes]<br><ul style="list-style-type: none"> <li>• For details about free runs: ☛ 5.1.7.</li> <li>• After selecting "1", press the OK key (or the  key) twice to start the free run. Press  to stop the free run.</li> </ul>                                                                                              |
| 803  | Input Check       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Displays the signals being received from a selected sensor or switch. (☛ 5.1.3)<br><i>Press  to exit the program.</i>                                                                                                                                                                                                                                                                                                                                                                   |
| 804  | Output Check      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |                   | Turns on a selected electrical component for test purposes. (☛ 5.1.4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| 5    | Mode Number/Name         | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 810  | SC Code Reset            | Resets all level-A service call conditions, such as fusing errors.<br>[0 = No / 1 = Yes]<br>• After selecting "1", hold down the Original Type key and press the OK key (or the  key) to execute the reset. If the reset succeeds, the machine reboots. If it fails, the display shows "Error!!!".<br>• (  4.1, "Service Call Conditions") |
| 811* | Serial Number Input      | Used to input the machine serial number (normally done at the factory). This is the serial number printed on SMC reports. (  5.1.10)                                                                                                                                                                                                                                                                                        |
| 812* | Service Telephone Number | Use this to input the telephone number of the service representative. (This number is displayed when a service call condition occurs.)<br>• To input a dash, press  .<br>• Use  to delete the existing phone number or to delete the last digit that you entered.                                                                          |
| 824  | SRAM Data Upload         | Uploads SP and UP settings from the machine's SRAM to a flash memory card. (  5.1.9)<br>[0 = No / 1 = Yes]<br>• This SP is effective only if a flash memory card has been plugged into the machine's card slot.                                                                                                                                                                                                            |
| 825  | SRAM Data Download       | Downloads SP mode data from a flash memory card to the machine's SRAM. (  5.1.9)<br>[0 = No / 1 = Yes]<br>• This SP is effective only if a flash memory card has been plugged into the machine's card slot.                                                                                                                                                                                                               |
| 826  | Program Upload           | Uploads the system program from the machine's SRAM into the flash memory card plugged into the machine's card slot. (  5.1.8)<br>[0 = No / 1 = Yes]<br>• This SP is effective only if a flash memory card has been plugged into the machine's card slot.                                                                                                                                                                  |
| 827  | Program Download         | Downloads the system program from a flash memory card to the machine's SRAM. (  5.1.8)<br>[0 = No / 1 = Download first 2MB / 2= Download last 2MB]<br>• This SP is effective only if you have booted the machine from a flash memory card.                                                                                                                                                                                |

## USING SERVICE PROGRAM MODE

| 5    | Mode Number/Name          | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 837  | Program Checksums         | Displays checksums of the contents of the machine's SRAM.<br><ul style="list-style-type: none"> <li>• The screen shows three check sums: "SUM" (total checksum, "B" (boot sum), and "M" (main sum).</li> <li>• If you have used SP-827 to download new firmware, be sure to reboot the software before running this SP. (If you don't reboot, the screen will show checksums for the previous firmware.)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 901  | Printer Free Run          | Starts a printer free run.<br>[0 = No / 1 = Yes]<br><ul style="list-style-type: none"> <li>• For details about free runs:  5.1.7.</li> <li>• After selecting "1", press the OK key (or the  key) twice to start the free run. Press  to stop the free run.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 902  | Test Pattern Print        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                         | Prints a test pattern. ( 5.1.2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 906* | Exhaust-Fan Control Timer |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                         | Inputs the fan control time.<br>[30 ~ 120 / 30 / 1 s/step]<br>The fan maintains existing speed for the specified time before slowing or stopping (after occurrence of an SC or following entry into warm-up, standby, or low-power mode).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 907* | Plug & Play Setting       | Selects the brand name and production name for the Plug and Play function (for Windows 95 and up). These names are registered in the SRAM. If the SRAM becomes defective, these names should be re-registered.<br><ul style="list-style-type: none"> <li>• Use the Right or Left cursor key to scroll through the list of brand names. To select a brand name, press the Original Type key and the OK (or ) key at the same time. The LCD displays an asterisk (*) next to the number of the currently selected brand name.</li> <li>• After displaying any of the brand names, you can view the corresponding production name by holding down the Darker key. (If the production name is too long to fit on the screen, you can view the rest of the name by holding down both the Darker and Lighter keys).</li> <li>• To exit, press  or the Cancel key.</li> </ul> |
| 908* | C1a/C1b Select            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                         | Selects whether the machine identifies itself as a C1a (B045) or C1b (B044/B046) when reporting to firmware.<br>[0 = no setting / 1 = C1a / 2 = C1b]<br><ul style="list-style-type: none"> <li>• You can visually identify the machine is C1a or C1b by its bypass. C1a machines have 1-sheet bypass; C1b machines have 100-sheet bypass.</li> <li>• If the setting is "0", the machine automatically checks its own bypass type to determine how to report itself.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         |



| <b>5</b> | <b>Mode Number/Name</b>   | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 912*     | PCU Alarm                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|          | 1                         | Alarm Display On/Off<br>Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2.<br>[0 = <b>Display</b> / 1 = Do not display]                                                                                                                                                                                                                                                                                                                                                                                       |
|          | 2                         | Interval<br>Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs.<br>[1 ~ 255 / <b>45</b> / 1000 sheets/step]                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 913      | UP Mode Data Reset        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|          | 1                         | Resets the user tools settings (with the exception of the copy user codes and copy user code counters).<br>[0 = <b>No</b> / 1 = Yes]<br><ul style="list-style-type: none"> <li>• This operation is equivalent to executing a System Reset with the User Tools.</li> <li>• After selecting "1", hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows "Action completed." If the reset fails, the display shows "Error!!!"</li> </ul> |
| 956      | Preset Small-Size Setting |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|          | 1                         | Enables setting of small paper sizes.<br>[0 = <b>No</b> / 1 = Yes]<br><ul style="list-style-type: none"> <li>• Setting this value to "1" enables setting of the following standard small sizes, for both paper tray and bypass tray: B5 SEF, Executive SEF.</li> </ul> If you change the setting from "1" to "0" when one of these sizes is set, the size setting changes to each tray's default.                                                                                                                                                                                                  |
| 991*     | Debug Monitor Mode        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|          | 1                         | [0 ~ 3 / <b>0</b> / 1/step] <b>DFU</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 992      | SMC Printing              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|          |                           | Prints out machine data. (➡ 5.1.5)<br>[0 = <b>No</b> / 1 = SP settings / 2 = All / 3 = Memory]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**SP6-XXX (Peripherals)**

| <b>6</b> | <b>Mode Number/Name</b>    | <b>Function/[Setting]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 006      | ADF Registration           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          | 1                          | Side-to-Side<br>Adjusts the side-to-side registration for DF mode.<br>[–9.0 ~ +9.0 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br>Use the  key to select “+” or “–” when entering the value.                                                                                                                                                                                            |
|          | 2                          | Leading Edge<br>Adjusts the leading edge registration for DF mode.<br>[–5.0 ~ +5.0 / <b>0.0</b> / 0.1 mm/step] <b>IAJ</b><br>0.1 mm/step<br>Use the  key to select “+” or “–” when entering the value.                                                                                                                                                                             |
|          | 3                          | Trailing Edge Erase<br>Adjusts the trailing edge erase margin for DF mode.<br>[–3.0 ~ +3.0 / <b>–1.0</b> / 0.1 mm/step] <b>IAJ</b><br>Use the  key to select “+” or “–” when entering the value.                                                                                                                                                                                   |
| 007      | ADF Sub-scan Magnification |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          | 1                          | Adjusts the actual magnification ratio in the sub-scan direction, for DF mode.<br>[–0.9 ~ +0.9 / <b>0.0</b> / 0.1%/step] <b>IAJ</b><br>Use the  key to select “+” or “–” when entering the value.                                                                                                                                                                                  |
| 009      | ADF Free Run               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                            | Performs a DF free run .<br>[ <b>0</b> = No / 1 = Yes]<br>• For details about free runs:  5.1.7.<br>• After selecting “1”, press OK or  twice to start the run.<br>Press  to stop.                   |
| 910      | ADF/Printer Free Run       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|          |                            | Performs a free run of the DF and printer.<br>[ <b>0</b> = No / 1 = Yes]<br>• For details about free runs:  5.1.7.<br>• After selecting “1”, press OK or  twice to start the run.<br>Press  to stop. |

**SP7-XXX (Data Log)**

| 7    | Mode Number/Name           | Function/[Setting]                                                    |
|------|----------------------------|-----------------------------------------------------------------------|
| 002* | Total Original Counter     |                                                                       |
|      | 1 All Modes                | Displays the total number of scanned originals (total).               |
|      | 2 Copy                     | Displays total number of scanned originals (copy mode only).          |
|      | 3 Fax                      | Displays total number of scanned originals (fax mode only).           |
| 003* | Total Print Counter        |                                                                       |
|      | 1 All Modes                | Displays the total number of prints (total).                          |
|      | 2 Copy                     | Displays the total number of prints (copier mode).                    |
|      | 3 Fax                      | Displays the total number of prints (fax mode).                       |
|      | 4 Printer                  | Displays the total number of prints (printer mode).                   |
| 101* | Copy Counter – Paper Size  |                                                                       |
|      | 1 A4                       | Displays the total number of copies by paper size.                    |
|      | 2 B5                       |                                                                       |
|      | 3 LG                       |                                                                       |
|      | 4 LT                       |                                                                       |
|      | 5 HLT                      |                                                                       |
|      | 6 Others                   |                                                                       |
| 201* | Total Scan Counter         |                                                                       |
|      | 1                          | Displays the total number of scanned originals.                       |
| 204* | Copy Counter - Paper Tray  |                                                                       |
|      | 1 1st                      | Displays the total number of sheets fed from each paper feed station. |
|      | 2 2nd                      |                                                                       |
|      | 3 Bypass                   |                                                                       |
| 205* | Total ADF Counter          |                                                                       |
|      | 1                          | Displays the total number of originals fed by the DF.                 |
| 401* | Total SC Counter           |                                                                       |
|      | 1                          | Displays the total number of logged SC codes.                         |
| 402* | SC Type Counter            |                                                                       |
|      | 1                          | Displays the total number of each type of logged SC code.             |
| 501* | Total Jam Counter          |                                                                       |
|      | 1                          | Displays the total number of jams (copy paper + original).            |
| 502* | Total Paper Jam Counter    |                                                                       |
|      | 1                          | Displays the total number of copy paper jams.                         |
| 503* | Total Original Jam Counter |                                                                       |
|      | 1                          | Displays the total number of original jams.                           |
| 504* | Jam Counter – by Location  |                                                                       |
|      | 1 “A” jams                 | Displays the total number of copy paper jams by location.             |
|      | 2 “B” jams                 |                                                                       |
|      | 3 “C” jams                 |                                                                       |
|      | 4 “Y” jams                 |                                                                       |
|      | 5 1st Tray                 |                                                                       |
|      | 6 2nd Tray                 |                                                                       |
|      | 7 Bypass                   |                                                                       |

## USING SERVICE PROGRAM MODE

| 7    | Mode Number/Name                                                                                                                                                                                                                                                                                             | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                     |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 801  | ROM Versions and Option Connections<br><b>Note: SP7-801 cannot be accessed at the screen. This information appears on SMC printouts only. (Go to SP5-992 and select "2" to print out all data. The SP-801 information will appear in the "LOG DATA" section on the second page of the printout. [5.1.5])</b> |                                                                                                                                                                                                                                                                                                                                                                                                        |
|      |                                                                                                                                                                                                                                                                                                              | Shows software versions and option connection statuses.                                                                                                                                                                                                                                                                                                                                                |
|      | 1                                                                                                                                                                                                                                                                                                            | Firmware Version                                                                                                                                                                                                                                                                                                                                                                                       |
|      | 2                                                                                                                                                                                                                                                                                                            | No meaning (Fixed at "VER. 1")                                                                                                                                                                                                                                                                                                                                                                         |
|      | 3                                                                                                                                                                                                                                                                                                            | Fax Unit ["Yes" = installed, "No" = Not installed]                                                                                                                                                                                                                                                                                                                                                     |
|      | 4                                                                                                                                                                                                                                                                                                            | Printer Unit ["Yes" = installed, "No" = Not installed]                                                                                                                                                                                                                                                                                                                                                 |
|      | 5                                                                                                                                                                                                                                                                                                            | ADF ["Yes" = installed, "No" = Not installed]                                                                                                                                                                                                                                                                                                                                                          |
|      | 6                                                                                                                                                                                                                                                                                                            | Optional Memory ["No" (None installed), "32MB", "40MB", "64MB"]                                                                                                                                                                                                                                                                                                                                        |
|      | 7                                                                                                                                                                                                                                                                                                            | Paper Tray Unit ["Yes" = installed, "No" = Not installed]                                                                                                                                                                                                                                                                                                                                              |
|      | 8                                                                                                                                                                                                                                                                                                            | Bypass Type ["1" = 1 sheet / "100" = 100-sheet]                                                                                                                                                                                                                                                                                                                                                        |
| 803* | PM Counter Display                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                                                                                                                                                                                                                                                                                                            | Displays the PM counter value (the count since the last PM).                                                                                                                                                                                                                                                                                                                                           |
| 804  | PM Counter Reset                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                                                                                                                                                                                                                                                                                                            | Resets the PM counter.<br>[0 = No / 1 = Yes]<br>After selecting "1", hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows "Action completed." If the reset fails, the display shows "Error!!!".                                       |
| 807  | SC/Jam Counter Reset                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                                                                                                                                                                                                                                                                                                            | Resets the SC counter and all jam counters.<br>[0 = No / 1 = Yes]<br>After selecting "1", hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows "Action completed." If the reset fails, the display shows "Error!!!".                  |
| 808  | Reset Counters                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                        |
|      | 1                                                                                                                                                                                                                                                                                                            | Resets all counters, except for the total counter (SP7-003).<br>[0 = No / 1 = Yes]<br>After selecting "1", hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows "Action completed." If the reset fails, the display shows "Error!!!". |

| 7    | Mode Number/Name                | Function/[Setting]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 825  | Total Counter Reset             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Resets the electronic total counter.<br>[0 = No / 1 = Yes]<br><ul style="list-style-type: none"> <li>• This reset is generally performed at installation. This SP mode is effective only once, while the counter still has a negative value. This SP cannot be used once the counter takes a positive value.</li> <li>• After selecting “1”, hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows “Action completed.” If the reset fails, the display shows “Error!!!”.</li> </ul> |
| 901  | SC History Display              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Displays the codes of the last fifty errors that have occurred.<br>[0 = No / 1 = Yes]<br><i>On fax-equipped models, you can print out the last fifty error codes using fax service mode 04. For information, refer to the fax service manual.</i>                                                                                                                                                                                                                                                                                                                                                                                                 |
| 902  | SC History Reset                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Clears the SC history.<br>[0 = No / 1 = Yes]<br><ul style="list-style-type: none"> <li>• Note that when executed on fax-equipped models, this operation will not clear the machine's service-report data.</li> <li>• After selecting “1”, hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows “Action completed.” If the reset fails, the display shows “Error!!!”.</li> </ul>                                                                                                  |
| 908  | PCU Counter Display             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Displays the number of prints made since the PCU was last replaced.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 909  | PCU Counter Reset               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Resets the developer counter.<br>[0 = No / 1 = Yes]<br><i>After selecting “1”, press the Original Type key and the OK key (or  key) at the same time to execute the reset. If the reset is successful, the display shows “Action completed.” If the reset fails, the display shows “Error!!!”.</i>                                                                                                                                                                                                                                                             |
| 911* | ID Sensor Error Counter Display |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Displays the total number of logged ID sensor errors.<br><i>For information about how to analyze these errors, see Section 5.1.11.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 912  | ID Sensor Error Counter Reset   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|      | 1                               | Resets the ID sensor error counter.<br>[0 = No / 1 = Yes]<br><i>After selecting “1”, hold down the Original Type key and press the OK key (or  key) to execute the reset. If the reset is successful, the display shows “Action completed.” If the reset fails, the display shows “Error!!!”.</i>                                                                                                                                                                                                                                                              |

## USING SERVICE PROGRAM MODE

| <b>7</b> | <b>Mode Number/Name</b>         | <b>Function/[Setting]</b>                                                                                                                                                                          |
|----------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 955      | Memory Read/Write (Byte Access) |                                                                                                                                                                                                    |
|          |                                 | Lets you read byte values from arbitrary RAM addresses, and write values into arbitrary addresses. (☛ 5.1.12)                                                                                      |
| 956      | Memory Read/Write (Word Access) |                                                                                                                                                                                                    |
|          |                                 | Same as SP7-955, except that access is in (2-byte) words. <b>DFU</b><br><i>This SP is not intended for use on models outside of Japan. Always use SP-955 to carry out memory reads and writes.</i> |

## 5.1.2 TEST PATTERN PRINTING (SP5-902)

1. Enter SP mode and select SP5-902.
2. Input the number for the test pattern you wish to print.
3. Press  to access the copy mode display.
4. Select the copy features (paper size, image density, magnification, etc.).
5. Press  again to print the test pattern.
6. After checking the test pattern, press  key to exit from copy mode.
7. To print other test patterns, repeat steps 2 to 6.
8. When finished, exit SP mode.

| No. | Test Pattern                                                                                                                          |
|-----|---------------------------------------------------------------------------------------------------------------------------------------|
| 0   | Blank                                                                                                                                 |
| 1   | Horiz. lines (1-dot printed line, 1-dot blank line, alternating)                                                                      |
| 2   | Horiz. lines (1-dot printed line, 2-dot blank line, alternating)                                                                      |
| 3   | Horiz. Lines (2-dot printed line, 1-dot blank line, alternating)                                                                      |
| 4   | Horiz. Lines (2-dot printed line, 2-dot blank line, alternating)                                                                      |
| 5   | Grid (1-dot line thickness)                                                                                                           |
| 6   | Grid (2-dot line thickness)                                                                                                           |
| 7   | Alternating dots (1 horiz. line of repeating 1 dot printed, 2 dots blank; followed by 2 horizontal lines completely blank; repeating) |
| 8   | Solid Black                                                                                                                           |
| 9   | —                                                                                                                                     |
| 10  | Trimming Area                                                                                                                         |
| 11  | Grayscale, 2 x 2-dot [Horizontal line of repeating 2 dots printed, 2 dots blank; printed every other line.]                           |
| 12  | Grayscale, 4 x 4-dot [Horizontal line of repeating 4 dots printed, 4 dots blank; printed every 4th line.]                             |
| 13  | —                                                                                                                                     |
| 14  | —                                                                                                                                     |
| 15  | —                                                                                                                                     |
| 16  | —                                                                                                                                     |
| 17  | —                                                                                                                                     |
| 18  | —                                                                                                                                     |
| 19  | —                                                                                                                                     |

| No. | Test Pattern                                             |
|-----|----------------------------------------------------------|
| 20  | —                                                        |
| 21  | Diagonal line pattern, ascending (1-dot width) [600dpi]  |
| 22  | Diagonal line pattern, ascending (2-dot width) [600dpi]  |
| 23  | Diagonal line pattern, descending (1-dot width) [600dpi] |
| 24  | Diagonal line pattern, descending (2-dot width) [600dpi] |
| 25  | Diagonal line pattern, ascending (1-dot width) [400dpi]  |
| 26  | Diagonal line pattern, ascending (2-dot width) [400dpi]  |
| 27  | Diagonal line pattern, descending (1-dot width) [400dpi] |
| 28  | Diagonal line pattern, descending (2-dot width) [400dpi] |
|     | —                                                        |
| 51  | Vertical-line VPM (DFU)                                  |
| 52  | Horiz.-line VPM (DFU)                                    |
| 53  | Diagonal-line VPM (DFU)                                  |
| 54  | Grayscale VPM (DFU)                                      |

### 5.1.3 INPUT CHECK (SP5-803)

|                         |
|-------------------------|
| Input Check<br>Code : 0 |
|-------------------------|

1. Access SP5-803.
2. Select the number that will access the switch or sensor you wish to check (see the table below).
3. Check the status of the sensor or switch.
4. If you wish to check the signal during a copy cycle, select the required copy mode, then press .
5. The LCD panel will display "00H" or "01H", as shown below.

|                         |
|-------------------------|
| Input Check<br>Code : 0 |
|-------------------------|

The following table shows the meaning of the value displayed for each switch and sensor.

**Input Check Table**

| Number | Description                                 | Reading               |                   |
|--------|---------------------------------------------|-----------------------|-------------------|
|        |                                             | 00H                   | 01H               |
| 1      | DF registration sensor                      | No paper              | Paper detected    |
| 3      | DF original set sensor                      | No paper              | Paper detected    |
| 12     | Scanner HP sensor                           | Not at home           | At home           |
| 13     | Platen cover sensor                         | Platen cover closed   | Platen cover open |
| 15     | Registration sensor                         | No paper              | Paper detected    |
| 16     | Exit Sensor                                 | No paper              | Paper detected    |
| 17     | Front door switch                           | Door closed           | Door open         |
| 18     | Right door switch                           | Door closed           | Door open         |
| 23     | Mechanical counter sensing                  | Counter not installed | Counter installed |
| 35     | Paper end sensor (standard tray)            | Paper not detected.   | Paper detected.   |
| 44     | Paper end sensor (optional paper tray unit) | No paper              | Paper detected    |
| 88     | Bypass paper end sensor (100-sheet bypass)  | No paper              | Paper detected    |



### 5.1.4 OUTPUT CHECK (SP5-804)

|                                  |
|----------------------------------|
| Output Check                     |
| Code:            0    Data:    0 |

**CAUTION:** To avoid mechanical or electrical damage, do not leave electrical components on continuously for a prolonged period of time.

1. Access SP5-804.
2. Select the number that corresponds to the component you wish to check (see the table below), then press *OK* or  $\text{R/\#}$ .
3. Press “1”, then press *OK* or the  $\text{R/\#}$  key to check that component.
4. To interrupt the test, re-enter SP 5-804 and enter a value of “0”.

#### ***Input Check Table***

| Number | Description                          |
|--------|--------------------------------------|
| 1      | Polygon mirror motor (400 x 400 dpi) |
| 2      | Polygon mirror motor (600 x 600 dpi) |
| 3      | Main motor                           |
| 4      | Fan motor (slow)                     |
| 5      | Fan motor (fast)                     |

### 5.1.5 SMC PRINTING (SP5-992)

1. Access SP5-992.
2. Select the type of data you wish to print: "1" to print SP settings only, "2" to print all system parameters (including SP settings), or "3" to dump a selected memory range.
3. If you selected "3", press the *OK* key and then use the cursor and numeric keys to enter the address range to be dumped.
4. Press  to access the copy mode display.
5. Select the print conditions (paper size, print density, etc).
6. Press  again to print the list.
7. Press  to exit from copy mode.
8. Press  as necessary to exit this SP.

**NOTE:** This report only requires the copier to print. it does not need the printer or fax option to generate the report.

### 5.1.6 MEMORY ALL CLEAR (SP5-801)

Executing a Memory All Clear will reset all SRAM-resident SP and UP settings and values to their defaults—with the exception of the serial number setting (SP5-811), the plug-and-play settings (SP5-907), and the total print counters (SP7-003). This procedure is not for normal use, but may be appropriate if the copier has malfunctioned as a result of a problem with its SRAM.

1. Before clearing the memory clear, you should do both of the following to save current SRAM data (if possible).
  - Print a complete SMC printout using SP5-992. Be sure to select all "2" ("All") for the printout type. (☛ 5.1.5)
  - Upload the data to a flash memory card using SP5-824. (☛ 5.1.9)
2. Access SP5-801.
3. Hold down the *Original Type* key and press the *OK* key (or  $\text{R}\#$ ) key) to execute the clear. If the clear is successful, the display shows "Action completed". If it fails, the display shows "Error!!!".
4. Turn the main switch off and back on.
5. If you save SRAM data to a flash-memory card, try downloading the data back into the machine (☛ 5.1.9). If the download is successful, this completes the procedure.

*If you did not save SRAM data to a flash memory card, or if you were unable to download the saved data, then continue as follows.*

6. Carry out printer and scanner registration and magnification adjustments. (☛ 3.13)
7. Carry out auto-scanner (white-level) adjustment, using SP4-908.
8. Refer to the SMC printout, and re-enter any values that differ from the factory settings.
9. Check the copy quality, and carry out any necessary adjustments.

### 5.1.7 FREE RUNS

SP mode offers a variety of free-run operations, as indicated below. Please keep in mind that prolonged or unnecessary use of free runs can cause machine wear or other problems. Select the free run that drives only those parts that you specifically need to check.

| Name                  | SP      | Scanner / ADF |          |               | Plotter        |             | Remark                             |
|-----------------------|---------|---------------|----------|---------------|----------------|-------------|------------------------------------|
|                       |         | Book Motor    | ADF feed | Exposure Lamp | Paper printout | Fusing Lamp |                                    |
| Fusing Nip Band Check | SP1-109 | Off           | Off      | Off           | Runs           | Runs        | <b>Factory use only</b>            |
| Scanner Free Run      | SP4-013 | Runs          | Off      | Runs          | Off            | Off         |                                    |
| Free Run              | SP5-802 | Runs          | Off      | Runs          | Runs           | Runs        | These two free runs are identical. |
| Printer Free Run      | SP5-901 | Runs          | Off      | Runs          | Runs           | Runs        |                                    |
| ADF Free Run          | SP6-009 | Off *         | Runs     | Runs          | Off            | Off         |                                    |
| ADF/Printer Free Run  | SP6-910 | Off *         | Runs     | Runs          | Runs           | Runs        |                                    |

\*The motor comes on briefly to move the scanner to the scanning position.

### 5.1.8 PROGRAM UPLOAD/DOWNLOAD

The program (firmware) for this machine is upgraded using a 4MB flash memory card. The machine provides the following two SPs to support program porting and upgrade:

- SP5-826: Uploads the program from the machine's flash ROM to a flash memory card.
- SP5-827: Downloads the selected program from a flash memory card to the machine's flash ROM.

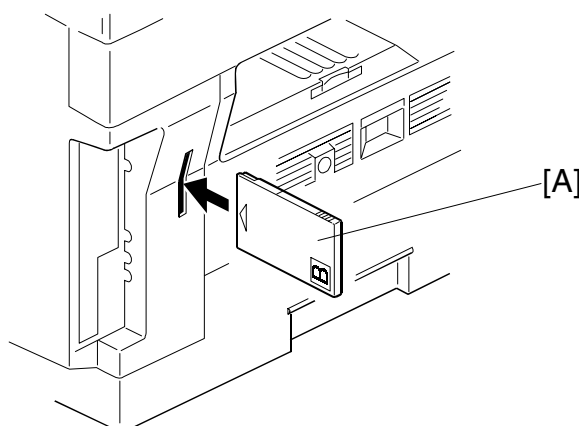
Since the program size is only 2MB, it is possible to carry two different program versions on a single card, and selectively download either one of these. If you wish to carry two different programs on the same card, write one of these programs into card address space 000000h to 1FFFFFFh, and write the other one into address space 200000h to 3FFFFFFh.

#### ***Program Download (SP5-827)***

This SP is effective only if you boot the machine from the flash memory card as described below. If the download is unsuccessful, or if you decide that you do not wish to start the download, please turn the machine off and back on before resuming normal operation.

**NOTE:** Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.

1. Turn off the main switch.
2. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine.



## USING SERVICE PROGRAM MODE

3. Hold down the *Operation Switch* and turn on the main switch.  
**NOTE:** If the card does not contain a valid program, the machine will not start.
4. The machine boots from the card, automatically enters SP5-827, and displays the following.

|                  |   |
|------------------|---|
| Program Download |   |
| (1:1st 2:2nd)    | 0 |

5. If you wish to load the program stored in first half of the card (in card space 000000h to 1FFFFFh), enter "1". If you wish to load the program stored in second half of the card (space 200000h to 3FFFFFFh), enter "2". Then press *OK* to start the download.  
**NOTE:** If you enter "0" (the default) instead of "1" or "2", the machine moves back to the top-level SP5-827 screen. If you enter "1" or "2" but the corresponding card space does not contain a valid program, the machine displays "Loading error!!!".
6. The machine erases the current firmware, then begins downloading the new firmware from the card. The "ON" lamp flashes, and the screen counts down the progress. The download takes about 3 minutes.  
**NOTE:** If downloading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
7. After completing the download, turn off the main switch and remove the memory card.
8. Turn the switch back on, and run SP5-837 to check the checksums for the new firmware. Then run SP7-801-1 to confirm that it correctly displays the new firmware version.  
**NOTE:** Be sure to remove the card and turn the main switch off and back on before running the above SPs.

Display during download:

|                  |           |
|------------------|-----------|
| Program Download |           |
| 1                | : 2089024 |

[A]: "0" = erasing flash ROM  
"1" or "2" = writing to flash ROM  
("1" if you selected "1st";  
"2" if you selected "2nd".)

[B]: Amount (bytes) remaining  
to be written

[A]

[B]

### ***Program Upload (SP5-826)***

- NOTE:**
- 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.
  - 2) This operation will erase any data already stored in the flash memory card.

1. Turn off the main switch.
2. Insert the flash memory card into the card slot, with the card's "A" side facing the front of the machine "B" side facing the rear of the machine. (See illustration on page 5-29.)
3. Turn on the main switch.
4. Access SP 5-826.
5. Enter "1" at the keypad, and then press *OK*.
6. The machine erases the card, and then writes the program into it. The "ON" lamp flashes, and the screen counts down the progress. Uploading takes about 2 minutes. On successful completion, the screen displays "Loading completed."  
**NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
7. Turn off the main switch, then remove the memory card.

Display during upload:

- [A]: "10" = erasing card  
 "11" = writing to card  
 [B]: Amount (bytes) remaining to be written

|                |           |
|----------------|-----------|
| Program Upload |           |
| 11             | : 2086914 |

[A]                      [B]

Service  
Tables

### 5.1.9 SRAM DATA UPLOAD/DOWNLOAD

Before installing a new FCU, and before executing a "memory all clear," you should upload all current SRAM data into a flash memory card. You can then download the data back after completing the FCU replacement or memory clear.

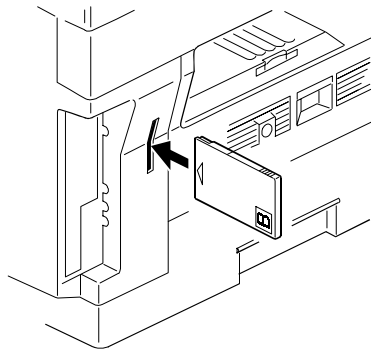
- SP5-824: Upload from the machine's SRAM to a flash memory card.
- SP5-825: Download from a flash memory card to the machine's SRAM

#### ***SRAM Data Upload (SP5-824)***

**NOTE:** 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.

2) This operation will erase any data already stored in the flash memory card.

1. Turn off the main switch.
2. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine.



3. Turn on the main switch.
4. Access SP 5-824.
5. Enter "1" at the keypad, and then press *OK* or  $\text{R/\#}$
6. The machine erases the card, and then saves its SRAM data into it. The "ON" lamp flashes, and the screen counts down the progress. Uploading takes about 30 seconds. On successful completion, the screen displays "Loading completed."

**NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.

7. Turn off the main switch, then remove the memory card.

Display during upload:

- [A]: "10" = erasing card  
 "11" = saving to card  
 [B]: Amount (bytes) remaining

|                  |          |
|------------------|----------|
| SRAM Data Upload |          |
| 11               | : 120834 |
| [A]              | [B]      |



### SRAM Data Download (SP5-825)

**NOTE:** 1) Be sure to turn off the main switch before inserting or removing the flash memory card. Installing or removing a card while the main switch is on may damage the FCU.

2) This operation will overwrite all of the machine's current SRAM data.

1. Turn off the main switch.
2. Insert the flash memory card [A] into the card slot, with the card's "B" side facing the rear of the machine. (See illustration on page 5-32.)
3. Turn on the main switch.
4. Access SP 5-825.
5. Enter "1" at the keypad, and then press *OK*.
6. The machine executes the download. This operation takes about 2 seconds. On successful completion, the screen displays "Loading completed."  
**NOTE:** If uploading fails, the "Loading error!!!" message appears. If this occurs, try repeating the procedure.
7. Turn off the main switch, then remove the memory card.

### 5.1.10 SERIAL NUMBER INPUT (SP5-811)

Use this SP to input the machine's 11-digit serial number. (This is normally done at the factory). Each key of the numeric keypad controls a different digit of the serial number: the first key controls the first digit, the second key controls the second digit, and so on. (The  $\text{R/\#}$  key is not used.) Press each key as many time as necessary to set the corresponding digit. To set the second digit to "X", for example, press the 2 key as many times as necessary to bring up "X" on the screen.

Note that the first four digits of the serial number may be either letters or numbers. Digits 5 to 11 are always numbers.

|            |            |           |
|------------|------------|-----------|
| ①          | ②          | ③         |
| 1st digit  | 2nd digit  | 3rd digit |
| ④          | ⑤          | ⑥         |
| 4th digit  | 5th digit  | 6th digit |
| ⑦          | ⑧          | ⑨         |
| 7th digit  | 8th digit  | 9th digit |
| ⑩/✕        | ⑩          | ⑩/✕       |
| 10th digit | 11th digit | Not used  |

### 5.1.11 ID SENSOR ERROR ANALYSIS (SP2-221)

Vg4 . 05 , Vp0 . 56 , PW59  
Vg-Vp3 . 49 , Vt2 . 16

A defective ID sensor does not generate an SC condition, but does cause the image quality to become worse (e.g., dirty background on the copy). If these conditions occur, check the ID sensor output using SP2-221. (➡ 6.11.15)

1. Vsg ("Vg" in the display)

Error Condition:  $Vsg < 1.65$

Possible causes:

- ID sensor defective
- ID sensor dirty
- Drum does not get charged

2. Vsp ("Vp" in the display)

Error Condition:  $Vsp > 1.65$

Possible causes:

- Toner density is very low
- ID sensor pattern is not being generated

3. Power ("PW" in the display)

This is the power for the light source of the ID sensor.

Error Condition:  $Vsg < 2.31$  at maximum power

Possible causes:

- ID sensor defective
- ID sensor dirty
- Drum does not get charged

4. Vsdp ("Vg-Vp" in the display)

No Error Conditions

5. Vt

Error Condition:  $Vt > 2.64$  or  $Vt < 0.20$

Possible cause:

- TD sensor defective

### 5.1.12 MEMORY READ/WRITE

You can use SP7-955 to read byte values from arbitrary RAM addresses, and to write values to arbitrary RAM addresses.

When you enter this SP, the screen looks like this:

|                       |
|-----------------------|
| Mem R/W (1byte)       |
| Adr=800000    Data=00 |

You can now operate the SP as follows.

- To manually enter an address or data value: Use the cursor keys to move to the desired column in the Adr field. Use numeric keys to input number values 1 to 9, and [*Original Type* + numeric keys "1" to "6"] to input number values A to F.
- After entering an address value, press OK (or ) to set the value. The Data field will then display the current content of the entered address. The cursor will jump to the Data field.
- To increment or decrement the address, use the density keys (or *Original Type* + cursor keys). The Data value will change to show the content of the selected address.
- When the cursor is in the Data field, you can enter a new value to be stored into the selected address. Press OK (or ) to write the new value into the address. The cursor will then return to the Address field.
- If you are in the Data field, pressing Cancel will move you to the address field. If you are in the address field, pressing Cancel will exit this SP.
- To cancel an entry in progress (and restore the previous value), press . To exit the SP, press the *Clear Modes* key.

## 5.2 USER TOOLS

The User Tools are accessed by users and key operators and by sales and service staff. User Tools are used to input or change the copier's default settings, or to view counter values.

### 5.2.1 HOW TO ENTER AND EXIT USER TOOLS

Press the User Tools button, then select the User Tools program. When you have finished the User Tools program, press the User Tools button to exit.

### 5.2.2 USER TOOLS TABLE

***System Settings Table***

|                           |                                       |           |
|---------------------------|---------------------------------------|-----------|
| <b>2. System Settings</b> | 1. Function Priority                  |           |
|                           | 2. Copy Count Display                 |           |
|                           | 3. System Reset                       |           |
|                           | 4. Energy Saver Timer                 |           |
|                           | 5. Energy Saver Level                 |           |
|                           | 6. Auto Off Timer                     |           |
|                           | 7. AOF (Keep It On.)                  |           |
|                           | 8. Tray Paper Size                    | 1. Tray 1 |
|                           |                                       | 2. Tray 2 |
|                           |                                       | 3. Bypass |
|                           | 9. Paper Tray Priority                |           |
|                           | 10. Auto Tray Switch<br>(B044/6 only) |           |
|                           | 11. Display Contrast                  |           |
|                           | 12. Measurement Unit                  |           |

**NOTE:** For information about the "AOF (Keep It On.)" setting, see System Settings in Section 6.

***Copy Features Table***

|                         |                         |                         |
|-------------------------|-------------------------|-------------------------|
| <b>2. Copy Features</b> | 1. Max. Copy Q'ty       |                         |
|                         | 2. Image Adjustment     | 1. Text                 |
|                         |                         | 2. Photo                |
|                         | 3. Set Ratios           |                         |
|                         | 4. Copy Reset Timer     |                         |
|                         | 5. Original Orientation |                         |
|                         | 6. Bypass Paper Type    |                         |
|                         | 7. Key Operator Tools   | 1. User Code Access     |
|                         |                         | 2. Check Copy Counter   |
|                         |                         | 3. Print Counter List   |
|                         |                         | 4. Reset Counter        |
|                         |                         | 5. Clear All User Codes |
|                         |                         | 6. Reset All Counters   |
|                         |                         | 7. Program User Code    |
|                         |                         | 8. Change User Code     |
|                         |                         | 9. Delete User Code     |

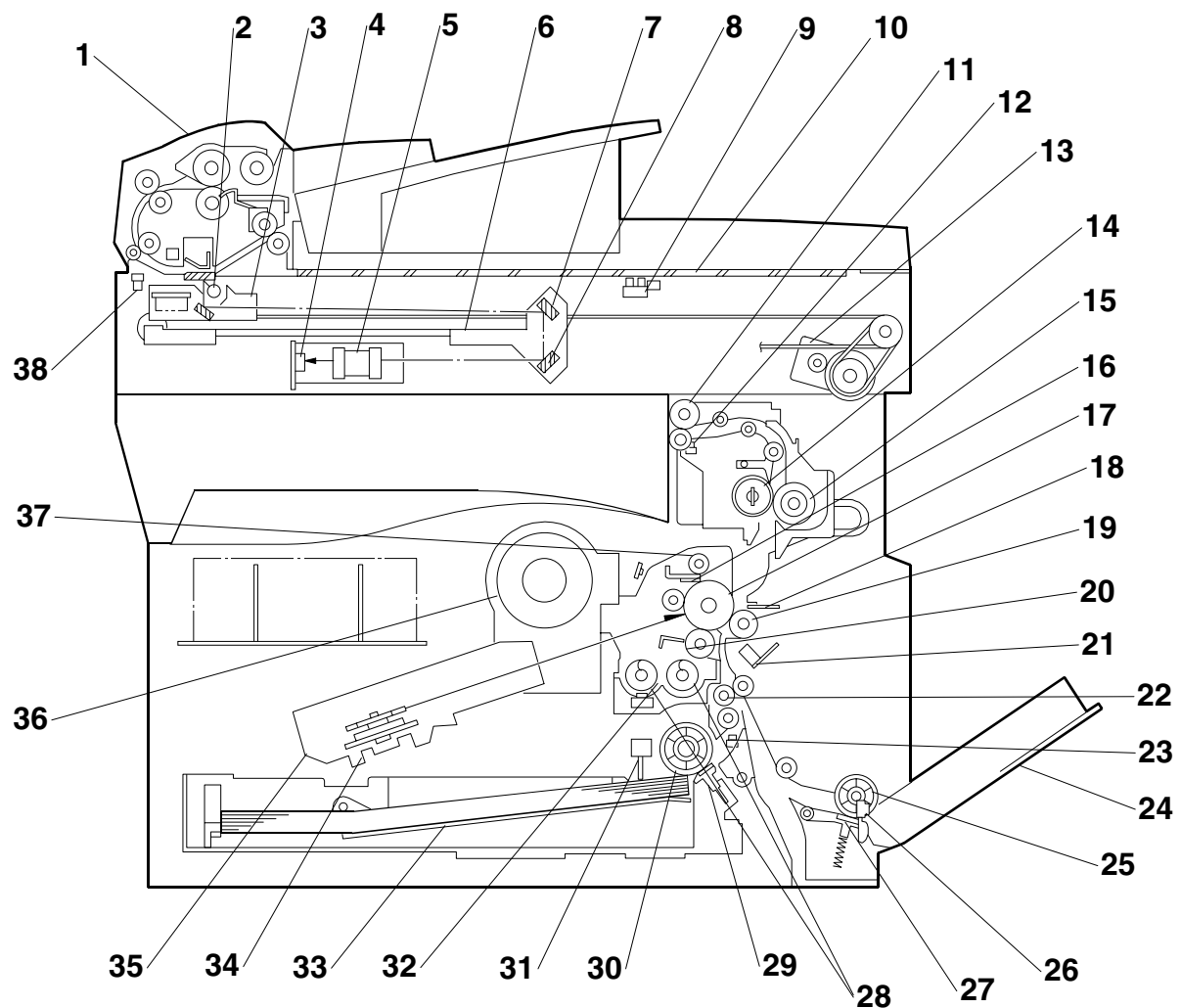
## **DETAILED DESCRIPTIONS**



## 6. DETAILED SECTION DESCRIPTIONS

### 6.1 OVERVIEW

#### 6.1.1 COMPONENT LAYOUT

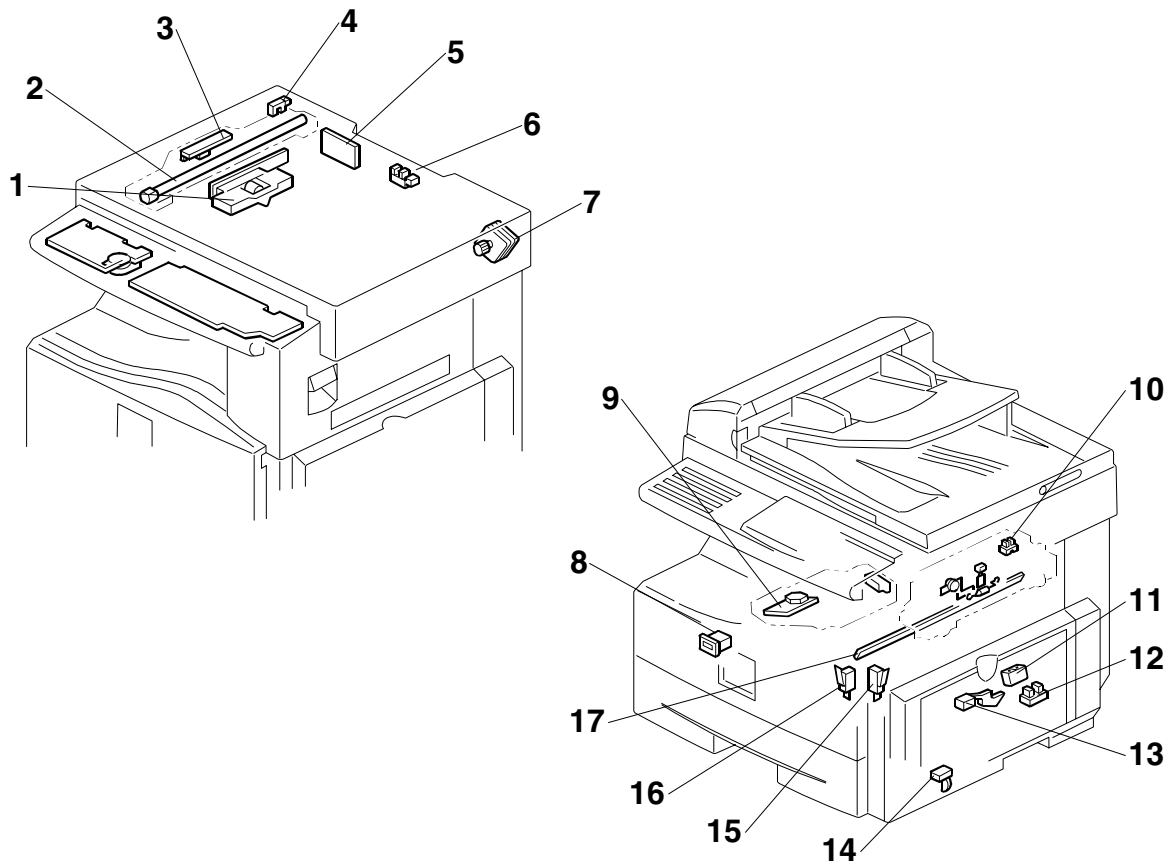


**NOTE:** The above illustration shows model B046. Model B045 has 1-sheet bypass only (no bypass paper feed roller and bypass friction pad). Models B044 and B045 do not include the ADF as standard.

## OVERVIEW

1. ADF
2. Exposure Lamp
3. 1st Scanner
4. CCD (on SBU)
5. Lens Block
6. 2nd Scanner
7. 2nd Mirror
8. 3rd Mirror
9. Platen Cover Sensor
10. Exposure Glass
11. Exit Roller
12. Exit Sensor
13. Scanner Motor
14. Hot Roller
15. Pressure Roller
16. Cleaning Blade
17. OPC Drum
18. Discharge Plate
19. Transfer Roller
20. Development Roller
21. ID (Image Density) Sensor
22. Registration Roller
23. Registration Sensor
24. Bypass Tray
25. Bypass Paper Feed Roller
26. Bypass Paper End Sensor
27. Bypass Friction Pad
28. Mixing Augers
29. (Main) Friction Pad
30. Paper Feed Roller
31. Paper End Sensor
32. TD (Toner Density) Sensor
33. Bottom Plate
34. Polygon Mirror Motor
35. Laser Unit
36. Toner Supply Bottle (or THM)
37. Toner Collection Coil
38. Scanner HP Sensor





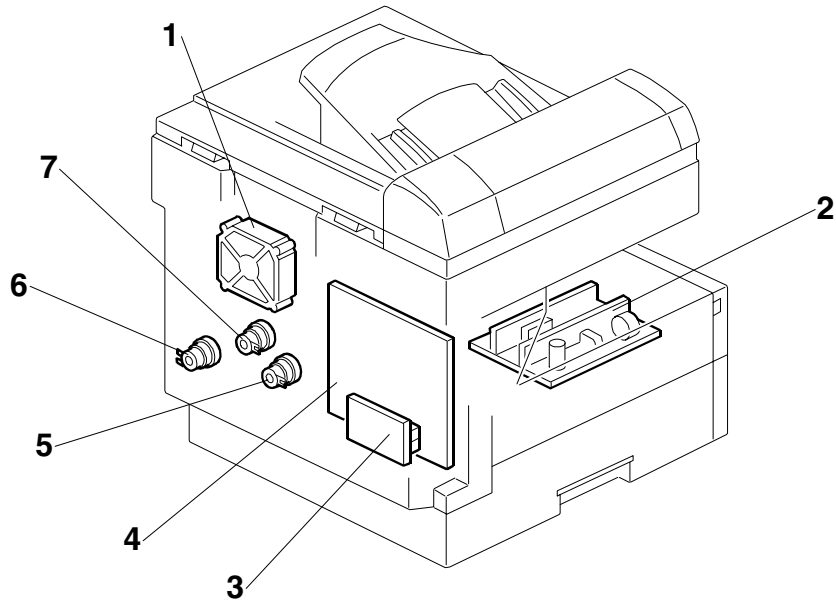
- |                                      |                                           |
|--------------------------------------|-------------------------------------------|
| 1. Lens Block                        | 10. Exit Sensor                           |
| 2. Exposure Lamp                     | 11. ID (Image Density) Sensor             |
| 3. Lamp Stabilizer Board             | 12. Registration Sensor                   |
| 4. Scanner HP Sensor                 | 13. Paper End Sensor                      |
| 5. DF Connection Board* <sup>1</sup> | 14. Bypass Paper End Sensor* <sup>3</sup> |
| 6. Platen Cover Sensor               | 15. Right Door Safety Switch              |
| 7. Scanner Motor                     | 16. Front Door Safety Switch              |
| 8. Mechanical Counter* <sup>2</sup>  | 17. Quenching Lamp                        |
| 9. Polygon Mirror Motor              |                                           |

\*1: DF connection board is standard on B046 only.

\*2: Mechanical counter is standard on B044 and B046 only.

\*3: Bypass paper end sensor is included on 100-sheet bypass models only (B044 and B046).

## OVERVIEW



1. Exhaust Fan

2. PSU

3. NCU\*<sup>1</sup>

4. FCU

5. Paper Feed Clutch

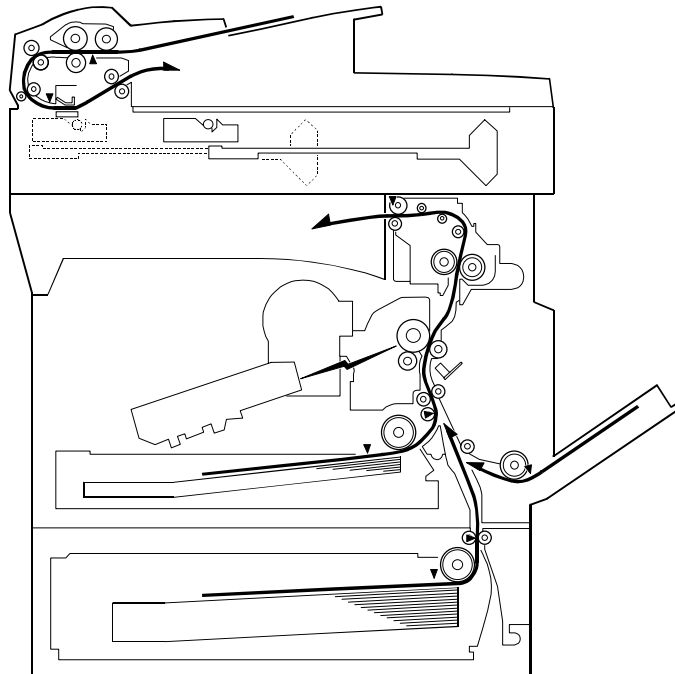
6. Bypass Feed Clutch\*<sup>2</sup>

7. Registration Clutch

\*1: NCU is standard on fax-equipped models only (B046).

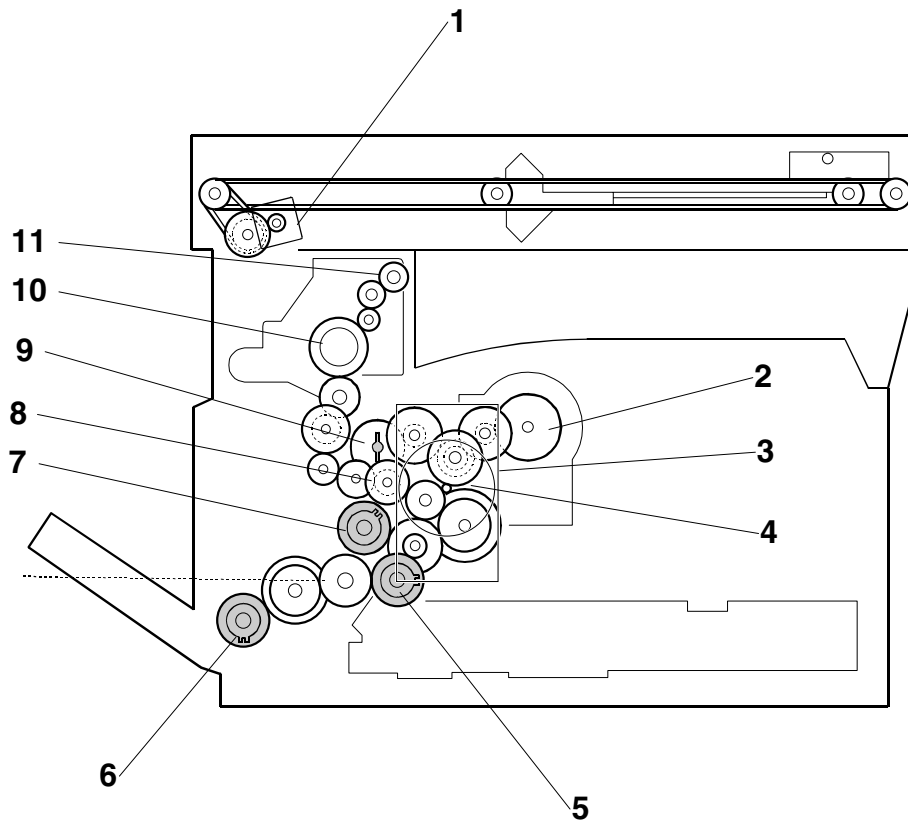
\*2: Bypass feed clutch is included on 100-sheet bypass models only (B044 and B046).

## 6.2 PAPER PATH



**NOTE:** The illustration shows model B046. Model B045 has 1-sheet bypass only (no bypass paper feed roller and no bypass friction pad). The paper tray unit shown above is an option for B044 and B046, and is not available on B045.

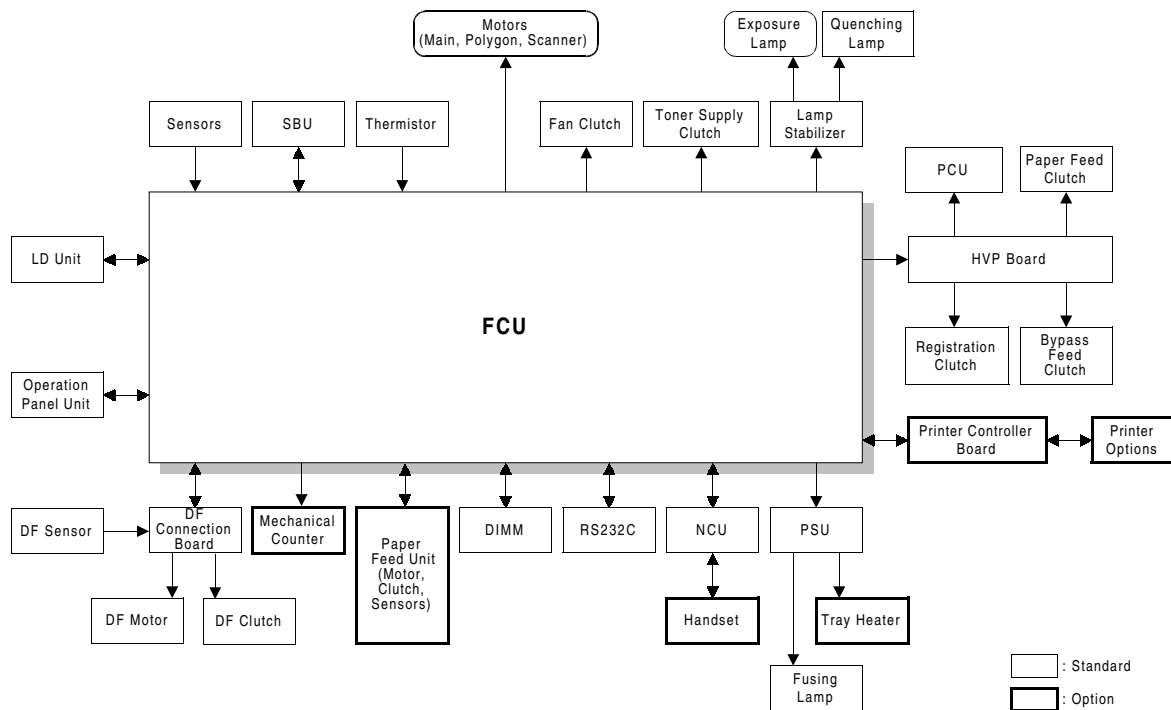
## 6.3 DRIVE LAYOUT



- |                                     |                          |
|-------------------------------------|--------------------------|
| 1. Scanner Motor                    | 7. Registration Clutch   |
| 2. Toner Bottle (or THM) Clutch     | 8. Developer Driver Gear |
| 3. Main Motor (board)               | 9. Drum Drive Gear       |
| 4. Main Motor (drive shaft)         | 10. Fusing Drive Gear    |
| 5. Paper Feed Clutch                | 11. Exit roller          |
| 6. Bypass Feed Clutch* <sup>1</sup> |                          |

\*1: Bypass feed clutch is included on 100-sheet bypass models only (B044 and B046).

## 6.4 BLOCK DIAGRAM: PCBs AND COMPONENTS

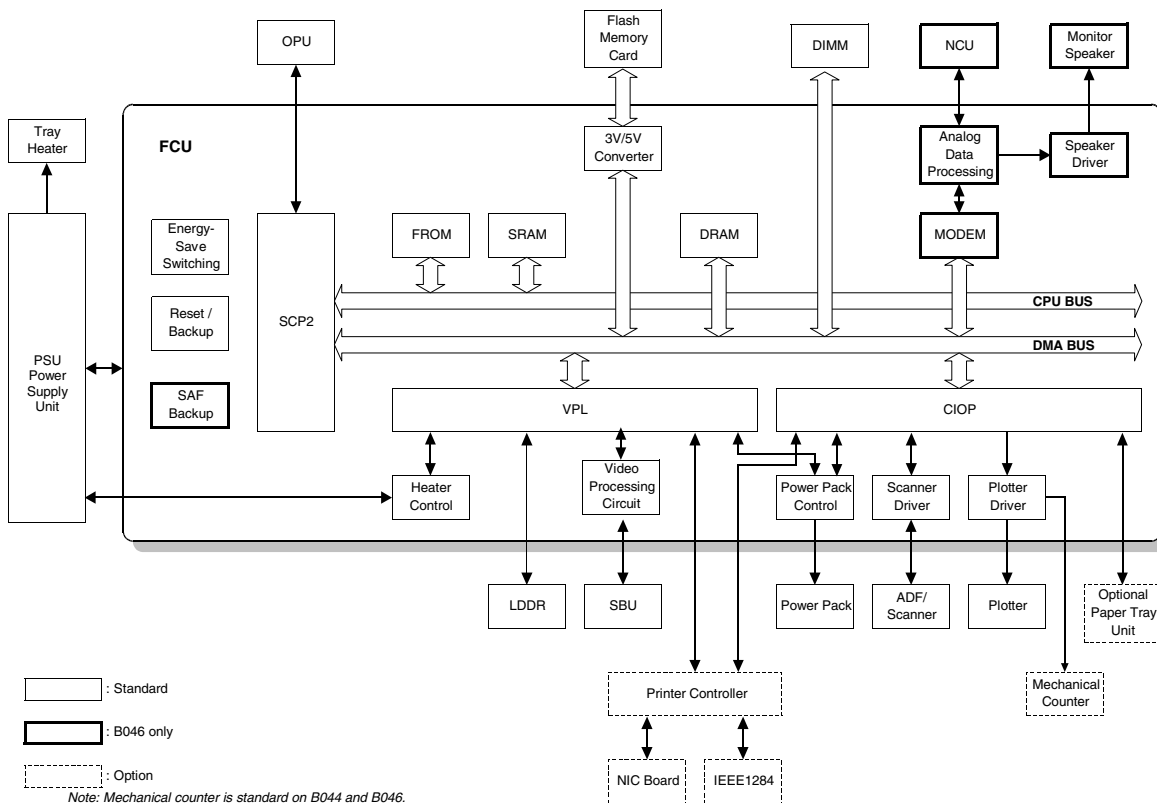


**NOTE:** The DF connection board, NCU, and speaker are standard on fax-equipped models (B046), and optional on B044 and B045.

## 6.5 MAIN PCBs

### 6.5.1 FCU (FUNCTION/FACSIMILE CONTROL UNIT)

The FCU is the machine's main controller. It controls scanning, printing, fax operations (B046 only), image processing, power-mode switching, and it interfaces with standard and optional peripherals and with the user. It holds the machine's FROM, SRAM, and DRAM, and provides the slot for the optional DIMM. Note that fax-related components are not included on FCUs that ship on models B044 and B045.



**SPC2**

The machine's CPU utilizes a dual bus structure (CPU bus and DMA bus), and includes DMA, DCR, JBIG, and energy-saver control circuits.

**VPL (Video Processing LSI)**

This chip implements video processing, utilizing the following internal blocks:

- VPM (Video Processing Module)  
Implements scanning control and image processing.
- LIF (Laser Interface)  
Implements printing control and image processing

**CIOP (Communications and I/O Processing)**

Implements communication and I/O control circuits. Runs at 9.83MHz (clock signal supplied by the SPC2).

**FROM (Flash ROM) – 2MB**

The machine's program memory. Packaged in a 48-pin TSOP; 75ns access time; runs at +2.7 to +3.6 V (+3VE). The memory content can be overwritten from a flash memory card.

**DRAM – 8MB**

The machine's standard operating RAM packaged in a 54-pin TSOP; 100MHz maximum clock speed; operates at +3.3V (+3VD). Allocated as follows: 6.0K for page memory and (if applicable) ring buffer; 1M for fax SAF; 576K working RAM; 256K line buffer, 128K ECM buffer, 128K OS, 64K text SAF. On B046 machines, the SAF backup circuit will maintain DRAM content for up to about 12 hours if power outage occurs while SAF data is being stored.

**NOTE:** If optional DIMM is installed, the allocations for page memory, ring buffer, and fax SAF are different from the above, and 2.5 to 5.4K may be allocated for sort SAF.

**SRAM – 128K**

Stores users settings and usage data. Packaged in a 32-pin TSOP; 70ns access time; runs at +2.7 to +3.6 V (+3V BAT). On-board battery backup maintains memory content while power is off.

**3V/5V Converter**

Interface between the 3V output by the FCU and the 5V used by service flash card.

**Energy-Saver Switching**

Controls low-power mode switching

***Reset/Backup Circuit***

Monitors +5VE power, and issues system reset and RTC reset signals. When the main power is off, supplies power from the primary battery to SRAM and parts of the SPC2.

***SAF Backup***

Backs up DRAM for up to 12 hours if power outage occurs while SAF data is being held. (Included only on B046.)

***Analog Processing Circuit***

Implements modem filtering, 2/4-line switching, and RITONE switching. (Included only on B046.)

***Modem***

Implements a V34 modem and code. Includes a 24.6MHz modem clock. (Included only on B046.)

***Speaker Driver***

Drives the speaker for the buzzer and monitor sounds. (Included only on B046.)

***Heater Control***

Processes signals from the thermistor controlling the fusing heater.

***Video Processing Circuit***

Interface with the SBU.

***Power Pack Control***

Interface with the high-voltage power supply unit. (Implements PWM control and receives feedback.)

***Scanner Driver***

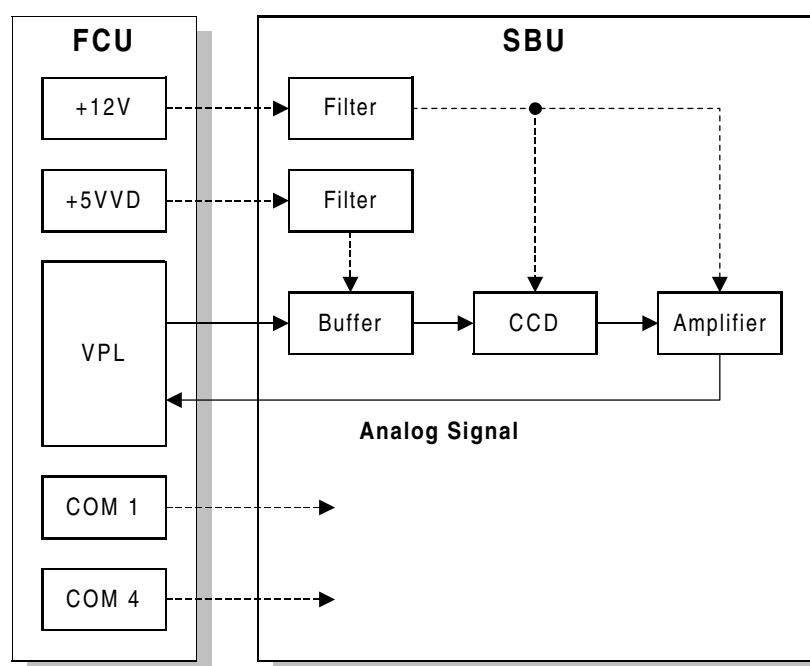
Drives the scanner and ADF motors and xenon lamp, interfaces with the HP sensor and the ADF.

***Plotter Driver***

- Drives the main and polygon motors; the feed, bypass, registration, and toner-supply clutches; the quenching lamp; and the fan.
- Interfaces with the exit, paper-end, registration, ID, and TD sensors.



## 6.5.2 SBU (SENSOR BOARD UNIT)



The SBU receives analog signals from the CCD and converts these into digital signals used for image processing.

### **Buffer**

Used for driving the CCD. Includes a 3V/5V converter (converts the VPL's 3V drive signal to 5V).

### **CCD**

Converts light reflected from the original into an electrical signal. This machine uses a Sony ILX553A (5150 pixel) CCD. Scan density is 600 dpi (for letter-size originals). Pixel size is 7 x 7 microns. Maximum pixel rate is 15Mhz.

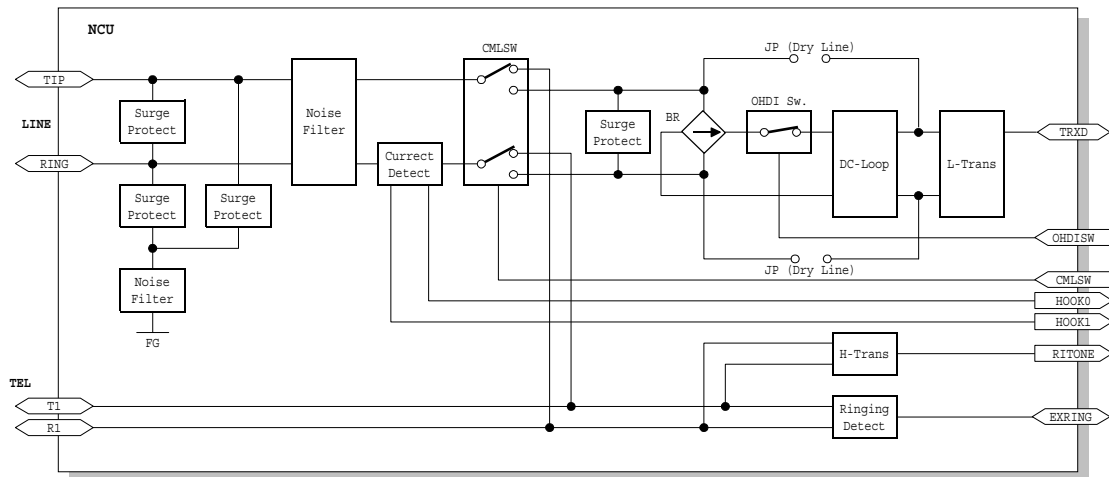
### **Amplifier**

Inverts and amplifies the electrical signal from the CCD.

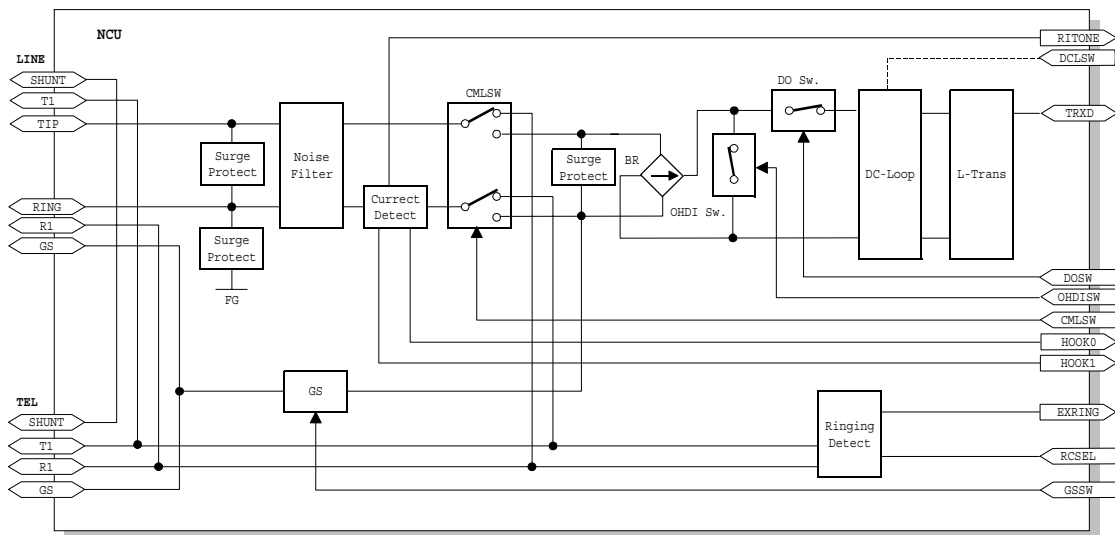
### 6.5.3 NCU (NETWORK CONTROL UNIT)

The NCU implements the interface between the fax system and the telephone network. An NCU is standard on model B046, and is included as part of the fax option for B044 and B045.

#### *North America version*



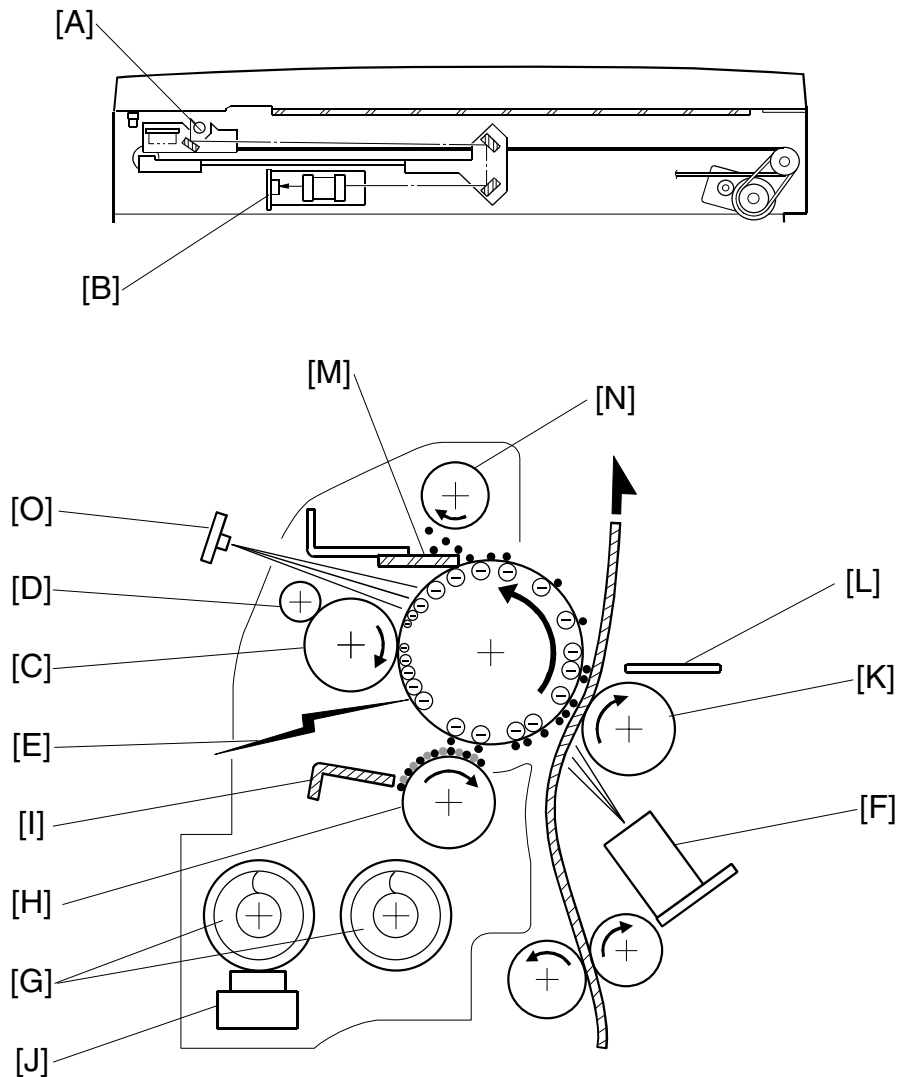
#### *Europe/Asia version*



#### *Jumper on Europe/Asia version*

|     |                                                               |
|-----|---------------------------------------------------------------|
| TB1 | Jumper TB1 must be opened on machines installed in Hong Kong. |
|-----|---------------------------------------------------------------|

## 6.6 COPY PROCESS OVERVIEW



The following is a brief overview. For more detailed information about each process, refer to the *Core Technology* manual.

### 1. EXPOSURE

A xenon lamp [A] exposes the original → the CCD [B] converts reflected light to analog data signal → the FCU converts analog signal into digital data, processes it, stores it in memory → the FCU retrieves the data from memory and uses it to drive the laser. (Each original is scanned once only.)

## COPY PROCESS OVERVIEW

### **2. DRUM CHARGE**

In the dark, the drum charge roller [C] imparts a negative charge to the OPC drum. (The roller is kept clean by cleaning roller [D].)

### **3. LASER EXPOSURE**

The laser unit, controlled by the FCU, fires a beam [E] at the drum, drawing the latent electrostatic image on the drum surface. (Exposure by laser dissipates the local negative charge.)

### **4. ID (IMAGE DENSITY) SENSOR**

The ID sensor [F] periodically measures (a) drum surface reflectivity, and (b) reflectivity of a test pattern image drawn on the drum. The FCU uses ID sensor data to adjust charge-roller voltage, and uses both ID sensor data and TD sensor [J] data to adjust the toner density.

### **5. DEVELOPMENT**

Augers at [G] carry developer (carrier/toner mix) to the magnetic development roller [H]. The roller creates a developer "brush" that rubs against the drum, causing toner to adhere to the electrostatic image. (The doctor blade [I] restricts the height of the "brush." The TD (toner density) sensor [J] measures the ratio of toner in the developer.)

### **6. IMAGE TRANSFER**

Paper moves between the drum and the transfer roller [K]. A positive charge applied to the transfer roller pulls toner off the drum and onto the paper, while also attracting the paper itself.

### **7. PAPER SEPARATION**

Paper is separated from the drum as a result of (a) electrostatic attraction of paper toward transfer roller, and (b) a high AC voltage applied to the discharge plate [L].

### **8. CLEANING**

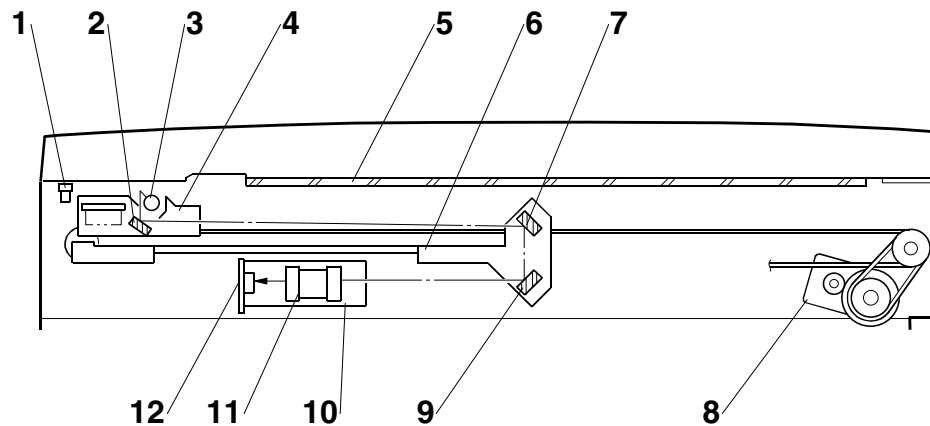
The cleaning blade [M] scrapes remaining toner from the drum, and the toner collection coil [N] retrieves this toner.

### **9. QUENCHING**

Light from the quenching lamp [O] neutralizes the charge on the drum surface.

## 6.7 SCANNING

### 6.7.1 OVERVIEW



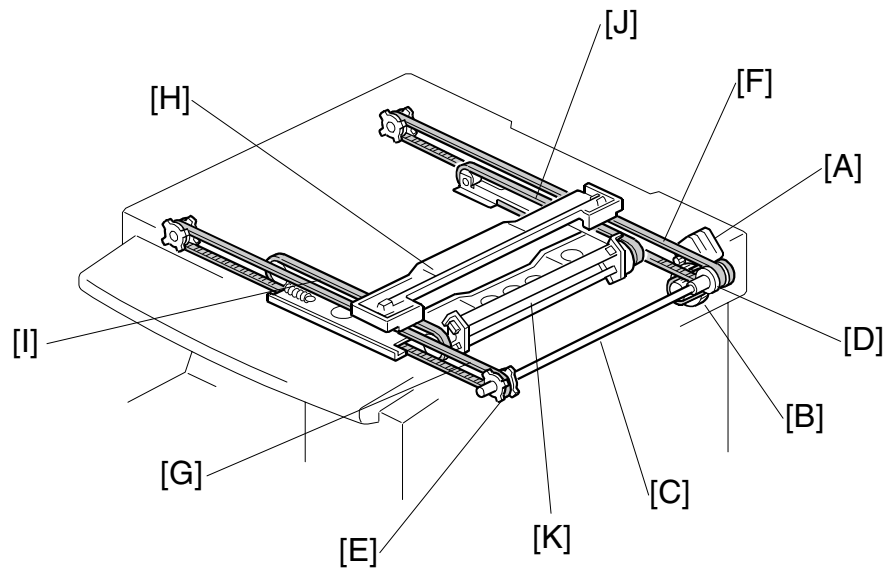
- |                      |                  |
|----------------------|------------------|
| 1. Scanner HP Sensor | 7. 2nd Mirror    |
| 2. 1st Mirror        | 8. Scanner Motor |
| 3. Exposure Lamp     | 9. 3rd Mirror    |
| 4. 1st Scanner       | 10. Lens Block   |
| 5. Exposure Glass    | 11. Lens         |
| 6. 2nd Scanner       | 12. CCD          |

The HP sensor [1] senses when the scanner is at home position, and indicates that the scanner is ready to begin a scan.

To copy: the original is illuminated by the xenon exposure lamp [2]. The 1st, 2nd, and 3rd mirrors direct the reflected light to the lens block, where the lens directs it to the CCD.

The 1st scanner includes a reflector (not shown) that helps reduce shadows on pasted originals.

## 6.7.2 SCANNER DRIVE



The scanner motor [A] (a stepper motor) drives a gear that turns a small drive belt [B], driving the scanner drive shaft [C]. Pulleys [D, E] on the ends of the shaft drive timing belts [F] and [G], driving the 1st scanner [H]. The first scanner is secured to timing belts [I] and [J], which drive the 2nd scanner [K] through the 2nd scanner's pulleys.

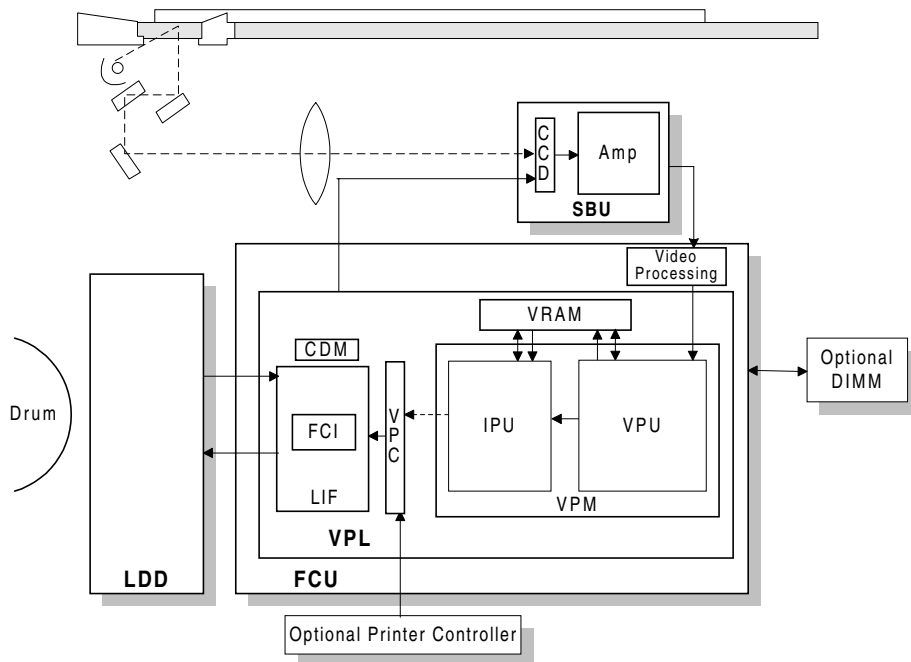
During scanning in book mode, the 2nd scanner moves at half the speed of the 1st scanner. Scanner speed increases for reduction printing, and drops for enlargement printing—generating reduction or enlargement in the sub-scan direction. (The FCU uses image processing to generate the corresponding reduction or enlargement in the main-scan direction.)

You can adjust magnification in the sub-scan direction using SP4-101 (which will adjust the motor speed). You can adjust in the main scan direction using SP4-008.

For information about scanning in DF mode, refer to the ADF manual.

## 6.8 IMAGE PROCESSING

### 6.8.1 OVERVIEW



The scanned image is processed by the following modules.

#### *In the SBU*

- **CCD:** Converts the reflected light from the image into an analog signal. Driven by the CDM (CCD Drive Module) on the VPL.
- **Amp:** Amplifies the analog signal and sends it to the VPL on the FCU as a digital signal.

#### *In the VPL chip on the FCU*

- **VPU:** Video correction (black level, shading, peak tracking and correction), image correction (gamma correction), and reduction processing (in main-scan direction). (➡ 6.8.2)
- **IPU:** Magnification processing (in main scan direction), filtering, second gamma correction (for fax only), etc. (➡ 6.8.2)
- **LIF** Smoothing, edge correction, FCI (fine character adjustment) (➡ 6.8.2)

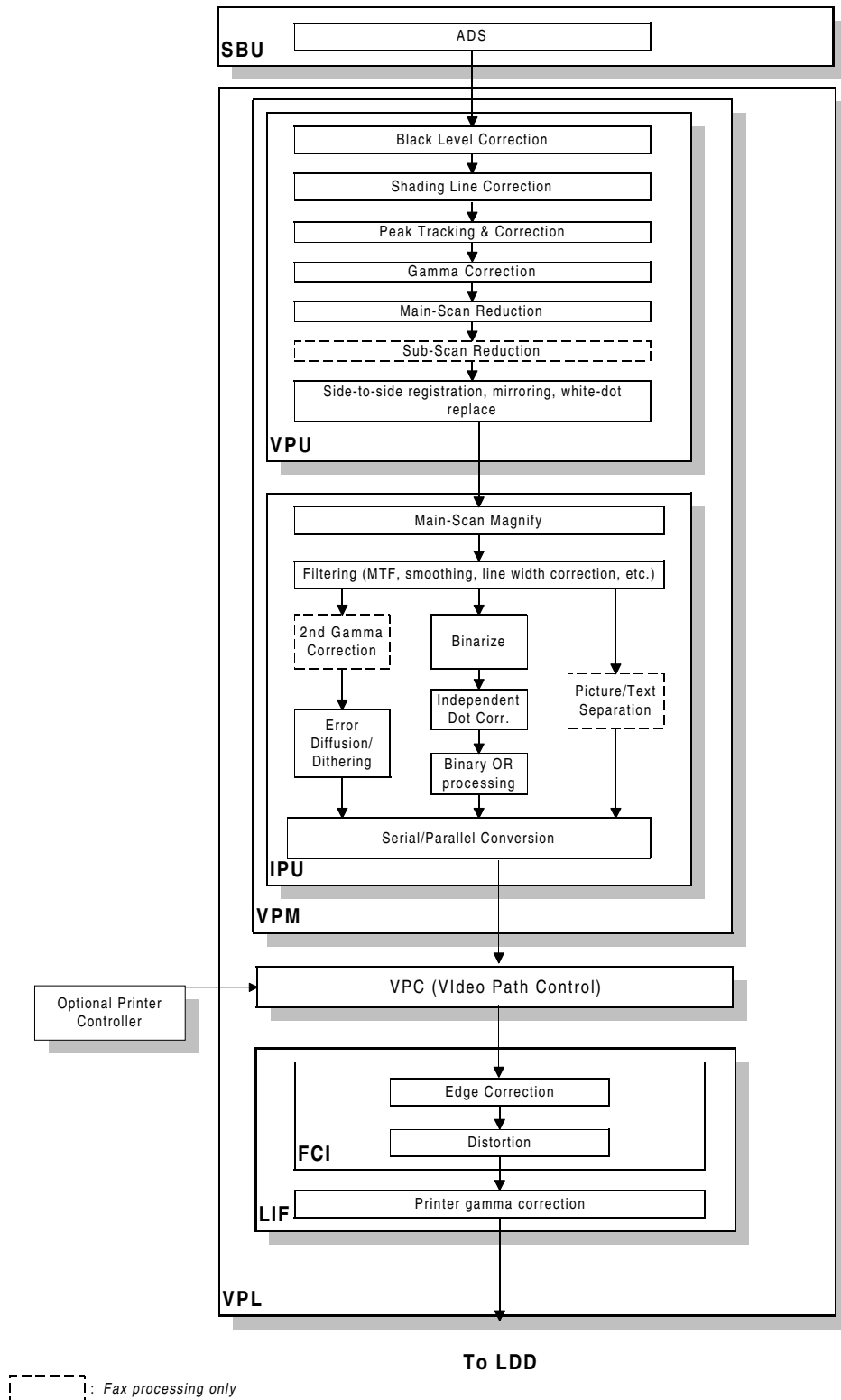
The data then moves to the LD drive board in accordance with timing controlled by the FCU.

Note the following:

- The VPU and IPU are submodules of a larger module, the VPM (Video Processing Module). The VPM includes interface components (not shown) that interface these submodules to the VRAM processing memory.
- The VPC (Video Path Control circuit) controls which signal is sent to the LIF.
- Abbreviations: SBU = Sensor Board Unit; LIF = Laser Interface; VPU = Video Processing Unit; IPU = Image Processing Unit.

## 6.8.2 IMAGE PROCESSING PATH

The diagram below shows the image processing steps. The steps that are actually performed depend on the selected original processing modes (☛ 6.8.3) and on adjustments made with the relevant SPs (☛ 6.8.5).





### 6.8.3 ORIGINAL MODES

The machine offers seven "original" modes for copy operation. Fax-equipped machines (B046) also offer four original modes for fax operation.

#### *Selection of Original Modes, for Copying*

The user selects the mode using User Tools ("3: Copier Features" → "2. Adjust Original Mode"). The user can also assign any two of these modes to the two "mode indicators" on the panel, so that they can be accessed with a single button press. (Although the upper indicator is nominally for "Text" and the lower is for "Photo," in fact the user can assign any mode to either indicator.)

#### *Selection of Original Modes, for Fax*

Before scanning, the user selects Text or Photo at the operation panel.

- *If Text:* The machine uses Text 1 (Sharp), unless a serviceperson has changed the mode to Text 2 (Dropout).
- *If Photo:* The machine uses the photo mode selected by User Parameter switch 10 bit 7 (where "0" selects Photo Normal and "1" selects Photo Smooth).

If the user is having a problem with text-mode quality, please try to resolve the problem by adjusting the settings for Text Mode 1. Do *not* try to solve the problem by changing the mode to Text Mode 2. Text Mode 2 is designed for very specific uses only (for machines that are almost exclusively used to send preprinted forms with unneeded background color), and is rarely appropriate outside of Japan.

The text mode used by the machine is determined by the value of SRAM address 410D48h. To change the text mode, you must use SP7-955 (☛ 5-1-12) to manually change the value at this address. To change to Text Mode 2 (Dropout), write 0Ah into this address. To change back to Text Mode 1 (Sharp), write 07h into this address.

**Original Modes: Copying**

| Original Type | Mode         | Also Called                 | Intended For...                                                                                                                                                                                                                                                  |
|---------------|--------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Text          | Text Mode 1  | <i>Text Normal</i>          | Normal text originals                                                                                                                                                                                                                                            |
|               | Text Mode 2  | <i>Text Sharp</i>           | For newspapers or other originals through which text on the rear side is moderately visible.                                                                                                                                                                     |
| Photo         | Photo Mode 1 | <i>Photo Priority</i>       | For photos, and for text/photo images that are primarily photographic.                                                                                                                                                                                           |
|               | Photo Mode 2 | <i>Text / Photo</i>         | For images with both text and photos                                                                                                                                                                                                                             |
| Special       | Special 1    | <i>Colored Text</i>         | For originals with colored text and lines                                                                                                                                                                                                                        |
|               | Special 2    | <i>Pixel Photos</i>         | For photo images with visible dots, such as newspaper photos. (This mode employs dithering.)                                                                                                                                                                     |
|               | Special 3    | <i>Preserved Background</i> | This mode disables automatic density adjustment. It is intended for text originals, in cases where the user wishes to retain the background. (For example, if embedded white area is causing the copier to eliminate background that the user wishes to retain.) |

**Original Modes: Fax**

| Original Type | Mode        | Also Called         | Intended For...                                                                              |
|---------------|-------------|---------------------|----------------------------------------------------------------------------------------------|
| Text          | Fax Text 1  | <i>Text Sharp</i>   | For newspapers or other originals through which text on the rear side is moderately visible. |
|               | Fax Text 2  | <i>Dropout</i>      | Stronger removal of dropout colors.                                                          |
| Photo         | Fax Photo 1 | <i>Photo Smooth</i> | Photos with visible pixels (newspaper photos, etc.)                                          |
|               | Fax Photo 2 | <i>Photo Normal</i> | Normal photos                                                                                |

## 6.8.4 IMAGE PROCESSING STEPS FOR EACH MODE

| Copier                    |  |                          |                 |                      |                 |                 |              |                      |                                           | Fax                   |                        |                 |                            | Adjust With. |  |
|---------------------------|--|--------------------------|-----------------|----------------------|-----------------|-----------------|--------------|----------------------|-------------------------------------------|-----------------------|------------------------|-----------------|----------------------------|--------------|--|
| SBU                       |  | Text                     |                 | Photo                |                 | Special         |              |                      | Text                                      |                       | Photo                  |                 | No ADS                     | SP4-922      |  |
|                           |  | Normal                   | Sharp           | Photo Priority       | Text / Photo    | Colored Text    | Pixel Photo  | Preserved Background | Sharp                                     | Dropout               | Normal                 | Smooth          |                            |              |  |
| ADS                       |  | ADS                      |                 | No ADS               | ADS             | ADS             | No ADS       |                      |                                           | ADS                   |                        | No ADS          |                            |              |  |
| Shading Correction        |  | On                       |                 | On                   |                 | On              |              |                      | On                                        |                       | On                     |                 |                            |              |  |
|                           |  | Text Normal              |                 | Text Sharp           |                 | Photo Priority  | Text / Photo |                      | Text Normal                               | Pixel Photo           | Text Normal            |                 |                            | SP4-922      |  |
| Magnification             |  | On                       |                 | On                   |                 | On              |              |                      | On                                        |                       | On                     |                 |                            |              |  |
| Mirroring                 |  | On (DF only)             |                 | On                   |                 | On              |              |                      |                                           |                       |                        |                 |                            |              |  |
| Side-To-Side Registration |  | On                       |                 | On                   |                 | On              |              |                      | On                                        |                       | On                     |                 |                            |              |  |
| Filtering                 |  | Normal                   | Strong          | Weak                 | Normal          | Normal          |              | Normal               | Normal                                    | Normal                | Normal                 | Strong          | SP4-925                    |              |  |
|                           |  |                          |                 |                      |                 |                 |              | Normal               |                                           |                       |                        | On              |                            |              |  |
|                           |  | Off                      |                 |                      | Off             | Thick           | Off          |                      |                                           |                       |                        |                 | SP4-927                    |              |  |
| 2nd Gamma Correction      |  |                          |                 |                      |                 |                 |              |                      |                                           |                       | Photo Normal           |                 |                            |              |  |
| Image Correction          |  | Gratation                | Error Diffusion | Binary               | Error Diffusion | Error Diffusion | Dither       | Error Diffusion      | Binary (AutoThresh.)                      | Binary (FixedThresh.) | Error Diffus. + Binary | Dither + Binary | SP4-926 (Error diff. only) |              |  |
|                           |  | Independent Dot Erase    |                 | On                   |                 |                 |              |                      | On                                        |                       |                        |                 | SP4-928                    |              |  |
| Video Path Control        |  | On                       |                 | On                   |                 | On              |              |                      | On                                        |                       | On                     |                 |                            |              |  |
| LIF                       |  | FCI                      |                 | On (Edge corr. only) |                 |                 |              |                      | On (Edge Correct + Distortion Prevention) |                       | Off                    |                 |                            |              |  |
|                           |  | Printer Gamma Correction | On              | On                   | On              | On              | On           | On                   | On                                        | On                    | On                     | On              | On                         |              |  |

: Not used.

ADS = Auto Image Density System removes original background such as colored paper from copied originals

Detailed  
Descriptions

## 6.8.5 MODE ADJUSTMENTS

As a service person, you can use SPs 4-922 to 4-966 to further customize each of these original modes to meet specific user requirements. If the user is experiencing a problem with copy or fax quality, however, SP-based adjustment should be the last step. Always proceed as follows:

1. First, try changing the density notch setting.  
*If that doesn't resolve the problem, then...*
2. Try selecting a different original mode.  
*If that also doesn't resolve the problem, then...*
3. Try customizing the relevant original mode with SPs.

### ***To customize...***

First use SP4-921 to select the original mode that you wish to customize. Then enter the relevant customizations using SP4-922 to SP4-966. Refer to Section 5 for general information about the adjustments you can make .

Note the following points:

- All SP settings are relative to the selected original mode. If you set the SP value to "0", the machine will use the default processing for that mode.
- If you enter an SP customization setting for an original mode that does not support that customization, the entry will have no meaning.

**Default plotter customization settings for each mode...**

The following table shows the default plotter customization settings for each original mode. For information about adjustments, refer to the SP explanations in Section 5.

| Customization: |                      | Plotter Mode  | Marking-Image Density Correction | Marking-Image Density Setting | Spot (Lone) Dot Enhance | Toner Save Level | Smoothing |
|----------------|----------------------|---------------|----------------------------------|-------------------------------|-------------------------|------------------|-----------|
| Adjust with:   |                      | SP4-961       | SP4-962                          | SP4-963                       | SP4-964                 | SP4-965          | SP4-966   |
| Image Mode     |                      | Defaults      |                                  |                               |                         |                  |           |
| Copy           | Text Normal          | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 1           | OFF       |
|                | Text Sharp           | FCI           | OFF                              | Both <sup>1</sup>             | None <sup>2</sup>       | Mask 1           | OFF       |
|                | Photo Priority       | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 2           | OFF       |
|                | Text/Photo           | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 2           | OFF       |
|                | Colored Text         | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 1           | OFF       |
|                | Pixel Photo          | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 2           | OFF       |
|                | Preserved Background | No Correction | OFF                              | Normal                        | None <sup>2</sup>       | Mask 1           | OFF       |
| Fax            | Text                 | FCI           | OFF                              | Both <sup>1</sup>             | Level 2 <sup>3</sup>    | Thin Lines       | ON        |
|                | Photo                | FCI           | OFF                              | Light edge correction         | Level 2 <sup>3</sup>    | Thin Lines       | OFF       |
| Printer        | Text                 | FCI           | OFF                              | Dense edge correction         | Level 2 <sup>3</sup>    | Mask 3           | ON        |
|                | Photo                | FCI           | OFF                              | Normal                        | Level 2 <sup>3</sup>    | Mask 3           | OFF       |

<sup>1</sup>Both = Distortion prevention + edge correction

<sup>2</sup>For copy-mode patterns, SP4-964 adjustments operate as follows.

| SP4-964 setting | Applied enhancement |
|-----------------|---------------------|
|-----------------|---------------------|

|    |         |
|----|---------|
| -2 | None    |
| -1 | None    |
| 0  | None    |
| +1 | Level 1 |
| +2 | Level 2 |

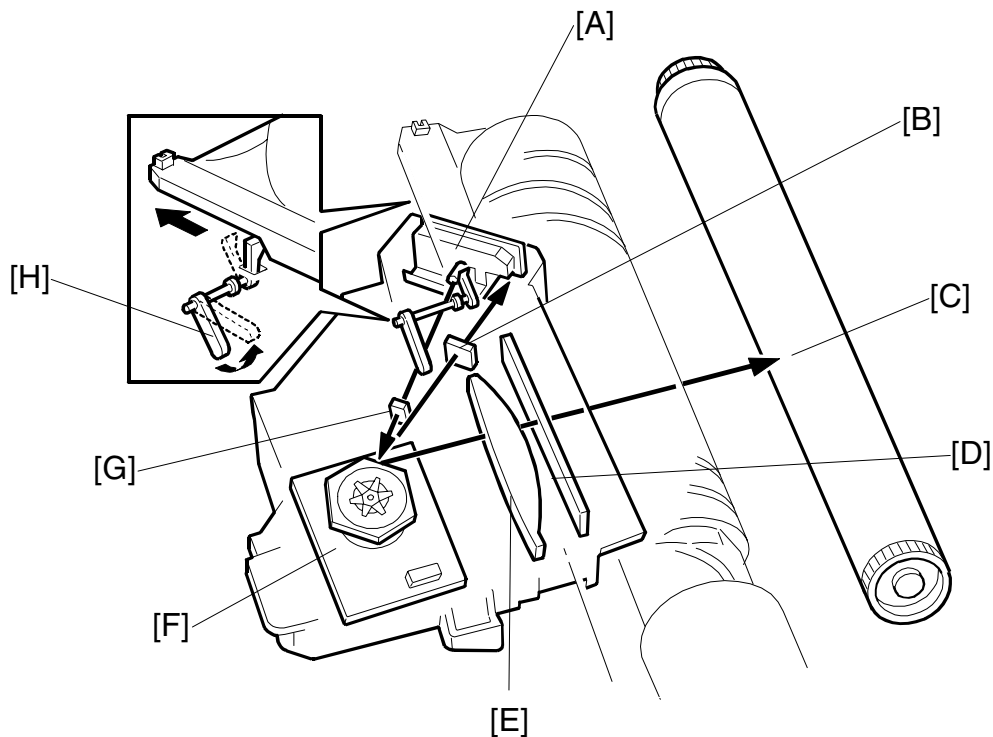
<sup>3</sup>For printer and fax patterns, SP4-964 adjustments operate as follows.

| SP4-964 setting | Applied enhancement |
|-----------------|---------------------|
|-----------------|---------------------|

|    |         |
|----|---------|
| -2 | None    |
| -1 | Level 1 |
| 0  | Level 2 |
| +1 | Level 3 |
| +2 | Level 4 |

## 6.9 LASER EXPOSURE

### 6.9.1 OVERVIEW



[A]: LD Unit

[B]: Synchronization Detector Lens

[C]: OPC Drum

[D]: Shield Glass

[E]: Toroidal Lens

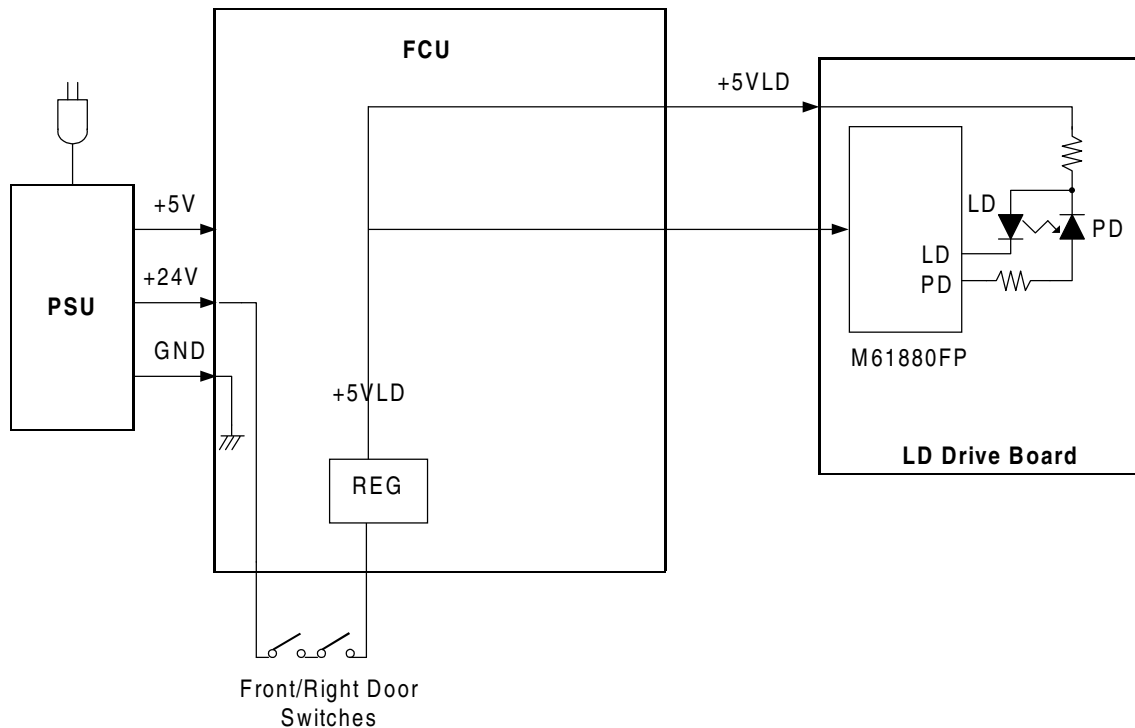
[F]: Polygon Mirror Motor

[G]: Cylindrical Lens

[H]: LD Shutter

- The LD unit controls both the laser output and the laser synchronization mechanism.
- The machine cuts the power to the LD drive board when the front door or right door is opened.
- The LD shutter blocks the laser-beam path if the toner bottle holder or THM (toner hopper magazine) is unlatched.

## 6.9.2 LD SAFETY SWITCHES

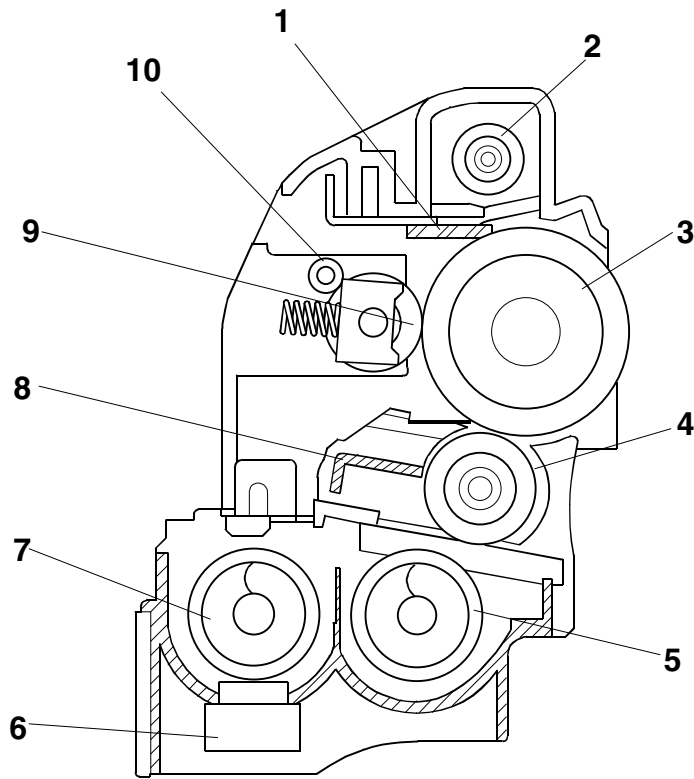


Safety switches are installed at the front and right doors to ensure technician and user safety and to prevent the laser beam from accidentally switching on during servicing. Opening of the front or right door opens the corresponding switch, cutting the power supply (+5VLD) to the laser diode.

The safety switches are installed on the +24V line coming from the power supply unit (PSU). The +24V supply must pass through these switches before converting into the +5VLD power that drives the laser.

## 6.10 PHOTOCONDUCTOR UNIT (PCU)

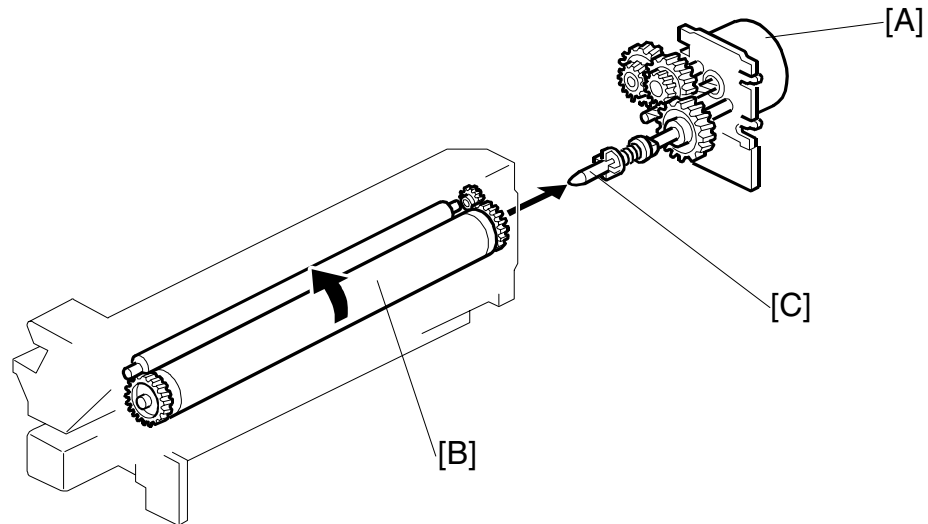
### 6.10.1 OVERVIEW



- |                          |                              |
|--------------------------|------------------------------|
| 1. Cleaning Blade        | 6. TD (toner density) Sensor |
| 2. Toner Collection Coil | 7. Mixing Auger 1            |
| 3. OPC Drum              | 8. Doctor Blade              |
| 4. Development roller    | 9. Charge Roller             |
| 5. Mixing Auger 2        | 10. Cleaning Roller          |



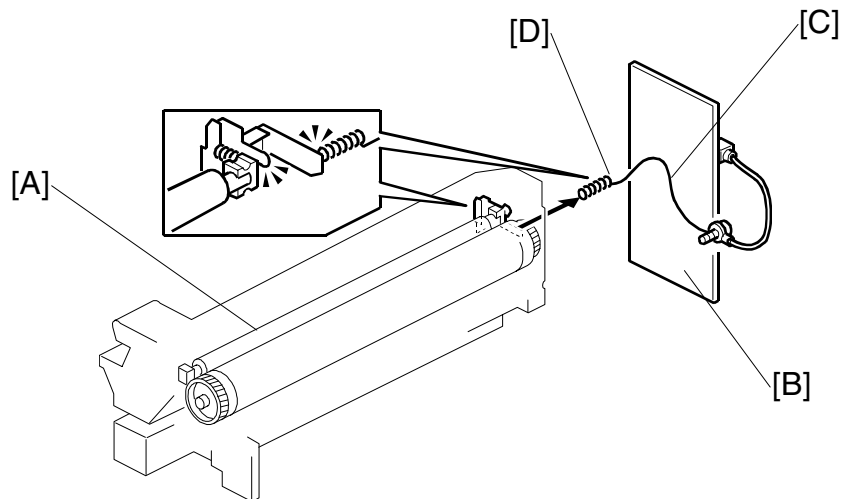
### 6.10.2 DRUM DRIVE



The main motor [A] drives the drum [B] through a series of gears and the drum drive shaft [C].

## 6.11 DRUM CHARGE

### 6.11.1 OVERVIEW

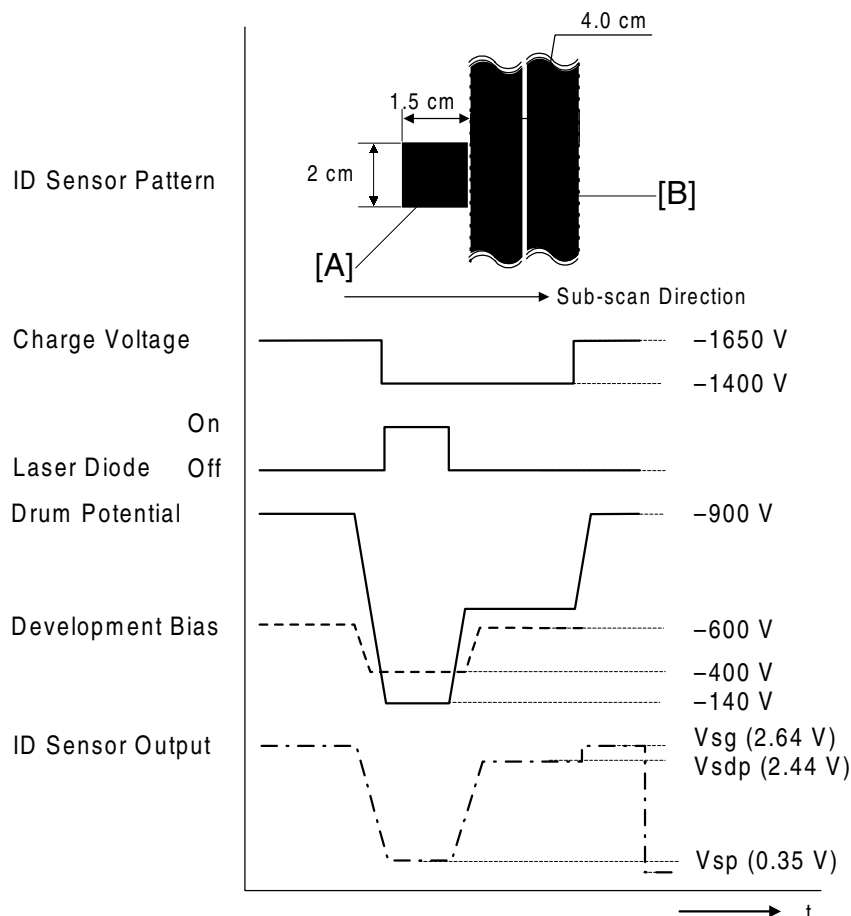


The drum charge roller [A] remains in contact with the drum, producing a charge of  $-900\text{ V}$  on the drum surface.

The high voltage supply board [B] supplies a negative charge to the charge roller via wire [C] and spring [D]. The default base (uncorrected) charge is  $-1650\text{V}$ . You can adjust this base charge using SP2-001-1. The actual charge is corrected in accordance with the ambient environment, as described in the next section.

## 6.11.2 CHARGE ROLLER VOLTAGE CORRECTION

### *Correction for Ambient Environment*



Efficiency of voltage transfer from the charge roller to the drum decreases as ambient temperature and humidity rise. Accordingly, the charge roller voltage must be made more negative at higher temperature and humidity.

#### *When Correction is Made*

- At initial warm-up (following power-on by main switch)
- During warm-up on exit from low-power or auto-off mode, if that mode has been in effect for at least 4 hours (Time set by SP2-995)

**NOTE:** Correction can be disabled with SP2-927.

## DRUM CHARGE

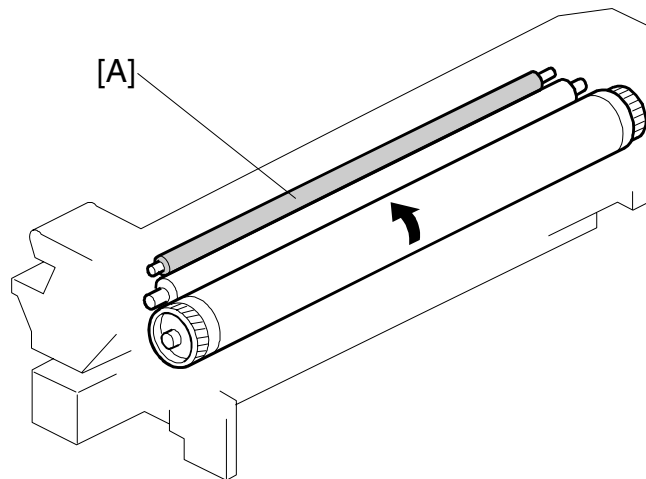
### *How Correction is Made*

Immediately after creating the ID sensor pattern [A] used for toner density control (☛ 6.12.4), the machine generates another pattern [B] for charge voltage correction by intensifying the development bias (☛ 6.12.2) to  $-600\text{ V}$ . The laser remains off, but a small amount of toner moves to the drum because of the slight charge difference between the drum and development roller. The ID measures the pattern's density ( $V_{sdp}$ ) and the bare drum voltage ( $V_{sg}$ ); the FCU compares the difference and adjusts the roller voltage accordingly.

- If  $V_{sdp}/V_{sg} > 0.95$ : Change charge roller voltage by  $+50\text{ V}$  (less negative).
- If  $V_{sdp}/V_{sg} < 0.90$  = Change charge roller voltage by  $-50\text{ V}$  (more negative).

**NOTE:** The current ID sensor readings can be viewed using SP2-221.

### 6.11.3 CHARGE ROLLER CLEANING



A cleaning roller [A] removes toner and debris that the roller picks up from the drum.

### 6.11.4 DETECTION OF A NEW PCU

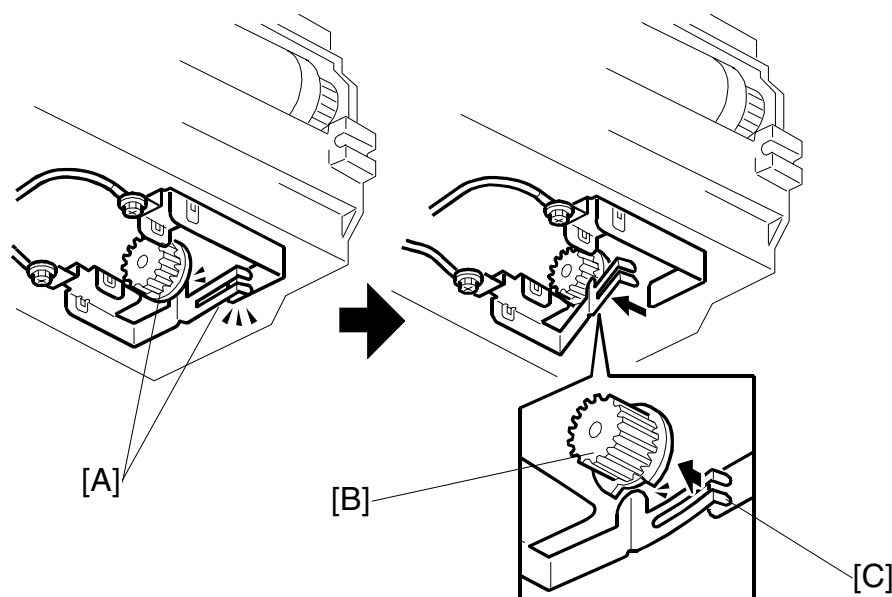
Before starting to use a new PCU, the machine must (a) agitate the toner/developer mix, (b) initialize the TD sensor, and (c) initialize the PCU counter. This machine automatically detects the presence of a new PCU and carries out these operations.

#### ***At time of copier installation***

The first time the machine is turned on following installation, a factory-set flag informs the machine that the PCU has not yet been initialized. The machine carries out the necessary initialization automatically.

#### ***When a replacement PCU is installed***

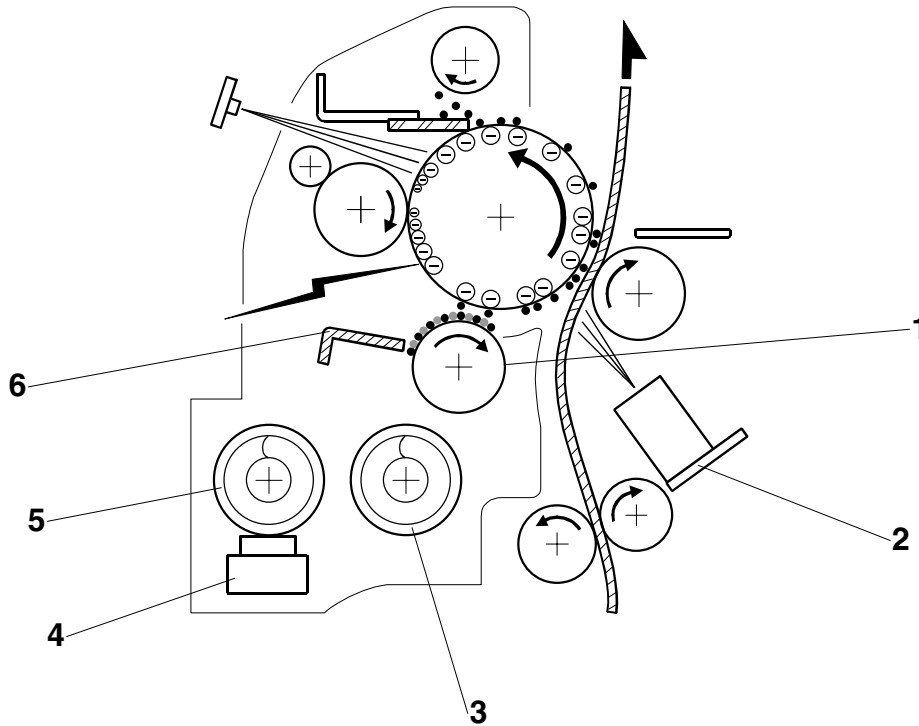
Replacement PCUs have a special mechanism that trips when they first start, informing the machine that a new PCU has been installed. (Preinstalled PCUs do not include this mechanism, and have two empty pins in their connector.)



Replacement PCUs are shipped as shown in [A]. Slight rotation of PCU gear [B] at power-on releases plate [C], breaking the circuit and informing the FCU that the new PCU is a replacement unit.

## 6.12 DEVELOPMENT

### 6.12.1 OVERVIEW

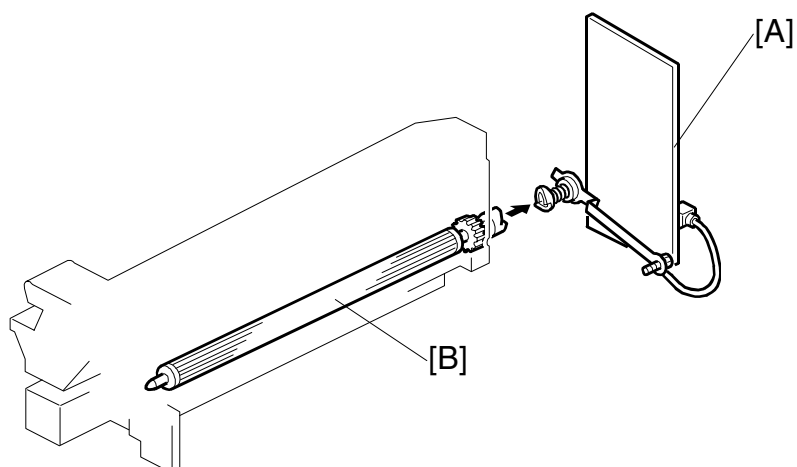


The development section consists of the following parts.

- |                       |                   |
|-----------------------|-------------------|
| 1. Development Roller | 4. TD Sensor      |
| 2. ID Sensor          | 5. Mixing Auger 1 |
| 3. Mixing Auger 2     | 6. Doctor Blade   |

The two mixing augers mix the developer (carrier/toner mix). The TD (toner density) sensor and the ID (image density) sensor are used to control the copy image density.

### 6.12.2 DEVELOPMENT BIAS

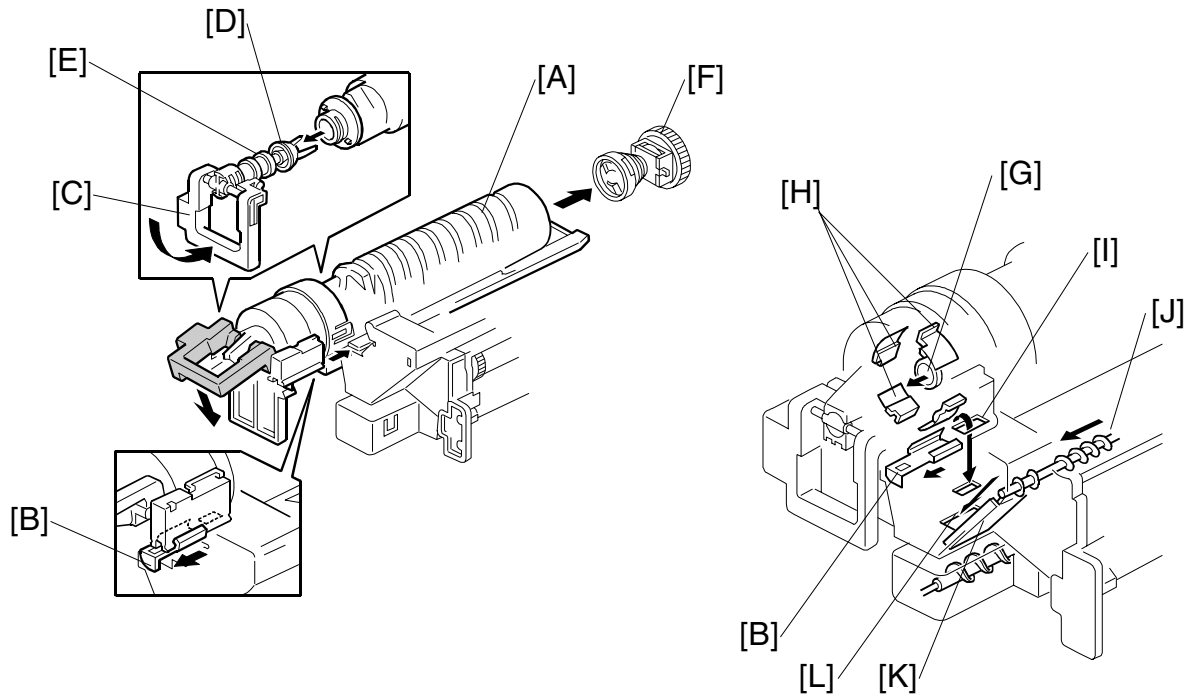


Black areas of the latent image on the drum are at low negative charge (about  $-140 \pm 50$  V), with white areas at high negative charge (about  $-900$  V).

To attract negatively charged toner to black areas, the high voltage supply board [A] applies a (default) bias of  $-600$  V to the development roller [B]. The bias voltage can be adjusted with SP2-201-1.

### 6.12.3 TONER SUPPLY

#### *Toner-Bottle Models (B044 and B046)*

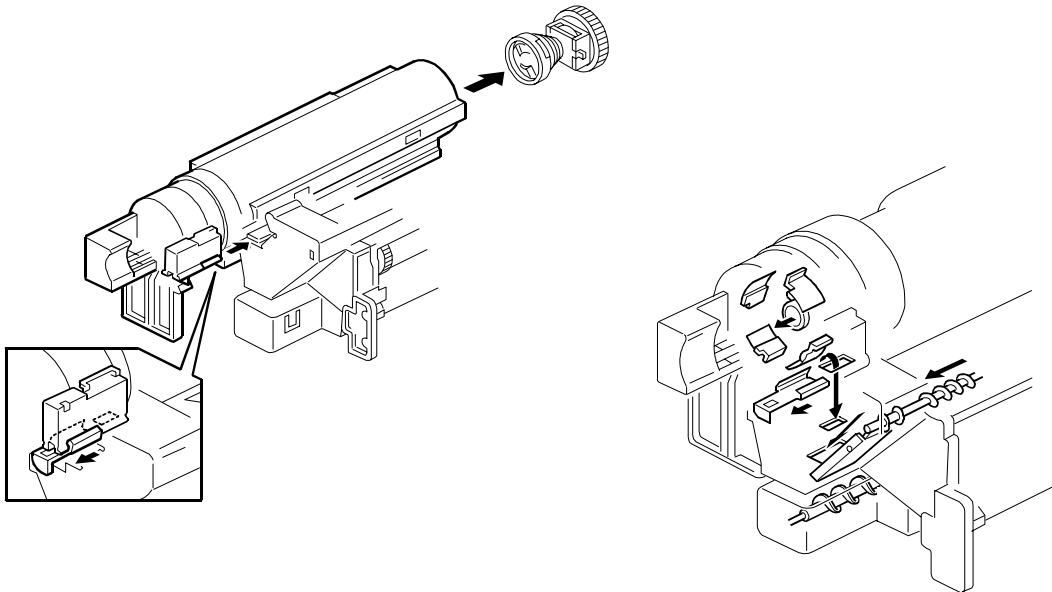


When toner bottle [A] is pushed in, shutter [B] is pushed open by the PCU body. Pressing in lever [C] pulls off toner bottle cap [D], which is held by chuck [E]. When clutch [F] turns the bottle, the spiral grooves push toner out at [G], and the turning Mylar blades [H] push this toner through slit [I] into the developing unit. Toner collection coil [J] simultaneously recycles toner retrieved from the OPC drum. The recycled toner slides down chute [K] and enters the developing unit through slit [L].



***Toner Hopper Magazine (B045)***

The magazine houses a grooved bottle similar to that shown on page 6-34 (except that it has no cap). The shuttering and rotation mechanisms are the same as on toner-bottle models (as seen on page 6-34).

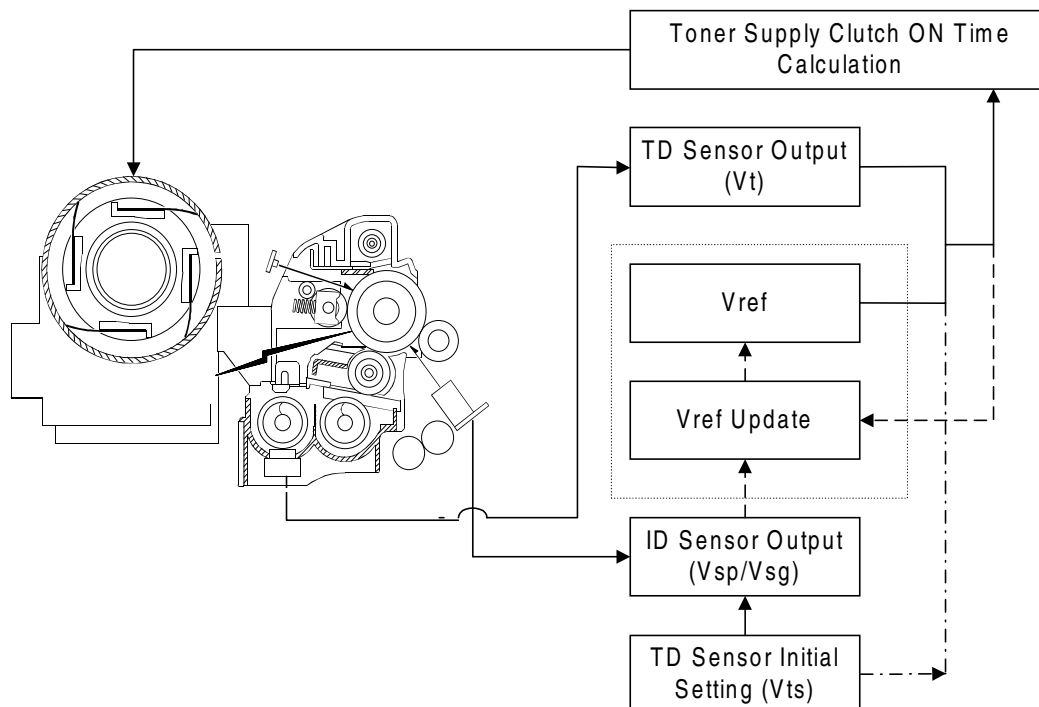


## 6.12.4 TONER DENSITY CONTROL

### Overview

Toner concentration in the developer is controlled using the following values:

- $V_{ts}$ : TD sensor initial setting (1.25V). (Used as reference voltage when  $V_{ref}$  is not available.)
- $V_{ref}$ : Toner supply reference voltage (calculated value; periodically updated)
- $V_t$ : Actual output from TD sensor
- $V_{sg}/V_{sp}$ : Values from ID sensor, where  $V_{sp}$  is the voltage of a test pattern (the "ID sensor pattern"), and  $V_{sg}$  is the voltage of the bare drum



Toner is added to the development unit if  $V_t$  is higher than the reference voltage.

### Reference Voltage

$V_{ts}$  is used as the reference if the PCU has just been installed (since  $V_{ref}$  has not yet been calculated) or if ID sensor correction has been disabled with SP2-927. In all other cases,  $V_{ref}$  is used as the reference.

### Toner Density Sensor Initial Setting

The  $V_{ts}$  for this machine is 1.25 V. During TD sensor initialization (after installation of new PCU), the machine adjusts the sensor so that it reads out 1.25V.

### ***Toner Concentration Measurement***

The machine checks concentration every copy cycle, by comparing  $V_t$  against the reference voltage.

### ***Vsp/Vsg Detection***

An ID sensor pattern is made on the drum by the charge roller and laser diode. The ID sensor detects the pattern density ( $V_{sp}$ ) and the density of the bare drum ( $V_{sg}$ ).

Detection is carried out at the same time as (and immediately before) charge-roller voltage detection (➤ 6.11.2).

**NOTE:** Use of ID sensor control can be disabled with SP2-927.

### ***Calculation of Vref***

$V_{ref}$  is calculated based on:

- ID sensor output ( $V_{sp}/V_{sg}$ )
- Existing reference voltage ( $V_{ref}$  or  $V_{ts}$ ) –  $V_t$

### ***Toner Supply Determination***

The machine supplies toner if  $V_t$  exceeds the reference voltage.

**NOTE:** Current  $V_t$  and reference voltage values can be viewed using SP2-220. Other ID sensor values can be viewed using SP2-221.

### ***Toner Clutch ON Time***

Calculation is based on:

- $V_t$
- Reference voltage  $RV$  (=  $V_{ref}$  or  $V_{ts}$ )
- $S$  (TD sensor's sensitivity coefficient)

| Level | Decision                        | Motor On Time (seconds) |
|-------|---------------------------------|-------------------------|
| 1     | $RV < V_t \leq RV + S/16$       | $t$                     |
| 2     | $RV + S/16 < V_t \leq RV + S/8$ | $1.5t$                  |
| 3     | $RV + S/8 < V_t \leq RV + S/4$  | $2t$                    |
| 4     | $RV + S/4 < V_t \leq RV + S/2$  | $3t$                    |
| 5     | $RV + S/2 < V_t \leq RV + 4S/5$ | $4t$                    |
| 6     | $RV + S > V_t \geq RV + 4S/5$   | $5t$                    |
| 7     | $V_t \geq RV + S$               | $6t$                    |

**NOTE:** The default value for  $t$  is 0.6. The value can be changed using SP2-922.

## 6.12.5 TONER SUPPLY IF SENSOR READING IS ABNORMAL

### ***ID Sensor***

Any of the following is considered abnormal:

- $V_{sg} \leq 1.65$  (when  $V_{sg}$  is read)
- $V_{sg} < 2.31$  (at maximum power)
- $V_{sp} \geq 1.65$
- $V_t \geq 2.64$  or  $V_t < 0.20$

Current readings can be viewed using SP2-221.

### ***TD Sensor***

The reading is considered abnormal if  $TD < 0.20$  V or  $TD > 2.64$  V. Abnormal readings 10 times in succession will generate SC 390. The current reading can be viewed using SP2-220.

## 6.12.6 DETECTION OF TONER NEAR END AND TONER END

### ***Toner Near End detected when either of the following occurs...***

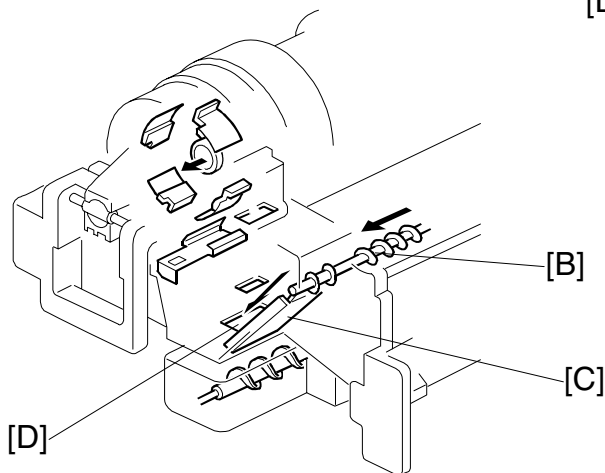
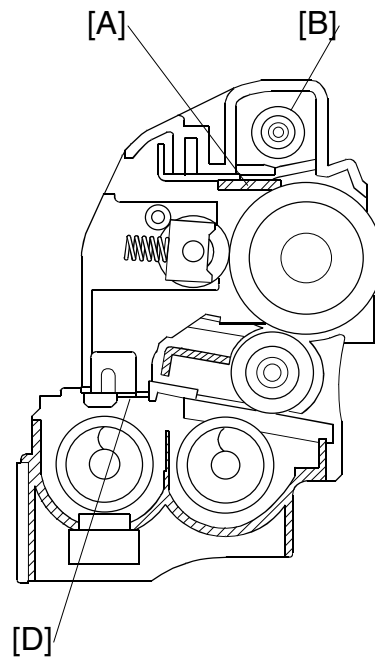
- $V_t$  is at level 6 (see above table) five times in succession
- $V_t > 1.85$  five times in succession

### ***Toner End detected when any of the following occurs....***

- ( $V_t$  is  $\geq$  level 6 and  $V_t > 1.85$ )  $n$  time in succession, where  $n$  is 50 by default but can be changed to 20 using SP2-213. (Note that  $n$  corresponds to the number of sheets that can be printed before Toner Near End changes to Toner End.)
- $V_t$  is at level 7 three times in succession.
- $V_t > 2.00$  three times in succession

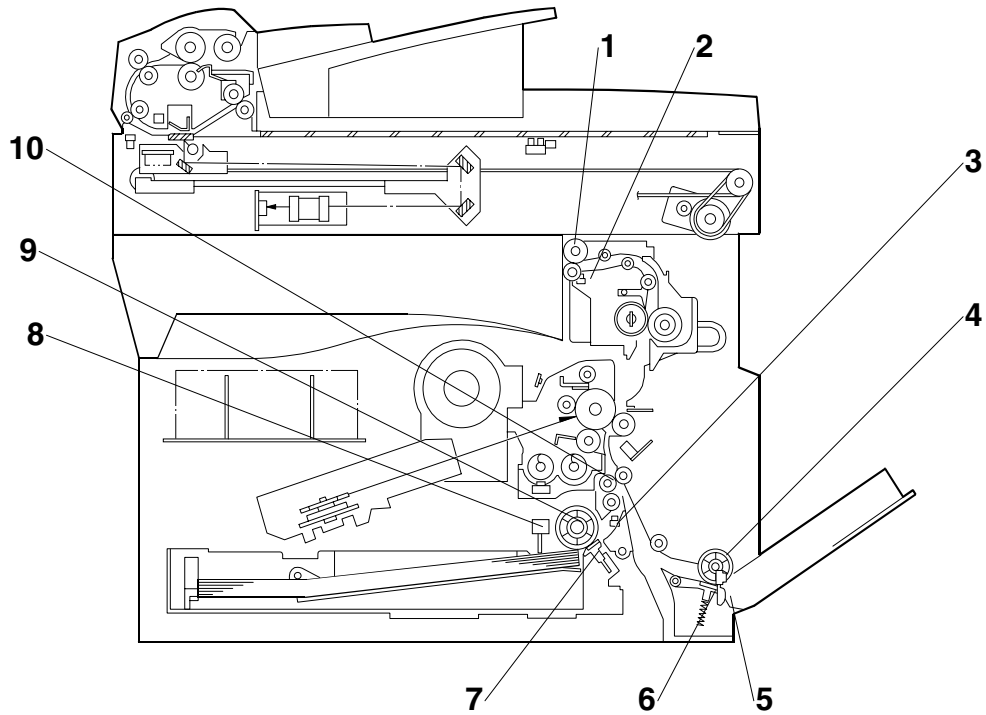
## 6.13 DRUM CLEANING AND TONER RECYCLING

- Cleaning blade [A] scrapes remaining toner from the drum after image transfer. Toner piles up on the blade.
- Toner collect coil [B] transports toner from pile and drops it onto chute [C], where it slides down into the development unit through a slit located at [D].
- At the end of each copy job, the drum turns about 3 mm in reverse to help clear toner and other debris from the edge of the cleaner blade.



## 6.14 PAPER FEED

### 6.14.1 OVERVIEW



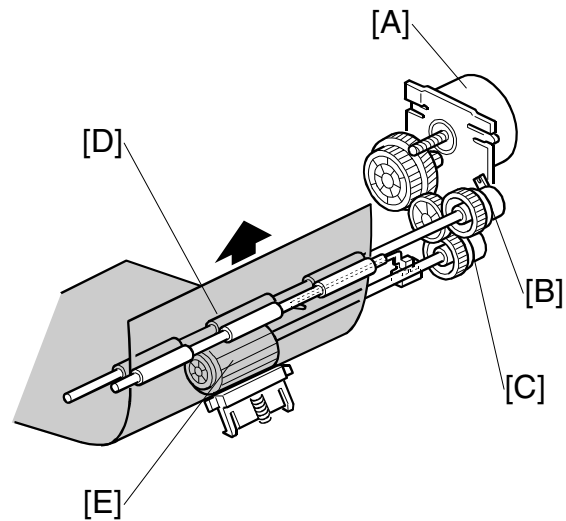
- |                                          |                                      |
|------------------------------------------|--------------------------------------|
| 1. Exit Roller                           | 6. Bypass Friction Pad* <sup>1</sup> |
| 2. Exit Sensor                           | 7. (Main) Friction Pad               |
| 3. Registration Sensor                   | 8. (Main) Paper End Sensor           |
| 4. Bypass Feed Roller*                   | 9. Paper Feed Roller                 |
| 5. Bypass Paper End Sensor* <sup>1</sup> | 10. Registration Roller              |

\*1: Only on 100-sheet bypass machines (B044, B046).

## 6.14.2 PAPER FEED DRIVE MECHANISM

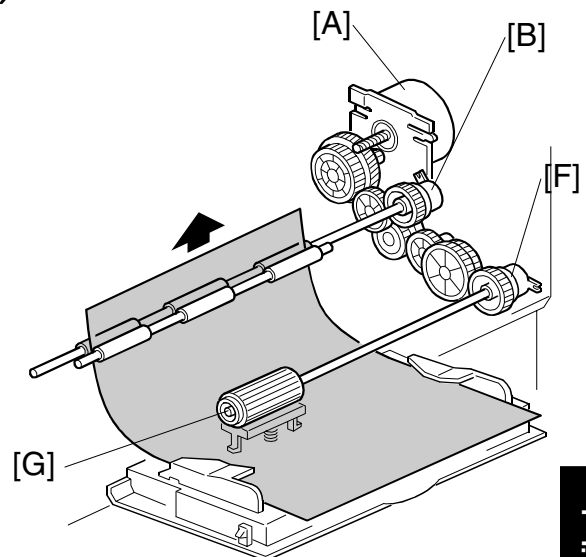
### *From Paper Tray*

Main motor [A] drives gears on the registration clutch [B] and the paper feed clutch [C]. These clutches transfer drive to the registration roller [D] and paper feed roller [E]. The FCU controls clutch timing based on input from the registration sensor.



### *From 100-Sheet Bypass Tray (B044, B046)*

Main motor [A] drives gear on registration clutch [B] and bypass feed clutch [F]. The bypass feed clutch drives the bypass feed roller [G]. Again, the FCU controls clutch timing based on input from the registration sensor.



### *From 1-Sheet Bypass Tray (B045)*

The user inserts the sheet directly up to the registration roller [D]. Main motor [A] drives the gear on registration clutch [B], causing the registration roller to turn and feed the sheet.

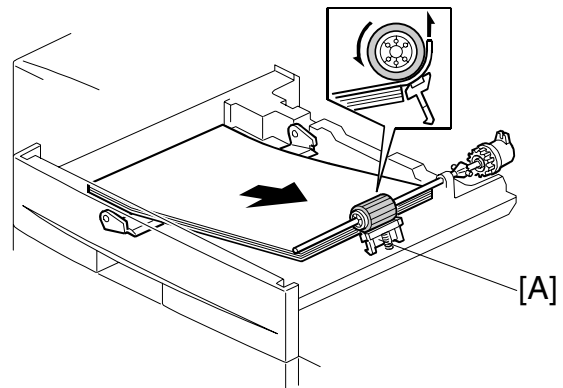
## PAPER FEED

### 6.14.3 PAPER FEED AND SEPARATION

The machine uses a friction-pad feed system.

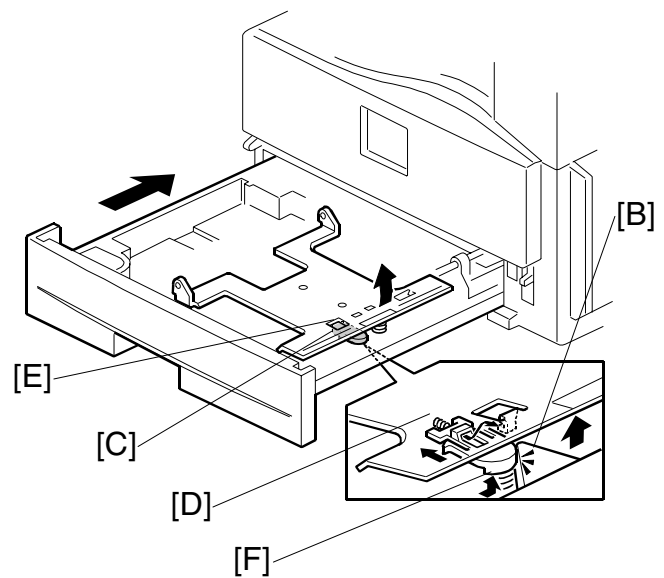
[A]: Friction pad (in paper tray)

**NOTE:** On 100-sheet bypass models (B044 and B046), friction-pad separation is also provided for the bypass feed.



### 6.14.4 PAPER LIFT MECHANISM

When tray is pushed in: Projection [B] on frame pushes rounded slider [C] in against spring [D], retracting the latch [E]. Spring [F] pushes the plate up.

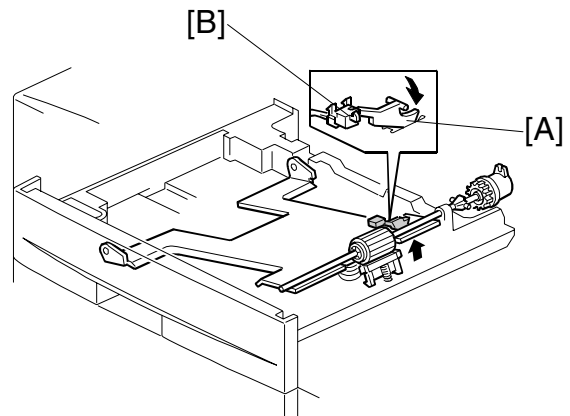




## PAPER END DETECTION

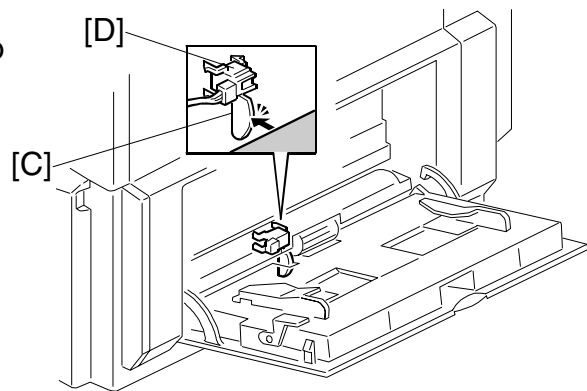
### *Main Tray*

When paper runs out, feeler [A] drops into cutout, activating paper end sensor [B].



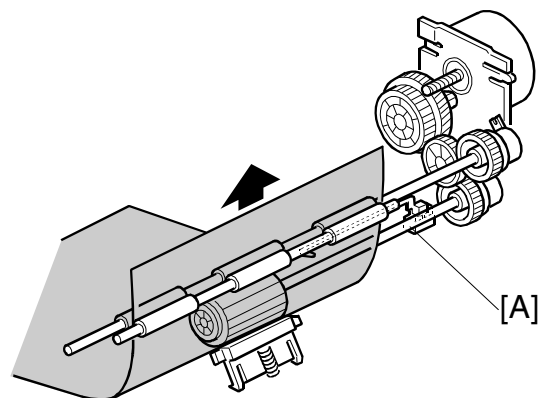
### *100-Sheet Bypass Tray (B044, B046)*

When paper runs out, feeler [C] drops into cutout, activating the bypass paper end sensor [D].



## 6.14.5 PAPER REGISTRATION

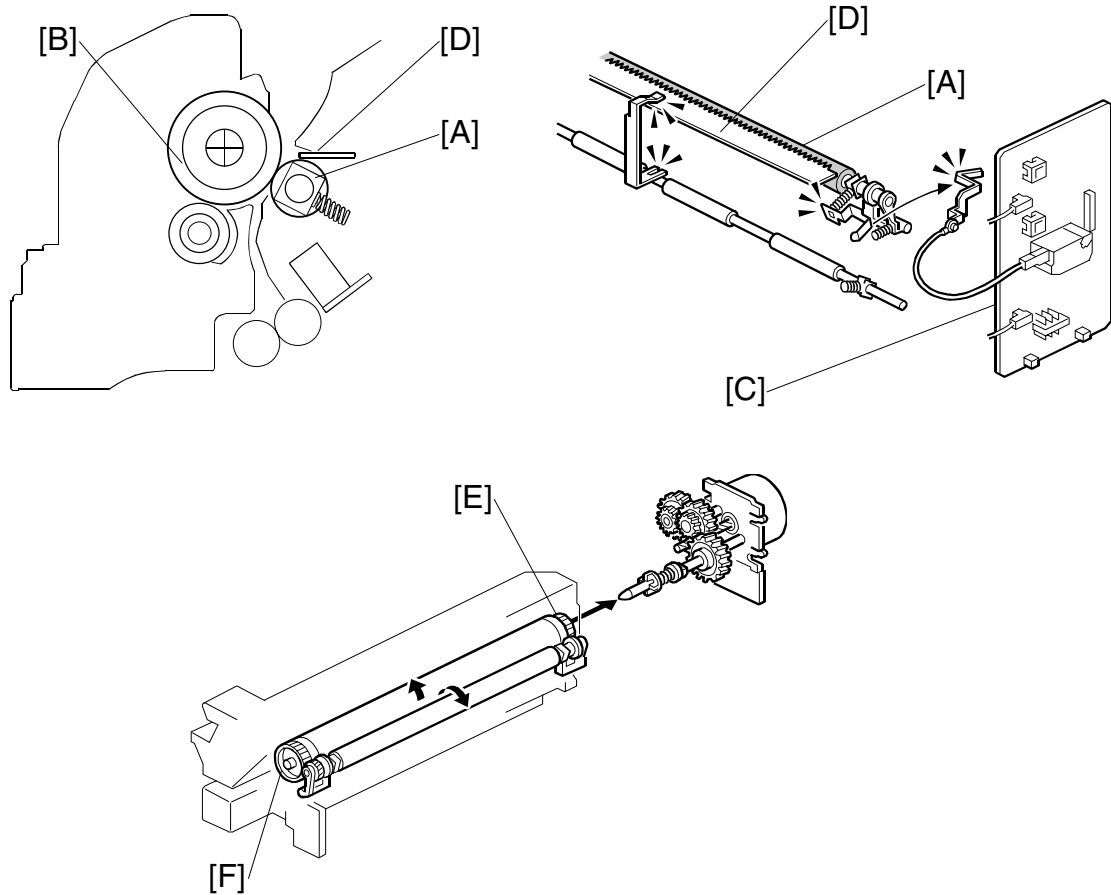
The FCU uses input from registration sensor [A] to control clutch timing and detect misfeeds. Registration clutch timing is controlled to eliminate skew (by stopping the paper briefly as it reaches the roller, so that it buckles). The amount of buckle can be adjusted with SP1-003.



Detailed  
Descriptions

## 6.15 IMAGE TRANSFER AND PAPER SEPARATION

### 6.15.1 OVERVIEW



The transfer roller [A] is pressed against the OPC drum [B]. The high-voltage power supply board [C] supplies a positive current to the transfer roller, attracting the toner from the drum onto the paper. The current is set in accordance with the paper's type, size, and feed tray.

Separation of the paper from the drum is aided by the drum's own curvature and by a high AC voltage applied to the discharge plate [D].

The drum drives the transfer roller directly by gears [E], [F].

### 6.15.2 IMAGE TRANSFER CURRENT TIMING

There are two current levels used during the transfer sequence: low and high.

1. At time of write-start signal, the high voltage supply board generates low current (5 A) to the roller. This prevents positive toner on the drum from moving to the roller.
2. After a certain time the high voltage supply board generates high current to the roller, causing toner to move from drum to paper. (See table below.)
3. After the sheet has passed the roller, current goes off (if printing is finished) or returns to low (if multicopy job with nonstop feed).

The table below shows the default high current levels. You can adjust these levels with SP2-301. But please note that setting the current too high can cause a ghosting effect (where the image at the top of the sheet repeats as a ghost lower down on the page) and in the worst case may damage the drum.

**"High" Transfer Current ( $\mu$ A)**

| Paper Size | Main Tray /<br>Optional Tray | Bypass |       |               |
|------------|------------------------------|--------|-------|---------------|
|            |                              | Normal | Thick | Special (OHP) |
| A4, LT     | 6                            | 6      | 8     | 8             |
| B5         | —                            | 8      | 6     | —             |
| A5         | —                            | 10     | 6     | —             |
| A6         | —                            | 12     | 6     | —             |

### 6.15.3 TRANSFER ROLLER CLEANING

Toner may transfer to the roller surface following a paper jam or if the paper is smaller than the image. Periodic cleaning of the roller is required to prevent this toner from migrating back to the rear of new printouts.

The machine cleans the roller at the following times:

- After initial power on.
- After clearing of a copy jam
- At the end of a job, if at least 10 sheet have been printed since the last cleaning

The high voltage supply unit first supplies a negative cleaning current (about  $-4\text{ }\mu\text{A}$ ) to the transfer roller, causing negatively charged toner on the roller to move back to the drum. It then applies a positive cleaning current ( $+5\text{ }\mu\text{A}$ ) to the roller, causing any positively charged toner to migrate back to the drum.

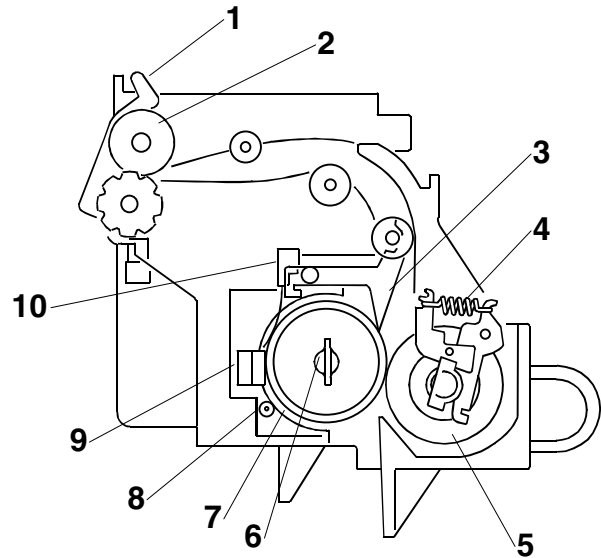
The cleaning current can be adjusted using SP2-301-4.

## 6.16 IMAGE FUSING AND PAPER EXIT

### 6.16.1 OVERVIEW

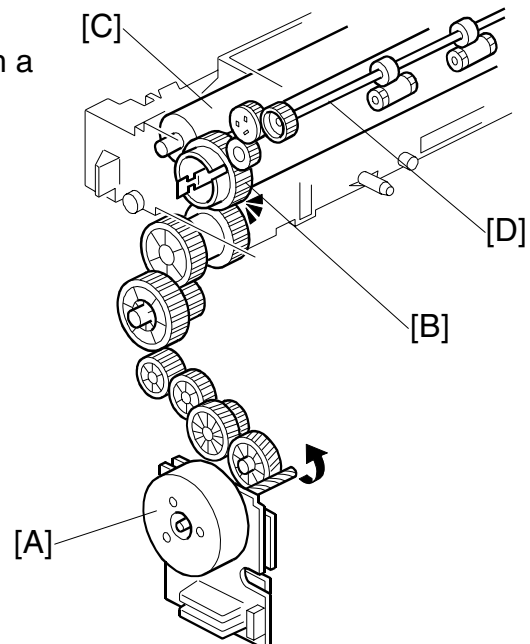
The fusing unit and paper exit area consist of the following parts.

1. Exit sensor
2. Exit roller
3. Hot roller strippers
4. Pressure spring
5. Pressure roller
6. Fusing lamp
7. Hot roller
8. Thermofuse
9. Thermoswitch
10. Thermistor



### 6.16.2 FUSING DRIVE AND RELEASE MECHANISM

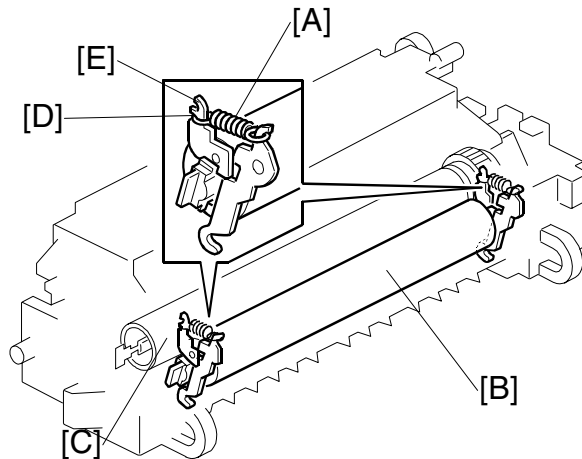
The main motor [A] drives the hot roller [B], pressure roller [C], and exit roller [D] through a gear train.



Detailed  
Descriptions

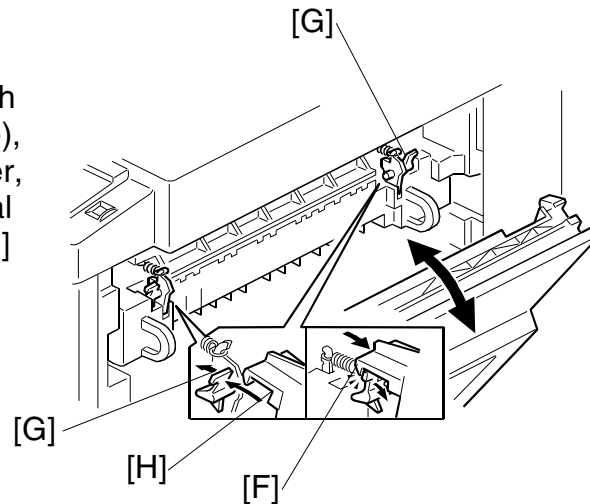
### 6.16.3 PRESSURE ROLLER

The pressure springs [A] constantly press the pressure roller [B] against the hot roller [C]. As the default, the springs are positioned at the end [D]. If necessary, pressure can be decreased by changing the springs to position [E].



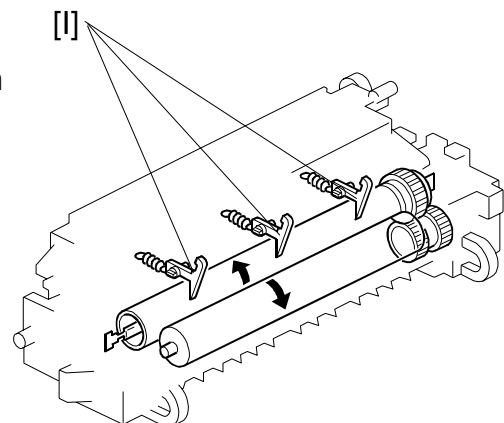
### 6.16.4 PRESSURE RELEASE

When right door opens, part [F] (on each side) pulls open catch [G] (on each side), releasing pressure on the pressure roller, so that it can turn freely to allow removal of jams. When right door closes, part [H] pushes catch [G] closed, restoring normal pressure.



### 6.16.5 SEPARATION

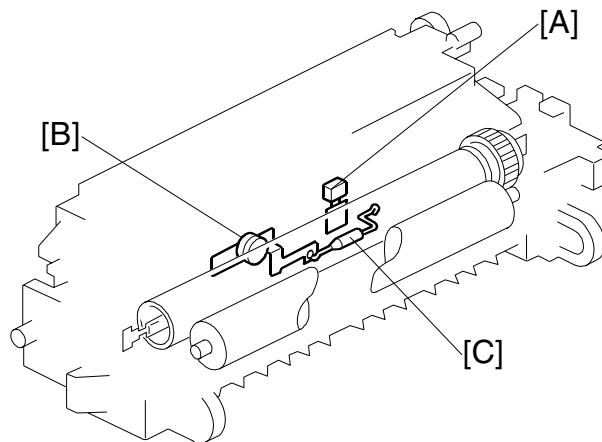
The hot roller stripper pawls [I] prevent paper from sticking to the hot roller.



## 6.16.6 FUSING TEMPERATURE CONTROL

### Overview

- [A]: Thermistor  
[B]: Thermoswitch  
[C]: Thermofuse



The CPU checks the thermistor

[A] output once per second, and calculates the power-on ratio for the next second based on (a) current temperature, (b) the temperature 1 second earlier, and (c) the target temperature.

The target fusing temperature drops somewhat over time, as the machine's overall state changes with continued use. For normal copying, the target starts at 180°C, then drops to 170°C after one minute.

### *Fusing Temperature Control for Thick Paper*

Target temperature goes up 10°C if the user selects thick-paper mode.

## 6.16.7 OVERHEAT PROTECTION

Primary protection is provided by the thermistor and CPU, with backup by a thermoswitch and secondary backup by a thermofuse. (See illustration above.)

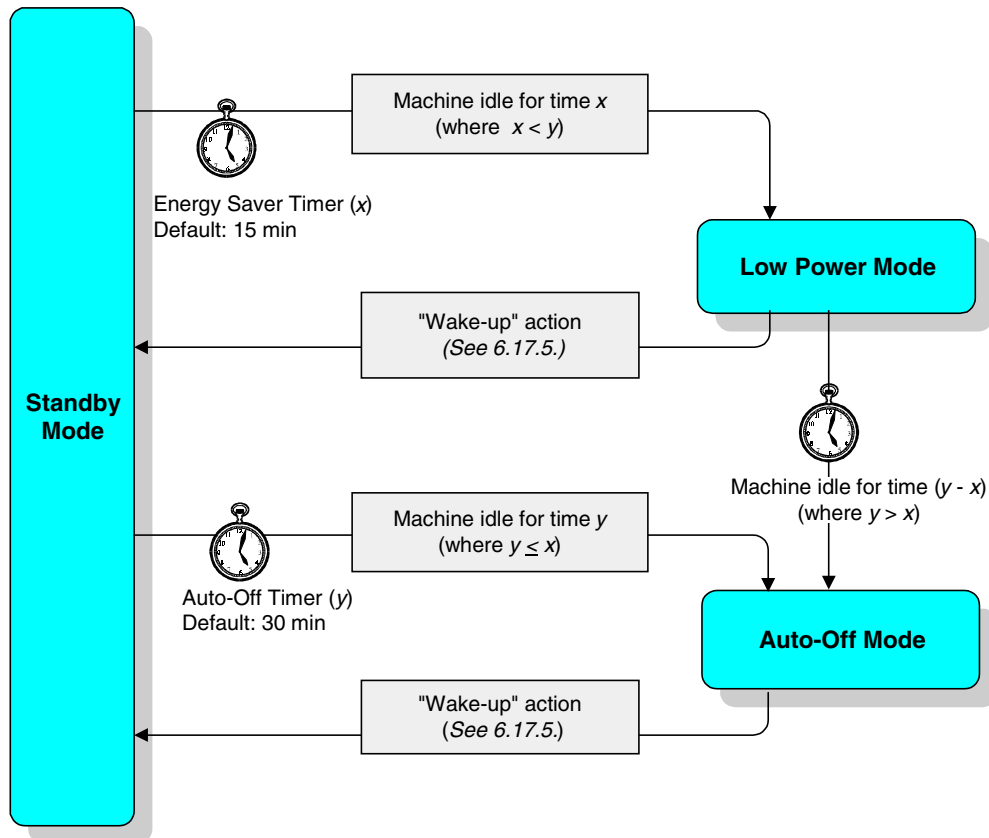
- Protection 1: If the CPU determines from the thermistor that the hot roller has stayed above 230°C for more than 1 second, it cuts the power to the fusing lamp and issues SC543.
- Protection 2: The thermoswitch (connected in series with the fusing lamp's common ground) opens if it reaches 190°C, cutting power to the lamp. If you restart the machine without correcting the problem, the machine will issue SC541.
- Protection 3: The thermofuse (which is farther from the lamp than the thermoswitch) opens at 131°C, cutting power to the lamp.

## 6.17 ENERGY SAVER MODES

### 6.17.1 MODE TRANSITIONS

When the machine is idle, the energy saver function reduces power consumption by lowering the fusing temperature. As shown below, the machine can be set to transition to two different reduced power states, in the following order:

- 1) Low power mode
- 2) Auto-off mode



Above, if the Energy Saver Timer setting is  $x$  and the Auto Off Timer setting is  $y$ , then the following operation applies:

- If  $x < y$ : The machine moves into selected low-power mode if all sensors and components remain inactive for time  $x$ , then moves into auto-off mode if all sensors and components continue inactive for time  $y-x$ .
- If  $x \geq y$ : The machine skips low-power mode and moves directly into auto-off mode if all sensors and components remain inactive for time  $y$ .

Note that during countdown to  $x$  or  $y$ , the machine may automatically switch into the preferred application mode (copier/fax) in accordance with the User Tool's Function Priority and System Reset settings. This has no effect on the power-mode transition timing.



### 6.17.2 SYSTEM SETTINGS

The user sets up energy-saving operation using the following User Tool settings.

| User Tool – System Setting | Operation                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------|
| Energy Saver timer         | Sets time at which machine moves from standby to the low-power mode.<br>• The default is 15 minutes. |
| Energy Saver level         | Selects the low-power mode that the system uses. The default is Level 2. (See below.)                |
| Auto-Off Timer             | Sets time at which machine transitions to auto-off mode. The default is 30 minutes.                  |
| AOF                        | Allows user to disable auto-off. The default setting is on (enabled). <i>See Note below.</i>         |

**NOTE:** If the customer requests that you disable auto-off, please inform the customer that disabling of this feature will void Energy Star conformance and is not recommended.

### 6.17.3 LOW POWER MODE LEVELS

The Energy Saver Level setting determines which power level is used when the machine enters Low Power mode.

| Mode              | Fusing Temp. | Approx. Recovery Time |
|-------------------|--------------|-----------------------|
| Low Power—Level 1 | 165°C        | 5 s                   |
| Low Power—Level 2 | 90°C         | 10 s                  |
| Low Power—Level 3 | Room Temp.   | 20 s                  |

### 6.17.4 AUTO-OFF LEVEL

Identical to low power mode level 3.

### 6.17.5 TRANSITION OPERATION

*On entry into low-power or auto-off:*

- Main power LED stays ON, operation switch and all other indicators OFF.
- System +5V power remains on.

*The machine returns to standby power mode when any of the following "wake-up" actions occurs:*

- Pressing of operation switch
- Opening of platen cover
- Placing sheet in DF
- Wake-up signal from a PC
- Error or SC condition



# **SPECIFICATIONS**



# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Configuration:       | Desktop                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Copy Process:        | Dry electrostatic transfer system                                                                                                                                                                                                                                                                                                                                                                                                |
| Originals:           | Sheet/Book                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Original Size:       | Maximum<br>A4 / 8 1/2" x 11"<br>A4 / 8 1/2" x 14" (ADF)                                                                                                                                                                                                                                                                                                                                                                          |
| Copy Paper Size:     | Maximum<br>A4 SEF / 8 1/2" x 11" SEF (Copier's paper tray)<br>A4 SEF / 8 1/2" x 14" SEF (Bypass)<br>A4 SEF / 8 1/2" x 14" SEF (Optional paper tray)<br>Minimum<br>A5 LEF / 8 1/2" x 5 1/2" LEF (Copier's paper tray)<br>A6 SEF / 8 1/2" x 5 1/2" (Bypass)<br>A4 SEF / 8 1/2" x 11" SEF (Optional paper tray unit)<br>Custom sizes in the bypass tray:<br>Width: 90 – 216 mm (3.5" – 8.5")<br>Length: 140 – 356 mm (5.5" – 14.0") |
| Copy Paper Weight:   | Copier's paper tray; optional paper tray:<br>60 – 90 g/m <sup>2</sup> , 16 – 24 lb.<br>Bypass:<br>60 – 157 g/m <sup>2</sup> , 16 – 42 lb.                                                                                                                                                                                                                                                                                        |
| Reproduction Ratios: | 2 enlargement and 3 reduction                                                                                                                                                                                                                                                                                                                                                                                                    |

|             | A4 Version | LT Version |
|-------------|------------|------------|
| Enlargement | 200%       | 155%       |
|             | 141%       | 129%       |
| Full Size   | 100%       | 100%       |
| Reduction   | 93%        | 93%        |
|             | 71%        | 78%        |
|             | 50%        | 65%        |

|               |                                                   |
|---------------|---------------------------------------------------|
| Zoom:         | 50% to 200%, in 1% steps                          |
| Power Source: | 110 – 120 V, 60 Hz<br>or<br>220 – 240 V, 50/60 Hz |

## SPECIFICATIONS

### Power Consumption:

|                          |                |
|--------------------------|----------------|
| Maximum                  | Not above 1 kW |
| Standby (mainframe only) | Approx. 90 W   |
| Standby (with ADF, PTU)  | Approx. 100 W  |
| When printing            | Approx. 480 W  |
| Low Power Level 1        | Not above 50W  |
| Low Power Level 2        | Note above 12W |
| Auto-Off                 | Not above 2 W  |

### Noise Emission

#### Sound Power Level

|                                          |                    |
|------------------------------------------|--------------------|
| Standby (Mainframe / Full system):       | Not above 40 dB(A) |
| Operating (Mainframe only, non-impulse): | Not above 62 dB(A) |
| Operating (Full System):                 | Not above 66 dB(A) |

#### Sound Pressure Level

|                                          |                    |
|------------------------------------------|--------------------|
| Standby (Mainframe / Full system):       | Not above 27 dB(A) |
| Operating (Mainframe only, non-impulse): | Not above 54 dB(A) |
| Operating (Full System):                 | Not above 54 dB(A) |

### Dimensions (W x D x H)

Without ADF: 468 x 450 x 371 mm (18.4" x 17.7" x 14.6")

With ADF: 468 x 450 x 461 mm (18.4" x 17.7" x 18.2")

### Weight

Mainframe: Not above 20 kg (44.1 lb.)

With ADF: Not above 22 kg (48.5 lb.)

Resolution: 600 dpi

Copying Speed in Multicopy Mode (copies/minute):

B044, B046: 13

B045: 12

**NOTE:** Measurement Conditions:

1) A4 / 8<sup>1</sup>/<sub>2</sub>" x 11"

2) 100% size

Warm-up Time: Less than 20 seconds (at 20°C [68°F])

First Copy Time: Not more than 8 seconds

**NOTE:** Measurement Conditions

1) From the ready state, with the polygonal mirror motor spinning.

2) A4/LT copying

3) From copier's paper tray

4) 100% size

Copy Number Input: Numeric keypad, 1 to 99 (increment, decrement)

Manual Image Density: 5 steps

Automatic Reset: Default is 60 seconds. Can be set from 10 to 999 seconds with user tools.

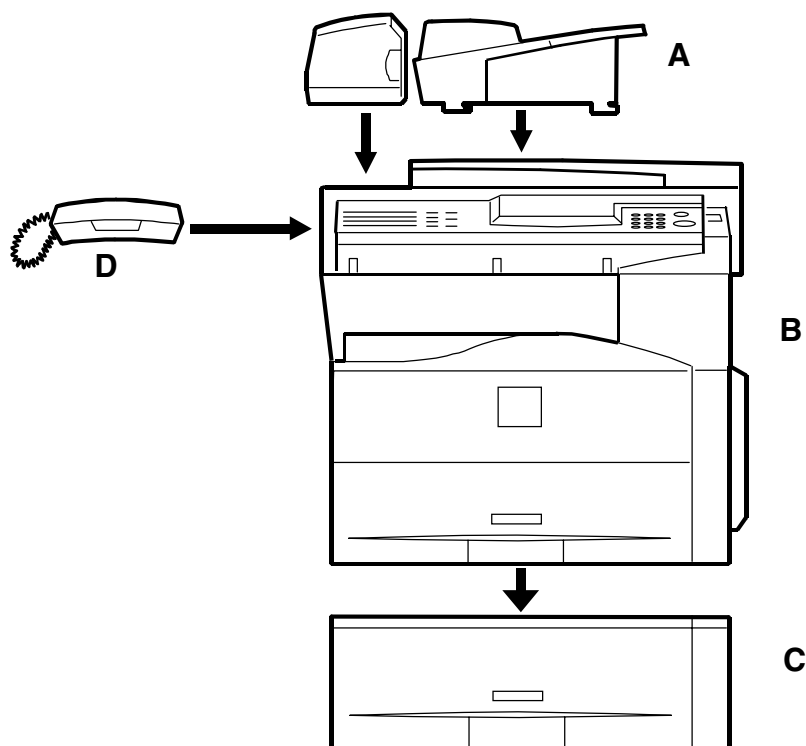
Auto-Off: Default is 30 minutes. Can be disabled or set from 1 to 240 minutes with user tools.

## SPECIFICATIONS

|                      |                                                                                                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Copy Paper Capacity: | Paper Tray:<br>250 sheets<br>Optional Paper Tray Unit (B044/B046):<br>500 sheets x 1<br>Bypass Tray:<br>100 sheets (B044/B046)<br>1 sheet (B045)                                        |
| Copy-Tray Capacity   | 250 sheets                                                                                                                                                                              |
| Toner Replenishment: |                                                                                                                                                                                         |
| • B045/B049:         | THM (Toner Hopper Magazine) replacement (260 g/<br>magazine)                                                                                                                            |
| • B044/B046:         | Cartridge replacement (230 g/cartridge)                                                                                                                                                 |
| Toner Yield          |                                                                                                                                                                                         |
| • B045/B049:         | 7k copies /THM (A4, 6% full black)                                                                                                                                                      |
| • B044/B046:         | 7k copies /toner bottle (A4, 6% full black)                                                                                                                                             |
| Optional Equipment:  | <ul style="list-style-type: none"><li>• Auto document feeder</li><li>• Paper tray unit (available for B044, B046 only)</li><li>• Anti-condensation heater for paper tray unit</li></ul> |
| Memory Capacity      | 8MB standard; 32MB DIMM as option                                                                                                                                                       |



## 2. MACHINE CONFIGURATION



| Version  | Item                                         | Machine Code | Letter |
|----------|----------------------------------------------|--------------|--------|
| Copier   | Copier (100-sheet bypass, no fax, no ADF)    | B044         | B      |
|          | Copier (1-sheet bypass, no fax, no ADF)      | B045         | B      |
|          | Copier (100-sheet bypass, fax, ADF)          | B046         | B      |
|          | ADF (option for B044/B045)                   | B444         | A      |
|          | Paper Tray Unit (option for B044/B046)       | B421         | C      |
|          | 32MB Memory (option)                         | G578         |        |
|          | Anti-condensation heater for Paper Tray Unit | B421         |        |
| Fax Unit | Fax Controller (option for B044/B045)        | B465         |        |
|          | Handset (option)                             | B433         | D      |
| Printer  | Printer Controller (option)                  | B441         |        |
|          | NIB (option)                                 | B430         |        |
|          | 32MB Memory (option)                         | G578         |        |
|          | 64MB Memory (option)                         | G579         |        |
|          | 128MB Memory (option)                        | G580         |        |
|          | PS2 (option)                                 | B431         |        |

## SPECIFICATIONS

### 3. OPTIONAL EQUIPMENT

#### **ADF**

|                             |                                                                                                                                                                               |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original Size:              | Standard sizes:<br>A4 to A5; 8 1/2" x 14" to 8 1/2" x 5 1/2"<br>Non-standard sizes:<br>Max. width: 216 mm<br>Min. width: 140 mm<br>Max. length: 356 mm<br>Min. length: 140 mm |
| Original Weight:            | 52 – 105 g/m <sup>2</sup> (14 – 28 lb.)                                                                                                                                       |
| Table Capacity:             | 30 sheets (80 g/m <sup>2</sup> , 21 lb.)                                                                                                                                      |
| Original Standard Position: | Center                                                                                                                                                                        |
| Separation:                 | FRR                                                                                                                                                                           |
| Original Transport:         | Roller transport                                                                                                                                                              |
| Original Feed Order:        | From the top original                                                                                                                                                         |
| Reproduction Range:         | 50 – 200%                                                                                                                                                                     |
| Power Source:               | 24 and 5 Vdc from the copier                                                                                                                                                  |
| Power Consumption:          | Not above 50 W when running<br>Not above 1.2 W when standing by                                                                                                               |
| Dimensions (W x D x H):     | 110 x 360 x 95 mm (4.3" x 14.2" x 3.7")                                                                                                                                       |
| Weight:                     | 2 kg (4.4 lb)                                                                                                                                                                 |

#### **PAPER TRAY UNIT**

|                    |                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Paper Sizes:       | A4 SEF, 8 1/2" x 11" SEF, 8 1/2" x 13" SEF,<br>8 1/2" x 14" SEF                                                               |
| Paper Weight:      | 60 – 90 g/m <sup>2</sup> , 16 – 24 lb.                                                                                        |
| Tray Capacity:     | 500 sheets (80 g/m <sup>2</sup> , 21 lb. ) x 1 tray                                                                           |
| Paper Feed System: | Feed roller and friction pad                                                                                                  |
| Power Source:      | 24 Vdc and 5 Vdc, from copier. If optional tray heater is installed, the copier also supplies Vac (120 Vac or 220 – 240 Vac). |
| Power Consumption: | Maximum: 15 W (excluding optional tray heater)<br>Average: 14 W (excluding optional tray heater)                              |
| Weight:            | Not above 6 kg (13.2. lb.)                                                                                                    |
| Size (W x D x H):  | 430 x 414 x 140 mm (16.9" x 16.3" x 5.5")                                                                                     |

**DOCUMENT FEEDER  
B444**



# B444

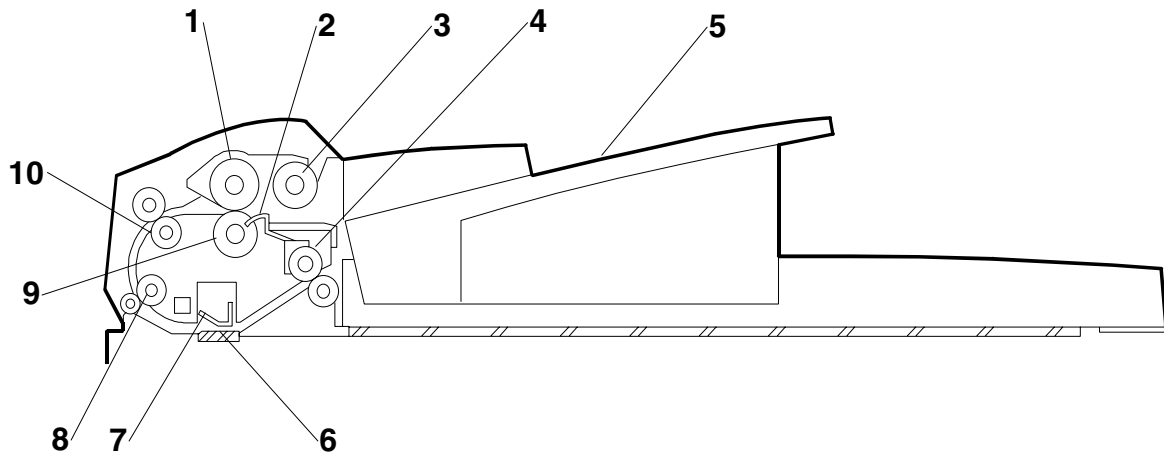
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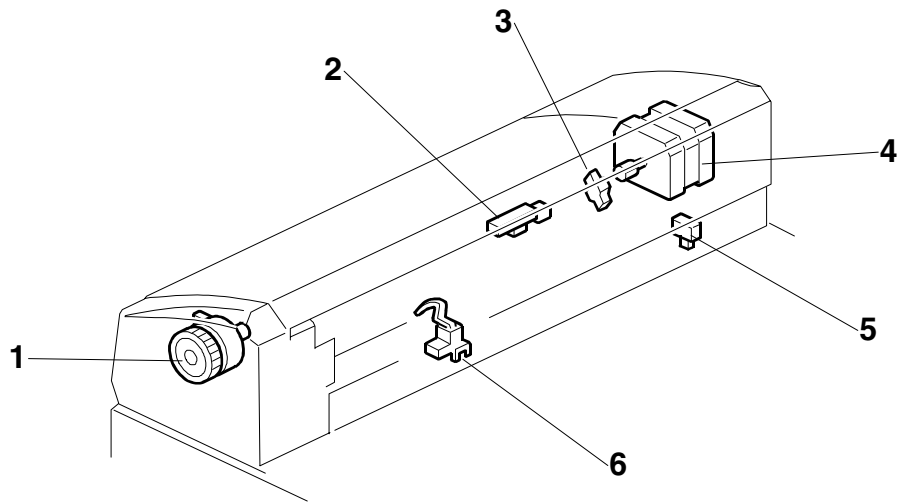
# 1. OVERALL INFORMATION

## 1.1 MECHANICAL COMPONENT LAYOUT



- |                         |                          |
|-------------------------|--------------------------|
| 1. Feed roller          | 6. DF exposure glass     |
| 2. Original set sensor  | 7. White plate           |
| 3. Pickup roller        | 8. 2nd transport roller  |
| 4. Original exit roller | 9. Separation roller     |
| 5. Original table       | 10. 1st transport roller |

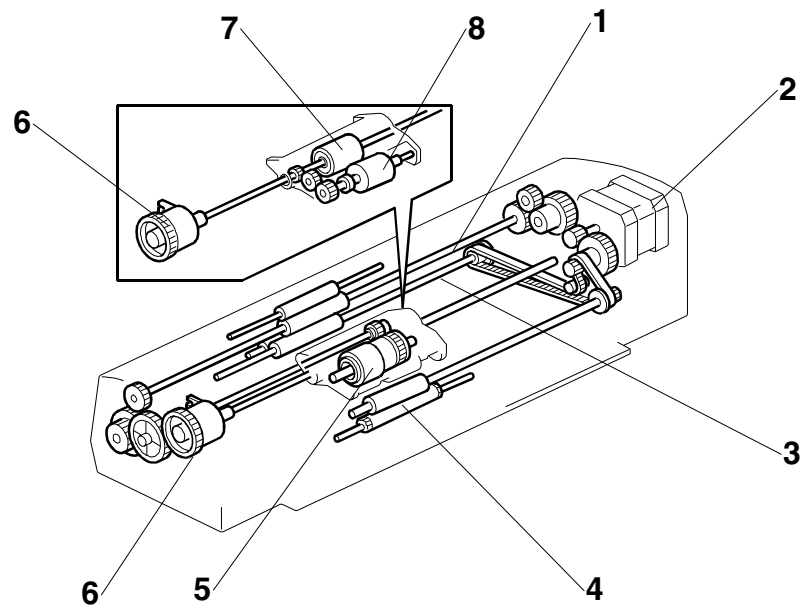
## 1.2 ELECTRICAL COMPONENT LAYOUT



- |                                 |                        |
|---------------------------------|------------------------|
| 1. DF feed clutch               | 4. DF motor            |
| 2. Original registration sensor | 5. Unit open switch    |
| 3. Guide open sensor            | 6. Original set sensor |



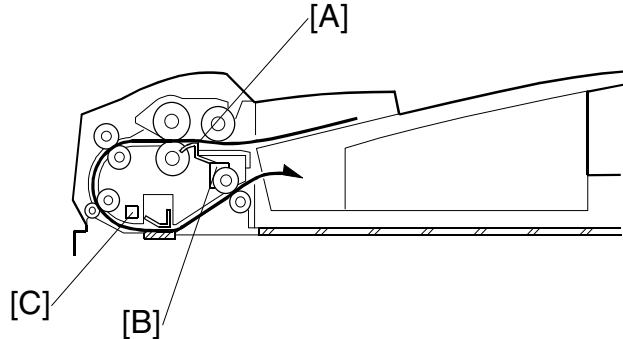
## 1.3 DRIVE LAYOUT



- |                         |                         |
|-------------------------|-------------------------|
| 1. 1st transport roller | 5. DF separation roller |
| 2. DF motor             | 6. DF feed clutch       |
| 3. 2nd transport roller | 7. DF feed roller       |
| 4. Exit roller          | 8. DF pickup roller     |

## 2. DETAILED SECTION DESCRIPTIONS

### 2.1 PICK-UP AND SEPARATION



The ADF uses an FRR (Feed & Reverse Roller) system.

Setting paper lowers the feeler [A], causing the original set sensor [B] to inform the CPU that the ADF is ready to feed.

Press  → short time lag → DF feed clutch engages → DF motor starts.

The motor drives the DF pickup roller, DF feed roller, DF separation roller, and transport rollers. The pickup roller drives the top sheet(s) between the feed and separation roller, where the top sheet is separated and fed to the transport rollers.

### 2.2 CLUTCH OPERATION

The DF feed clutch is provided to stop feeding in the event of a jam. During jam-free operation the clutch remains activated for the entire feed cycle. In the event of a jam the clutch disengages (by torque limiter).

### 2.3 TRANSPORT AND EXIT

During pickup and feeding of the first sheet, the scanner moves to carry out white adjustment and then scanning correction.

A short time after the sheet reaches the original registration sensor [C], the DF motor stops briefly, the scanner moves to DF scan position, and the white peak is read. The DF motor then restarts and the sheet is scanned. The exit roller ejects the sheet.

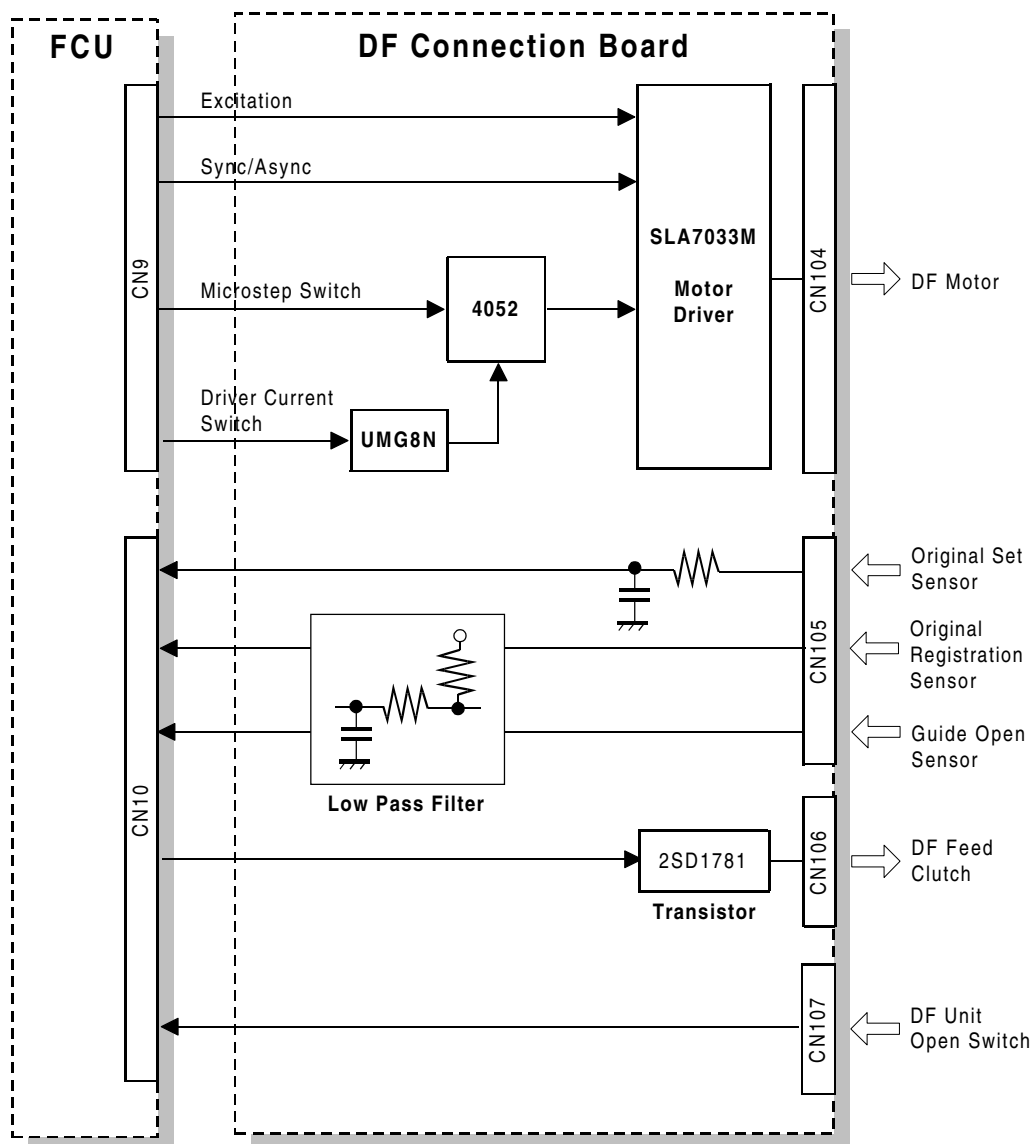
Features of the transport mechanism:

- White peak is read for each sheet. If timing allows, the DF motor continues running while the peak is read between consecutive trailing and leading edges. If timing does not allow, the DF motor stops and then restarts.
- Shading correction is repeated every 10 sheets. The DF motor must stop and restart to carry out this correction.
- Following feeding of the last sheet, the DF motor reverses briefly, raising the pickup roller.

## 2.4 UNIT OPEN SWITCH AND GUIDE OPEN SENSOR

The guide open sensor is ON while the DF guide is open, and the unit open switch is ON when the DF unit itself is raised. The machine will not carry out scanning when either of these is ON, but will instead display a message instructing the user to close the DF.

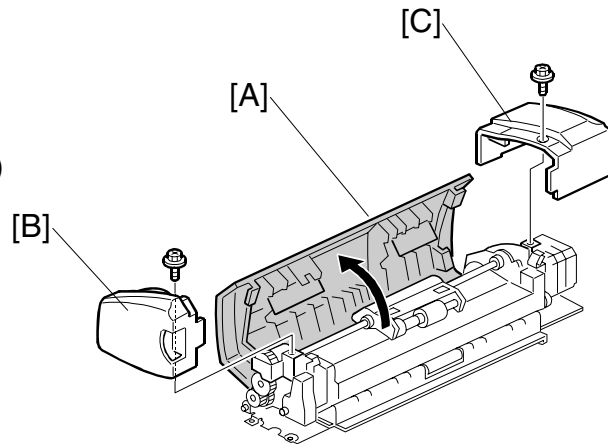
## 2.5 OVERALL ELECTRICAL CIRCUIT



## 3. REPLACEMENT AND ADJUSTMENT

### 3.1 DF UPPER COVERS

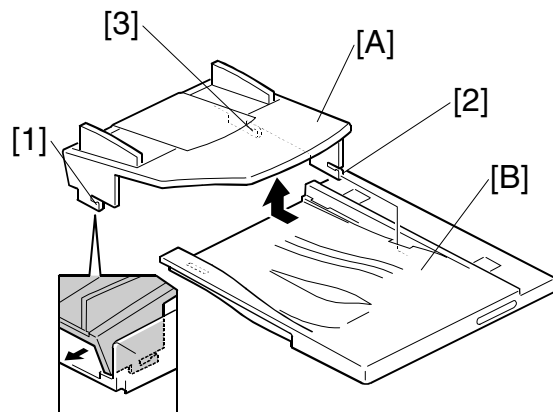
1. Open the upper guide [A].
2. DF front upper cover [B] and/or DF rear upper cover [C] (1 screw each)



### 3.2 ORIGINAL TABLE

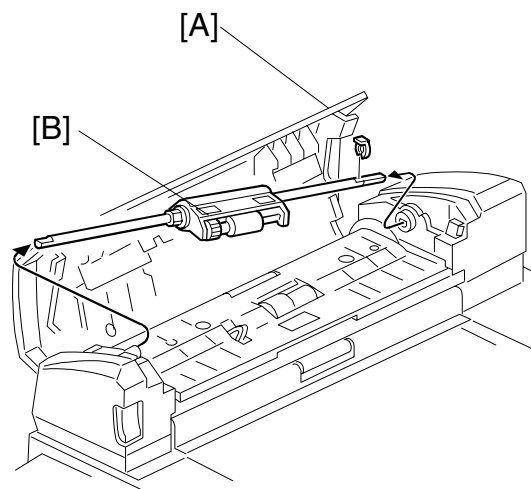
1. Push the original table [A] to the left so that the three latches come free of the platen cover [B], and lift off.

**NOTE:** When reinstalling, first set the table flat onto the platen cover so that the latches go all the way in to the openings, and be sure that the contact area around each latch is flush against the cover. Then push so that latch [1] locks into place, then latch [2], and then latch [3].



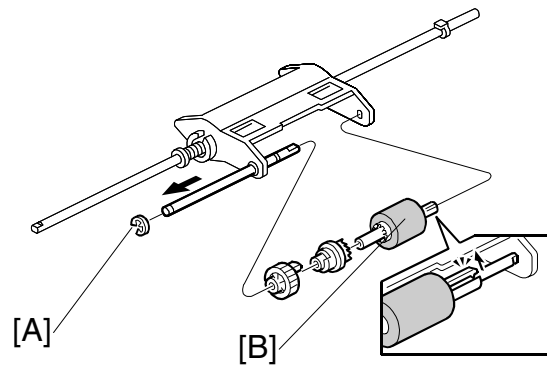
### 3.3 FEED UNIT

1. Raise the upper guide [A].
2. Feed unit [B] (☞ x 1).



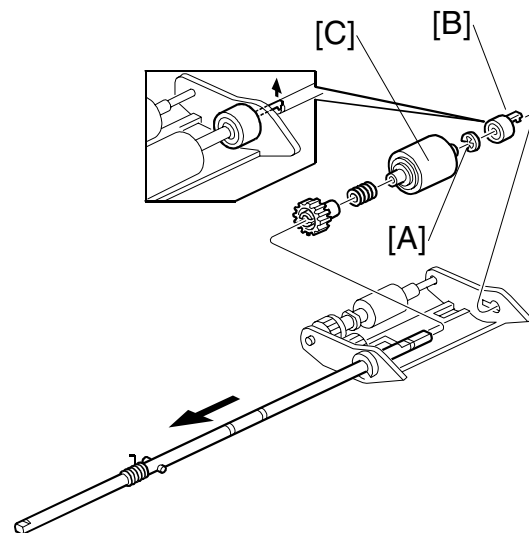
### 3.4 DF PICKUP ROLLER

1. Feed unit (☛ 3.3)
2. Remove E-ring [A].
3. DF pickup roller [B].



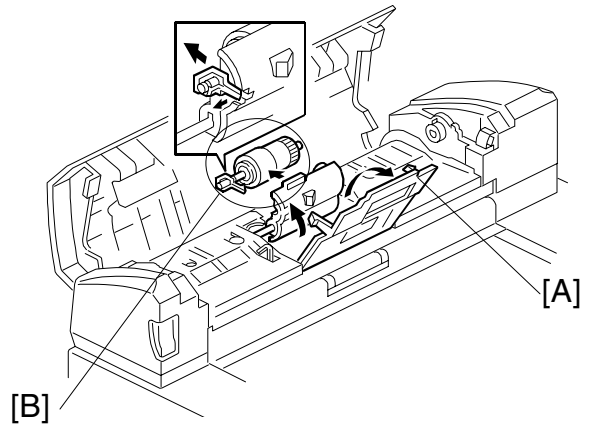
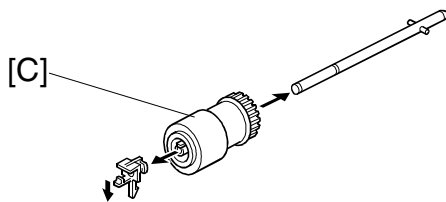
### 3.5 DF FEED ROLLER

1. Feed unit (☛ 3.3)
2. Remove E-ring [A].
3. Lift catch [B] and pull shaft in indicated direction.
4. DF feed roller [C]



## 3.6 DF SEPARATION ROLLER

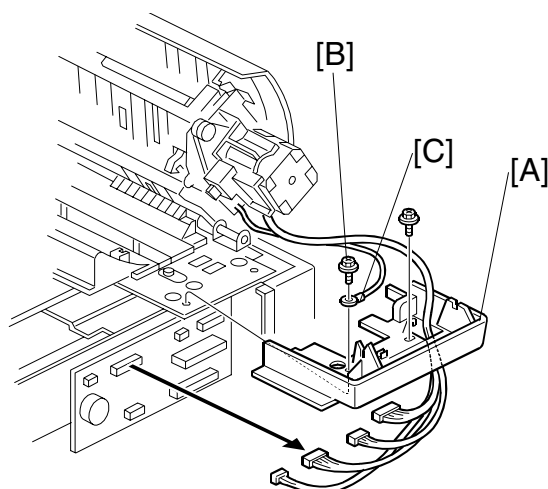
1. Feed unit (☛ 3.3)
2. Open the center lid [A]
3. Lift out the separation roller ass'y [B].
4. DF separation roller [C]



### 3.7 DF MOTOR

1. Copier rear cover (☛ Copier Service Manual, Section 3.3.2)
2. DF rear upper cover (☛ 3.1)
3. Unscrew and lift away the rear lower cover [A] (⚙ × 2).

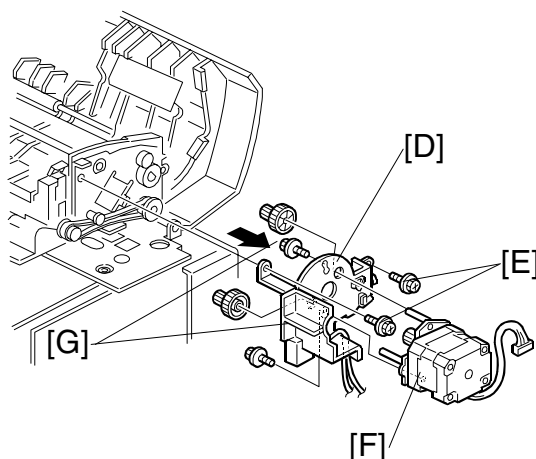
**NOTE:** It is not necessary to disconnect all connectors and remove the cover completely. When replacing, remember that the left screw [B] must also go through the ground line [C].



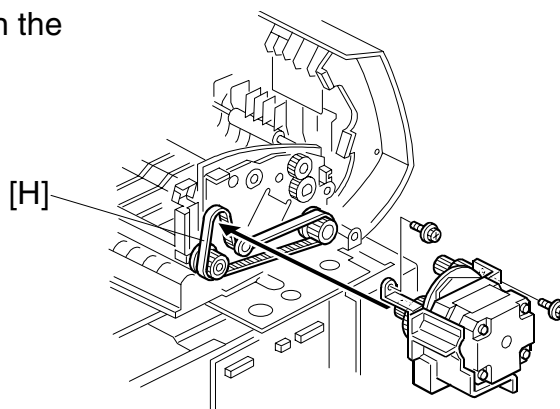
4. Motor bracket [D] (2 screws at [E]).

**NOTE:** Before removing the bracket, open the three clamps (not shown) on the bracket and take the wiring out of the them.

5. Motor [F] (2 screws at [G], ⚙ × 1).

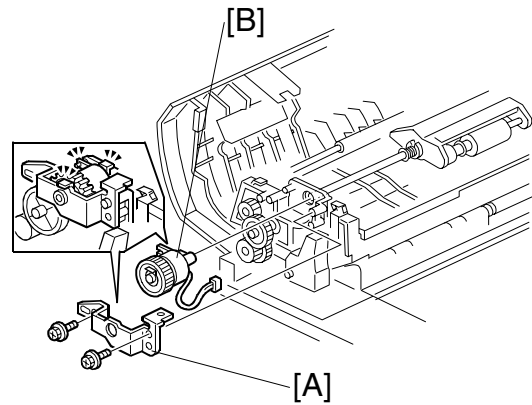


**NOTE:** When reinstalling, be sure that the belt [H] is arranged as shown in the illustration.

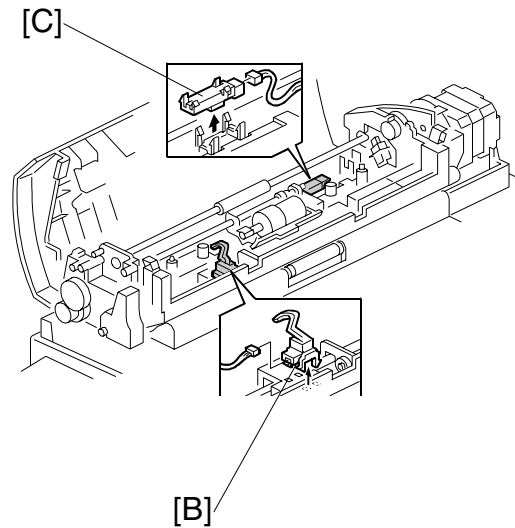
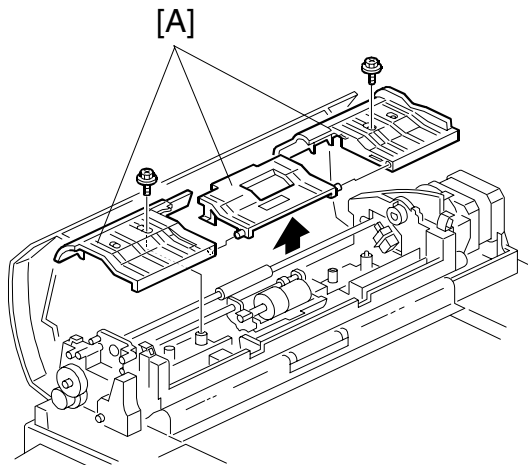


### 3.8 DF FEED CLUTCH

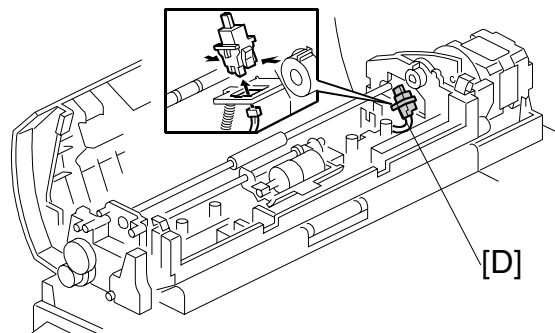
1. DF front upper cover (☛ 3.1)
2. Metal retainer [A] (🔩 × 2)
3. DF feed clutch [B] (🔌 × 1)



### 3.9 SENSORS



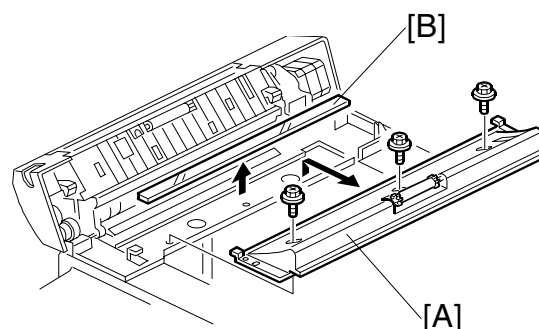
1. Feed unit (☛ 3.3)
  2. Three lids [A] (🔩 × 2)
- [B]: Original set sensor (🔌 × 1)  
 [C]: Original registration sensor (🔌 × 1)  
 [D]: Guide open sensor (🔌 × 1)





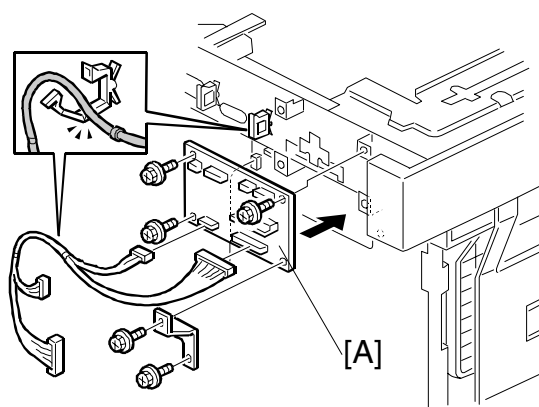
### 3.10 DF EXPOSURE GLASS

1. Press the DF latch and raise the DF body.
2. Original exit guide [A] (⌀ × 3)
3. DF exposure glass [B]  
**NOTE:** When reinstalling, set the glass so that its padded side is facing up.



### 3.11 DF CONNECTION BOARD

1. Copier rear cover (☛ Copier Service Manual, Section 3.3.2)
2. DF connection board [A] (⌀ × 5, all connectors)





# **PAPER TRAY UNIT**

## **B421**



# B421

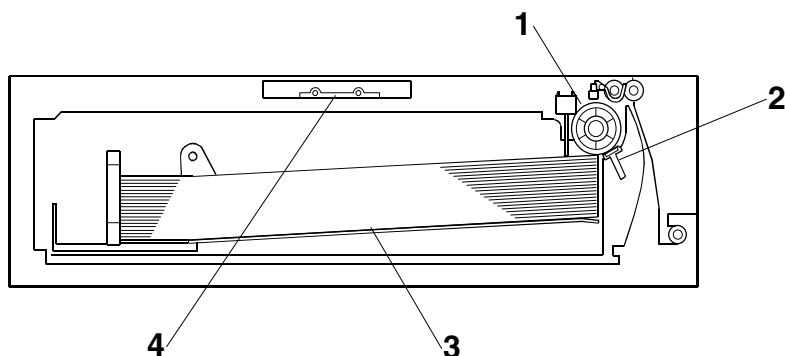
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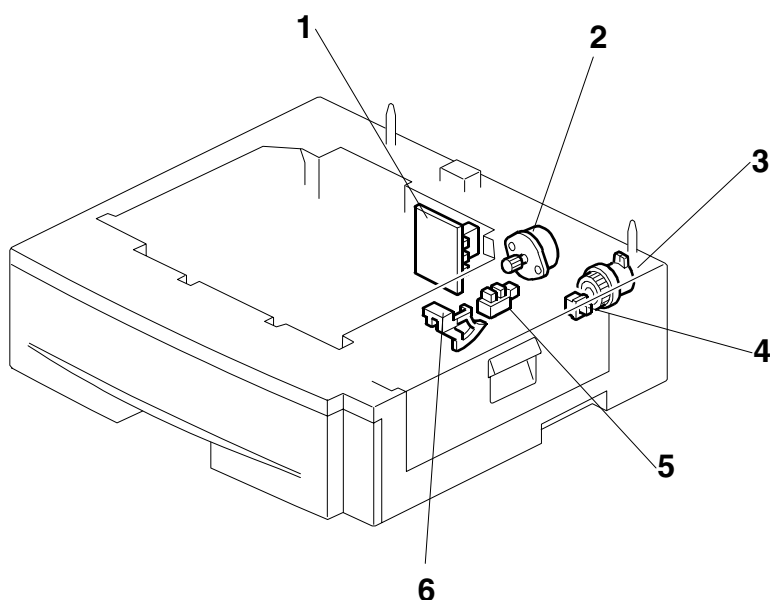
# 1. OVERALL MACHINE INFORMATION

## 1.1 MECHANICAL COMPONENT LAYOUT



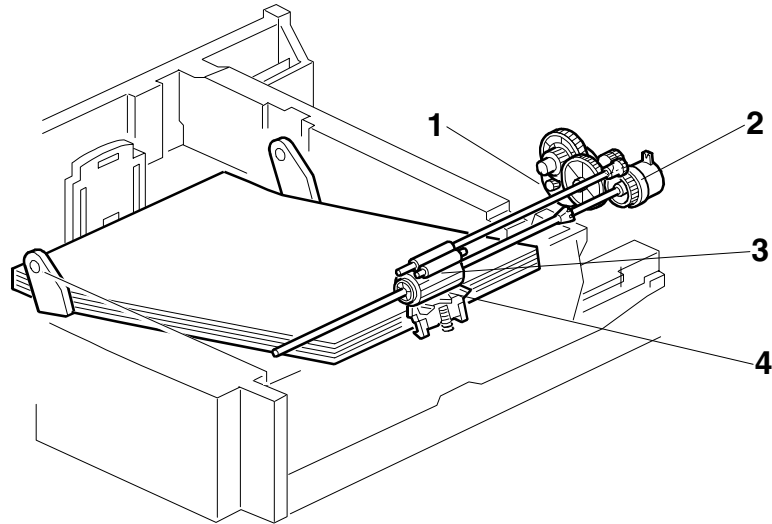
- |                 |                         |
|-----------------|-------------------------|
| 1. Feed Roller  | 3. Bottom Plate         |
| 2. Friction Pad | 4. Optional Tray Heater |

## 1.2 ELECTRICAL COMPONENT LAYOUT



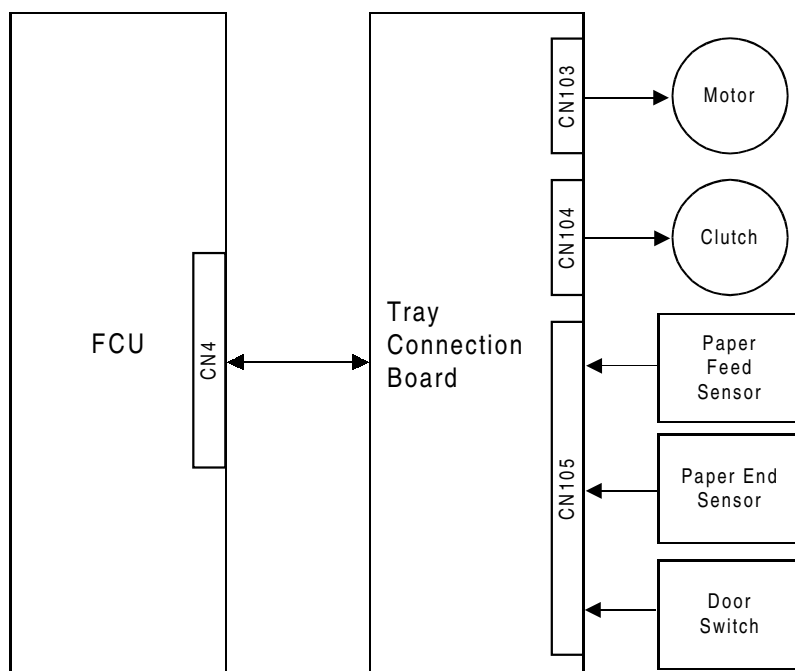
- |                      |                      |
|----------------------|----------------------|
| 1. Tray Main Board   | 4. Door Switch       |
| 2. Paper Feed Motor  | 5. Paper Feed Sensor |
| 3. Paper Feed Clutch | 6. Paper End Sensor  |

## 1.3 DRIVE LAYOUT



- |                      |                 |
|----------------------|-----------------|
| 1. Paper Feed Motor  | 3. Feed Roller  |
| 2. Paper Feed Clutch | 4. Friction Pad |

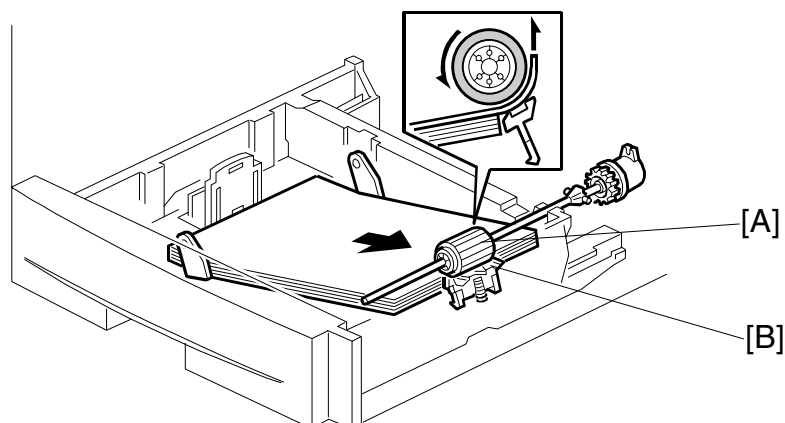
## 1.4 OVERALL ELECTRICAL CIRCUIT





## 1.5 DETAILED DESCRIPTIONS

### 1.5.1 PAPER FEED AND SEPARATION



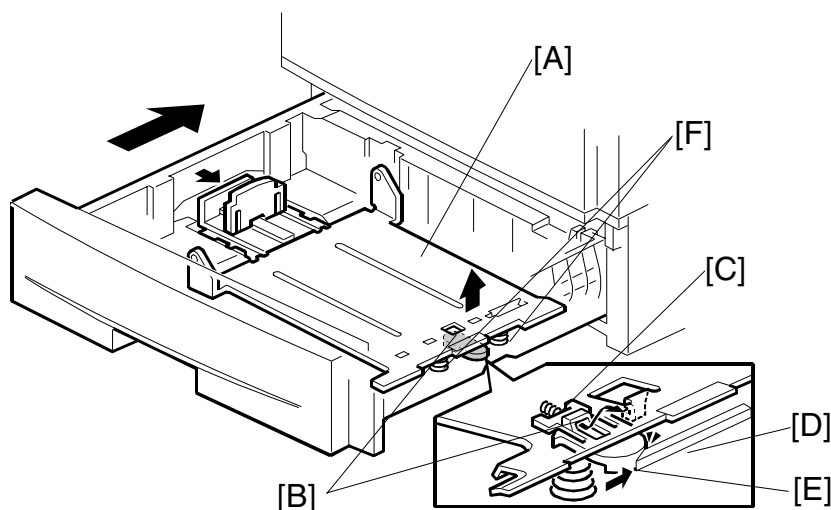
Paper Tray  
Unit  
B421

The paper tray holds 500 sheets. A friction-pad feed system is used.

[A]: Paper feed roller

[B]: Friction pad

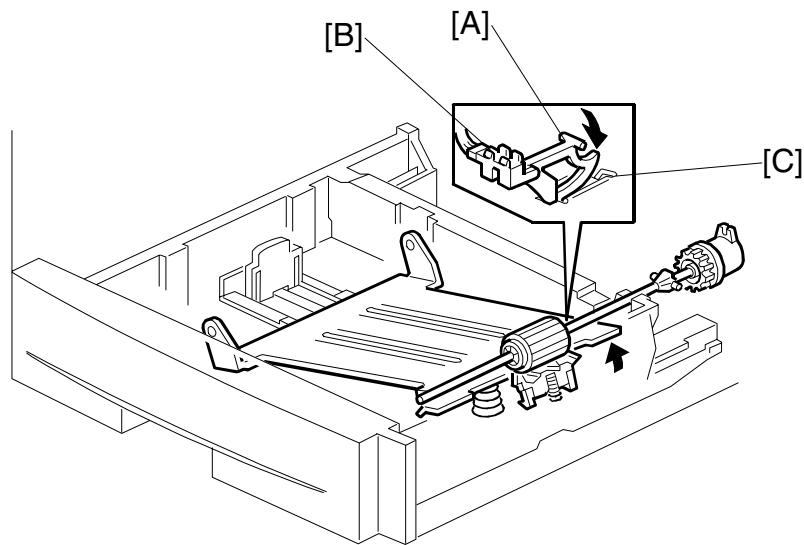
### 1.6 PAPER LIFT MECHANISM



With tray partially or fully out of unit: Pushing down bottom plate [A] engages latch [B], locking the plate down. Latch [B] is held in place by spring [C].

When user pushes tray in: Runner [D] on frame pushes in rounded slider [E], retracting the latch. Springs [F] push the plate up. The latch remains retracted while the drawer is in the unit, so that the plate cannot be locked down.

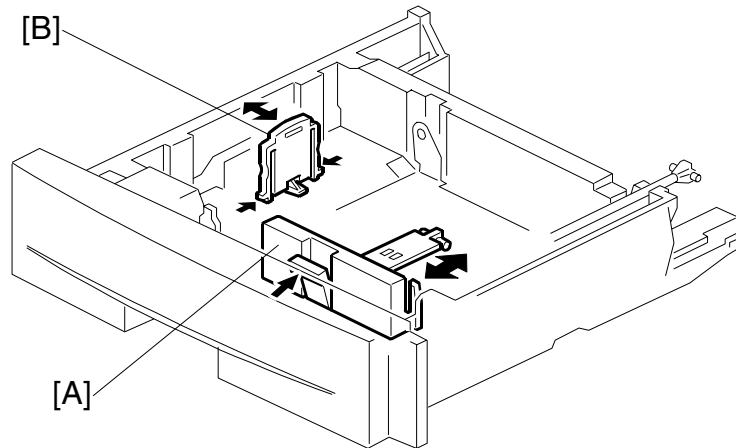
## 1.7 PAPER END DETECTION



[A]: Paper End Feeler  
[B]: Paper End Sensor  
[C]: Cutout in Paper Tray

- If paper is present: feeler [A] pushed up, deactivating sensor [B].
- If no paper is present: feeler [A] drops into cutout [C], activating sensor [B].
- The feeler is rounded so that it lifts out of the way when the tray is inserted or pulled out.

## 1.8 SIDE AND END FENCES



Paper Tray  
Unit  
B421

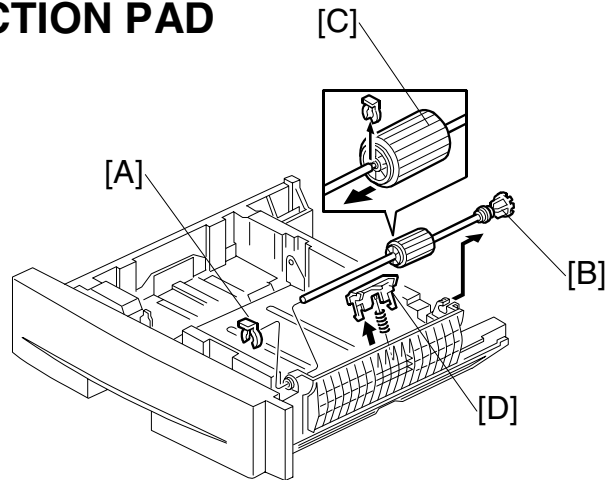
[A]: Side Fence  
[B]: End Fence

- Side Fence: Set width to A4, 8 1/4", or 8 1/2".
- End fence: Set from 11" to 13", with standard settings at 11", A4, and 13". To feed 14" paper, the end fence can be removed and placed in internal compartment.
- Both fences can be secured with screws at standard positions.

## 2. REPLACEMENT AND ADJUSTMENT

### 2.1 FEED ROLLER AND FRICTION PAD

1. Take the tray out of the paper tray unit.
2. Clip ring [A]
3. Shaft assembly [B]
4. Feed roller [C] (☞ x 1)
5. Friction pad [D]



### 2.2 REMOVING THE PAPER TRAY UNIT FROM THE COPIER

#### *If Optional Tray Heater Is Not Installed*

1. Lift the copier off of the paper tray unit.

#### *If Optional Tray Heater Is Installed*

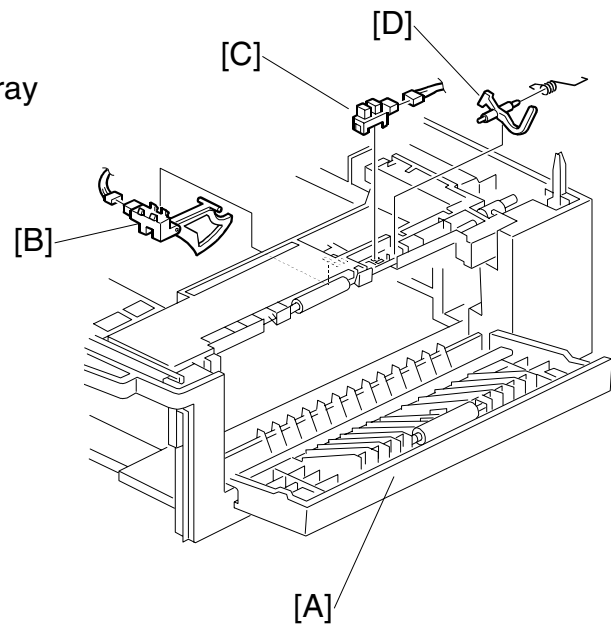
1. Refer to Section 1.4.2 of the B044/B045/B046 Service Manual, and carry out the following steps of that procedure in this order:
  - Step 2 (remove both paper trays)
  - Step 7 (remove copy tray)
  - Step 8 (remove rear cover)
  - Step 9 (remove FCU cover plate)
2. Refer to Section 1.4.2 of the B044/B045/B046 Service Manual, and do the following:
  - Unscrew the ground line.
  - Unclamp the heater harness clamps.
  - Disconnect the heater harness from the relay harness.
  - Unwrap and remove the core.
3. Pull the relay harness down and out through the hole in the PSU bracket, and then pull it all the way in through the hole at the rear of the (main) paper tray unit.
4. Remove the 3 screws fastening the paper tray unit to the copier (☞ 1.4.2 of the B044/B045/B046 Service Manual, Step 6).
5. Lift the copier off the paper tray unit.  
 To reinstall, refer to the procedure in Section 1.4.2 of the B044/B045/B046 Service Manual. Carry out most of that procedure, starting from Step 5 and omitting unnecessary steps.

## 2.3 SENSORS

1. Remove the copier from the paper tray unit (☞ 2.2).
2. Open the PTU's right door [A].

[B]: Paper end sensor (☞ × 1)

[C]: Paper feed sensor  
(1 feeler [D], ☞ × 1)

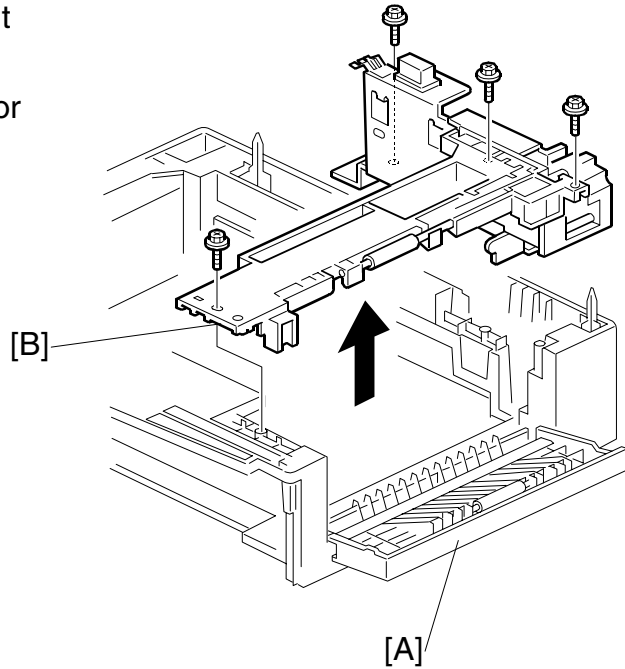


Paper Tray  
Unit  
B421

## 2.4 DRIVE SECTION

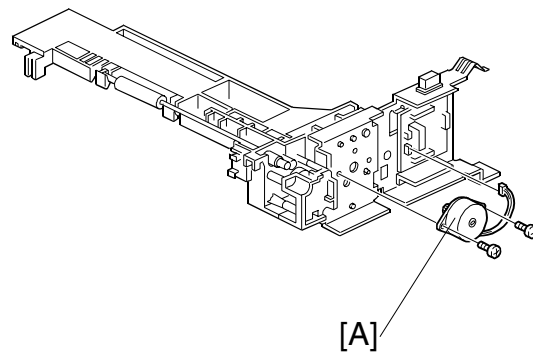
### 2.4.1 DRIVE BLOCK

1. Remove copier from paper tray unit (☛ 2.2).
2. Open the paper tray unit's right door [A].
3. Drive block [B] (🔩 × 4)



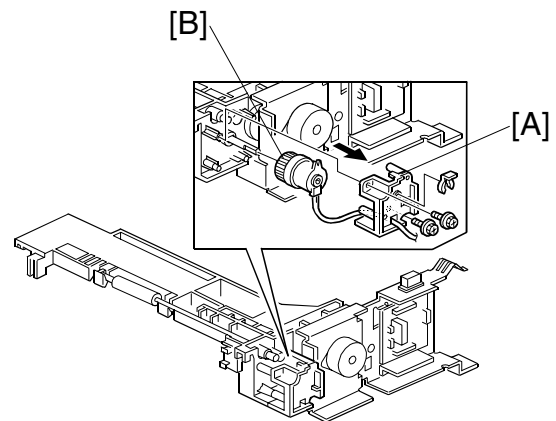
### 2.4.2 PAPER FEED MOTOR

1. Drive block (☛ 2.4.1)
2. Paper feed motor [A] (🔩 × 1)



### 2.4.3 PAPER FEED CLUTCH

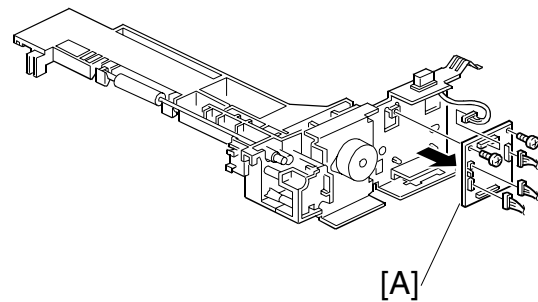
1. Drive block (☛ 2.4.1)
2. Detach the clutch cover [A]  
(☛ x 1, ⚙ x 2).
3. Paper feed clutch [B] (☛ x 1)  
Detach the connector from the board  
side, not the clutch side.



Paper Tray  
Unit  
B421

### 2.4.4 TRAY MAIN BOARD (☛ 2.4.1)

1. Tray main board [A]  
(⚙ x 2, all connectors)







# **FAX UNIT B465**

This manual explains the Fax Unit, as well as the following.

- ❑ Handset (Machine Code: B433 - NA only)

## Lithium Batteries

### CAUTION

The danger of explosion exists if battery on the FCU is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

# **B465**

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# **INSTALLATION**



# 1. INSTALLATION

- NOTES:**
- 1) Never install telephone wiring during a lightning storm.
  - 2) Never install a telephone jack in a wet location, unless the jack is specifically designed for such a location.
  - 3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
  - 4) Use caution when installing and modifying telephone lines.
  - 5) Avoid using telephones (other than cordless types) during an electrical storm, as there may be a remote risk of electric shock from lightning.
  - 6) Do not use a telephone in the vicinity of a gas leak. If you need to report a leak, move to a different location before phoning.

## CAUTION

1. Before installing the fax unit, switch off the main power and disconnect the power cord.
2. The fax unit includes lithium battery(s). There is risk of explosion of a battery of this type is replaced incorrectly. Replace only with the same type or with an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

Fax Unit  
B465

## 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

Refer to the service manual for the base copier.

### 1.1.2 MACHINE LEVEL

Refer to the service manual for the base copier.

### 1.1.3 MINIMUM SPACE REQUIREMENTS

Refer to the service manual for the base copier.

### 1.1.4 POWER REQUIREMENTS

Refer to the service manual for the base copier.

## FAX UNIT

### 1.2 FAX UNIT

#### 1.2.1 ACCESSORY CHECK

Confirm that you have the components and accessories indicated below.

| No. | Description                                | Q'ty | NA |
|-----|--------------------------------------------|------|----|
| 1   | Fax operation panel                        | 1    | O  |
| 2   | Monitor speaker                            | 1    | O  |
| 3   | NCU (Network Control Unit) with bracket    | 1    | O  |
| 4   | Harness for NCU - FCU                      | 1    | O  |
| 5   | FCU (Fax/Function Control Unit)            | 1    | O  |
| 6   | Copy Key Top                               | 1    | O  |
| 7   | Screws                                     | 6    | O  |
| 8   | Super G3 decal                             | 1    | O  |
| 9   | Handset bracket                            | 1    | O  |
| 10  | Telephone cable                            | 1    | O  |
| 11  | Label(s)                                   | 1    | O  |
| 12  | User function key decal                    | 1    | O  |
| 13  | Operation panel sheet                      | 1    | #  |
| 14  | Operators Instructions - Basic Features    | 1    | O  |
| 15  | Operators Instructions - Advanced Features | 1    | O  |
| 16  | Installation Procedure                     | 1    | O  |

O: Included in package

#: Adhered on the operation panel

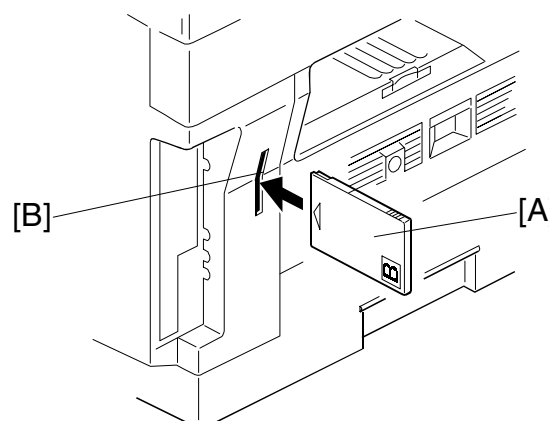


## 1.1.2 INSTALLING THE FAX OPTION

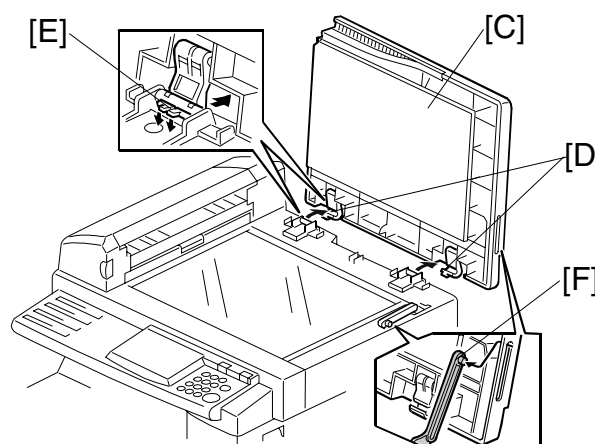
### ⚠ CAUTION

1. Before starting installation, be sure to save the SRAM data (user settings) from the existing FCU into an external memory card. After completing the installation, load the save data into the new FCU.
2. If there is a printer option installed in the machine, proceed as follows.
  - 1) Print out all print data from the printer buffer.
  - 2) Remove the printer option from the machine.
  - 3) Install the fax option.
  - 4) Reinstall the printer option.

1. Turn the power off, and then insert a memory card [A] into the card slot [B].

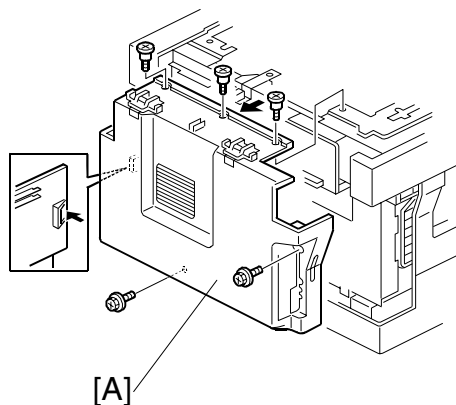


2. Turn the power on, and run SP5-824 to save (upload) the SRAM data from the current FCU into the memory card. (For instructions, see Section 5.1.8 of the base copier's service manual.)
3. Turn off the main switch, remove the memory card, and disconnect the power cord.
4. Remove the platen cover [C]. To remove: Lift the cover, unlatch the two latches [D] (press down on the tabs [E] and push the latch back), and detach the cover from the hook [F].

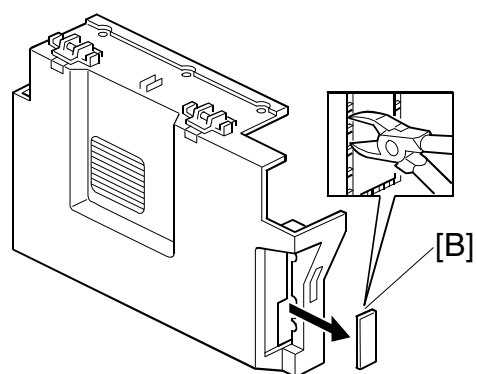


## FAX UNIT

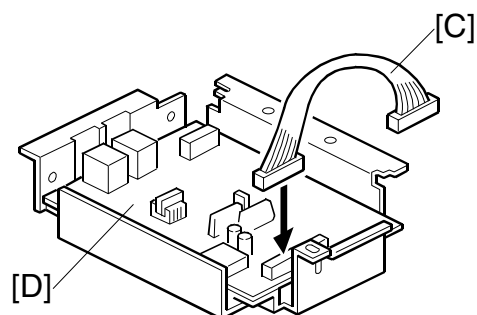
5. Remove the rear cover [A] (⌀ x 5).



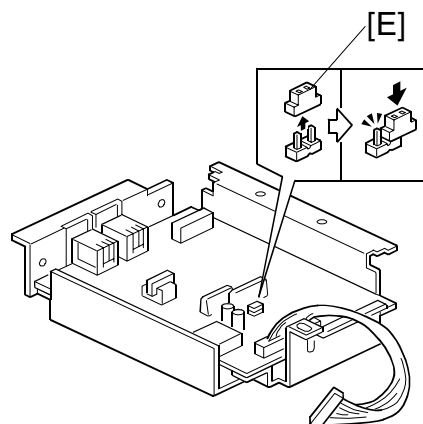
6. Cut out area [B] from the rear cover.



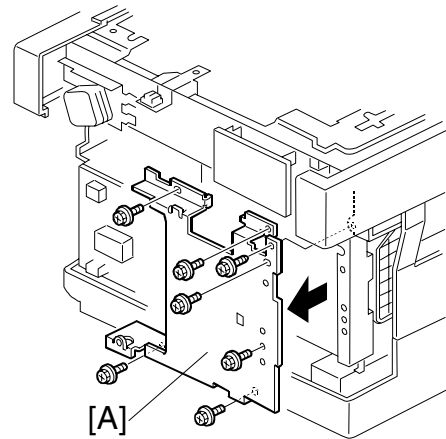
7. Connect the supplied harness [C] to the NCU [D].



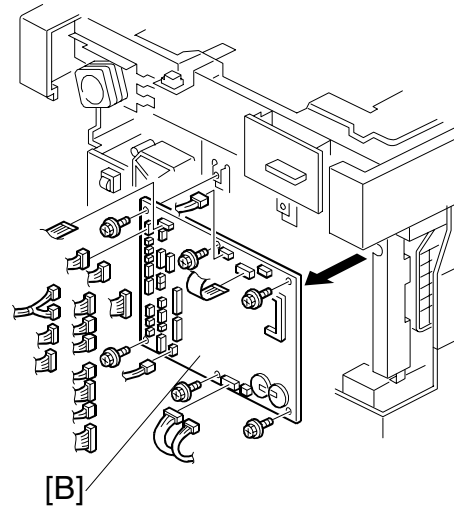
8. **On Hong Kong models only:** On the NCU, change the position of the TB1 jumper connector [E] so that the jumper is open. On all other versions, make sure that the jumper TB1 is closed.



9. Remove the FCU cover plate [A] (⚙ x 7).



10. Remove the FCU [B] that is currently installed on the machine (all connectors, 2 flat cables, ⚙ x 6).

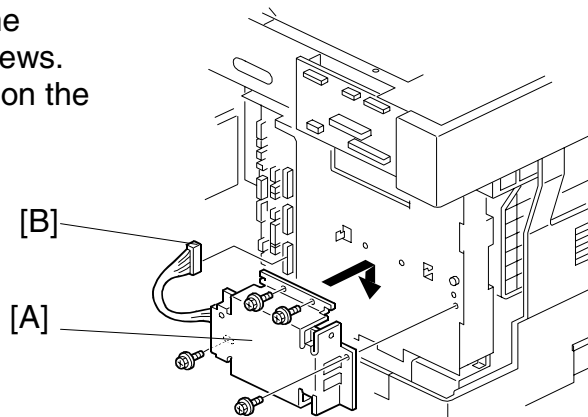


11. In place of the FCU that you just removed, install the FCU that came with the fax option (⚙ x 6, 2 flat cables, all connectors).

**NOTE:** Make sure that the battery switch on the FCU is turned on.

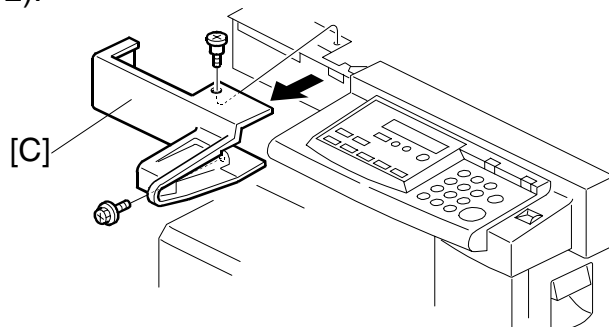
## FAX UNIT

12. Reinstall the FCU cover plate that you removed at Step 9.
13. Connect the supplied harness to CN1 on the NCU.
14. Attach the NCU-and-bracket [A] to the cover plate with 4 of the supplied screws. Connect the NCU cable [B] to CN33 on the FCU.

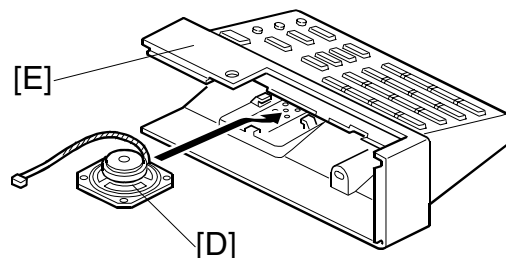


15. Reattach the rear cover.

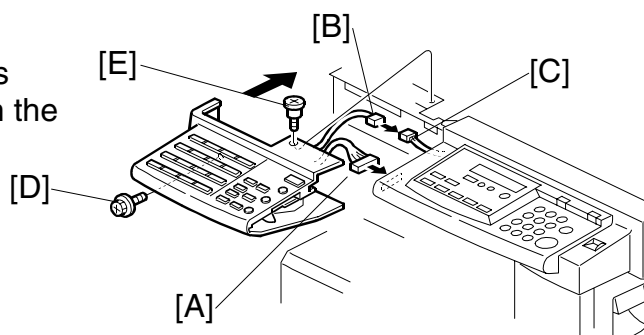
14. Remove the front left cover [C] (⌀ x 2).



17. Set the monitor speaker [D] into the fax operation panel [E], with the speaker harness positioned as shown.



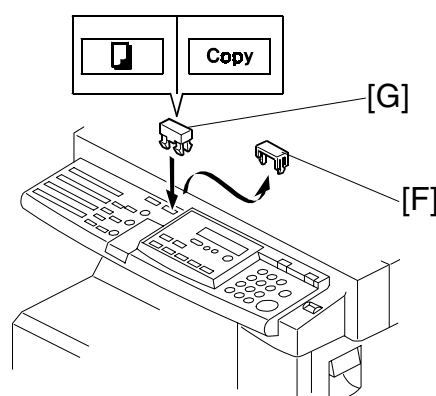
18. Connect the fax operation panel's connector [A] to the connector on the copier's operation panel.



19. Connect the speaker's connector [B] to the connector [C] extending out from the copier's operation panel.
20. Attach the fax operation panel to the copier with the 2 screws ([D] and [E]) removed at Step 15. For the upper screw [E], be sure to use the shorter, headless screw.

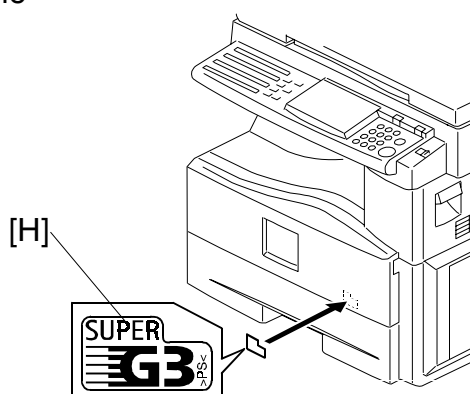
**NOTE:** If you mistakenly use the longer screw at [E], the screw will block the action of the scanner.

21. Remove the small cover [F], then attach the copy key top [G].



22. Reattach the platen cover.
23. Affix the packed decal(s)/label(s) on the front cover as shown.

**Example:** Super G3 decal [H]



24. Insert the telephone cable into the socket labeled "LINE" at the rear of the machine.
25. Plug in the machine and turn the main power switch on.
- NOTE:** Be sure to plug the machine into a properly grounded outlet.

## FAX UNIT

26. Do the following to confirm that the fax unit is correctly installed. If results are incorrect, go back and repeat the installation procedure.
  - 1) Access SP5-992 and select "2" to print out a full SMC report. Confirm that the report shows a "YES" for SP7-801-3.
  - 2) Press the On Hook key on the fax operation panel, and confirm that you hear a dial tone coming from the monitor speaker.
27. Turn the power off, and then insert the memory card that you used at Step 2 to save the old FCU's SRAM data.
28. Turn the power on, and run SP5-825 to download the saved data from the card into the new FCU. (For instructions, see Section 5.1.8 of the base copier's service manual.)
29. Turn the power off, remove the memory card, and turn the power back on.
30. Program the items required for fax communication, as indicated in section 1.2.3 Initial Programming.

### 1.1.3 INITIAL PROGRAMMING

| Items to Program (Service Level – Service Functions <sup>*1</sup> ) | Function No. |
|---------------------------------------------------------------------|--------------|
| Country code (System switch 0F)                                     | 01           |
| Protocol requirements (G3 switch 0B) - EU only                      | 01           |
| PM call (System switch 01 – bit 0)                                  | 01           |
| Country code (NCU parameter 00)                                     | 07           |
| Service station's fax number                                        | 09           |

| Items to Program (Service Level – SP Mode <sup>*1</sup> ) | SP No. |
|-----------------------------------------------------------|--------|
| Machine's serial number                                   | 5-811  |
| Language replacement (Firmware download)                  | 5-827  |
| PSTN access code (RAM address 4000DB)                     | 7-955  |
| PSTN access method (RAM address 4000CD)                   |        |
| Periodic service call (RAM addresses 40054F to 400553)    |        |

\*1: See Section 5.1.1 for information about how to enter service functions.

| Items to Program (User Administrator Level) | User Tools               |
|---------------------------------------------|--------------------------|
| Monitor volume                              | Fax Features -><br>Setup |
| Display contrast                            |                          |
| Date and Time                               |                          |
| Reception mode                              |                          |
| Fax Header/Own Name/Own No. (TTI/RTI/CSI)   |                          |
| Reports on/off                              | Key Op. Tools            |
| Country Code (except NA)                    |                          |
| Energy saver level                          | System Settings          |
| Language selection                          | Language                 |
| Other initial programming items             | *2                       |

\*2: Refer to the Operating Instructions for details.

## 1.3 HANDSET (OPTION FOR NA)

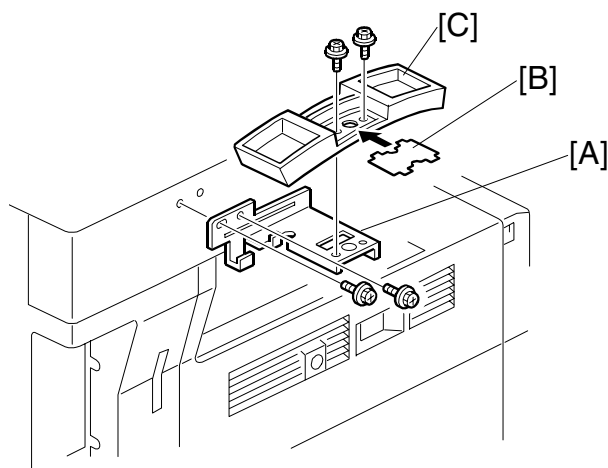
### 1.3.1 ACCESSORY CHECK

Check that you have the components and accessories indicated below.

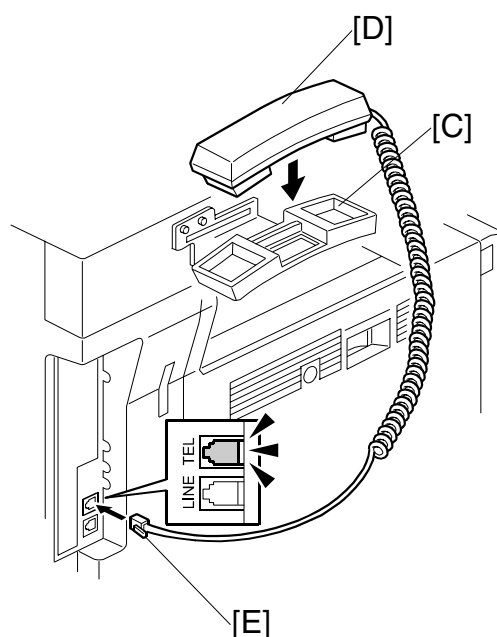
| No. | Description    | Q'ty |
|-----|----------------|------|
| 1   | Handset        | 1    |
| 2   | Handset cradle | 1    |
| 3   | Screws         | 2    |
| 4   | Handset manual | 1    |

### 1.3.2 INSTALLATION PROCEDURE

1. Attach the handset bracket [A] included with the fax option, using 2 of the screws included with that option.



2. Remove the label [B] from the handset cradle [C]. Attach the cradle [C] to the bracket [A] using the two supplied screws. Then reattach the label.
3. Set the handset [D] on the cradle [C], and then connect the cable [E] to the TEL jack at the rear of the machine.





# **PREVENTIVE MAINTENANCE**



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## **2. PREVENTIVE MAINTENANCE**

### **2.1 SPECIAL TOOLS AND LUBRICANTS**

- Flash Memory Card – 4MB (P/N: N8036701)
- Card Case (P/N: N8031000)

### **2.2 PM TABLE**

No PM necessary for the fax option.

Fax Unit  
B465



# **REPLACEMENT AND ADJUSTMENT**



## 3. REMOVAL AND REPLACEMENT

### 3.1 PRECAUTION

#### ⚠ CAUTION

Before starting disassembly, be sure to print all message files in the SAF memory. Then, turn off the main power switch and disconnect the power cord and telephone cable for safety.

#### Lithium Battery

The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same type or with an equivalent type recommended by the manufacturer. Discard used batteries in accordance with the manufacturer's instructions.

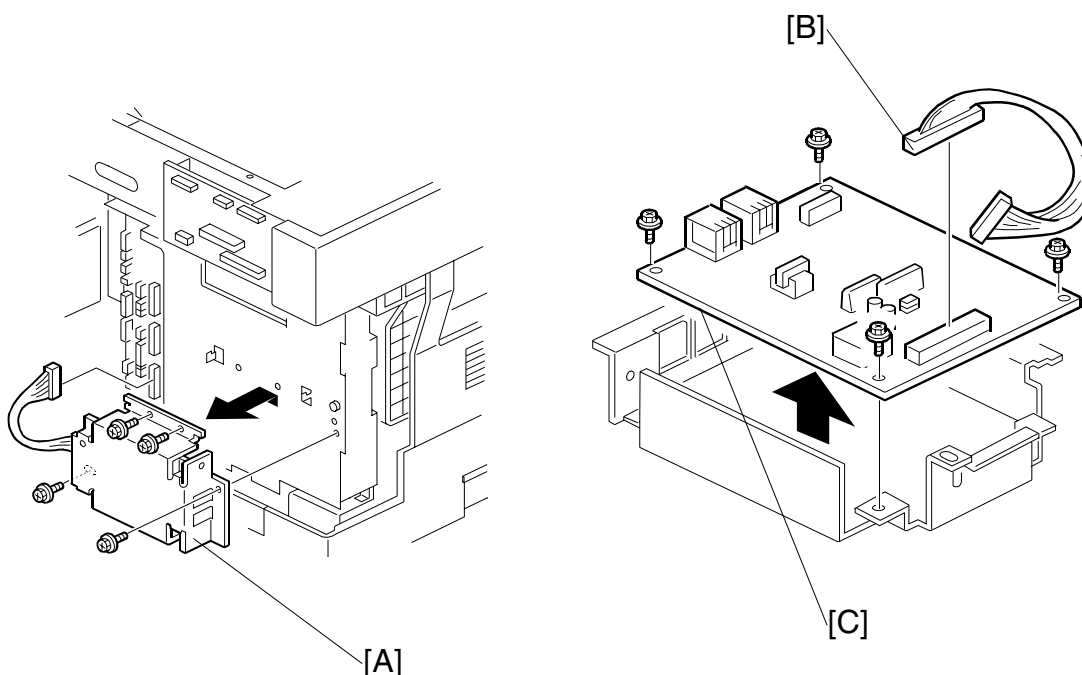
Fax Unit  
B465

### 3.2 FCU

Refer to the service manual for the base copier.

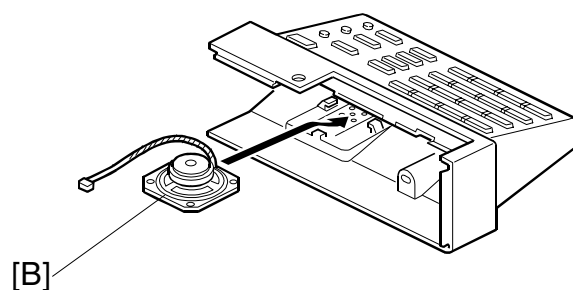
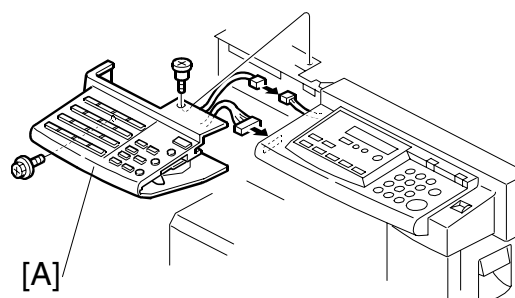
### 3.3 NCU

1. Rear cover (Refer to service manual for the base copier.)
2. NCU bracket (⌀ × 4) [A]
3. Disconnect the harness [B] from the NCU.
4. NCU [C] (⌀ × 4)



### 3.4 MONITOR SPEAKER

1. Fax operation panel [A] (🔧 × 2, 📶 × 2)
2. Speaker [B]





# **TROUBLESHOOTING**



## 4. TROUBLESHOOTING

### 4.1 ERROR CODES

If an error code occurs, retry the communication. If the same problem occurs, try to fix the problem as suggested below. Note that some error codes appear only in the error code display and on the service report.

| Code | Meaning                                                 | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-00 | DIS/NSF not detected within 40 s of Start being pressed | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the NCU - FCU connectors.</li> <li>• The machine at the other end may be incompatible.</li> <li>• Replace the NCU or FCU.</li> <li>• Check for DIS/NSF with an oscilloscope.</li> <li>• If the rx signal is weak, there may be a bad line.</li> </ul>                                                                                                                                                                                                                                                          |
| 0-01 | DCN received unexpectedly                               | <ul style="list-style-type: none"> <li>• The other party is out of paper or has a jammed printer.</li> <li>• The other party pressed Stop during communication.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0-03 | Incompatible modem at the other end                     | <ul style="list-style-type: none"> <li>• The other terminal is incompatible.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 0-04 | CFR or FTT not received after modem training            | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the NCU - FCU connectors.</li> <li>• Try changing the tx level and/or cable equalizer settings.</li> <li>• Replace the FCU or NCU.</li> <li>• The other terminal may be faulty; try sending to another machine.</li> <li>• If the rx signal is weak or defective, there may be a bad line.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Tx level - NCU Parameter 01 (PSTN)</li> <li>• Cable equalizer - G3 Switch 07 (PSTN)</li> <li>• Dedicated Tx parameters</li> </ul> |
| 0-05 | Unsuccessful after modem training at 2400 bps           | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the NCU - FCU connectors.</li> <li>• Try adjusting the tx level and/or cable equalizer.</li> <li>• Replace the FCU or NCU.</li> <li>• Check for line problems.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• See error code 0-04.</li> </ul>                                                                                                                                                                                                                               |

## ERROR CODES

| Code | Meaning                                                                                  | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-06 | The other terminal did not reply to DCS                                                  | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Try adjusting the tx level and/or cable equalizer settings.</li> <li>• Replace the NCU or FCU.</li> <li>• The other end may be defective or incompatible; try sending to another machine.</li> <li>• Check for line problems.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• See error code 0-04.</li> </ul>                                                                                                                                                                                              |
| 0-07 | No post-message response from the other end after a page was sent                        | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Replace the NCU or FCU.</li> <li>• The other end may have jammed or run out of paper.</li> <li>• The other end user may have disconnected the call.</li> <li>• Check for a bad line.</li> <li>• The other end may be defective; try sending to another machine.</li> </ul>                                                                                                                                                                                                                                                                   |
| 0-08 | The other end sent RTN or PIN after receiving a page, because there were too many errors | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Replace the NCU or FCU.</li> <li>• The other end may have jammed, or run out of paper or memory space.</li> <li>• Try adjusting the tx level and/or cable equalizer settings.</li> <li>• The other end may have a defective modem/NCU/FCU; try sending to another machine.</li> <li>• Check for line problems and noise.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Tx level - NCU Parameter 01 (PSTN)</li> <li>• Cable equalizer - G3 Switch 07 (PSTN)</li> <li>• Dedicated Tx parameters</li> </ul> |
| 0-14 | Non-standard post message response code received                                         | <ul style="list-style-type: none"> <li>• Check the FCU - NCU connectors.</li> <li>• Incompatible or defective remote terminal; try sending to another machine.</li> <li>• Noisy line: resend.</li> <li>• Try adjusting the tx level and/or cable equalizer settings.</li> <li>• Replace the NCU or FCU.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• See error code 0-08.</li> </ul>                                                                                                                                                                                                                                              |

| Code | Meaning                                                                                                              | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-15 | The other terminal is not capable of specific functions.                                                             | <p>The other terminal is not capable of accepting the following functions, or the other terminal's memory is full.</p> <ul style="list-style-type: none"> <li>• Confidential rx</li> <li>• Transfer function</li> <li>• SEP/SUB/PWD/SID</li> </ul>                                                                                                                                                                                                                                                                                  |
| 0-17 | Communication was interrupted by pressing the Stop key.                                                              | If the Stop key was not pressed and this error keeps occurring, replace the operation panel.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 0-20 | Facsimile data not received within 6 s of retraining                                                                 | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Replace the NCU or FCU.</li> <li>• Check for line problems.</li> <li>• Try calling another fax machine.</li> <li>• Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Reconstruction time - G3 Switch 0A, bit 6</li> <li>• Rx cable equalizer - G3 Switch 07 (PSTN)</li> </ul> |
| 0-21 | EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal                       | <ul style="list-style-type: none"> <li>• Check the connections between the FCU, NCU, &amp; line.</li> <li>• Check for line noise or other line problems.</li> <li>• Replace the NCU or FCU.</li> <li>• The remote machine may be defective or may have disconnected.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4</li> </ul>                                                                                    |
| 0-22 | The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms) | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Replace the NCU or FCU.</li> <li>• Defective remote terminal.</li> <li>• Check for line noise or other line problems.</li> <li>• Try adjusting the acceptable modem carrier drop time.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1</li> </ul>                                                       |

## ERROR CODES

| Code | Meaning                                                                                                 | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-23 | Too many errors during reception                                                                        | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Replace the NCU or FCU.</li> <li>• Defective remote terminal.</li> <li>• Check for line noise or other line problems.</li> <li>• Try asking the other end to adjust their tx level.</li> <li>• Try adjusting the rx cable equalizer setting and/or rx error criteria.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Rx cable equalizer - G3 Switch 07 (PSTN)</li> <li>• Rx error criteria - Communication Switch 02, bits 0 and 1</li> </ul> |
| 0-24 | Printer failure occurred while the memory was full during non-ECM reception; negative response returned | <p>There is no memory space available, or substitute reception is disabled.</p> <ul style="list-style-type: none"> <li>• Try asking the user to add optional extra memory.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 0-29 | Data block format failure in ECM reception                                                              | <p>Check for line noise or other line problems.</p> <ul style="list-style-type: none"> <li>• Try receiving from another machine.</li> </ul> <p>Replace the FCU.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 0-30 | The other terminal did not reply to NSS(A) in AI short protocol mode                                    | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check the FCU - NCU connectors.</li> <li>• Try adjusting the tx level and/or cable equalizer settings.</li> <li>• The other terminal may not be compatible.</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Dedicated tx parameters</li> </ul>                                                                                                                                                                                                                                            |
| 0-32 | The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.      | <ul style="list-style-type: none"> <li>• Check the protocol dump list.</li> <li>• Ask the other party to contact the manufacturer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0-33 | DCR timer runs out without receiving certain amount of data.                                            | <ul style="list-style-type: none"> <li>• Check the connections between the FCU, NCU, &amp; line.</li> <li>• Check for line noise or other line problems.</li> <li>• Replace the NCU or FCU.</li> <li>• The remote machine may be defective or may have disconnected.</li> </ul>                                                                                                                                                                                                                                                                                                                            |
| 0-52 | Polarity changed during communication                                                                   | <ul style="list-style-type: none"> <li>• Check the line connection.</li> </ul> <p>Retry communication.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 0-70 | The communication mode specified in CM/JM was not available (V.8 calling and called terminal)           | <ul style="list-style-type: none"> <li>• The other terminal did not have a compatible communication mode (e.g., the other terminal was a V.34 data modem and not a fax modem.)</li> <li>• A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.</li> </ul>                                                                                                                                                                                                                                                                                        |

| Code | Meaning                                                                                                            | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-74 | The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.                   | <ul style="list-style-type: none"> <li>The calling terminal could not detect ANSam due to noise, etc.</li> <li>ANSam was too short to detect.</li> <li>Check the line connection and condition.</li> <li>Try making a call to another V.8/V.34 fax.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0-75 | The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout). | <ul style="list-style-type: none"> <li>The terminal could not detect ANSam.</li> <li>Check the line connection and condition.</li> <li>Try receiving a call from another V.8/V.34 fax.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 0-76 | The calling terminal fell back to T.30 mode, because it could not detect a JM in response to a CM (CM timeout).    | <ul style="list-style-type: none"> <li>The called terminal could not detect a CM due to noise, etc.</li> <li>Check the line connection and condition.</li> <li>Try making a call to another V.8/V.34 fax.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 0-77 | The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM (JM timeout).       | <ul style="list-style-type: none"> <li>The calling terminal could not detect a JM due to noise, etc.</li> <li>A network that has narrow bandwidth cannot pass JM to the other end.</li> <li>Check the line connection and condition.</li> <li>Try receiving a call from another V.8/V.34 fax.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0-79 | The called terminal detected CI while waiting for a V.21 signal.                                                   | Check for line noise or other line problems. If this error occurs, the called terminal falls back to T.30 mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0-80 | The line was disconnected due to a timeout in V.34 phase 2 – line probing.                                         | <ul style="list-style-type: none"> <li>The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors.</li> </ul> <p>If these errors happen at the transmitting terminal:</p> <ul style="list-style-type: none"> <li>Try making a call at a later time.</li> <li>Try using V.17 or a slower modem using dedicated tx parameters.</li> <li>Try increasing the tx level.</li> <li>Try adjusting the tx cable equalizer setting.</li> </ul> <p>If these errors happen at the receiving terminal:</p> <ul style="list-style-type: none"> <li>Try adjusting the rx cable equalizer setting.</li> <li>Try increasing the tx level.</li> <li>Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.</li> </ul> |
| 0-81 | The line was disconnected due to a timeout in V.34 phase 3 – equalizer training.                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0-82 | The line was disconnected due to a timeout in the V.34 phase 4 – control channel start-up.                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0-83 | The line was disconnected due to a timeout in the V.34 control channel restart sequence.                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0-84 | The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0-85 | The line was disconnected due to abnormal signaling in V.34 control channel restart.                               | <ul style="list-style-type: none"> <li>The signal did not stop within 10 s.</li> <li>Turn off the machine, then turn it back on.</li> <li>If the same error is frequent, replace the FCU.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## ERROR CODES

| Code | Meaning                                                                                                                                            | Suggested Cause/Action                                                                                                                                                                                                                                                                                 |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0-86 | The line was disconnected because the other terminal requested a data rate using MPh that was not available in the currently selected symbol rate. | <ul style="list-style-type: none"> <li>The other terminal was incompatible.</li> <li>Ask the other party to contact the manufacturer.</li> </ul>                                                                                                                                                       |
| 0-87 | The control channel started after an unsuccessful primary channel.                                                                                 | <ul style="list-style-type: none"> <li>The receiving terminal restarted the control channel because data reception in the primary channel was not successful.</li> <li>This does not result in an error communication.</li> </ul>                                                                      |
| 0-88 | The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.                                        | <ul style="list-style-type: none"> <li>Try using a lower data rate at the start.</li> <li>Try adjusting the cable equalizer setting.</li> </ul>                                                                                                                                                        |
| 1-00 | Document jam                                                                                                                                       | <ul style="list-style-type: none"> <li>Incorrectly inserted document or unsuitable document type.</li> </ul> <p>Check the ADF drive components and sensors.</p>                                                                                                                                        |
| 1-01 | Document length exceeded the maximum                                                                                                               | <ul style="list-style-type: none"> <li>Try changing the maximum acceptable document length.</li> <li>Divide the document into smaller pieces.</li> <li>Check the ADF drive components and sensors.</li> </ul> <p><b>Cross reference</b><br/>Max. document length - Scanner switch 00, bits 2 and 3</p> |
| 1-02 | Shading error (Interval of original documents is too short)                                                                                        | <ul style="list-style-type: none"> <li>Check the ADF drive components and sensors.</li> </ul>                                                                                                                                                                                                          |
| 1-08 | Shading error (No Xenon lamp turns on)                                                                                                             | <ul style="list-style-type: none"> <li>Check the xenon lamp connection</li> <li>Replace the xenon lamp or FCU</li> </ul>                                                                                                                                                                               |
| 1-10 | Paper at the scan line when the power was turned on.                                                                                               | <ul style="list-style-type: none"> <li>Remove the paper.</li> <li>Check the scan line sensor.</li> </ul>                                                                                                                                                                                               |
| 1-17 | Document jam in the feed-out area                                                                                                                  | <ul style="list-style-type: none"> <li>Clear any debris from the sensor actuator.</li> <li>Check the ADF drive components and sensors.</li> </ul>                                                                                                                                                      |
| 1-20 | Paper did not reach the fusing exit at the end of printing                                                                                         | <ul style="list-style-type: none"> <li>Remove the paper.</li> <li>Check the printer drive components and sensors.</li> </ul>                                                                                                                                                                           |
| 1-21 | Paper present at the fusing exit after printing                                                                                                    |                                                                                                                                                                                                                                                                                                        |
| 1-30 | Paper ran out during printing                                                                                                                      | <ul style="list-style-type: none"> <li>Add paper in the cassette.</li> </ul>                                                                                                                                                                                                                           |
| 1-34 | Paper ran out after printing                                                                                                                       |                                                                                                                                                                                                                                                                                                        |
| 1-35 | Paper lift mechanism error at the 1 <sup>st</sup> optional paper tray                                                                              | <ul style="list-style-type: none"> <li>Check the printer drive components and sensors of optional paper tray.</li> </ul>                                                                                                                                                                               |
| 1-71 | The cover was opened or the cassette was pulled out during printing                                                                                | <ul style="list-style-type: none"> <li>Close the cover or put back the cassette.</li> </ul>                                                                                                                                                                                                            |
| 2-10 | The modem cannot enter tx mode                                                                                                                     | <ul style="list-style-type: none"> <li>Replace the FCU.</li> </ul>                                                                                                                                                                                                                                     |
| 2-11 | Only one V.21 connection flag was received                                                                                                         | <ul style="list-style-type: none"> <li>Replace the FCU.</li> </ul>                                                                                                                                                                                                                                     |



| Code | Meaning                                                                                                                              | Suggested Cause/Action                                                                                                                                                                                |
|------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2-12 | Modem clock irregularity                                                                                                             | <ul style="list-style-type: none"> <li>Replace the FCU.</li> </ul>                                                                                                                                    |
| 2-13 | Modem initialization error                                                                                                           | <ul style="list-style-type: none"> <li>Turn off the machine, then turn it back on.</li> <li>Update the modem ROM.</li> <li>Replace the FCU.</li> </ul>                                                |
| 2-20 | Abnormal coding/decoding (CPU not ready)                                                                                             | <ul style="list-style-type: none"> <li>Replace the FCU.</li> </ul>                                                                                                                                    |
| 2-23 | JBIG compression/reconstruction error                                                                                                | <ul style="list-style-type: none"> <li>Turn off the machine, then turn it back on.</li> <li>Replace the FCU if the error occurs frequently.</li> </ul>                                                |
| 2-24 | JBIG ASIC error                                                                                                                      |                                                                                                                                                                                                       |
| 2-25 | JBIG data reconstruction error (BIH) error                                                                                           |                                                                                                                                                                                                       |
| 2-26 | JBIG data reconstruction error (Float marker error)                                                                                  |                                                                                                                                                                                                       |
| 2-27 | JBIG data reconstruction error (End marker error)                                                                                    |                                                                                                                                                                                                       |
| 2-28 | JBIG data reconstruction error (Timeout)                                                                                             | <ul style="list-style-type: none"> <li>JBIG data error.</li> <li>Check the remote terminal's JBIG function.</li> <li>Replace the FCU if the error occurs frequently.</li> </ul>                       |
| 2-50 | The machine resets itself for a fatal FCU system error                                                                               |                                                                                                                                                                                                       |
| 2-51 | The machine resets itself because of a fatal communication error                                                                     |                                                                                                                                                                                                       |
| 2-52 | Memory resource releasing error after communication                                                                                  | Check the connection between FCU and NCU board.                                                                                                                                                       |
| 3-30 | Mismatched specifications (rx capability)                                                                                            | <ul style="list-style-type: none"> <li>Check the receive capabilities requested from the other terminal.</li> </ul>                                                                                   |
| 4-00 | One page took longer than 8 minutes to transmit                                                                                      | Check for a bad line.<br>Try the communication at a lower resolution, or without halftone.<br>Change the FCU.                                                                                         |
| 4-01 | Line current was cut                                                                                                                 | <ul style="list-style-type: none"> <li>Check the line connector.</li> <li>Check the connection between FCU and NCU.</li> <li>Check for line problems.</li> <li>Replace the FCU or the NCU.</li> </ul> |
| 4-02 | The other end cut the received page as it was longer than the maximum limit.                                                         | <ul style="list-style-type: none"> <li>Split the page into smaller pieces, or ask the other end to change their maximum receive length setting, then re-send.</li> </ul>                              |
| 4-10 | Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections) | <ul style="list-style-type: none"> <li>Get the ID Codes the same and/or the CSIs programmed correctly, then resend.</li> <li>The machine at the other end may be defective.</li> </ul>                |
| 5-00 | Data construction not possible                                                                                                       | <ul style="list-style-type: none"> <li>Replace the FCU.</li> </ul>                                                                                                                                    |
| 5-01 | Data reconstruction not possible                                                                                                     |                                                                                                                                                                                                       |
| 5-10 | DCR timer expired                                                                                                                    |                                                                                                                                                                                                       |

## ERROR CODES

| Code | Meaning                                                                                   | Suggested Cause/Action                                                                                                                                                                                                                                                                                                                                                                                           |
|------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5-20 | Storage impossible because of a lack of memory                                            | <ul style="list-style-type: none"> <li>• Temporary memory shortage.</li> <li>• Test the SAF memory.</li> <li>• Replace the FCU board</li> </ul>                                                                                                                                                                                                                                                                  |
| 5-21 | Memory overflow                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5-22 | Mode table overflow after the second page of a scanned document                           |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5-23 | Print data error when printing a substitute rx or confidential rx message                 | <ul style="list-style-type: none"> <li>• Wait for the messages which are currently in the memory to be sent or delete some files from memory.</li> <li>• Test the SAF memory.</li> <li>• Ask the other end to resend the message.</li> <li>• Replace the FCU board.</li> </ul>                                                                                                                                   |
| 5-24 | Memory overflow after the second page of a scanned document                               | <ul style="list-style-type: none"> <li>• Try using a lower resolution setting.</li> <li>• Wait for the messages which are currently in the memory to be sent or delete some files from memory.</li> </ul>                                                                                                                                                                                                        |
| 5-25 | SAF file access error                                                                     | <ul style="list-style-type: none"> <li>• Replace the FCU board.</li> </ul>                                                                                                                                                                                                                                                                                                                                       |
| 5-30 | Mode table for the first page to be printed was not effective                             | <ul style="list-style-type: none"> <li>• Replace the FCU or IC memory card.</li> </ul>                                                                                                                                                                                                                                                                                                                           |
| 6-00 | G3 ECM - T1 time out during reception of facsimile data                                   | <ul style="list-style-type: none"> <li>• Try adjusting the rx cable equalizer.</li> <li>• Replace the FCU or NCU.</li> </ul>                                                                                                                                                                                                                                                                                     |
| 6-01 | G3 ECM - no V.21 signal was received                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 6-02 | G3 ECM - EOR was received                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 6-03 | G3 ECM - non-standard V.21 code received                                                  | <ul style="list-style-type: none"> <li>• The other terminal may be defective.</li> </ul>                                                                                                                                                                                                                                                                                                                         |
| 6-04 | G3 ECM - RTC not detected                                                                 | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check connections from the NCU to the FCU.</li> <li>• Check for a bad line or defective remote terminal.</li> <li>• Replace the FCU or NCU.</li> </ul>                                                                                                                                                                            |
| 6-05 | G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail | <ul style="list-style-type: none"> <li>• Check the line connection.</li> <li>• Check connections from the NCU to the FCU.</li> <li>• Check for a bad line or defective remote terminal.</li> <li>• Replace the FCU or NCU.</li> <li>• Try adjusting the rx cable equalizer</li> </ul> <p><b>Cross reference</b></p> <ul style="list-style-type: none"> <li>• Rx cable equalizer - G3 Switch 07 (PSTN)</li> </ul> |
| 6-06 | G3 ECM - coding/decoding error                                                            | <ul style="list-style-type: none"> <li>• Defective FCU.</li> <li>• The other terminal may be defective.</li> </ul>                                                                                                                                                                                                                                                                                               |
| 6-08 | G3 ECM - PIP/PIN received in reply to PPS.NULL                                            | <ul style="list-style-type: none"> <li>• The other end pressed Stop during communication.</li> <li>• The other terminal may be defective.</li> </ul>                                                                                                                                                                                                                                                             |
| 6-09 | G3 ECM - ERR received                                                                     | <ul style="list-style-type: none"> <li>• Check for a noisy line.</li> <li>• Adjust the tx levels of the communicating machines.</li> <li>• See code 6-05.</li> </ul>                                                                                                                                                                                                                                             |

| Code | Meaning                                                                                            | Suggested Cause/Action                                                                                                                                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-10 | G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps | <ul style="list-style-type: none"> <li>• Check for line noise.</li> <li>• Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address).</li> <li>• Check the line connection.</li> <li>• Defective remote terminal.</li> </ul> |
| 6-11 | G3 ECM - printing impossible because of a missing first line in the MMR coding                     | <ul style="list-style-type: none"> <li>• Check for problems in the printer mechanism.</li> </ul>                                                                                                                                                            |
| 6-21 | V.21 flag detected during high speed modem communication                                           | <ul style="list-style-type: none"> <li>• The other terminal may be defective or incompatible.</li> </ul>                                                                                                                                                    |
| 6-99 | V.21 signal not stopped within 6 s                                                                 | <ul style="list-style-type: none"> <li>• Replace the FCU.</li> </ul>                                                                                                                                                                                        |
| 9-00 | PIN code response because of printer SC error                                                      | <ul style="list-style-type: none"> <li>• Fix and release the SC error</li> </ul>                                                                                                                                                                            |
| 9-02 | DMA receiving error (PLU)                                                                          | <ul style="list-style-type: none"> <li>• Replace the FCU.</li> </ul>                                                                                                                                                                                        |
| 9-03 | Paper eject error at the last page (with image data)                                               | <ul style="list-style-type: none"> <li>• Check the printer drive components and sensors</li> </ul>                                                                                                                                                          |
| 9-04 | Paper eject error at the last page (without image data)                                            |                                                                                                                                                                                                                                                             |
| 9-05 | Paper eject error                                                                                  |                                                                                                                                                                                                                                                             |
| 9-07 | Paper non-feed or jam at the cassette entrance                                                     | <ul style="list-style-type: none"> <li>• If the problem persists, replace the FCU.</li> </ul>                                                                                                                                                               |
| 9-08 | Paper jam inside the development area                                                              |                                                                                                                                                                                                                                                             |
| 9-09 | Paper jam in the fusing exit area                                                                  |                                                                                                                                                                                                                                                             |
| 9-10 | Toner end detected                                                                                 | <ul style="list-style-type: none"> <li>• Replace the cartridge.</li> </ul>                                                                                                                                                                                  |
| 9-12 | Cover open detected during printing                                                                | <ul style="list-style-type: none"> <li>• Close the cover, or check the cover sensors.</li> </ul>                                                                                                                                                            |
| 9-13 | LD interlock error                                                                                 | <ul style="list-style-type: none"> <li>• Replace the polygon motor</li> <li>• Replace the LD unit</li> </ul>                                                                                                                                                |
| 9-14 | PSU overheat                                                                                       | <ul style="list-style-type: none"> <li>• Check the machine's environment</li> <li>• Replace the PSU</li> </ul>                                                                                                                                              |
| 9-17 | Charge corona unit failure                                                                         | <ul style="list-style-type: none"> <li>• If the problem persists, replace the FCU.</li> </ul>                                                                                                                                                               |
| 9-20 | Laser diode failure                                                                                | <ul style="list-style-type: none"> <li>• If the problem persists, replace the FCU.</li> </ul>                                                                                                                                                               |
| 9-22 | Fusing lamp failure                                                                                |                                                                                                                                                                                                                                                             |
| 9-23 | Hexagonal mirror motor failure                                                                     |                                                                                                                                                                                                                                                             |
| 9-24 | Main motor failure                                                                                 |                                                                                                                                                                                                                                                             |
| 9-29 | Power pack error                                                                                   | <ul style="list-style-type: none"> <li>• Check the connections</li> <li>• Replace the power pack or FCU</li> </ul>                                                                                                                                          |
| 9-50 | Paper non-feed or jam inside the upper paper feed unit                                             | <ul style="list-style-type: none"> <li>• Check if a recommended type of paper is used.</li> <li>• Check if the paper guides are aligned to the paper correctly.</li> <li>• Check the paper feed mechanism in the unit.</li> </ul>                           |

## ERROR CODES

| Code  | Meaning                                                                      | Suggested Cause/Action                                                                                                                                                                                                                                                                                      |
|-------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9-51  | Jam at the paper exit of the upper paper feed unit.                          | <ul style="list-style-type: none"> <li>• Check for a blockage in the paper feed path.</li> <li>• Check the paper feed mechanisms inside the unit.</li> <li>• Check if the sensor is defective.</li> </ul>                                                                                                   |
| 9-60  | Printer error occurs during reception                                        | <p>If substitute reception is switched off and a paper jam or other printer error occurs, the machine will terminate the reception.</p> <ul style="list-style-type: none"> <li>• Check the printer mechanism.</li> </ul>                                                                                    |
| 9-61  | Memory overflow occurs during reception                                      | <ul style="list-style-type: none"> <li>• Check the SAF.</li> </ul>                                                                                                                                                                                                                                          |
| 9-80  | Bypass feed - paper non-feed or jam at the entrance                          | <ul style="list-style-type: none"> <li>• Check the registration roller and sensor.</li> </ul>                                                                                                                                                                                                               |
| 9-81  | Bypass feed - paper length exceeds the maximum limit (600 mm)                | <ul style="list-style-type: none"> <li>• Check the paper feed mechanism and sensors.</li> </ul>                                                                                                                                                                                                             |
| 9-84  | Paper non-feed or jam at the cassette entrance                               | <ul style="list-style-type: none"> <li>• Same as 9-07</li> </ul>                                                                                                                                                                                                                                            |
| 22-00 | Original length exceeded the maximum scan length                             | <ul style="list-style-type: none"> <li>• Divide the original into a few pages.</li> <li>• Check the resolution used for scanning. Lower the scan resolution if possible.</li> <li>• Add optional page memory.</li> </ul>                                                                                    |
| 22-01 | Memory overflow while receiving                                              | <ul style="list-style-type: none"> <li>• Wait for the files in the queue to be sent.</li> <li>• Delete unnecessary files from memory.</li> <li>• Transfer the substitute reception files to another fax machine, if the machine's printer is busy or out of order.</li> <li>• Expand SAF memory.</li> </ul> |
| 22-02 | Tx or rx job stalled due to line disconnection at the other end              | <ul style="list-style-type: none"> <li>• The job started normally but did not finish normally; data may or may not have been received fully.</li> <li>• Restart the machine.</li> </ul>                                                                                                                     |
| 22-04 | The machine cannot store received data in the SAF                            | <ul style="list-style-type: none"> <li>• Update the ROM</li> <li>• Replace the FCU.</li> </ul>                                                                                                                                                                                                              |
| 23-00 | Data read timeout during construction                                        | <ul style="list-style-type: none"> <li>• Restart the machine.</li> <li>• Replace the FCU</li> </ul>                                                                                                                                                                                                         |
| 25-00 | The machine software resets itself after a fatal transmission error occurred | <ul style="list-style-type: none"> <li>• Update the ROM</li> <li>• Replace the FCU.</li> </ul>                                                                                                                                                                                                              |
| F0-xx | V.34 modem error                                                             | <ul style="list-style-type: none"> <li>• Replace the FCU.</li> </ul>                                                                                                                                                                                                                                        |

## 4.2 FAX SC CODES

Same SC codes for fax communication as for the base copier are used.

Refer to section 4.1.2 in the service manual for the base copier.



# **SERVICE TABLES**





## 5. SERVICE TABLES

### 5.1 SERVICE LEVEL FUNCTIONS

#### 5.1.1 HOW TO ENTER AND EXIT SERVICE MODE

##### To Enter Fax Service Mode:

1. Ensure that the machine is in standby mode.
2. Press  ① ⑦, then hold down  for more than 3 seconds.  
The SP mode main menu appears.

```
[Service P-Mode] No._
1 Copy 2 Fax 3 Printer
```

3. Press ② to enter the fax service mode.

```
SERVICE FUNCTION
■■ FUNCTION NO.
```

##### To Exit Fax Service Mode:

Press the 'CANCEL' key to exit the service mode.

#### 5.1.2 FUNCTION NO.

##### (1) 01. BIT SW

1. Enter the fax service mode.
2. Press  , then 'OK'.
  -  - System Switches
  -  - Scanner Switches
  -  - Plotter Switches
  -  - Communication Switches
  -  - G3 Switches

```
SERVICE FUNCTION
01.BIT SW
```

```
0.SYSTEM      1.SCANNER
2.PLOTTER     3.COMMUNI.
```

##### Example

1. Press .
2. Scroll through the bit switches.  
To increment the bit switch number:  
Press '→'  
To decrement the bit switch number:  
Press '←'
3. Adjust the bit switch.  
Example: To change the value of bit 7,  
press .
4. To adjust more bit switches, go to step 2.  
To finish, press 'OK' then 'CANCEL'.
5. Exit the service mode.

```
SYS DF   :0000 0000
BITSW 00:0000 0000
```

```
SYS DF   :0000 0000
BITSW 00:1000 0000
```

## SERVICE LEVEL FUNCTIONS

### **(2) 02. PARAMETER LIST**

1. Enter the fax service mode.
2. Press  .

SERVICE FUNCTION  
02.PARAMETER LIST ◀▶

3. Press 'OK'.

START  
PARAMETER LIST

4. Press .

### **(3) 03. ERROR CODE**

1. Enter the fax service mode.
2. Press  .

SERVICE FUNCTION  
03.ERROR CODE ◀▶

3. Press 'OK'.

4. Scroll through the error codes with the arrow keys

ERROR CODE ◀▶  
00-00 JUN 04 22:07

### **(4) 04. SERVICE REPORT**

1. Enter the fax service mode.
2. Press  .

SERVICE FUNCTION  
04.SERVICE REPORT ◀▶

3. Press 'OK'.

4. Press .

START  
SERVICE REPORT

**(5) 05. PROTOCOL DUMP**

1. Enter the fax service mode.
2. Press **[0]** **[5]**.

|                  |    |
|------------------|----|
| SERVICE FUNCTION |    |
| 05.PROTOCOL DUMP | ◀▶ |

3. Press 'OK'.
4. Select '1-COMMUNICATION' or 'ALL-COMMUNICATIONS' with the arrow keys, then press 'OK'.

|                 |    |
|-----------------|----|
| PROTOCOL DUMP   |    |
| 1-COMMUNICATION | ◀▶ |

5. Press **[↻]**.

|                    |    |
|--------------------|----|
| PROTOCOL DUMP      |    |
| ALL-COMMUNICATIONS | ◀▶ |

|               |       |
|---------------|-------|
|               | START |
| PROTOCOL DUMP |       |

Fax Unit  
B465

**(6) 06. COUNTER R/W**

1. Enter the fax service mode.
2. Press **[0]** **[6]**, then 'OK'.

|                  |    |
|------------------|----|
| SERVICE FUNCTION |    |
| 06.COUNTER R/W   | ◀▶ |

3. Either:  
Check the transmitted, received, scanned and printed page counters, and the printer and scanner jam counters - press **[0]**.  
Check the PM counter - press **[1]**.  
Check the Toner counter - press **[2]**.  
**Example:** Press **[0]**.

|           |      |
|-----------|------|
| 0.COUNTER | 1.PM |
| 2.TONER   |      |

|        |         |
|--------|---------|
| 0.TX   | 1.RX    |
| 2.SCAN | 3.PRINT |

4. To check the received counter, press **[1]**.

|            |          |
|------------|----------|
| RX COUNTER | :0000584 |
|------------|----------|

5. To change the contents of a counter, input the new value, then press 'OK'.
6. To finish, press 'CANCEL'.

## SERVICE LEVEL FUNCTIONS

### **(07) 07. NCU**

1. Enter the fax service mode.

1. Press  .

SERVICE FUNCTION

07.NCU



3. Press 'OK'.

4. Select an item from the menu, then press .

0.NCU

1.MODEM

2.DTMF

3.V8

0. NCU:

NCU parameters

1. MODEM:

MODEM test

2. DTMF:

DTMF test

3. V8:

V8 test

4. V34:

V34 test

5. DP:

Dial pulse test

4.V34

5.DP

**NOTE:** NA models only:

Before changing the NCU country code with "0. NCU", you must first set system switch 15 bit 2 to 1

### **(08) 08. WORDING**

1. Enter the fax service mode.

2. Press  .

SERVICE FUNCTION

08.WORDING



3. Press 'OK'.

4. Press to print out Wording List.

START

WORDING LIST

**(09) 09. S.S. NUMBER**

1. Enter the fax service mode.

2. Press  .

SERVICE FUNCTION

09.S.S.NO.



3. Press 'OK'.

4. Enter the fax number of the service station that will receive Automatic Service Calls from the machine.

S.S.NO.

KPAD



5. Press 'OK'.

**(10) 10. WHITE ADJUST**

This is the equivalent to SP4-908 (SBU Auto-Adjustment).

For details, refer to "Standard White Density Adjustment" in Section 3.13.2 of the base copier's service manual.

1. Enter the fax service mode.

1. Press  .

3. Press 'OK'.

SERVICE FUNCTION

10.WHITE ADJUST



WHITE ADJUST

START

4. Place 10 sheets of new A4 paper on the exposure glass, and close the platen cover, then press .

WHITE ADJUSTING

5. The machine automatically adjusts the standard white density.

If test is successful, the display shows "OK!!".

WHITE ADJUSTING

OK!!

If test is unsuccessful, the display shows "NG!!".

WHITE ADJUSTING

NG!!

## 5.2 BIT SWITCHES

### WARNING

**Do not adjust a bit switch or use a setting that is described as “Not used”, as this may cause the machine to malfunction or to operate in a manner that is not accepted by local regulations. Such bits are for use only in other countries, such as Japan.**

**NOTE:** Default settings for bit switches are not listed in this manual. Refer to the System Parameter List printed by the machine.

### 5.1.1 SYSTEM SWITCHES

| System Switch 00 |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                                 | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 0, 1             | <b>RAM Reset</b><br><b>Bit 1 0 Reset Level</b><br>0 0 No reset<br>0 1 Reset Level 2<br>1 0 Reset Level 3<br>1 1 Not used | <p><b>Reset Level 3:</b> Erases all image data files stored in the SAF memory and communication files (e.g. substitute RX files). This is the recommended setting when the SAF requires clearing.</p> <p><b>Reset Level 2:</b> This level erases the following items in addition to those erased by Reset Level 3: own telephone number, bit switches (excluding country code), RTI/TTI/CSI, report data, programmed telephone numbers (Quick/Speed/Groups, service station, etc.), NCU parameters, and personal codes. The NCU country code is also set to the same as the bit switch country code (System Bit Switch 0F).</p> <p>After erasing, the machine automatically changes these two bits back to 0.</p> <p><b>No reset:</b> Normal operation</p> <p><b>Cross-reference</b><br/> <b>RAM Reset Level 1 (Factory reset):</b><br/>           Change the RAM address data from 400005(H) to FF(H), then turn the machine off and on. In addition to those items erased by Reset Level 2, the clock, country code (the default country code is Japan), scan margin settings and print registration settings are erased. To adjust the country code, you must first set system switch 15 bit 2 to 1.</p> |

| System Switch 00 |                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                   | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2                | Technical data printout on Journal<br>0: Disabled 1: Enabled                                               | <p>1: Instead of a personal code, the Journal lists the following data for each analog G3 communication.</p> <p>E.g. 32 V34 288 M 01 00 03 02</p> <p><b>First number:</b> Symbol rate (V.34 only)<br/> <b>Second number:</b> Final modem type used<br/> <b>Third number:</b> Final date rate (for example, 288 means 28.8 Kbps)<br/> <b>Fourth number:</b> M means modem EQM./L means RX level.<br/> <b>Fifth and sixth number:</b> Line quality data. This is either a measurement of the error rate or the RX level, depending on the bit 3 setting below. (An M on the report indicates that it is error rate, and an L indicates RX level.) The left-hand figure is the high byte and the right-hand figure is the low byte (refer to the note after this table for how to read the RX level). If it measures the error rate, a larger number means more errors.<br/> <b>Seventh number (RX mode only):</b> Total number of error lines that occurred during non-ECM reception.<br/> <b>Eighth number (RX mode only):</b> Total number of burst error lines that occurred during non-ECM reception.<br/> The seventh and eighth numbers are fixed at 00 for transmission records and ECM reception records.</p> |
| 3                | Line quality data output method<br>0: Error rate measurement during image data transmission<br>1: Rx level | This bit determines the data type printed in the Journal when bit 2 (above) enables a technical data printout.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4                | Line error marks<br>0: Disabled 1: Enabled                                                                 | If this bit is 1, a mark will be printed on the left edge of the page at any place where a line error occurred in the data. A noisy line causes such errors, for example.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5                | Communication parameter display<br>0: Disabled 1: Enabled                                                  | This is a faultfinding aid. The LCD shows the key parameters (see the next page). This is normally disabled because it cancels the CSI display for the user.<br>Be sure to reset this bit to 0 after testing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6                | Protocol dump list output<br>0: Disabled 1: Enabled                                                        | This is used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after testing.<br>The setting of system switch 09 bit 6 determines the types of communication that the list is printed after.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## BIT SWITCHES

| System Switch 00 |                                                                                                                                                                                  |                                                                                               |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                                                                                         | COMMENTS                                                                                      |
| 7                | Amount of protocol dump data in one protocol dump list print operation<br><b>0:</b> Up to the limit of the memory area for protocol dumping<br><b>1:</b> Last communication only | Change this bit to 1 if you want to have a protocol dump list of the last communication only. |

How to calculate the RX level listed on the Journal (when bit 2 of system switch 00 is set to 1)

**Example:** 32 V34 288 L 01 00 00 00

The four-digit hexadecimal values (N) after L indicates the RX level.

The high byte is given first, followed by the low byte. Divide the decimal value of N by -16 to get the RX level.

In this above example, the decimal value of N (=0100[H]) is 256.

So, the actual RX level is  $256/-16 = -16$  dB.

## Communication Parameters

| Mode                | DCS: ITU-T standard                                                                                                                                                                                                                         | NSS: Non-standard G3                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Modem rate          | 336: 33600 BPS<br>312: 31200 BPS<br>288: 28800 BPS<br>264: 26400 BPS<br>240: 24000 BPS<br>216: 21600 BPS<br>192: 19200 BPS                                                                                                                  | 168: 16800 BPS<br>144: 14400 BPS<br>120: 12000 BPS<br>96: 9600 BPS<br>72: 7200 BPS<br>48: 4000 BPS<br>24: 2400 BPS |
| Resolution          | F: Fine, transmitted at 8 x 15.4 dots per mm<br>D: Detail, transmitted at 8 x 7.7 dots per mm<br>S: Standard, transmitted at 8 x 3.85 dots per mm<br>21: Standard (200 x 100 dpi)<br>22: Detail (200 x 200 dpi)<br>24: Fine (200 x 400 dpi) |                                                                                                                    |
| Compression mode    | MMR: MMR compression<br>MR: MR compression<br>MH: MH compression<br>JBO: JBIG optional compression<br>JBB: JBIG standard compression                                                                                                        |                                                                                                                    |
| Communication mode  | ECM: With ECM<br>NML: With no ECM                                                                                                                                                                                                           |                                                                                                                    |
| Width and reduction | A4: A4 (8.3"), no reduction                                                                                                                                                                                                                 |                                                                                                                    |
| I/O rate            | 0: 0 ms/line<br>2/: 2.5 ms/line<br>5: 5 ms/line<br>"40" is displayed while receiving a fax message using AI short protocol.                                                                                                                 |                                                                                                                    |
|                     | 10: 10 ms/line<br>20: 20 ms/line<br>40: 40 ms/line                                                                                                                                                                                          |                                                                                                                    |



| System Switch 01 |                                             |                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                    | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                        |
| 0                | PM call<br>0: Disabled 1: Enabled           | This bit switch determines whether the machine will send an Auto Service Call to the service station when it is time for PM.                                                                                                                                                                                                                                                                    |
| 1                | Auto service call<br>0: Disabled 1: Enabled | <p>This bit switch determines whether the machine will send an Auto Service Call to the service station when a fatal error occurs.</p> <p>This bit is changed to 0 (disabled) automatically when the machine called a not fax machine or a wrong fax machine.</p> <p><b>Cross-reference</b><br/>Communication Switch 02 bits 4 and 5 - Wrong connection prevention method (Service station)</p> |
| 2-7              | Not used                                    | Do not change these settings.                                                                                                                                                                                                                                                                                                                                                                   |

| System Switch 02 |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                                                      | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 0                | Memory file transfer<br>0: Disabled 1: Enabled                                                                                                | <p>1: All messages in the memory (including confidential RX messages) are sent to the fax number that is stored as the service station.</p> <p>Always reset this bit to zero after transfer.</p> <p><b>Cross-reference</b><br/>Service station number: Function 09</p>                                                                                                                                                                                                                     |
| 1-3              | Not used                                                                                                                                      | Do not change these settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 4                | Automatic reset (during communication)<br>0: Disabled 1: Enabled                                                                              | <p>1: The machine automatically returns to standby mode when a page takes more than a certain time to send (the default setting is 60 minutes).</p> <p>This timer can be adjusted with RAM addresses 4004C0 and 4004C1.</p> <p><b>Cross-reference</b><br/>Service RAM Addresses, section 5.5.</p>                                                                                                                                                                                          |
| 5                | Not used                                                                                                                                      | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 6, 7             | Memory read/write by RDS<br><b>Bit 7 6 Setting</b><br>0 0 Always disabled<br>0 1 User selectable<br>1 0 User selectable<br>1 1 Always enabled | <p>(0,0): All RDS systems are always locked out.</p> <p>(0,1), (1,0): Normally, RDS systems are locked out, but the user can temporarily switch RDS on to allow RDS operations to take place. RDS will automatically be locked out again after a certain time, which is stored in System Switch 03 (see below). Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired.</p> <p>(1,1): At any time, an RDS system can access the machine.</p> |

## BIT SWITCHES

| System Switch 03 |                                                                                                                       |                                                                                                                                                       |
|------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                              | COMMENTS                                                                                                                                              |
| 0–7              | Length of time that RDS is temporarily switched on when bits 6 and 7 of System Switch 02 are set to "User selectable" | 00 - 99 hours (BCD).<br>This data is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable".<br>The default setting is 24 hours. |

| System Switch 04 |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                               | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 0–2              | Not used                                                               | Do not change these settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3                | Dedicated transmission parameter programming<br>0: Disabled 1: Enabled | Set this bit to 1 before changing any dedicated transmission parameters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4                | Not used                                                               | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5                | Replacement level for the maintenance kits<br>0: User 1: Service       | 0: The machine asks the user to replace the parts in the ADF maintenance kit after 45,000 scans with the ADF.<br>After the user replaces the parts, the machine asks the user if they have been replaced or not. After the user answers yes, the user has to reset the roller counter using the key operator tools.<br>The replacement counter is programmed at the following addresses:<br>ADF kit counter: 4002D0 to 4002D3(H)<br>Refer to section 5.5 for more details.<br>1: The machine will not ask the user to replace the maintenance kits. |
| 6                | CSI programming level<br>0: User level 1: Service level                | 1: Only a service function can program the CSI.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7                | Telephone line type programming mode<br>0: User level 1: Service level | 1: Only a service function can program the telephone line type selection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| System Switch 05 |          |                               |
|------------------|----------|-------------------------------|
| No.              | FUNCTION | COMMENTS                      |
| 0–7              | Not used | Do not change these settings. |

| <b>System Switch 06</b> |                                                                                        |                                                                                                                                                             |
|-------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                                        | <b>COMMENTS</b>                                                                                                                                             |
| <b>0</b>                | Use of the Stop key during memory transmission<br><b>0:</b> Disabled <b>1:</b> Enabled | <b>1:</b> The Stop key can be used to halt memory transmissions. However, users might accidentally cancel another person's memory transmission in progress. |
| <b>1–3</b>              | Not used                                                                               | Do not change these settings.                                                                                                                               |
| <b>4</b>                | Use of the Stop key during memory transmission<br><b>0:</b> Disabled <b>1:</b> Enabled | <b>1:</b> The Stop key can be used to halt memory transmissions. After pressing the Stop key, a message (STOP & CLR FILE?) appears on the LCD.              |
| <b>5–7</b>              | Not used                                                                               | Do not change these settings.                                                                                                                               |

**System Switch 07** - Not used (do not change any of these settings)

**System Switch 08** - Not used (do not change any of these settings)

| <b>System Switch 09</b> |                                                                                                                                                                                 |                                                                                                                                                                                                                                        |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                                                                                                                                 | <b>COMMENTS</b>                                                                                                                                                                                                                        |
| <b>0</b>                | Not used                                                                                                                                                                        | Do not change the setting.                                                                                                                                                                                                             |
| <b>1</b>                | Inclusion of communications in the Journal when no image data was exchanged.<br><b>0:</b> Disabled <b>1:</b> Enabled                                                            | <b>0:</b> The Journal lists communications that reached phase C (message TX/RX) of the T.30 protocol.<br><b>1:</b> The Journal lists communications that reached phase A (call setup) of T.30 protocol. This includes telephone calls. |
| <b>2</b>                | Automatic error report printout<br><b>0:</b> Disabled <b>1:</b> Enabled                                                                                                         | <b>0:</b> Error reports are not printed.<br><b>1:</b> Error reports will print automatically after all failed communications, excluding polling reception and immediate transmissions.                                                 |
| <b>3</b>                | Print error code on error report<br><b>0:</b> No <b>1:</b> Yes                                                                                                                  | <b>1:</b> Error codes are printed on the error reports.                                                                                                                                                                                |
| <b>4</b>                | Not used                                                                                                                                                                        | Do not change the setting.                                                                                                                                                                                                             |
| <b>5</b>                | Power failure report<br><b>0:</b> Disabled <b>1:</b> Enabled                                                                                                                    | <b>1:</b> A power failure report automatically prints after the power is switched on if a fax message disappears from memory when the power was turned off last.                                                                       |
| <b>6</b>                | Conditions for printing the protocol dump list<br><b>0:</b> Print for all communications<br><b>1:</b> Print only when there is a communication error                            | This switch becomes effective only when system switch 00 bit 6 is set to 1.<br><b>1:</b> Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.                                            |
| <b>7</b>                | Priority given to various types of remote terminal ID when printing reports<br><b>0:</b> RTI > CSI > Dial label > Tel. Number<br><b>1:</b> Dial label > Tel. number > RTI > CSI | This bit determines which set of priorities the machine uses when listing remote terminal names on reports.<br><br>Dial Label: The name stored with the Quick/Speed Dial number by the user.                                           |

## BIT SWITCHES

| <b>System Switch 0A</b> |                                                                                                 |                                                                              |
|-------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                                                 | <b>COMMENTS</b>                                                              |
| <b>0–2</b>              | Not used                                                                                        | Do not change these settings                                                 |
| <b>3</b>                | Continuous polling reception<br><b>0:</b> Disabled <b>1:</b> Enabled                            | This feature allows a series of stations to be polled in a continuous cycle. |
| <b>4</b>                | Dialing on the ten-key pad when the handset is off-hook<br><b>0:</b> Disabled <b>1:</b> Enabled | <b>1:</b> The user can dial on the ten-key pad when the handset is off-hook. |
| <b>5</b>                | On-hook dial<br><b>0:</b> Disabled <b>1:</b> Enabled                                            | <b>0:</b> On-hook dial is disabled.                                          |
| <b>6, 7</b>             | Not used                                                                                        | Do not change these settings                                                 |

| <b>System Switch 0B</b> |                                                                                                                            |                                                                                      |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                                                                            | <b>COMMENTS</b>                                                                      |
| <b>0, 1</b>             | Automatic reset timer<br><b>Bit 1 0 Timer setting</b><br>0 0 30 seconds<br>0 1 1 minutes<br>1 0 3 minutes<br>1 1 5 minutes | The machine returns to standby mode when the timer expires after the last operation. |
| <b>2–7</b>              | Not used                                                                                                                   | Do not change these settings.                                                        |

| <b>System Switch 0C</b> |                                                                    |                                                                                             |
|-------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                    | <b>COMMENTS</b>                                                                             |
| <b>0–2</b>              | Not used                                                           | Do not change these settings.                                                               |
| <b>3</b>                | Paper size selection for ADF mode<br><b>0:</b> A4 <b>1:</b> Letter | This switch determines the original size in ADF mode, and fixes the maximum scanning width. |
| <b>4–7</b>              | Not used                                                           | Do not change these settings.                                                               |

| <b>System Switch 0D</b> |                                                                          |                                                                                                   |
|-------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                          | <b>COMMENTS</b>                                                                                   |
| <b>0–2</b>              | Not used                                                                 | Do not change these settings.                                                                     |
| <b>3</b>                | Paper size selection for book scan mode<br><b>0:</b> A4 <b>1:</b> Letter | This switch determines the original size in book scan mode, and fixes the maximum scanning width. |
| <b>4–7</b>              | Not used                                                                 | Do not change these settings.                                                                     |

|                                                                          |
|--------------------------------------------------------------------------|
| <b>System Switch 0E - Not used (do not change any of these settings)</b> |
|--------------------------------------------------------------------------|

| System Switch 0F |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                   | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>0–7</b>       | Country code for functional settings (Hex) | <p>This country code determines the factory settings of bit switches and RAM addresses. However, it has no effect on the NCU parameter settings and communication parameter RAM addresses.</p> <p><b>Cross-reference</b><br/>NCU country code: Function 07, parameter CC.</p> <p>The bit switch country code will automatically be changed to the same country code with the NCU country code when you change the NCU country code and exit the service mode.</p> <p><b>Note:</b> If RAM reset level 1 is done, this bit switch resets to UK (02) for EU/Asia models and USA (11) for NA model.</p> |
|                  | 00: France                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 01: Germany                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 02: UK                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 03: Italy                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 04: Austria                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 05: Belgium                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 06: Denmark                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 07: Finland                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 08: Ireland                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 09: Norway                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0A: Sweden                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0B: Swiss.                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0C: Portugal                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0D: Holland                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0E: Spain                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 0F: Israel                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 10: Not used                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 11: USA                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 12: Asia                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 13: Not used                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 14: Hong Kong                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 15: South Africa                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 16: Australia                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 17: New Zealand                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 18: Singapore                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 19: Malaysia                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 1A: China                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 1B: Formosa                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 1C: Korea                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 20: Turkey                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 21: Greece                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 22: Hungary                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 23: Czech                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | 24: Poland                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| System Switch 10 |                                                         |                                                                                                                      |
|------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                | COMMENTS                                                                                                             |
| <b>0–7</b>       | Threshold memory level for parallel memory transmission | <p>Threshold mount = N x 64 Kbytes</p> <p>N can be between 00 - FF(H)</p> <p>Default setting: 04(H) = 256 Kbytes</p> |

| System Switch 11 |                                                                                                                                                       |                                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                                                              | COMMENTS                                                                                                                                                                                                                                |
| <b>0</b>         | <p>TTL printing position</p> <p><b>0:</b> Superimposed on the page data</p> <p><b>1:</b> Printed before the data leading edge</p>                     | Change this bit to 1 if the TTL overprints information that the customer considers important.                                                                                                                                           |
| <b>1–3</b>       | Not used                                                                                                                                              | Do not change these settings.                                                                                                                                                                                                           |
| <b>4</b>         | <p>Received-time printing position</p> <p><b>0:</b> Superimposed on the page data</p> <p><b>1:</b> Printed after the data trailing edge</p>           | Change this bit to 1 if the reception time overprints information that the customer considers important.                                                                                                                                |
| <b>5</b>         | <p>Preferred type of terminal identification to appear on reports</p> <p><b>0:</b> Label programmed in the machine</p> <p><b>1:</b> Dialed number</p> | Change this bit to 1 If the customer wants reports to always show actually dialed numbers rather than programmed labels. (If the setting is 0, the report will show programmed label if one is registered, or dialed number otherwise). |

## BIT SWITCHES

| System Switch 11 |                                                                                                                                                      |                                                                                                                                                                                                                                                                                           |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                                                                             | COMMENTS                                                                                                                                                                                                                                                                                  |
| 6                | Memory reception if no RTI or CSI received<br>0: Reception disabled<br>1: Reception enabled only when there is no problem with the printer mechanism | This switch setting is dependent on user parameter switch 05 bit 1.<br><br>This Sw      U.P.05 bit 1<br>--            0 : Reception always enabled<br>0            1 : Reception disabled<br>1            1 : Reception enabled only<br>there is no problem with<br>the printer mechanism |
| 7                | Not used                                                                                                                                             | Do not change the setting.                                                                                                                                                                                                                                                                |

| System Switch 12 |                                                  |                                                                                                                                                                                                                                               |
|------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                         | COMMENTS                                                                                                                                                                                                                                      |
| 0-7              | TTI printing position in the main scan direction | 08 to 92 (BCD) mm. Only input even numbers. This setting determines the TTI print start position from the left edge of the paper. If the TTI is too far to the right, the file number, which is on the top right of the page, may obscure it. |

**System Switch 13** - Not used (do not change any of these settings)

**System Switch 14** - Not used (do not change any of these settings)

| System Switch 15 |                                                                                                        |                                                                                                         |
|------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| No.              | FUNCTION                                                                                               | COMMENTS                                                                                                |
| 0                | Not used                                                                                               | Do not change this setting.                                                                             |
| 1                | Programming with European characters<br>0: Disabled    1: Enabled                                      | 1: The user can program with European characters (e.g. "ä", "å") for the TTI, Quick Dial labels, etc.   |
| 2                | Change NCU country code<br>0: Disabled    1: Enabled                                                   | 0: The machine does not display "c.c." in the service mode 07: NCU, 0: NCU PARA menu.                   |
| 3                | Not used                                                                                               | Do not change the setting.                                                                              |
| 4                | Daylight saving time automatic adjustment (NA only)<br>0: Manual adjustment<br>1: Automatic adjustment | 1: The clock is adjusted automatically at start and end of daylight-saving time (in April and October). |
| 5-7              | Not used                                                                                               | Do not change these settings.                                                                           |

**System Switch 16** - Not used (do not change any of these settings)

| <b>System Switch 17</b> |                                                                                                      |                                                                                           |
|-------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>No.</b>              | <b>FUNCTION</b>                                                                                      | <b>COMMENTS</b>                                                                           |
| <b>0–2</b>              | Not used                                                                                             | Do not change these settings.                                                             |
| <b>3</b>                | Tonal signals key when the machine is in pulse dial setting.<br><b>0:</b> Disabled <b>1:</b> Enabled | <b>1:</b> The machine can dial out tone signals.                                          |
| <b>4, 5</b>             | Not used                                                                                             | Do not change these settings.                                                             |
| <b>6</b>                | Notify user when the communication is complete<br><b>0:</b> Not notify <b>1:</b> Notify              | <b>1:</b> The machine notifies the user with a beeper when the communication is complete. |
| <b>7</b>                | Not used                                                                                             | Do not change the setting.                                                                |

|                                                                          |
|--------------------------------------------------------------------------|
| <b>System Switch 18</b> - Not used (do not change any of these settings) |
| <b>System Switch 19</b> - Not used (do not change any of these settings) |
| <b>System Switch 1A</b> - Not used (do not change any of these settings) |
| <b>System Switch 1B</b> - Not used (do not change any of these settings) |
| <b>System Switch 1C</b> - Not used (do not change any of these settings) |
| <b>System Switch 1D</b> - Not used (do not change any of these settings) |
| <b>System Switch 1E</b> - Not used (do not change any of these settings) |
| <b>System Switch 1F</b> - Not used (do not change any of these settings) |

## 5.1.2 SCANNER SWITCHES

| Scanner Switch 00 |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                 |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------|---|---|--------|---|---|---------|---|---|----------|---|---|----------|-------------------------------------|
| No.               | FUNCTION                                                                                                                                                                                                                                                                                                  | COMMENTS                                                                                                                                                                                                                                                                                        |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 0                 | MTF<br>0: Disabled 1: Enabled                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                 |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 1                 | Text/Photo separation in halftone mode<br>0: Disabled 1: Enabled                                                                                                                                                                                                                                          | Normally keep this bit at 1 to get a good halftone quality.                                                                                                                                                                                                                                     |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 2, 3              | Maximum transmittable document length<br><table> <tr> <th>Bit 3</th><th>2</th><th>Setting</th></tr> <tr> <td>0</td><td>0</td><td>600 mm</td></tr> <tr> <td>0</td><td>1</td><td>1200 mm</td></tr> <tr> <td>1</td><td>0</td><td>Not used</td></tr> <tr> <td>1</td><td>1</td><td>Not used</td></tr> </table> | Bit 3                                                                                                                                                                                                                                                                                           | 2 | Setting | 0 | 0 | 600 mm | 0 | 1 | 1200 mm | 1 | 0 | Not used | 1 | 1 | Not used | This is effective only in FAX mode. |
| Bit 3             | 2                                                                                                                                                                                                                                                                                                         | Setting                                                                                                                                                                                                                                                                                         |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 0                 | 0                                                                                                                                                                                                                                                                                                         | 600 mm                                                                                                                                                                                                                                                                                          |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 0                 | 1                                                                                                                                                                                                                                                                                                         | 1200 mm                                                                                                                                                                                                                                                                                         |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 1                 | 0                                                                                                                                                                                                                                                                                                         | Not used                                                                                                                                                                                                                                                                                        |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 1                 | 1                                                                                                                                                                                                                                                                                                         | Not used                                                                                                                                                                                                                                                                                        |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 4                 | OR processing in immediate TX and copying (Standard resolution)<br>0: Disabled<br>1: Enabled                                                                                                                                                                                                              | 0: The machine scans the document in 3.85 line/mm steps, then transmits or makes copies.<br>1: The machine scans the document in 7.7 line/mm steps. Each pair of lines goes through OR processing before transmission or copy making. Toner may be used up earlier if OR processing is enabled. |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |
| 5-7               | Not used                                                                                                                                                                                                                                                                                                  | Do not change these settings.                                                                                                                                                                                                                                                                   |   |         |   |   |        |   |   |         |   |   |          |   |   |          |                                     |

|                                                                    |
|--------------------------------------------------------------------|
| Scanner Switch 01 - Not used (do not change any of these settings) |
| Scanner Switch 02 - Not used (do not change any of these settings) |
| Scanner Switch 03 - Not used (do not change any of these settings) |
| Scanner Switch 04 - Not used (do not change any of these settings) |
| Scanner Switch 05 - Not used (do not change any of these settings) |
| Scanner Switch 06 - Not used (do not change any of these settings) |
| Scanner Switch 07 - Not used (do not change any of these settings) |
| Scanner Switch 08 - Not used (do not change any of these settings) |
| Scanner Switch 09 - Not used (do not change any of these settings) |
| Scanner Switch 0A - Not used (do not change any of these settings) |
| Scanner Switch 0B - Not used (do not change any of these settings) |
| Scanner Switch 0C - Not used (do not change any of these settings) |
| Scanner Switch 0D - Not used (do not change any of these settings) |
| Scanner Switch 0E - Not used (do not change any of these settings) |
| Scanner Switch 0F - Not used (do not change any of these settings) |



## 5.1.3 PLOTTER SWITCHES

| Plotter Switch 00 |                                                                                                      |                                                                                                                                                                                                                                                                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.               | FUNCTION                                                                                             | COMMENTS                                                                                                                                                                                                                                                                                                                                       |
| 0                 | Page separation mark<br>0: Disabled<br>1: Enabled                                                    | 0: No marks are printed.<br>1: If a received page has to be printed out on two sheets, an asterisk inside square brackets is printed at the bottom right hand corner of the first sheet, and a "2" inside a small box is printed at the top right hand corner of the second sheet. This helps the user to identify pages that have been split. |
| 1                 | Repetition of data when the received page is longer than the printer paper<br>0: Disabled 1: Enabled | 0: The next page continues from where the previous page left off.<br>1: The final 10 mm of the previous page are repeated at the top of the next page.                                                                                                                                                                                         |
| 2-7               | Not used                                                                                             | Do not change these settings.                                                                                                                                                                                                                                                                                                                  |

| Plotter Switch 01 |                                                          |                                                                                                                                                                                  |
|-------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.               | FUNCTION                                                 | COMMENTS                                                                                                                                                                         |
| 0                 | Reset the fusing unit failure<br>0: Off<br>1: On (Clear) | When a fusing error occurs, set this bit to 1 after fixing the problem. The machine then resets the fusing error. Switch the machine off/on and this bit will reset itself to 0. |
| 1-7               | Not used                                                 | Do not change these settings.                                                                                                                                                    |

**Plotter Switch 02** - Not used (do not change any of these settings)

| Plotter Switch 03 |                                                             |                                                                                                                                                                                                                                             |
|-------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.               | FUNCTION                                                    | COMMENTS                                                                                                                                                                                                                                    |
| 0                 | Length reduction of received data<br>0: Disabled 1: Enabled | 0: Incoming pages are printed without length reduction.<br>(Page separation threshold: Plotter Switch 03, bits 4 to 7)<br>1: Incoming page length is reduced when printing.<br>(Maximum reducible length: Plotter Switches 04, bits 0 to 4) |
| 1-3               | Not used                                                    | Do not change these settings.                                                                                                                                                                                                               |

## BIT SWITCHES

| Plotter Switch 03 |                                                                                                                                                                                                                                                                                                     |          |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| No.               | FUNCTION                                                                                                                                                                                                                                                                                            | COMMENTS |
| 4-7               | Page separation threshold (with reduction disabled with switch 03-0 above)                                                                                                                                                                                                                          |          |
|                   | If the incoming page is up to x mm longer than the length of copy paper, the excess portion will not be printed. If the incoming page is more than x mm longer than the length of copy paper, the excess portion will be printed on the next page. The value of x is determined by these four bits. |          |
|                   | Hex value of bits 4 to 7                                                                                                                                                                                                                                                                            | x (mm)   |
|                   | 0                                                                                                                                                                                                                                                                                                   | 0        |
|                   | 1                                                                                                                                                                                                                                                                                                   | 1        |
|                   | and so on until                                                                                                                                                                                                                                                                                     |          |
|                   | F                                                                                                                                                                                                                                                                                                   | 15       |
|                   | Default setting: 6 mm                                                                                                                                                                                                                                                                               |          |
|                   | <b>Cross reference</b>                                                                                                                                                                                                                                                                              |          |
|                   | Length reduction On/Off: Plotter Switch 03, Bit 0                                                                                                                                                                                                                                                   |          |

| Plotter Switch 04 and 05 |                                                                                                   |       |                 |
|--------------------------|---------------------------------------------------------------------------------------------------|-------|-----------------|
| No.                      | FUNCTION                                                                                          |       | COMMENTS        |
| 0-7                      | Reduction ratios used for different paper sizes (with reduction enabled in switch 03-bit 0 above) |       |                 |
|                          | If reduction is enabled, the data will be reduced in the lengthwise direction before printing.    |       |                 |
|                          | These switches determine the maximum reduction ratio for each paper size.                         |       |                 |
|                          | <b>Cross-reference</b>                                                                            |       |                 |
|                          | Switch 04/05      Paper used                                                                      |       |                 |
|                          | Bit0                      A5 sideways/HLT sideways                                                |       |                 |
|                          | Bit1                      Not used                                                                |       |                 |
|                          | Bit2                      LT/B5                                                                   |       |                 |
|                          | Bit3                      A4                                                                      |       |                 |
|                          | Bit4                      F                                                                       |       |                 |
|                          | Bit5                      LG                                                                      |       |                 |
|                          | Bit6                      Not used                                                                |       |                 |
|                          | Bit7                      Not used                                                                |       |                 |
|                          | SW04                                                                                              | SW05  | Reduction Ratio |
|                          | 0                                                                                                 | 0     | Disabled        |
| 1                        | 0                                                                                                 | 4/3   |                 |
| 0                        | 1                                                                                                 | 8/7   |                 |
| 1                        | 0                                                                                                 | 12/11 |                 |

|                                                                           |
|---------------------------------------------------------------------------|
| <b>Plotter Switch 06</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 07</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 08</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 09</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 0A</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 0B</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 0C</b> - Not used (do not change any of these settings) |

## BIT SWITCHES

|                                                                           |
|---------------------------------------------------------------------------|
| <b>Plotter Switch 0D</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 0E</b> - Not used (do not change any of these settings) |
| <b>Plotter Switch 0F</b> - Not used (do not change any of these settings) |

Fax Unit  
B465

## 5.1.4 COMMUNICATION SWITCHES

| Communication Switch 00 |                                                                                                                                   |                                                                                                                                                    |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                                          | COMMENTS                                                                                                                                           |
| 0, 1                    | Compression modes available in receive mode<br><b>Bit 1 0 Modes</b><br>0 0 MH only<br>0 1 MH/MR<br>1 0 MH/MR/MMR<br>1 1 Not used  | These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol.                                    |
| 2, 3                    | Compression modes available in transmit mode<br><b>Bit 3 2 Modes</b><br>0 0 MH only<br>0 1 MH/MR<br>1 0 MH/MR/MMR<br>1 1 Not used | These bits determine the compression capabilities to be used in the transmission and to be declared in phase B (handshaking) of the T.30 protocol. |
| 4–7                     | Not used                                                                                                                          | Do not change these settings.                                                                                                                      |

| Communication Switch 01 |                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                                                | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 0                       | ECM<br>0: Off 1: On                                                                                                                     | If this bit is set to 0, ECM is switched off for all communications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1                       | Not used                                                                                                                                | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2, 3                    | Wrong connection prevention method<br><b>Bit 3 Bit 2 Setting</b><br>0 0 None<br>0 1 8 digit CSI<br>1 0 4 digit CSI<br>1 1 CSI/RTI       | <p>(0,1) - The machine will disconnect the line without sending a fax message if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed.</p> <p>(1,0) - The same as above, except that only the last 4 digits are compared.</p> <p>(1,1) - The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI.</p> <p>(0,0) - Nothing is checked; transmission will always go ahead.</p> <p><b>Note:</b> This function does not work when dialing is done from the external telephone.</p> |
| 4                       | Operator call if no response is received in reply to NSF/DIS<br>0: Disabled 1: Enabled                                                  | Set this bit to 1 if the user expects to receive telephone calls at the same number that the machine is connected to. The machine will then alert the user if a phone call comes in.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5                       | Not used                                                                                                                                | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6, 7                    | Maximum printable page length available<br><b>Bit 7 6 Setting</b><br>0 0 No limit<br>0 1 B4 (364 mm)<br>1 0 A4 (297 mm)<br>1 1 Not used | The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Communication Switch 02 |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|---------|---------|------|-----------|----------|-------------|--------------|---|-------------|----|---------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| No.                     | FUNCTION                                                                                                                                                                                                                                                                                                                | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 0                       | Burst error threshold<br>0: Low    1: High                                                                                                                                                                                                                                                                              | If there are more consecutive error lines in the received page than the threshold, the machine will send a negative response.<br>The Low and High threshold values depend on the sub-scan resolution, and are as follows.<br><table><tr><td>Resolution</td><td>100 dpi</td><td>200 dpi</td><td>400 dpi</td></tr><tr><td></td><td>3.85 l/mm</td><td>7.7 l/mm</td><td>15.4 l/mm</td></tr><tr><td>Low settings</td><td>6</td><td>12</td><td>24</td></tr><tr><td>High settings</td><td>12</td><td>24</td><td>48</td></tr></table><br>This bit is ignored if ECM is in use.<br>This method is enabled only when the switch 02-bit 7 below is set to 1. | Resolution | 100 dpi | 200 dpi | 400 dpi |      | 3.85 l/mm | 7.7 l/mm | 15.4 l/mm   | Low settings | 6 | 12          | 24 | High settings | 12      | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 48 |
| Resolution              | 100 dpi                                                                                                                                                                                                                                                                                                                 | 200 dpi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 400 dpi    |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
|                         | 3.85 l/mm                                                                                                                                                                                                                                                                                                               | 7.7 l/mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 15.4 l/mm  |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| Low settings            | 6                                                                                                                                                                                                                                                                                                                       | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 24         |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| High settings           | 12                                                                                                                                                                                                                                                                                                                      | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 48         |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 1                       | Acceptable total error line ratio<br>0: 5%    1: 10%                                                                                                                                                                                                                                                                    | If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.<br>This bit is ignored if ECM is in use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 2                       | Treatment of pages received with errors during G3 reception<br>0: Deleted from memory without printing<br>1: Printed                                                                                                                                                                                                    | 0: Pages received with errors are not printed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 3                       | Hang-up decision when a negative code (RTN or PIN) is received during immediate transmission<br>0: No hang-up   1: Hang-up                                                                                                                                                                                              | 0: The next page will be sent even if RTN or PIN is received.<br>1: The machine will send DCN and hang up if it receives RTN or PIN.<br><br>This bit is ignored for memory transmissions or if ECM is being used.                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 4, 5                    | Wrong connection prevention method (Auto Service Call)<br><table><tr><td>Bit 3</td><td>Bit 2</td><td>Setting</td></tr><tr><td>0</td><td>0</td><td>None</td></tr><tr><td>0</td><td>1</td><td>8 digit CSI</td></tr><tr><td>1</td><td>0</td><td>4 digit CSI</td></tr><tr><td>1</td><td>1</td><td>CSI/RTI</td></tr></table> | Bit 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Bit 2      | Setting | 0       | 0       | None | 0         | 1        | 8 digit CSI | 1            | 0 | 4 digit CSI | 1  | 1             | CSI/RTI | (0,1) - The machine will disconnect the line without sending a fax message if the last 8 digits of the received CSI do not match the last 8 digits of the dialed telephone number. This does not work when manually dialed.<br>(1,0) - The same as above, except that only the last 4 digits are compared.<br>(1,1) - The machine will disconnect the line without sending a fax message, if the other end does not identify itself with an RTI or CSI.<br>(0,0) - Nothing is checked; transmission will always go ahead. |    |
| Bit 3                   | Bit 2                                                                                                                                                                                                                                                                                                                   | Setting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 0                       | 0                                                                                                                                                                                                                                                                                                                       | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 0                       | 1                                                                                                                                                                                                                                                                                                                       | 8 digit CSI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 1                       | 0                                                                                                                                                                                                                                                                                                                       | 4 digit CSI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 1                       | 1                                                                                                                                                                                                                                                                                                                       | CSI/RTI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 6                       | Not used                                                                                                                                                                                                                                                                                                                | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| 7                       | Burst error<br>0: Disabled   1: Enabled                                                                                                                                                                                                                                                                                 | If this switch is set to 0, burst error count method in switch 02-bit 0 above is disabled, and only total error line count method in switch 02-bit 1 above is used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |         |         |         |      |           |          |             |              |   |             |    |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |

## BIT SWITCHES

| <b>Communication Switch 03</b> |                                                                 |                                                                                                    |
|--------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>No.</b>                     | <b>FUNCTION</b>                                                 | <b>COMMENTS</b>                                                                                    |
| <b>0-7</b>                     | Maximum number of page retransmissions in a memory transmission | 00 - FF (Hex) times.<br>This setting is not used if ECM is switched on.<br>Default setting - 03(H) |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Communication Switch 04</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 05</b> - Not used (do not change any of these settings) |

| <b>Communication Switch 06</b> |                                                     |                                                                                                                                              |
|--------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>                     | <b>FUNCTION</b>                                     | <b>COMMENTS</b>                                                                                                                              |
| <b>0-5</b>                     | Not used                                            | Do not change these settings.                                                                                                                |
| <b>6</b>                       | Dialing requirements: USA<br>0: Disabled 1: Enabled | This function automatically sets these switches to the required settings for each country after selecting a country code (System switch 0F). |
| <b>7</b>                       | DTS requirements: Germany<br>0: Disabled 1: Enabled |                                                                                                                                              |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Communication Switch 07</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 08</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 09</b> - Not used (do not change any of these settings) |

| <b>Communication Switch 0A</b> |                                                                                                       |                                                                                                                                                                        |
|--------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>                     | <b>FUNCTION</b>                                                                                       | <b>COMMENTS</b>                                                                                                                                                        |
| <b>0</b>                       | Point of resumption of memory transmission upon redialing<br>0: From the error page<br>1: From page 1 | 0: The transmission begins from the page where transmission failed the previous time.<br>1: Transmission begins from the first page, using normal memory transmission. |
| <b>1-6</b>                     | Not used                                                                                              | Do not change these settings.                                                                                                                                          |
| <b>7</b>                       | Emergency calls using 999<br>0: Enabled 1: Disabled                                                   | Hong Kong only<br>If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer.                                                                  |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Communication Switch 0B</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 0C</b> - Not used (do not change any of these settings) |

| Communication Switch 0D |                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                        | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 0–7                     | The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled | 00 to FF (Hex), unit = 2 KB<br>(e.g. 0C(H) = 24 KB)<br>One page is about 24 KB.<br>The machine refers to this setting before each fax reception. If the remaining memory is below this threshold, the machine cannot receive fax messages.<br>If this setting remains at 0, the machine will detect ringing signals and enter receive mode even if there is no available memory. This will result in communication failure. |

| Communication Switch 0E |                                                     |                                                                                                                                                   |
|-------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                            | COMMENTS                                                                                                                                          |
| 0–7                     | Minimum interval between automatic dialing attempts | 06 to FF (Hex), unit = 2 s<br>(e.g., 06(H) = 12 s)<br>This value is the minimum time that the machine waits before it dials the next destination. |

**Communication Switch 0F** - Not used (do not change any of these settings)

| Communication Switch 10 |                                                                                 |                               |
|-------------------------|---------------------------------------------------------------------------------|-------------------------------|
| No.                     | FUNCTION                                                                        | COMMENTS                      |
| 0–7                     | Memory transmission: Maximum number of dialing attempts to the same destination | 01 - FE (Hex) = 1 - 254 times |

**Communication Switch 11** - Not used (do not change any of these settings)

| Communication Switch 12 |                                                                                |                                 |
|-------------------------|--------------------------------------------------------------------------------|---------------------------------|
| No.                     | FUNCTION                                                                       | COMMENTS                        |
| 0–7                     | Memory transmission: Interval between dialing attempts to the same destination | 00 - FF (Hex) = 0 - 255 minutes |

**Communication Switch 13** - Not used (do not change any of these settings)

## BIT SWITCHES

| Communication Switch 14 |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                                                                     | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 0                       | Inch-to-mm conversion during transmission<br>0: Disabled (default)<br>1: Enabled                                                                             | 0: Transmitting is always done in inch format.<br>1: If the other end only has mm-based resolution for printing, the machine converts the scanned data to mm-format before transmission.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1                       | Inch/mm format informed to the other terminal during transmission<br>0: Always in inch format<br>1: Dependent on the other terminal (default)                | 0: The machine always informs the other terminal that the resolution is in inch format and transmits with the inch format.<br>1: The machine informs the other terminal that the resolution is in mm format and transmits with the inch format if the other end only has mm-based resolution.<br><br>This setting is informed to the receiving terminal in the pre-message protocol exchange (in the DCS/NSS frames).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 2                       | Not used                                                                                                                                                     | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3                       | I/O rate for Detail reception<br>0: Off (Normal)<br>1: On (Double)                                                                                           | 1: Shortens receiving time for non-ECM communication<br><b>Note:</b> In most cases this setting should be left at 0. Communication will fail if fusing warm-up time is longer than the time it takes to receive the image.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4                       | Positive response timing when substitute reception is disabled<br>0: When the fusing exit sensor turns on<br>1: When all image data are stored in the memory | This switch setting is effective when user parameter switch 05 bit 0 is set to 0 (Substitute reception is off).<br>0: The data is not stored in the SAF memory. The machine sends the positive response to the other end when the leading edge of the paper turns on the fusing exit sensor. This informs the other end of successful reception after the received image data has already been printed.<br>1: The incoming data is stored in the SAF memory. The machine sends the positive response to the other end when all received image data have been stored in the SAF memory. This sends the positive response earlier than when this bit switch is set to 0, but the page has not been printed yet.<br><br>The data goes to SAF, like for substitute reception. However, it is different from substitute reception, as follows: <ul style="list-style-type: none"> <li>• The machine rejects all incoming ringing signals when the printer is out of order.</li> <li>• The received image data are stored in the memory even if no RTI/CSI is received.</li> </ul> |



| Communication Switch 14 |                                                                                                                                                                                                                                                                                                                                                                                     |                            |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------|------|---|---|----|---|---|------|---|---|-------------|--|--|-----------|---|---|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                                                                                                                                                                                                                                                                                            | COMMENTS                   |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 5                       | Not used                                                                                                                                                                                                                                                                                                                                                                            | Do not change the setting. |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 6, 7                    | Available unit of resolution in which fax messages are received<br><br><table> <tr> <th>Bit 7</th><th>Bit 6</th><th>Unit</th></tr> <tr> <td>0</td><td>0</td><td>mm</td></tr> <tr> <td>0</td><td>1</td><td>inch</td></tr> <tr> <td>1</td><td>0</td><td>mm and inch</td></tr> <tr> <td></td><td></td><td>(default)</td></tr> <tr> <td>1</td><td>1</td><td>Not used</td></tr> </table> | Bit 7                      | Bit 6 | Unit | 0 | 0 | mm | 0 | 1 | inch | 1 | 0 | mm and inch |  |  | (default) | 1 | 1 | Not used | For the best performance, do not change the factory settings.<br><br>The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |
| Bit 7                   | Bit 6                                                                                                                                                                                                                                                                                                                                                                               | Unit                       |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 0                       | 0                                                                                                                                                                                                                                                                                                                                                                                   | mm                         |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 0                       | 1                                                                                                                                                                                                                                                                                                                                                                                   | inch                       |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 1                       | 0                                                                                                                                                                                                                                                                                                                                                                                   | mm and inch                |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                     | (default)                  |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |
| 1                       | 1                                                                                                                                                                                                                                                                                                                                                                                   | Not used                   |       |      |   |   |    |   |   |      |   |   |             |  |  |           |   |   |          |                                                                                                                                                                                                                  |

| Communication Switch 15 |                                                                                                                                                    |                                                                                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                                                                                           | COMMENTS                                                                                                                                                                                                     |
| 0, 1                    | Available resolution for receiving fax messages<br><b>Bit 0 1:</b> 200 x 100/8 x 3.85<br><b>Bit 1 1:</b> 200 x 200/8 x 7.7<br>Other bits: Not used | For the best performance, do not change the factory settings.<br>The setting determined by these bits is informed to the transmitting terminal in the pre-message protocol exchange (in the DIS/NSF frames). |
| 2–7                     | Not used                                                                                                                                           | Do not change these settings.                                                                                                                                                                                |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Communication Switch 16</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 17</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 18</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 19</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 1A</b> - Not used (do not change any of these settings) |

| Communication Switch 1B |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
|-------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                     | FUNCTION                                                                   | COMMENTS                                                                                                                                                                                                                                                                                                                                    |
| 0                       | Extension access code (0 to 7) to turn V.8 protocol On/Off<br>0: On 1: Off | If the PABX does not support V.8/V.34 protocol procedure, set one of these bits to "1" to disable V.8.<br><b>Example:</b> If "0" is the PSTN access code, set bit 0 to 1. When the machine detects "0" as the first dialed number, it automatically disables V.8 protocol. (Alternatively, if "3" is the PSTN access code, set bit 3 to 1.) |
| 1                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 2                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 3                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 4                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 5                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 6                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| 7                       |                                                                            |                                                                                                                                                                                                                                                                                                                                             |

## BIT SWITCHES

| <b>Communication Switch 1C</b> |                                                                                              |                                                                                                                                                                                                               |
|--------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>                     | <b>FUNCTION</b>                                                                              | <b>COMMENTS</b>                                                                                                                                                                                               |
| <b>0</b>                       | Extension access code (8 and 9) to turn V.8 protocol On/Off<br><b>0:</b> On<br><b>1:</b> Off | Refer to communication switch 1B.                                                                                                                                                                             |
| <b>1</b>                       |                                                                                              | <b>Example:</b> If "8" is the PSTN access code, set bit 0 to 1. When the machine detects "8" as the first dialed number, it automatically disables V.8 protocol. (If "9" is the PSTN access code, use bit 1.) |
| <b>2–7</b>                     | Not used                                                                                     | Do not change these settings.                                                                                                                                                                                 |

|                                                                                 |
|---------------------------------------------------------------------------------|
| <b>Communication Switch 1D</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 1E</b> - Not used (do not change any of these settings) |
| <b>Communication Switch 1F</b> - Not used (do not change any of these settings) |

## 5.1.5 G3 SWITCHES

| G3 Switch 00 |                                                                                                                                                                             |                                                                                                                                                                                                                                                                                          |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.          | FUNCTION                                                                                                                                                                    | COMMENTS                                                                                                                                                                                                                                                                                 |
| 0, 1         | Monitor speaker during communication (tx and rx)<br><b>Bit 1   Bit 0   Setting</b><br>0   0   Disabled<br>0   1   Up to Phase B<br>1   0   All the time<br>1   1   Not used | (0, 0): The monitor speaker is disabled all through the communication.<br>(0, 1): The monitor speaker is on up to phase B in the T.30 protocol.<br>(1, 0): Used for testing. The monitor speaker is on all through the communication. Make sure that you reset these bits after testing. |
| 2            | Monitor speaker during memory transmission<br>0: Disabled   1: Enabled                                                                                                      | 1: The monitor speaker is enabled during memory transmission.                                                                                                                                                                                                                            |
| 3–7          | Not used                                                                                                                                                                    | Do not change the setting.                                                                                                                                                                                                                                                               |

| G3 Switch 01 |                                                     |                                                                                                                                                                                           |
|--------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.          | FUNCTION                                            | COMMENTS                                                                                                                                                                                  |
| 0–3          | Not used                                            | Do not change these settings.                                                                                                                                                             |
| 4            | DIS frame length<br>0: 10 bytes   1: 4 bytes        | 1: The bytes in the DIS frame after the 4th byte will not be transmitted (set to 1 if there are communication problems with PC-based faxes which cannot receive the extended DIS frames). |
| 5            | Not used                                            | Do not change the setting.                                                                                                                                                                |
| 6            | CED/ANSam transmission<br>0: Disabled<br>1: Enabled | Do not change this setting, unless the communication problem is caused by the CED/ANSam transmission.                                                                                     |
| 7            | Not used                                            | Do not change the setting.                                                                                                                                                                |

| G3 Switch 02 |                                                                                                 |                                                                                                                                                                                                                                                        |
|--------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.          | FUNCTION                                                                                        | COMMENTS                                                                                                                                                                                                                                               |
| 0            | G3 protocol mode used<br>0: Standard and non-standard<br>1: Standard only                       | Change this bit to 1 only when the other end can only communicate with machines that send T.30-standard frames only.<br>1: Disables NSF/NSS signals (these are used in non-standard mode communication)                                                |
| 1–4          | Not used                                                                                        | Do not change these settings.                                                                                                                                                                                                                          |
| 5            | Use of modem rate history for transmission using Quick/Speed Dials<br>0: Disabled<br>1: Enabled | 0: Communications using Quick/Speed Dials always start from the highest modem rate.<br>1: The machine refers to the modem rate history for communications with the same machine when determining the most suitable rate for the current communication. |
| 6            | AI short protocol (transmission and reception)<br>0: Disabled   1: Enabled                      | Refer to the Core Technology Manual for details about AI Short Protocol.                                                                                                                                                                               |
| 7            | Not used                                                                                        | Do not change the settings.                                                                                                                                                                                                                            |

## BIT SWITCHES

| <b>G3 Switch 03</b> |                                                                                                                     |                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>          | <b>FUNCTION</b>                                                                                                     | <b>COMMENTS</b>                                                                                                                                                                             |
| <b>0</b>            | DIS detection number<br>(Echo countermeasure)<br><b>0:</b> 1<br><b>1:</b> 2                                         | <b>0:</b> The machine will hang up if it receives the same DIS frame twice.<br><b>1:</b> Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.  |
| <b>1</b>            | Not used                                                                                                            | Do not change the setting.                                                                                                                                                                  |
| <b>2</b>            | V.8 protocol<br><b>0:</b> Disabled<br><b>1:</b> Enabled                                                             | <b>0:</b> V.8/V.34 communications will not be possible.<br><b>Note:</b><br>Do not set to 0 unless the line condition is always bad enough to slow down the data rate to 14.4 kbps or lower. |
| <b>3</b>            | ECM frame size<br><b>0:</b> 256 bytes<br><b>1:</b> 64 bytes                                                         | Keep this bit at "0" in most cases.                                                                                                                                                         |
| <b>4</b>            | CTC transmission conditions<br><b>0:</b> Ricoh mode (PPR x 1)<br><b>1:</b> ITU-T mode (PPR x 4)                     | When using ECM, the machine will choose a slower modem rate after receiving PPR once (Rico mode) or four times (ITU-T mode).<br>This bit is ineffective in V.34 communications.             |
| <b>5</b>            | Modem rate for the next page after receiving a negative code (RTN or PIN)<br><b>0:</b> No change <b>1:</b> Fallback | <b>1:</b> The TX modem rate of the machine will fall back before sending the next page if it receives a negative code. This bit is ignored if ECM is in use.                                |
| <b>6</b>            | Not used                                                                                                            | Do not change the setting.                                                                                                                                                                  |
| <b>7</b>            | Polarity change after DIS/NSF detection<br><b>0:</b> Disabled <b>1:</b> Enabled                                     | This bit should be set to "1" only to deal with communication problems caused by certain types of exchanger.                                                                                |

| <b>G3 Switch 04</b> |                                    |                                                                                                                                                                       |
|---------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>          | <b>FUNCTION</b>                    | <b>COMMENTS</b>                                                                                                                                                       |
| <b>0-3</b>          | Training error detection threshold | 0 - F (Hex): 0 - 15 bits<br>If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful. |
| <b>4-7</b>          | Not used                           | Do not change these settings.                                                                                                                                         |

| G3 Switch 05 |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.          | FUNCTION                                                                                                                                                                                                                                                                                                                                       | COMMENTS                                                                                                                                                                                                                                                                                                                                             |
| 0-3          | Initial Tx modem rate<br><b>Bit 3 2 1 0 Setting (bps)</b><br>0 0 0 1 2.4 k<br>0 0 1 0 4.8 k<br>0 0 1 1 7.2 k<br>0 1 0 0 9.6 k<br>0 1 0 1 12.0 k<br>0 1 1 0 14.4 k<br>0 1 1 1 16.8 k<br>1 0 0 0 19.2 k<br>1 0 0 1 21.6 k<br>1 0 1 0 24.0 k<br>1 0 1 1 26.4 k<br>1 1 0 0 28.8 k<br>1 1 0 1 31.2 k<br>1 1 1 0 33.6 k<br>Other settings - Not used | These bits set the initial starting modem rate for transmission.<br><br>Use the dedicated transmission parameters if you need to change this for specific receivers.<br><br>If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.<br><br><b>Cross reference</b><br>V.8 protocol on/off - G3 switch 03, bit 2 |
| 4, 5         | Initial modem type for 9.6 k or 7.2 kbps.<br><b>Bit 5 Bit 4 Setting</b><br>0 0 V.29<br>0 1 V.17<br>1 0 V.34<br>1 1 Not used                                                                                                                                                                                                                    | These bits set the initial modem type for 9.6 and 7.2 kbps, if the initial modem rate is set at these speeds.                                                                                                                                                                                                                                        |
| 6, 7         | Not used                                                                                                                                                                                                                                                                                                                                       | Do not change these settings.                                                                                                                                                                                                                                                                                                                        |

| G3 Switch 06 |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                         |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.          | FUNCTION                                                                                                                                                                                                                                                                                                                                       | COMMENTS                                                                                                                                                                                                                                                                                                                |
| 0-3          | Initial Rx modem rate<br><b>Bit 3 2 1 0 Setting (bps)</b><br>0 0 0 1 2.4 k<br>0 0 1 0 4.8 k<br>0 0 1 1 7.2 k<br>0 1 0 0 9.6 k<br>0 1 0 1 12.0 k<br>0 1 1 0 14.4 k<br>0 1 1 1 16.8 k<br>1 0 0 0 19.2 k<br>1 0 0 1 21.6 k<br>1 0 1 0 24.0 k<br>1 0 1 1 26.4 k<br>1 1 0 0 28.8 k<br>1 1 0 1 31.2 k<br>1 1 1 0 33.6 k<br>Other settings - Not used | These bits set the initial starting modem rate for reception.<br><br>Use a lower setting if high speeds pose problems during reception.<br><br>If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually.<br><br><b>Cross reference</b><br>V.8 protocol on/off - G3 switch 03, bit 2 |

## BIT SWITCHES

| G3 Switch 06              |                                     |   |   |                                                                     |                                                                                                                                    |                                                                  |
|---------------------------|-------------------------------------|---|---|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| No.                       | Function                            |   |   |                                                                     | Comments                                                                                                                           |                                                                  |
| 4–7                       | Modem types available for reception |   |   |                                                                     | The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode. |                                                                  |
|                           | Bit 7                               | 6 | 5 | 4                                                                   |                                                                                                                                    | Setting                                                          |
|                           | 0                                   | 0 | 0 | 1                                                                   | V.27ter                                                                                                                            | If V.34 is not selected, V.8 protocol must be disabled manually. |
|                           | 0                                   | 0 | 1 | 0                                                                   | V.27ter, V.29                                                                                                                      |                                                                  |
|                           | 0                                   | 0 | 1 | 1                                                                   | Not used                                                                                                                           |                                                                  |
|                           | 0                                   | 1 | 0 | 0                                                                   | V.27ter, V.29, V.17                                                                                                                |                                                                  |
|                           | 0                                   | 1 | 0 | 1                                                                   | V.27ter, V.29, V.17,V.34                                                                                                           |                                                                  |
| Other settings - Not used |                                     |   |   | <b>Cross reference</b><br>V.8 protocol on/off - G3 switch 03, bit 2 |                                                                                                                                    |                                                                  |

| <b>G3 Switch 07</b> |                                                                                                                                                                                                                                                                                                          |                                            |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------|---------|---|---|------|---|---|-----|---|---|--------|---|---|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>          | <b>FUNCTION</b>                                                                                                                                                                                                                                                                                          | <b>COMMENTS</b>                            |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>0, 1</b>         | <p>PSTN cable equalizer (tx mode: Internal)</p> <table> <tr> <th>Bit 1</th><th>Bit 0</th><th>Setting</th></tr> <tr> <td>0</td><td>0</td><td>None</td></tr> <tr> <td>0</td><td>1</td><td>Low</td></tr> <tr> <td>1</td><td>0</td><td>Medium</td></tr> <tr> <td>1</td><td>1</td><td>High</td></tr> </table> | Bit 1                                      | Bit 0 | Setting | 0 | 0 | None | 0 | 1 | Low | 1 | 0 | Medium | 1 | 1 | High | <p>Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange.</p> <p>Use the dedicated transmission parameters for specific receivers.</p> <p>Also, try using the cable equalizer if one or more of the following symptoms occurs.</p> <ul style="list-style-type: none"> <li>• Communication error</li> <li>• Modem rate fallback occurs frequently.</li> </ul> <p><b>Note:</b> This setting is not effective in V.34 communications.</p> |
| Bit 1               | Bit 0                                                                                                                                                                                                                                                                                                    | Setting                                    |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0                   | 0                                                                                                                                                                                                                                                                                                        | None                                       |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0                   | 1                                                                                                                                                                                                                                                                                                        | Low                                        |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1                   | 0                                                                                                                                                                                                                                                                                                        | Medium                                     |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1                   | 1                                                                                                                                                                                                                                                                                                        | High                                       |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>2, 3</b>         | <p>PSTN cable equalizer (rx mode: Internal)</p> <table> <tr> <th>Bit 3</th><th>Bit 2</th><th>Setting</th></tr> <tr> <td>0</td><td>0</td><td>None</td></tr> <tr> <td>0</td><td>1</td><td>Low</td></tr> <tr> <td>1</td><td>0</td><td>Medium</td></tr> <tr> <td>1</td><td>1</td><td>High</td></tr> </table> | Bit 3                                      | Bit 2 | Setting | 0 | 0 | None | 0 | 1 | Low | 1 | 0 | Medium | 1 | 1 | High | <p>Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange.</p> <p>Also, try using the cable equalizer if one or more of the following symptoms occurs.</p> <ul style="list-style-type: none"> <li>• Communication error with error codes such as 0-20, 0-23, etc.</li> <li>• Modem rate fallback occurs frequently.</li> </ul> <p><b>Note:</b> This setting is not effective in V.34 communications.</p>                                |
| Bit 3               | Bit 2                                                                                                                                                                                                                                                                                                    | Setting                                    |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0                   | 0                                                                                                                                                                                                                                                                                                        | None                                       |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0                   | 1                                                                                                                                                                                                                                                                                                        | Low                                        |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1                   | 0                                                                                                                                                                                                                                                                                                        | Medium                                     |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1                   | 1                                                                                                                                                                                                                                                                                                        | High                                       |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>4</b>            | <p>PSTN cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode: External)</p> <p><b>0:</b> Disabled <b>1:</b> Enabled</p>                                                                                                                                                                                | <p>Keep this bit at “1” in most cases.</p> |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>5–7</b>          | Not used                                                                                                                                                                                                                                                                                                 | Do not change these settings.              |       |         |   |   |      |   |   |     |   |   |        |   |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| <b>G3 Switch 08</b> |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>No.</b>          | <b>FUNCTION</b>                                                                                                                                | <b>COMMENTS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| <b>0, 1</b>         | PABX cable equalizer<br>(tx mode: Internal)<br><b>Bit 1   Bit 0   Setting</b><br>0   0   None<br>0   1   Low<br>1   0   Medium<br>1   1   High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange.<br>Use the dedicated transmission parameters for specific receivers.<br><br>Also, try using the cable equalizer if one or more of the following symptoms occurs. <ul style="list-style-type: none"> <li>• Communication error</li> <li>• Modem rate fallback occurs frequently.</li> </ul> <b>Note:</b> This setting is not effective in V.34 communications. |  |
| <b>2, 3</b>         | PABX cable equalizer<br>(rx mode: Internal)<br><b>Bit 3   Bit 2   Setting</b><br>0   0   None<br>0   1   Low<br>1   0   Medium<br>1   1   High | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange.<br><br>Also, try using the cable equalizer if one or more of the following symptoms occurs. <ul style="list-style-type: none"> <li>• Communication error with error codes such as 0-20, 0-23, etc.</li> <li>• Modem rate fallback occurs frequently.</li> </ul> <b>Note:</b> This setting is not effective in V.34 communications.                            |  |
| <b>4</b>            | PABX cable equalizer<br>(V.27ter, V.29, V.33/V.17, V.8 rx mode: External)<br><b>0: Disabled 1: Enabled</b>                                     | Set this bit to 0 when line quality is good.<br>(e.g. for a digital PABX)                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| <b>5–7</b>          | Not used                                                                                                                                       | Do not change these settings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |

|                                                                      |
|----------------------------------------------------------------------|
| <b>G3 Switch 09 - Not used (do not change any of these settings)</b> |
|----------------------------------------------------------------------|

| <b>G3 Switch 0A</b> |                                                                                                                                                                  |                                                                                                                      |  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--|
| <b>No.</b>          | <b>FUNCTION</b>                                                                                                                                                  | <b>COMMENTS</b>                                                                                                      |  |
| <b>0, 1</b>         | Maximum allowable carrier drop during image data reception<br><b>Bit 1   Bit 0   Value (ms)</b><br>0   0   200<br>0   1   400<br>1   0   800<br>1   1   Not used | These bits set the acceptable modem carrier drop time.<br>Try using a longer setting if error code 0-22 is frequent. |  |
| <b>2</b>            | Reception carrier drop operation.<br><b>0: Continue reception</b><br><b>1: Disconnect the line</b>                                                               | This bit decides what the machine does when there is a carrier drop in the image data.                               |  |
| <b>3</b>            | Not used                                                                                                                                                         | Do not change the setting.                                                                                           |  |

## BIT SWITCHES

| <b>G3 Switch 0A</b> |                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No.</b>          | <b>Function</b>                                                                               | <b>Comments</b>                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>4</b>            | Maximum allowable frame interval during image data reception.<br><b>0:</b> 5 s <b>1:</b> 13 s | This bit set the maximum interval between EOL (end-of-line) signals from the other end. Try using a longer setting if error code 0-21 is frequent.                                                                                                                                                                                                                                                               |
| <b>5</b>            | Not used                                                                                      | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>6</b>            | Reconstruction time for the first line in receive mode<br><b>0:</b> 6 s <b>1:</b> 12 s        | When the sending terminal is controlled by a computer, there may be a delay in receiving page data after the local machine accepts set-up data and sends CFR. This is outside the T.30 recommendation. But, if this delay occurs, set this bit to 1 to give the sending machine more time to send data.<br>Refer to error code 0-20.<br>ITU-T T.30 recommendation: The first line should come within 5 s of CFR. |
| <b>7</b>            | Not used                                                                                      | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                                       |

| <b>G3 Switch 0B (Europe only)</b> |                                                                        |                                                                  |
|-----------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>No.</b>                        | <b>FUNCTION</b>                                                        | <b>COMMENTS</b>                                                  |
| <b>0</b>                          | Protocol requirements: Europe<br><b>0:</b> Disabled <b>1:</b> Enabled  | Program these bit switches manually to match local requirements. |
| <b>1</b>                          | Protocol requirements: Spain<br><b>0:</b> Disabled <b>1:</b> Enabled   |                                                                  |
| <b>2</b>                          | Protocol requirements: Germany<br><b>0:</b> Disabled <b>1:</b> Enabled |                                                                  |
| <b>3</b>                          | Protocol requirements: France<br><b>0:</b> Disabled <b>1:</b> Enabled  |                                                                  |
| <b>4</b>                          | PTT requirements: Germany<br><b>0:</b> Disabled <b>1:</b> Enabled      |                                                                  |
| <b>5-7</b>                        | Not used                                                               | Do not change these settings.                                    |

|                                                                      |
|----------------------------------------------------------------------|
| <b>G3 Switch 0C</b> - Not used (do not change any of these settings) |
| <b>G3 Switch 0D</b> - Not used (do not change any of these settings) |
| <b>G3 Switch 0E</b> - Not used (do not change any of these settings) |
| <b>G3 Switch 0F</b> - Not used (do not change any of these settings) |



### 5.3 NCU PARAMETERS

The following tables give the RAM addresses and the parameter calculation units that the machine uses for ringing signal detection and automatic dialing. The factory settings for each country are also given. Most of these must be changed by RAM read/write (Function 06-0), but some can be changed using NCU Parameter programming (Function 07-0). If Function 07-0 can be used, this will be indicated in the Remarks column. The RAM is programmed in hex code unless (BCD) is included in the Unit column.

| Address | Function                        | Unit                                                                                                                                                                                                                                                                                   | Remarks                   |
|---------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 401400  | Country code for NCU parameters | Use the Hex value to program the country code directly into this address, or use the decimal value to program it using Function 07-0 (parameter C.C.).<br><b>Note:</b> NA model only<br>You will have to set system switch 15 bit 2 to 1 before trying to change the NCU country code. |                           |
|         |                                 | <b>Country</b>                                                                                                                                                                                                                                                                         | <b>Decimal</b> <b>Hex</b> |
|         |                                 | France                                                                                                                                                                                                                                                                                 | 00      00                |
|         |                                 | Germany                                                                                                                                                                                                                                                                                | 01      01                |
|         |                                 | UK                                                                                                                                                                                                                                                                                     | 02      02                |
|         |                                 | Italy                                                                                                                                                                                                                                                                                  | 03      03                |
|         |                                 | Austria                                                                                                                                                                                                                                                                                | 04      04                |
|         |                                 | Belgium                                                                                                                                                                                                                                                                                | 05      05                |
|         |                                 | Denmark                                                                                                                                                                                                                                                                                | 06      06                |
|         |                                 | Finland                                                                                                                                                                                                                                                                                | 07      07                |
|         |                                 | Ireland                                                                                                                                                                                                                                                                                | 08      08                |
|         |                                 | Norway                                                                                                                                                                                                                                                                                 | 09      09                |
|         |                                 | Sweden                                                                                                                                                                                                                                                                                 | 10      0A                |
|         |                                 | Switzerland                                                                                                                                                                                                                                                                            | 11      0B                |
|         |                                 | Portugal                                                                                                                                                                                                                                                                               | 12      0C                |
|         |                                 | Holland                                                                                                                                                                                                                                                                                | 13      0D                |
|         |                                 | Spain                                                                                                                                                                                                                                                                                  | 14      0E                |
|         |                                 | Israel                                                                                                                                                                                                                                                                                 | 15      0F                |
|         |                                 | USA                                                                                                                                                                                                                                                                                    | 17      11                |
|         |                                 | Asia                                                                                                                                                                                                                                                                                   | 18      12                |
|         |                                 | Hong Kong                                                                                                                                                                                                                                                                              | 20      14                |
|         |                                 | South Africa                                                                                                                                                                                                                                                                           | 21      15                |
|         |                                 | Australia                                                                                                                                                                                                                                                                              | 22      16                |
|         |                                 | New Zealand                                                                                                                                                                                                                                                                            | 23      17                |
|         |                                 | Singapore                                                                                                                                                                                                                                                                              | 24      18                |
|         |                                 | Malaysia                                                                                                                                                                                                                                                                               | 25      19                |
|         |                                 | China                                                                                                                                                                                                                                                                                  | 26      1A                |
|         |                                 | Formosa                                                                                                                                                                                                                                                                                | 27      1B                |
|         |                                 | Korea                                                                                                                                                                                                                                                                                  | 28      1C                |
|         |                                 | Turkey                                                                                                                                                                                                                                                                                 | 32      20                |
|         |                                 | Greece                                                                                                                                                                                                                                                                                 | 33      21                |
|         |                                 | Hungary                                                                                                                                                                                                                                                                                | 34      22                |
|         |                                 | Czech                                                                                                                                                                                                                                                                                  | 35      23                |
|         |                                 | Poland                                                                                                                                                                                                                                                                                 | 36      24                |

Fax Unit  
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## NCU PARAMETERS

| Address | Function                                                                   | Unit     | Remarks                                                                                                                   |
|---------|----------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------|
| 401401  | Line current detection time                                                | 20 ms    | Line current detection is disabled.<br>Line current is not detected if 401401 contains FF.                                |
| 401402  | Line current wait time                                                     |          |                                                                                                                           |
| 401403  | Line current drop detect time                                              |          |                                                                                                                           |
| 401404  | PSTN dial tone frequency upper limit (high byte)                           | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.<br>See Note 7                                                |
| 401405  | PSTN dial tone frequency upper limit (low byte)                            |          |                                                                                                                           |
| 401406  | PSTN dial tone frequency lower limit (high byte)                           |          |                                                                                                                           |
| 401407  | PSTN dial tone frequency lower limit (low byte)                            |          |                                                                                                                           |
| 401408  | PSTN dial tone detection time                                              | 20 ms    | If 401408 contains FF(H), the machine pauses for the pause time (address 40140D / 40140E).<br><br>Italy: See Note 2 and 7 |
| 401409  | PSTN dial tone reset time (LOW)                                            |          |                                                                                                                           |
| 40140A  | PSTN dial tone reset time (HIGH)                                           |          |                                                                                                                           |
| 40140B  | PSTN dial tone continuous tone time                                        |          |                                                                                                                           |
| 40140C  | PSTN dial tone permissible drop time                                       |          |                                                                                                                           |
| 40140D  | PSTN wait interval (LOW)                                                   | 20 ms    | See Note 7                                                                                                                |
| 40140E  | PSTN wait interval (HIGH)                                                  |          |                                                                                                                           |
| 40140F  | PSTN ring-back tone detection time                                         | 20 ms    | Detection is disabled if this contains FF.                                                                                |
| 401410  | PSTN ring-back tone off detection time                                     | 20 ms    |                                                                                                                           |
| 401411  | PSTN detection time for silent period after ring-back tone detected (LOW)  |          |                                                                                                                           |
| 401412  | PSTN detection time for silent period after ring-back tone detected (HIGH) |          |                                                                                                                           |
| 401413  | PSTN busy tone frequency upper limit (high byte)                           | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                                                              |
| 401414  | PSTN busy tone frequency upper limit (low byte)                            |          |                                                                                                                           |
| 401415  | PSTN busy tone frequency lower limit (high byte)                           | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                                                              |
| 401416  | PSTN busy tone frequency lower limit (low byte)                            |          |                                                                                                                           |
| 401417  | PABX dial tone frequency upper limit (high byte)                           | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                                                              |
| 401418  | PABX dial tone frequency upper limit (low byte)                            |          |                                                                                                                           |
| 401419  | PABX dial tone frequency lower limit (high byte)                           | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                                                              |
| 40141A  | PABX dial tone frequency lower limit (low byte)                            |          |                                                                                                                           |

| Address | Function                                                                                                                                                                             | Unit     | Remarks                                                                         |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------|
| 40141B  | PABX dial tone detection time                                                                                                                                                        | 20 ms    | If 40141B contains FF, the machine pauses for the pause time (401420 / 401421). |
| 40141C  | PABX dial tone reset time (LOW)                                                                                                                                                      |          |                                                                                 |
| 40141D  | PABX dial tone reset time (HIGH)                                                                                                                                                     |          |                                                                                 |
| 40141E  | PABX dial tone continuous tone time                                                                                                                                                  |          |                                                                                 |
| 40141F  | PABX dial tone permissible drop time                                                                                                                                                 |          |                                                                                 |
| 401420  | PABX wait interval (LOW)                                                                                                                                                             |          |                                                                                 |
| 401421  | PABX wait interval (HIGH)                                                                                                                                                            |          |                                                                                 |
| 401422  | PABX ringback tone detection time                                                                                                                                                    | 20 ms    | If both addresses contain FF(H), tone detection is disabled.                    |
| 401423  | PABX ringback tone off detection time                                                                                                                                                |          |                                                                                 |
| 401424  | PABX detection time for silent period after ringback tone detected (LOW)                                                                                                             | 20 ms    | If both addresses contain FF(H), tone detection is disabled.                    |
| 401425  | PABX detection time for silent period after ringback tone detected (HIGH)                                                                                                            | 20 ms    | If both addresses contain FF(H), tone detection is disabled.                    |
| 401426  | PABX busy tone frequency upper limit (high byte)                                                                                                                                     | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                    |
| 401427  | PABX busy tone frequency upper limit (low byte)                                                                                                                                      |          |                                                                                 |
| 401428  | PABX busy tone frequency lower limit (high byte)                                                                                                                                     | Hz (BCD) | If both addresses contain FF(H), tone detection is disabled.                    |
| 401429  | PABX busy tone frequency lower limit (low byte)                                                                                                                                      |          |                                                                                 |
| 40142A  | Busy tone ON time: range 1                                                                                                                                                           | 20 ms    |                                                                                 |
| 40142B  | Busy tone OFF time: range 1                                                                                                                                                          |          |                                                                                 |
| 40142C  | Busy tone ON time: range 2                                                                                                                                                           |          |                                                                                 |
| 40142D  | Busy tone OFF time: range 2                                                                                                                                                          |          |                                                                                 |
| 40142E  | Busy tone ON time: range 3                                                                                                                                                           |          |                                                                                 |
| 40142F  | Busy tone OFF time: range 3                                                                                                                                                          |          |                                                                                 |
| 401430  | Busy tone ON time: range 4                                                                                                                                                           |          |                                                                                 |
| 401431  | Busy tone OFF time: range 4                                                                                                                                                          |          |                                                                                 |
| 401432  | Busy tone continuous tone detection time                                                                                                                                             |          |                                                                                 |
| 401433  | Busy tone signal state time tolerance for all ranges, and number of cycles required for detection (a setting of 4 cycles means that ON-OFF-ON or OFF-ON-OFF must be detected twice). |          |                                                                                 |
|         | Tolerance (±)<br>Bit    1    0<br>0    0    75%            Bits 2 and 3 must always<br>0    1    50%            be kept at 0.<br>1    0    25%<br>1    1    12.5%                    |          |                                                                                 |
|         | Bits 7, 6, 5, 4: number of cycles required for cadence detection                                                                                                                     |          |                                                                                 |

## NCU PARAMETERS

| Address | Function                                                                | Unit                       | Remarks                                                                                                     |
|---------|-------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------|
| 401434  | International dial tone frequency upper limit (high byte)               | Hz (BCD)                   | If both addresses contain FF(H), tone detection is disabled.                                                |
| 401435  | International dial tone frequency upper limit (low byte)                |                            |                                                                                                             |
| 401436  | International dial tone frequency lower limit (high byte)               | Hz (BCD)                   | If both addresses contain FF(H), tone detection is disabled.                                                |
| 401437  | International dial tone frequency lower limit (low byte)                |                            |                                                                                                             |
| 401438  | International dial tone detection time                                  | 20 ms                      | If 401438 contains FF, the machine pauses for the pause time (40143D / 40143E).<br><br>Belgium: See Note 2. |
| 401439  | International dial tone reset time (LOW)                                |                            |                                                                                                             |
| 40143A  | International dial tone reset time (HIGH)                               |                            |                                                                                                             |
| 40143B  | International dial tone continuous tone time                            |                            |                                                                                                             |
| 40143C  | International dial tone permissible drop time                           |                            |                                                                                                             |
| 40143D  | International dial wait interval (LOW)                                  |                            |                                                                                                             |
| 40143E  | International dial wait interval (HIGH)                                 |                            |                                                                                                             |
| 40143F  | Country dial tone upper frequency limit (HIGH)                          | Hz (BCD)                   | If both addresses contain FF(H), tone detection is disabled.                                                |
| 401440  | Country dial tone upper frequency limit (LOW)                           |                            |                                                                                                             |
| 401441  | Country dial tone lower frequency limit (HIGH)                          | Hz (BCD)                   | If both addresses contain FF(H), tone detection is disabled.                                                |
| 401442  | Country dial tone lower frequency limit (LOW)                           |                            |                                                                                                             |
| 401443  | Country dial tone detection time                                        | 20 ms                      | If 401443 contains FF, the machine pauses for the pause time (401448 / 401449).                             |
| 401444  | Country dial tone reset time (LOW)                                      |                            |                                                                                                             |
| 401445  | Country dial tone reset time (HIGH)                                     |                            |                                                                                                             |
| 401446  | Country dial tone continuous tone time                                  |                            |                                                                                                             |
| 401447  | Country dial tone permissible drop time                                 |                            |                                                                                                             |
| 401448  | Country dial wait interval (LOW)                                        |                            |                                                                                                             |
| 401449  | Country dial wait interval (HIGH)                                       |                            |                                                                                                             |
| 40144A  | Time between opening or closing the DO relay and opening the OHDI relay | 1 ms                       | See Notes 3, 6 and 7. Function 07-0 (parameter 11).                                                         |
| 40144B  | Break time for pulse dialing                                            | 1 ms                       | See Notes 3 and 7. Function 07-0 (parameter 12).                                                            |
| 40144C  | Make time for pulse dialing                                             | 1 ms                       | See Notes 3 and 7. Function 07-0 (parameter 13).                                                            |
| 40144D  | Not used                                                                | Do not change the setting. |                                                                                                             |

# NCU PARAMETERS

| Address          | Function                                                                                             | Unit                                        | Remarks                                                                                                                                                                                                |
|------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40144E           | Minimum pause between dialed digits (pulse dial mode)                                                | 20 ms                                       | See Notes 3 and 7.<br>Function 07-0 (parameter 15).                                                                                                                                                    |
| 40144F           | Time waited when a pause is entered at the operation panel                                           |                                             | Function 07-0 (parameter 16). See Note 7                                                                                                                                                               |
| 401450           | DTMF tone on time                                                                                    | 1 ms                                        | Function 07-0 (parameter 17). See Note 7                                                                                                                                                               |
| 401451           | DTMF tone off time                                                                                   |                                             | Function 07-0 (parameter 18). See Note 7                                                                                                                                                               |
| 401452           | Tone attenuation level of DTMF signals while dialing                                                 | -dBm x 0.5                                  | Function 07-0 (parameter 19).<br>See Note 5 and 7.                                                                                                                                                     |
| 401453           | Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals | -dBm x 0.5                                  | Function 07-0 (parameter 20).<br>The setting must be less than -5dBm, and should not exceed the setting at 401452h above.<br>See Notes 5 and 7.                                                        |
| 401454           | PSTN: DTMF tone attenuation level after dialling                                                     | -dBm x 0.5                                  | Function 07-0 (parameter 21). See Note 5.                                                                                                                                                              |
| 401455           | ISDN: DTMF tone attenuation level after dialling                                                     | -dBm x 0.5                                  | See Note 5                                                                                                                                                                                             |
| 401456           | Not used                                                                                             | Do not change the setting.                  |                                                                                                                                                                                                        |
| 401457           | Time between 40144Dh (NCU parameter 14) and 40144Eh (NCU parameter 15)                               | 1 ms                                        |                                                                                                                                                                                                        |
| 401458           | Not used                                                                                             | Do not change the setting.                  |                                                                                                                                                                                                        |
| 401459           | Grounding time (ground start mode)                                                                   | 20 ms                                       | The Gs relay is closed for this interval.                                                                                                                                                              |
| 40145A           | Break time (flash start mode)                                                                        | 1 ms                                        | The OHDI relay is open for this interval.                                                                                                                                                              |
| 40145B           | International dial access code (High)                                                                | BCD                                         | For a code of 100:<br>40145B - F1<br>40145C - 00                                                                                                                                                       |
| 40145C           | International dial access code (Low)                                                                 |                                             |                                                                                                                                                                                                        |
| 40145D           | PSTN access pause time                                                                               | 20 ms                                       | This time is waited for each pause input after the PSTN access code. If this address contains FF[H], the pause time stored in address 40144F is used.<br>In the UK: Do not set a number higher than 7. |
| 40145E           | Progress tone detection level, and cadence detection enable flags                                    | Bits 7–3: Not used<br>Bits 2–0: See Note 2. |                                                                                                                                                                                                        |
| 40145F to 401464 | Not used                                                                                             | Do not change these settings.               |                                                                                                                                                                                                        |

Fax Unit  
B465

## NCU PARAMETERS

| Address                | Function                                                                                                                                                 | Unit                          | Remarks                                                                       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------|
| 401465                 | Long distance call prefix (HIGH)                                                                                                                         | BCD                           | For a code of 0:<br>401465 - FF<br>401466 - F0                                |
| 401466                 | Long distance call prefix (LOW)                                                                                                                          | BCD                           |                                                                               |
| 401467<br>to<br>401468 | Not used                                                                                                                                                 | Do not change these settings. |                                                                               |
| 401469                 | Distinctive ring                                                                                                                                         | Hex                           | 00(H): OFF, 01(H): ON                                                         |
| 40146A                 | Distinctive ring minimum off time                                                                                                                        | 1 ms                          |                                                                               |
| 40146B                 | Distinctive ring maximum one cycle time                                                                                                                  | 20 ms<br>±<br>20 ms           |                                                                               |
| 40146C<br>to<br>401471 | Not used                                                                                                                                                 | Do not change these settings. |                                                                               |
| 401472                 | Acceptable ringing signal frequency:<br>range 1, upper limit                                                                                             | 1000/ N (Hz)                  | Function 07-0 (parameter 02).<br>See Note 7.                                  |
| 401473                 | Acceptable ringing signal frequency:<br>range 1, lower limit                                                                                             |                               | Function 07-0 (parameter 03).<br>See Note 7.                                  |
| 401474                 | Acceptable ringing signal frequency:<br>range 2, upper limit                                                                                             | 1000/ N (Hz)                  | Function 07-0 (parameter 04).<br>See Note 7.                                  |
| 401475                 | Acceptable ringing signal frequency:<br>range 2, lower limit                                                                                             |                               | Function 07-0 (parameter 05).<br>See Note 7.                                  |
| 401476                 | Number or rings until a call is detected                                                                                                                 | 1                             | Function 07-0 (parameter 06).<br>The setting must not be zero.<br>See Note 7. |
| 401477                 | Minimum required length of the first ring                                                                                                                | 20 ms                         | See Note 4 and 7.<br>Function 07-0 (parameter 07).                            |
| 401478                 | Minimum required length of the second and subsequent rings                                                                                               | 20 ms                         | Function 07-0 (parameter 08).<br>See Note 7.                                  |
| 401479                 | Ringing signal detection reset time (LOW)                                                                                                                | 20 ms                         | Function 07-0 (parameter 09).<br>See Note 7.                                  |
| 40147A                 | Ringing signal detection reset time (HIGH)                                                                                                               | 20 ms                         | Function 07-0 (parameter 10).<br>See Note 7.                                  |
| 40147B<br>to<br>401480 | Not used                                                                                                                                                 | Do not change the settings.   |                                                                               |
| 401481                 | Interval between dialing the last digit and switching the Oh relay over to the external telephone when dialing from the operation panel in handset mode. | 20 ms                         | Factory setting: 500 ms                                                       |

| Address                | Function                                                                                                                                                                                                                                                                                                              | Unit                          | Remarks                                                      |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------|
| 401482                 | Bits 0 and 1 - Handset off-hook detection time<br><u>Bit 1    0    Setting</u><br>0    0    200 ms<br>0    1    800 ms<br>Other Not used<br><br>Bits 2 and 3 - Handset on-hook detection time<br><u>Bit 3    2    Setting</u><br>0    0    200 ms<br>0    1    800 ms<br>Other Not used<br><br>Bits 4 to 7 - Not used |                               |                                                              |
| 401483<br>to<br>4014A4 | Not used                                                                                                                                                                                                                                                                                                              | Do not change these settings. |                                                              |
| 4014A5                 | CED detection time                                                                                                                                                                                                                                                                                                    | 20 ms<br>± 20 ms              | Factory setting: 200 ms                                      |
| 4014A6<br>to<br>4014AA | Not used                                                                                                                                                                                                                                                                                                              | Do not change these settings. |                                                              |
| 4014AB                 | CNG on time                                                                                                                                                                                                                                                                                                           | 20 ms                         | Factory setting: 500 ms                                      |
| 4014AC                 | CNG off time                                                                                                                                                                                                                                                                                                          |                               | Factory setting: 200 ms                                      |
| 4014AD                 | Number of CNG cycles required for detection                                                                                                                                                                                                                                                                           |                               | The data is coded in the same way as address 401433.         |
| 4014AE                 | Not used                                                                                                                                                                                                                                                                                                              | Do not change the settings.   |                                                              |
| 4014AF                 | Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)                                                                                                                                                                                                                                 | Hz (BCD)                      | If both addresses contain FF(H), tone detection is disabled. |
| 4014B0                 | Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)                                                                                                                                                                                                                                  |                               |                                                              |
| 4014B1                 | Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)                                                                                                                                                                                                                                 | Hz(BCD)                       | If both addresses contain FF(H), tone detection is disabled. |
| 4014B2                 | Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)                                                                                                                                                                                                                                  |                               |                                                              |
| 4014B3                 | Detection time for 800 Hz AI short protocol tone                                                                                                                                                                                                                                                                      | 20 ms                         | Factory setting: 360 ms                                      |
| 4014B4                 | PSTN: Tx level from the modem                                                                                                                                                                                                                                                                                         | - dBm                         | Function 07-0 (parameter 01).<br>See Note 7.                 |
| 4014B5<br>to<br>4014B6 | Not used                                                                                                                                                                                                                                                                                                              | Do not change these settings. |                                                              |
| 4014B7                 | PABX: Tx level from the modem                                                                                                                                                                                                                                                                                         | - dBm                         |                                                              |
| 4014B8<br>to<br>4014BC | Not used                                                                                                                                                                                                                                                                                                              | Do not change these settings. |                                                              |

## NCU PARAMETERS

| Address          | Function                                                                                                                          | Unit                               | Remarks                                                                                                                                                                       |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4014BD           | Modem turn-on level (incoming signal detection level)                                                                             | -37-0.5N (dBm)                     |                                                                                                                                                                               |
| 4014BE to 4014C6 | Not used                                                                                                                          | Do not change these settings.      |                                                                                                                                                                               |
| 4014C7           | Bits 0 to 3 – Not used.<br>Bit 4 – V.34 protocol dump <b>0</b> : Simple, <b>1</b> : Detailed (default)<br>Bits 5 to 7 – Not used. |                                    |                                                                                                                                                                               |
| 4014C8 to 4014D9 | Not used                                                                                                                          | Do not change the settings.        |                                                                                                                                                                               |
| 4014DA           | T.30 T1 timer                                                                                                                     | 1 s                                | See Note 7.                                                                                                                                                                   |
| 4014DB to 4014DF | Not used                                                                                                                          | Do not change these settings.      |                                                                                                                                                                               |
| 4014E0 bit 3     | Maximum wait time for post message                                                                                                | <b>0</b> : 12 s<br><b>1</b> : 30 s | <b>1</b> : Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s.<br>Change this bit to “1” if communication errors occur frequently during V.17 reception. |

### NOTES

1. If a setting is not required, store FF in the address.
2. Italy and Belgium only

RAM address 40145E: the lower four bits have the following meaning.

Bit 2 - 1: International dial tone cadence detection enabled (Belgium)

Bit 1 - Not used

Bit 0 - 1: PSTN dial tone cadence detection enabled (Italy)

If bit 0 or bit 2 is set to 1, the functions of the following RAM addresses are changed.

401408 (if bit 0 = 1) or 401438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 401433.

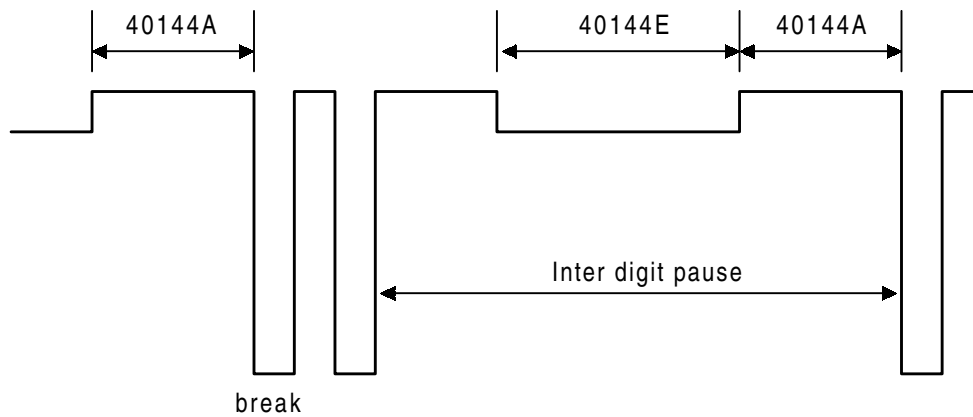
40140B (if bit 0 = 1) or 40143B (if bit 2 = 1): on time, hex code (unit = 20 ms)

40140C (if bit 0 = 1) or 40143C (if bit 2 = 1): off time, hex code (unit = 20 ms)

3. Pulse dial parameters (addresses 40144A to 40144F) are the values for 10 pps. If 20 pps is used, the machine automatically compensates.
4. The first ring may not be detected until 1 to 2.5 wavelengths after the time specified by this parameter.



5. The attenuation levels calculated from RAM data are:  
 High frequency tone:  $-0.5 \times N_{401452/401454}$  dBm



Low frequency tone:  $-0.5 \times (N_{401452/401454} + N_{401453})$  dBm

**NOTE:**  $N_{401452}$ , for example, means the value stored in address 401452(H)

6. The actual inter-digit pause (pulse dial mode) is the sum of the periods specified by RAM addresses 40144A and 40144E.
7. For European models, these parameters should not be changed in the field. The default values of these parameters have been approved by CTR21 and/or EG201121. Therefore, a change in any one of these values would constitute a violation of these requirements.

## 5.4 DEDICATED TRANSMISSION PARAMETERS

Each Quick Dial Key and Speed Dial Code has eight bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

### 5.4.1 PROGRAMMING PROCEDURE

1. Make sure the machine is in standby mode. Press 'User Tools' key then choose '4. Fax Features'.
2. Select the "1. Program/Delete", then press "OK" key.  
Select "1. Prog. Quick dial" or "3. Prog. Speed Dial" then press "OK" key  
**Example:** Change the Parameters in Quick Dial 01.
3. Press Quick Dial key 01 and "OK" key.  
**NOTE:** The selected Quick or Speed Dial must be programmed beforehand.
4. When the programmed dial number is displayed, press S - V - C using Quick Dial keys, then press 'Start'.
5. The settings for byte 0 are now displayed. Press a number from 0 to 7 corresponding to the bit that you wish to change.  
**Example:** Change bit 7 to 1: Press 7
6. To scroll through the parameter bytes, either:  
Select the next byte: press '→' Switch'  
or  
Select the previous byte: press '←' Switch' until the correct byte is displayed.  
Then go back to step 6.
7. After the setting is changed, press "OK" until "Programmed" displays.
8. To finish, press 'User Tools'.

## 5.4.2 PARAMETERS

The initial settings of the following parameters are all FF(H)—all the parameters are disabled.

| Switch 00                                                                                                                                                                                                                                                                                                                                                                                |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| FUNCTION AND COMMENTS                                                                                                                                                                                                                                                                                                                                                                    |  |
| ITU-T T1 time (for PSTN G3 mode)<br>If the connection time to a particular terminal is longer than the NCU parameter setting, adjust this byte. The T1 time is the value stored in this byte (in hex code), multiplied by 1 second.<br><b>Range:</b><br>0 to 120 s (00h to 78h)<br>FFh - The local NCU parameter factory setting is used.<br>Do not program a value between 79h and FEh. |  |

| Switch 01 |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.       | FUNCTION                     | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 0-4       | Tx level                     | If communication with a particular remote terminal often contains errors, the signal level may be inappropriate. Adjust the Tx level for communications with that terminal until the results are better.<br><br>If the setting is 'Disabled', the NCU parameter 01 setting is used.<br><br><b>Note:</b> Do not use settings other than listed on the left.                                                                                                                                                                                                                                             |
|           | <b>Bit 4 3 2 1 0 Setting</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 0 0 0 0                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 0 0 1 -1                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 0 1 0 -2                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 0 1 1 -3                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 1 0 0 -4                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | :                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | :                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 1 1 1 1 -15                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 1 1 1 1 1 Disabled           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5-7       | Cable equalizer              | Use a higher setting if there is signal loss at higher frequencies because of the length of wire between the modem and the telephone exchange when calling the number stored in this Quick/Speed Dial.<br><br>Also, try using the cable equalizer if one or more of the following symptoms occurs. <ul style="list-style-type: none"> <li>Communication error with error codes such as 0-20, 0-23, etc.</li> <li>Modem rate fallback occurs frequently.</li> </ul><br>If the setting is 'Disabled', the bit switch setting is used.<br><b>Note:</b> Do not use settings other than listed on the left. |
|           | <b>Bit 7 6 5 Setting</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 0 None                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 0 1 Low                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 1 0 Medium                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 0 1 1 High                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|           | 1 1 1 Disabled               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## DEDICATED TRANSMISSION PARAMETERS

| Switch 02 |                                            |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.       | FUNCTION                                   | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                              |
| 0-3       | Initial Tx modem rate                      | <p>If training with a particular remote terminal always takes too long, the initial modem rate may be too high. Reduce the initial Tx modem rate using these bits.</p> <p>For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0.</p> <p>If the setting is 'Disabled', the bit switch setting is used.</p> <p><b>Note:</b> Do not use settings other than listed on the left.</p> |
|           | <b>Bit 3 2 1 0 Setting (bps)</b>           |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 0 0 0 Not used                           |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 0 0 1 2,400                              |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 0 1 0 4,800                              |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 0 1 1 7,200                              |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 1 0 0 9,600                              |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 1 0 1 12,000                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 1 1 0 14,400                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 0 1 1 1 16,800                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 0 0 0 19,200                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 0 0 1 21,600                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 0 1 0 24,000                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 0 1 1 26,400                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 1 0 0 28,800                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 1 0 1 31,200                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 1 1 0 33,600                             |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | 1 1 1 1 Disabled                           |                                                                                                                                                                                                                                                                                                                                                                                                       |
|           | Other settings: Not used                   |                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4, 5      | Not used                                   | Do not change the settings.                                                                                                                                                                                                                                                                                                                                                                           |
| 6         | AI short protocol<br>0: Off<br>1: Disabled | Refer to the Core Technology Manual for details about AI Short Protocol.<br>If the setting is 'Disabled', the bit switch setting is used.                                                                                                                                                                                                                                                             |
| 7         | Not used                                   | Do not change the setting.                                                                                                                                                                                                                                                                                                                                                                            |

| Switch 03 |                                        |                                                                                                                                                                                                                                                                                         |
|-----------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.       | FUNCTION                               | COMMENTS                                                                                                                                                                                                                                                                                |
| 0, 1      | Inch-mm conversion before transmission | <p>The machine uses inch-based resolutions for scanning. If "inch only" is selected, the printed copy may be slightly distorted at the other end if that machine uses mm-based resolutions.</p> <p>If the setting is 'Disabled', the bit switch setting is used.</p>                    |
|           | <b>Bit 1 Bit 0 Setting</b>             |                                                                                                                                                                                                                                                                                         |
|           | 0 0 Inch-mm conversion available       |                                                                                                                                                                                                                                                                                         |
|           | 0 1 Inch only                          |                                                                                                                                                                                                                                                                                         |
|           | 1 0 Not used                           |                                                                                                                                                                                                                                                                                         |
| 2, 3      | DIS/NSF detection method               | <p><b>(0, 1):</b> Use this setting if echoes on the line are interfering with the setup protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS.</p> <p>If the setting is 'Disabled', the bit switch setting is used.</p> |
|           | <b>Bit 3 Bit 2 Setting</b>             |                                                                                                                                                                                                                                                                                         |
|           | 0 0 First DIS or NSF                   |                                                                                                                                                                                                                                                                                         |
|           | 0 1 Second DIS or NSF                  |                                                                                                                                                                                                                                                                                         |
|           | 1 0 Not used                           |                                                                                                                                                                                                                                                                                         |
|           | 1 1 Disabled                           |                                                                                                                                                                                                                                                                                         |

## DEDICATED TRANSMISSION PARAMETERS

| <b>Switch 03</b>     |                                                                                                                                                        |                                                                                                                                                                                                                                                                                         |  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>No.</b>           | <b>FUNCTION</b>                                                                                                                                        | <b>COMMENTS</b>                                                                                                                                                                                                                                                                         |  |
| <b>4</b>             | V.8 protocol<br><b>0:</b> Off<br><b>1:</b> Disabled                                                                                                    | If transmissions to a specific destination always end at a lower modem rate (14,400 bps or lower), disable V.8 protocol so as not to use V.34 protocol.<br><b>0:</b> V.34 communication will not be possible.<br>If the setting is 'Disabled', the bit switch setting is used.          |  |
| <b>5</b>             | Compression modes available in transmit mode<br><b>0:</b> MH only<br><b>1:</b> Disabled                                                                | This bit determines the capabilities that are informed to the other terminal during transmission.<br>If the setting is 'Disabled', the bit switch setting is used.                                                                                                                      |  |
| <b>6</b><br><b>7</b> | ECM during transmission<br><b>Bit 7   Bit 6   Setting</b><br>0      0      Off<br>0      1      On<br>1      0      Not used<br>1      1      Disabled | For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting.<br>Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled.<br>If the setting is 'Disabled', the bit switch setting is used. |  |

Fax Unit  
B465

|                                                                  |
|------------------------------------------------------------------|
| <b>Switch 04:</b> Not used (do not change any of these settings) |
| <b>Switch 05:</b> Not used (do not change any of these settings) |
| <b>Switch 06:</b> Not used (do not change any of these settings) |
| <b>Switch 07:</b> Not used (do not change any of these settings) |
| <b>Switch 08:</b> Not used (do not change any of these settings) |
| <b>Switch 09:</b> Not used (do not change any of these settings) |

## 5.5 SERVICE RAM ADDRESSES

### CAUTION

Do not change the settings which are marked as “Not used” or “Read only.”

#### **400001 to 400004(H) - ROM version (Read only)**

400001(H) - Revision number (BCD)

400002(H) - Year (BCD)

400003(H) - Month (BCD)

400004(H) - Day (BCD)

#### **400005(H) - RAM Reset Level 1**

Change the data at this address to FF(H), then switch the machine off and on to reset all system settings (with the exception of the copier SP/UP settings, which are retained).

**Caution:** Before using this RAM, print the settings of all the system parameters (System Parameter List - Function02).

The country code will be reset to UK for EU/Asia models and USA for NA model when RAM reset level 1 is done.

#### **400006(H) - Language Code (Hex)**

02(H) - English

04(H) - French

05(H) - Spanish

06(H) - German

07(H) - Italian

08(H) - Swedish

09(H) - Norwegian

0A(H) - Portuguese

0B(H) - Dutch

0C(H) - Polish

0D(H) - Hungarian

0E(H) - Czech

0F(H) - Danish

10(H) - Finnish

**400008(H)** - Program checksum: Total (low)

**400009(H)** - Program checksum: Total (high)

**40000A(H)** - Program checksum: Boot (low)

**40000B(H)** - Program checksum: Boot (high)

**40000C(H)** - Program checksum: Main (low)

**40000D(H)** - Program checksum: Main (high)

**40000E(H)** - RDS program update counter (Hex)

**400010 to 40002F(H)** - System bit switches

**400030 to 40003F(H)** - Scanner bit switches

**400040 to 40004F(H)** - Plotter bit switches

**400050 to 40006F(H)** - Communication bit switches**400070 to 40007F(H)** - G3 bit switches**4000C0(H) - User parameter switch 00 (SWusr\_00)**

Bit 0: Not used

Bits 1 to 3: Scanning contrast home position

| Bit | 3 | 2 | 1 | Setting  |
|-----|---|---|---|----------|
|     | 0 | 0 | 0 | Normal   |
|     | 0 | 0 | 1 | Lightest |
|     | 0 | 1 | 0 | Darkest  |
|     | 1 | 0 | 1 | Lighter  |
|     | 1 | 1 | 0 | Darker   |

Bits 4 and 5: Scanning resolution home position

| Bit | 5 | 4 | Setting  |
|-----|---|---|----------|
|     | 0 | 0 | Standard |
|     | 0 | 1 | Detail   |
|     | 1 | 0 | Fine     |
|     | 1 | 1 | Not used |

Bit 6: Transmission mode home position

0: Memory tx, 1: Immediate tx

Bit 7: Halftone home position

0: Disabled, 1: Enabled

**4000C1(H) - User parameter switch 01 (SWusr\_01)**

Bits 0 to 6: Not

Bit 7: Settings return to home position after scanning  
Enabled

0: Disabled, 1:

**4000C2(H) - User parameter switch 02 (SWusr\_02)**

Bit 0: Forwarding mark printing on forwarded messages

0: Disabled, 1: Enabled

Bit 1: Center mark printing on received copies

0: Disabled, 1: Enabled

Bit 2: Reception time printing

0: Disabled, 1: Enabled

Bit 3: TSI print on received messages

0: Disabled, 1: Enabled

Bit 4: Checkered mark printing

0: Disabled, 1: Enabled

Bits 5 and 7: Not used

**4000C3(H) - User parameter switch 03 (SWusr\_03: Automatic report printout)**

Bit 0: Communication result report (memory transmissions) 0: Off, 1: On

Bit 1: Not used

Bit 2: File reserve report (memory transmission)

0: Off, 1: On

Bit 3: File reserve report (polling reception)

0: Off, 1: On

Bit 4: Communication result report (polling reception)

0: Off, 1: On

Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On

Bit 6: Not used

Bit 7: Journal

0: Off, 1: On

**4000C4(H) - User parameter switch 04 (SWusr\_04: Automatic report printout)**

Bits 0 to 6: Not used

Bit 7: Inclusion of a sample image on reports

0: Off, 1: On

**4000C5(H) - User parameter switch 05 (SWusr\_05)**

Bit 0: Substitute reception

0: Enabled, 1: Disabled

Bit 1: Memory reception if no RTI or CSI received

0: Possible, 1:

Impossible

## SERVICE RAM ADDRESSES

Bits 2 and 3: Not used

Bit 4: Restricted Access using personal codes

0: Off, 1: On

Bits 5 to 7: Not used

### **4000C6(H) - User parameter switch 06 (SWusr\_06)**

Bit 0: TT print

0: Off, 1: On

Bits 1 to 3: Not used

Bit 4: Batch transmission

0: Off, 1: On

Bits 5 to 7: Not used

### **4000C7(H) - User parameter switch 07 (SWusr\_07)**

Bits 0 and 1: Not used

Bit 2: Parallel memory transmission

0: Off, 1: On

Bit 3: Not used

Bit 4: Use of the ☒ key for tonal signals

0: Off, 1: On

Bits 5 to 7: Not used

### **4000C8(H) - User parameter switch 08 (SWusr\_08)**

Bits 0 to 5: Not used.

Bits 6 and 7: Forwarding

| Bit 7 | 6 | Setting |
|-------|---|---------|
|-------|---|---------|

|   |   |          |
|---|---|----------|
| X | 0 | Disabled |
|---|---|----------|

|   |   |                                                                                  |
|---|---|----------------------------------------------------------------------------------|
| 0 | 1 | Faxes from senders whose RTIs/CSIs are specified for this feature are forwarded. |
|---|---|----------------------------------------------------------------------------------|

|   |   |                                                                                      |
|---|---|--------------------------------------------------------------------------------------|
| 1 | 1 | Faxes from senders whose RTIs/CSIs are not specified for this feature are forwarded. |
|---|---|--------------------------------------------------------------------------------------|

### **4000C9(H) - User parameter switch 09 (SWusr\_09)**

Bits 0 and 1: Memory lock

| Bit 0 | 1 | Setting |
|-------|---|---------|
|-------|---|---------|

|   |   |          |
|---|---|----------|
| X | 0 | Disabled |
|---|---|----------|

|   |   |                                                                                                                             |
|---|---|-----------------------------------------------------------------------------------------------------------------------------|
| 0 | 1 | Faxes from senders whose RTIs/CSIs are specified for this feature are kept in the memory until a memory lock ID is entered. |
|---|---|-----------------------------------------------------------------------------------------------------------------------------|

|   |   |                                                                                                                                 |
|---|---|---------------------------------------------------------------------------------------------------------------------------------|
| 1 | 1 | Faxes from senders whose RTIs/CSIs are not specified for this feature are kept in the memory until a memory lock ID is entered. |
|---|---|---------------------------------------------------------------------------------------------------------------------------------|

Bits 2 to 5: Not used

Bit 6: Inclusion of the Yes key when Quick Dials are continuously selected for destinations

0: Not needed, 1: Needed

1: The user must press the Yes key after each Quick Dial key. This is to prevent the user from selecting incorrect destinations.

Bit 7: Not used

### **4000CA(H) - User parameter switch 10 (SWusr\_0A)**

Bits 0 to 6: Not used

Bit 7: Halftone type

0: Error diffusion, 1: Dither

### **4000CB(H) - User parameter switch 11 (SWusr\_0B)**

Bits 0 to 5: Not used

Bit 6: Printout of messages received while acting as a forwarding station

0: Off, 1: On

Bit 7: Not used



**4000CC(H) - User parameter switch 12 (SWusr\_0C)**

Bit 0: Not used

Bit 1: Distinctive Ring detection (NA only)

0: Off, 1: On

Bit 2: Toner saving mode

0: Disabled, 1: Enabled

Bits 3 to 7: Not used

**4000CD(H) - User parameter switch 13 (SWusr\_0D)**

Bits 0 and 1: PSTN access method from behind a PABX

| Bit | 1 | 0 | Setting             |
|-----|---|---|---------------------|
| 0   | 0 | 0 | PSTN                |
| 0   | 1 | 1 | Loop start (prefix) |
| 1   | 0 | 0 | Ground start        |
| 1   | 1 | 1 | Flash start         |

Bits 2 to 7: Not used

**4000CE(H) to 4000D8 - User parameter switch 14 to 24 (SWusr\_0E to 18)**

Bits 0 to 7: Not used

**4000D9(H) - User parameter switch 25 (SWusr\_19)**

Bits 0 to 3: Not used

Bit 4: RDS operation 0: Not acceptable

1: Acceptable for the limit specified by system switch 03

**Note:** This bit is only effective when RDS operation can be selected by the user (system switch 02 bits 6 and 7).

Bits 5 and 6: Not used

Bit 7: Daylight saving time (User tools)

0: Disabled, 1: Enabled

**4000DA(H) - User parameter switch 26 (SWusr\_1A)**

Bit 0 and 1: Dialing type

(This switch is not printed on the user parameter list.)

| Bit | 1 | 0 | Setting                |
|-----|---|---|------------------------|
| 0   | 0 | 0 | Pulse dialing (10 pps) |
| 0   | 1 | 1 | Pulse dialing (20 pps) |
| 1   | 0 | 0 | Tone (DTMF) dialing    |

Bits 2 to 7: Not used

**4000DB(H) - User parameter switch 27 (SWusr\_1B)**

PSTN access code from behind a PABX (Key operator tools)

(This switch is not printed on the user parameter list.)

| Access number | Hex value to program (BCD) |
|---------------|----------------------------|
| 0             | F0                         |
| ↓             | ↓                          |
| 9             | F9                         |
|               |                            |
| 00            | 00                         |
| ↓             | ↓                          |
| 99            | 99                         |

## SERVICE RAM ADDRESSES

### **4000DC(H) - User parameter switch 28 (SWusr\_1C)**

Number of rings in TEL mode (User tools)

(This switch is not printed on the user parameter list.)

| <u>Number of rings</u> |   | <u>Hex value to program (BCD)</u> |
|------------------------|---|-----------------------------------|
| 00                     |   | 00                                |
| ↓                      | ➡ | ↓                                 |
| 99                     |   | 99                                |

### **4000DD(H) to 4000EF - User parameter switch 29 to 47 (SWusr\_1D to 2F)**

Bits 0 to 7: Not used

**400130 to 400143(H)** - RTI (Max. 20 characters - ASCII) - See the following note.

**400159 to 400178(H)** - TTI 1 (Max. 32 characters - ASCII) - See the following note

**400179 to 40018C(H)** - CSI (Max. 20 digits - ASCII)

**4001D5(H)** - Number of CSI digits (Hex)

If the number of characters is less than the maximum (20 for RTI, 32 for TTI), add a stop code (FF[H]) after the last character.

**4001D8 to 4001E6(H)** - Service station's fax number (Max. 15 digits - ASCII)  
[Service Function 09]

**4001F6 to 400204(H)** - Own fax number: PSTN (Max. 15 digits - ASCII)

**400250(H)** - ID code (low - BCD)

**400251(H)** - ID code (high - BCD)

**400252(H)** - Confidential ID (low - BCD)

**400253(H)** - Confidential ID (high - BCD)

**400254(H)** - Memory Lock ID (low - BCD)

**400255(H)** - Memory Lock ID (high - BCD)

**400273 to 40027D(H)** – Daylight-saving time (Summer time)

Amount of time shift

400273(H) – Amount of time shift

1-0xFF(H) minutes, 00(H)= 60 minutes

Start date/time:

400274(H) - Month (BCD)

400275(H) - Week (Hex)

400276(H) - 00: Monday, 01: Tuesday, 02: Wednesday, .... , 06: Sunday

400277(H) - Hour (BCD)

400278(H) - Day (BCD)

End date/time:

400279(H) - Month (BCD)

40027A(H) - Week (Hex)

40027B(H) - 00: Monday, 01: Tuesday, 02: Wednesday, .... , 06: Sunday

40027C(H) - 24-Hour (BCD)

40027D(H) - Day (BCD)

**40027E to 400285(H)** - Last power off time (Read only)

40027E(H) - Clock

00(H) - 12-hour clock (AM)

01(H) - 24-hour clock

02(H) - 12-hour clock (PM)

40027F(H) - Year (BCD)

400280(H) - Month (BCD)

400281(H) - Day (BCD)

400282(H) - Hour

400283(H) - Minute

400284(H) - Second

400285(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ..... , 06: Sunday

**400286 to 40028D(H)** - Present time (Read only)

400286(H) - Clock

00(H) - 12-hour clock (AM)

01(H) - 24-hour clock

02(H) - 12-hour clock (PM)

400287(H) - Year (BCD)

400288(H) - Month (BCD)

400289(H) - Day (BCD)

40028A(H) - Hour

40028B(H) - Minute

40028C(H) - Second

40028D(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ..... , 06: Sunday

**40028E to 400291(H)** - Total seconds (hex value) since 00:00:00 1st January 1990  
(Read only)**400292 to 400295(H)** - Optional equipment (Read only)

400292(H)

Bit 1: Future expander 40M

Bit 3: ADF

Bit 4: !00 sheets by-pass tray unit

Bit 7: Paper tray unit

Other bits: Not used

400293(H)

Bit 4: Printer unit

Other bits: Not used

400294(H)

Bit 2: JBIG

Other bits: Not used

400295(H)

Bit 3: 1 sheet by-pass tray unit

Bit 4: Modem

Bit 5: DIMM

Other bits: Not used

## SERVICE RAM ADDRESSES

For the following counters, the wording in brackets indicates how these counters appear on the system parameter list.

### **4002AC to 4002AF(H)** - TX counter (TRANSMISSION)

| Address   | High                    | Low                 |
|-----------|-------------------------|---------------------|
| 4002AC(H) | Tens digit              | Unit digit          |
| 4002AD(H) | Thousands digit         | Hundreds digit      |
| 4002AE(H) | Hundred thousands digit | Ten thousands digit |
| 4002AF(H) | Ten millions digit      | Millions digit      |

**Note:** The following counters have the same data format as above.

### **4002B0 to 4002B3(H)** - RX counter (RECEPTION)

### **4002B4 to 4002B7(H)** - Scan counter (SCAN)

### **4002B8 to 4002BB(H)** - Print counter (PRINT)

### **4002C0 to 4002C3(H)** - ADF counter (ADF)

### **4002C4 to 4002C7(H)** - ADF PM counter

### **4002C8 to 4002CB(H)** - ADF PM interval (Default: 45,000)

### **4002CC to 4002CF(H)** - ADF roller counter

### **4002D0 to 4002D3(H)** - ADF roller interval (Default: 45,000)

### **4002D8 to 4002DB(H)** - Paper feed counter: standard cassette (MAIN CASSETTE)

### **4002DC to 4002DF(H)** - Paper feed counter: optional cassette (CASSETTE 2)

### **4002EC to 4002EF(H)** - Paper feed counter: by-pass feeder (BY-PASS)

### **4002F4 to 4002F7(H)** - Scanner total jam counter (DOC. JAM)

### **4002F8 to 4002FB(H)** - Printer total jam counter (COPY JAM)

### **4002FC to 4002FF(H)** - Paper jam counter: standard cassette (MAIN CST JAM)

### **400300 to 400303(H)** - Paper jam counter: optional cassette (CST 2 JAM)

### **400310 to 400313(H)** - Paper jam counter: by-pass feeder (BY-PASS JAM)

### **400318 to 40031B(H)** - Fusing exit jam counter (EJECT JAM)

### **40031C to 40031F(H)** - Registration jam counter (PAPER JAM)

### **400320 to 400323(H)** - Printer PM counter (PM)

### **400324 to 400327(H)** - Printer PM interval (PM DEFAULT: Default: 90,000)

### **400328 to 40032B(H)** - Copy counter (COPY)

### **40032C to 40032F(H)** - OPC counter (PCU)

### **400330 to 400333(H)** - OPC PM interval (Default: 45,000)

### **400334 to 400337(H)** - AIO counter (TONER)

### **400338 to 40033B(H)** - Previous AIO counter, before replacing (TONER (PRE))

**400340 to 40034F(H)** - Excessive jam call parameters

| Parameters                         | Address (H) |         | Initial Setting | Sys. Para. List |
|------------------------------------|-------------|---------|-----------------|-----------------|
|                                    | ADF         | Printer |                 |                 |
| <b>DEC</b> (1 – 255; 0 = Disabled) | 400340      | 400344  | 10 (H)          | X               |
| <b>CALL</b> (3 – 15; 0 = Disabled) | 400341      | 400345  | 06(H)           | Y               |
| <b>CLR</b><br>(Low)<br>(High)      | 400342      | 400346  | 30(H)           | -               |
|                                    | 400343      | 400347  | 00(H)           |                 |

| Counters                                                   | Address (H)   |               | Sys. Para. List |
|------------------------------------------------------------|---------------|---------------|-----------------|
|                                                            | ADF           | Printer       |                 |
| <b>JAM</b> : Jam counter used to place a service call      | 400348        | 40034C        | Z               |
| <b>NO-JAM1</b> : Counter used for JAM counter decrement    | 400349        | 40034D        | -               |
| <b>NO-JAM2</b> : Counter used for clearing the JAM counter | 40034A (Low)  | 40034E (Low)  | -               |
|                                                            | 40034B (High) | 40034F (High) |                 |

**400350 to 400353(H)** - PC tx counter (PC TX)**400354 to 400357(H)** - PC rx counter (PC RX)**400358 to 40035B(H)** - PC scan counter (PC SCN)**40035C to 40035F(H)** - PC print counter (PC PRT)**4004B7(H)** - ROM Suffix (BCD)**4004B8(H)** - ROM Version (BCD)**4004B9 to 4004BB(H)** - ROM Information

4004B9(H) - Year (BCD)

4004BA(H) - Month (BCD)

4004BB(H) - Day (BCD)

**4004BC to 4004BD(H)** - Modem ROM version (BCD)**4004C0 to 4004C1(H)**

Timer adjustment for FCU automatic reset (system switch 02 bit 4)

0000 to 04FF(H): 1 hour

0500 to FFFF(H): N x 500 ms (10.7 minutes to 9.1 hours)

## SERVICE RAM ADDRESSES

### **4004D8 to 400501(H) - Night timer period**

4004D8 to 4004DA(H) - Setting #1 for Monday  
4004DB to 4004DD(H) - Setting #2 for Monday  
4004DE to 4004E0(H) - Setting #1 for Tuesday  
4004E1 to 4004E3(H) - Setting #2 for Tuesday  
4004E4 to 4004E6(H) - Setting #1 for Wednesday  
4004E7 to 4004E9(H) - Setting #2 for Wednesday  
4004EA to 4004EC(H) - Setting #1 for Thursday  
4004ED to 4004EF(H) - Setting #2 for Thursday  
4004F0 to 4004F2(H) - Setting #1 for Friday  
4004F3 to 4004F5(H) - Setting #2 for Friday  
4004F6 to 4004F8(H) - Setting #1 for Saturday  
4004F9 to 4004FB(H) - Setting #2 for Saturday  
4004FC to 4004FE(H) - Setting #1 for Sunday  
4004FF to 400501(H) - Setting #2 for Sunday

### **Program format**

First byte - Hour (BCD)

Second byte - Minute (BCD)

Third byte - 00(H): Timer start time, 01(H): Timer end time

### **40052E to 400531(H) - Time of last RDS execution (Read-only)**

These 4 bytes store the time at which RDS was last carried out. (Time is given in total seconds counted from 00:00:00 January 1, 1990.)

**400548(H)** - Transmission monitor volume 00 – 07(H)

**400549(H)** - Reception monitor volume 00 – 07(H)

**40054A(H)** - On-hook monitor volume 00 – 07(H)

**40054B(H)** - Dialing monitor volume 00 – 07(H)

**40054C(H)** - Buzzer volume 00 – 07(H)

**40054D(H)** - Key acknowledgment tone volume 00 – 07(H)

**40054E(H)** - Country code (same data as System bit switch 0F)

### **40054F to 400553(H) - Periodic service call parameters**

| Parameters    |                                                                    | Address (H) |
|---------------|--------------------------------------------------------------------|-------------|
| Call interval | 01 through 15 month(s) (BCD)<br>00: Periodic service call disabled | 40054F      |
| Next call     | Year (Read only)                                                   | 400550      |
|               | Month (Read only)                                                  | 400551      |
|               | Day: 01 through 31 (BCD)                                           | 400552      |
|               | Hour: 01 through 24 (BCD)                                          | 400553      |

### **400559 to 40055B(H) - Effective term of automatic service calls**

| Parameters                              |  | Address (H) |
|-----------------------------------------|--|-------------|
| Year: last two digits of the year (BCD) |  | 400559      |
| Month: 01 through 12 (BCD)              |  | 40055A      |
| Day: 01 through 31 (BCD)                |  | 40055B      |

[illegible]

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## SERVICE RAM ADDRESSES

Bit 6: Error report  
Bit 7: Data validity

0: Not printed, 1: Printed  
0: Not valid, 1: Valid

2nd byte - Not used

3rd to 7th bytes - Date and time when the communication started

3rd byte - Year (BCD)  
4th byte - Month (BCD)  
5th byte - Day (BCD)  
6th byte - Hour (BCD)  
7th byte - Minute (BCD)

8th and 9th bytes - Communication time

8th byte - Minutes (BCD)  
9th byte - Seconds (BCD)

10th byte - Line detection status

01(H): Ringing detection  
02(H): 1300Hz detection  
03(H): Remote detection  
04(H): CNG detection

11th and 12th bytes - Number of pages transmitted or received

11th byte - Low byte (Hex)  
12th byte - High byte (Hex)

13th and 14th bytes - Personal code or number of total/burst error lines

If bit 4 of the 1st byte is 0: 13th byte - Personal code (low - BCD)  
14th byte - Personal code (high - BCD)  
If bit 4 of the 1st byte is 1: 13th byte - Number of total error lines (Hex)  
14th byte - Number of burst error lines (Hex)

15th byte - File number (low - Hex)

16th byte - File number (high - Hex)

17th and 18th bytes – Destination File ID number (for system work area)

19th byte - Communication result

00(H): OK  
80(H): NG  
FF(H): Unknown

20th byte - Type of image mode

00(H): Text  
01(H): Gray scale  
02(H): Color  
03(H): Color/Text  
04(H): Color/Photo  
80(H): Photo

21st and 22nd bytes - Rx level or measure of error rate

If bit 5 of the 1st byte is 0: 20th byte - Rx level (low - Hex)  
21st byte - Rx level (high - Hex)  
If bit 4 of the 1st byte is 1: 20th byte - Measure of error rate (low - Hex)  
21st byte - Measure of error rate (high - Hex)



23rd byte - Final modem rate

Bits 0 to 3: Final modem speed

| Bit 3 | 2 | 1 | 0 | Setting |
|-------|---|---|---|---------|
| 0     | 0 | 0 | 1 | 2.4 k   |
| 0     | 0 | 1 | 0 | 4.8k    |
| 0     | 0 | 1 | 1 | 7.2k    |
| 0     | 1 | 0 | 0 | 9.6k    |
| 0     | 1 | 0 | 1 | 12.0k   |
| 0     | 1 | 1 | 0 | 14.4k   |
| 0     | 1 | 1 | 1 | 16.8k   |
| 1     | 0 | 0 | 0 | 19.2k   |
| 1     | 0 | 0 | 1 | 21.6k   |
| 1     | 0 | 1 | 0 | 24.0k   |
| 1     | 0 | 1 | 1 | 26.4k   |
| 1     | 1 | 0 | 0 | 28.8k   |
| 1     | 1 | 0 | 1 | 31.2k   |
| 1     | 1 | 1 | 0 | 33.6k   |

Other settings - Not used

Bits 4 to 7: Final modem type

| Bit 7 | 6 | 5 | 4 | Setting                   |
|-------|---|---|---|---------------------------|
| 0     | 0 | 0 | 1 | V.27ter                   |
| 0     | 0 | 1 | 0 | V.27ter, V.29             |
| 0     | 0 | 1 | 1 | V.33                      |
| 0     | 1 | 0 | 0 | V.27ter, V.29, V.17       |
| 0     | 1 | 0 | 1 | V.27ter, V.29, V.17, V.34 |

Other settings - Not used

24th to 26th bytes - Not used

27th to 50th byte - Remote terminal's ID (RTI, TSI or CSI) (ASCII)

51st byte - Communication mode #1

Bits 0 - 3: Resolution used

| Bit 3 | 2 | 1 | 0 | Setting            |
|-------|---|---|---|--------------------|
| 0     | 0 | 0 | 1 | 8 x 3.85 lines/mm  |
| 0     | 0 | 1 | 0 | 8 x 7.7 lines/mm   |
| 0     | 0 | 1 | 1 | 8 x 15.4 lines/mm  |
| 0     | 1 | 0 | 0 | 16 x 15.4 lines/mm |
| 0     | 0 | 0 | 1 | 24 x 23.1 lines/mm |

Bits 4 to 7: Communication mode used

| Bit 7 | 6 | 5 | 4 | Setting                |
|-------|---|---|---|------------------------|
| 0     | 0 | 0 | 0 | Normal                 |
| 0     | 0 | 1 | 0 | Polling                |
| 0     | 1 | 0 | 0 | Forwarding             |
| 0     | 1 | 0 | 1 | Automatic Service Call |

Other settings - Not used

52nd byte - Communication mode #2

Bit 0: Tx or Rx

0: Tx, 1: Rx

Bit 1: Reduction in Tx

0: Not reduced, 1: Reduced

Bit 2: Batch transmission

0: Not used, 1: Used

## SERVICE RAM ADDRESSES

|                                |                      |
|--------------------------------|----------------------|
| Bit 3: Send later transmission | 0: Not used, 1: Used |
| Bit 4: Transmission from       | 0: ADF, 1: Memory    |
| Bit 5: Not used                |                      |
| Bit 6: ECM                     | 0: Off, 1: On        |
| Bit 7: Not used                |                      |

53rd to 56th bytes - Not used

57th byte - Number of errors during communication (Hex)

58th byte - Not used

59th to 62nd byte - 1st error code and page number where the error occurred

59th byte - Page number where the error occurred (low - Hex)

60th byte - Page number where the error occurred (high - Hex)

61st byte - Error code (low - BCD)

62nd byte - Error code (high - BCD)

63rd to 66th byte - 2nd error code and page number where the error occurred

67th to 70th byte - 3rd error code and page number where the error occurred

71st to 74th byte - 4th error code and page number where the error occurred

75th to 78th byte - 5th error code and page number where the error occurred

79th to 82nd byte - 6th error code and page number where the error occurred

83rd to 86th byte - 7th error code and page number where the error occurred

87th to 90th byte - 8th error code and page number where the error occurred

91st to 94th byte - 9th error code and page number where the error occurred

95th to 98th byte - 10th error code and page number where the error occurred

## **DETAILED DESCRIPTIONS**



---

## 6. DETAILED SECTION DESCRIPTIONS

### 6.1 PCBS

#### 6.1.1 FCU

The FCU (Facsimile Control Unit) for the fax unit contains some additional components other than the FCU (Function Control Unit) for the base copier, as shown below;

- V34 Modem
- Analog circuit for communication (Amplifier)
- Speaker driver
- SAF memory back-up circuit and a rechargeable lithium battery

For details about the FCU, refer to section 6.5.1 in the service manual for the base copier.

#### 6.1.2 NCU

For details about the NCU, refer to section 6.5.3 in the service manual for the base copier.



# **SPECIFICATIONS**





# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS

### Type

Desktop type transceiver

### Circuit

PSTN, PABX

### Connection

Direct couple

### Original Size (Book)

**Maximum Length:** 297 mm [11.7 in]

**Maximum Width:** 216 mm [8.5 in]

### Original Size (ADF)

**Length:** 128 – 1260 mm [5.0 – 47.2 in]

**Width:** 105 – 216 mm [4.1 – 8.5 in]

### Scanning Method

Flatbed, with CCD

### Scan Width

210 mm [8.3 in]  $\pm 1\%$  (A4)

216 mm [8.5 in]  $\pm 1\%$  (8.5" x 11")

### Resolutions

8 x 3.85 lines/mm

8 x 7.7 lines/mm

8 x 15.4 lines/mm

200 x 100 dpi

200 x 200 dpi

200 x 400 dpi

### Memory Capacity

**ECM:** 128 KB

### SAF:

**Standard:** 1 MB (80 pages)

**Maximum:** 4 MB (320 pages)

Measured using an ITU-T #1 test document (Slerexe letter)

### Compression

MH, MR, MMR

SAF storage for memory tx: MMR and/or raw data

### Protocol

Group 3 with ECM

### Modulation

V.34, V.33, V.17 (TCM), V.29 (QAM),

V.27ter (PHM), V.8, V.21 (FM)

### Data Rate (bps)

#### G3:

33600/31200/28800/26400/24000/21600/  
19200/16800/14400/12000/9600/7200/4800  
/2400, Automatic fallback

### I/O Rate

With ECM: 0 ms/line

Without ECM: 2.5, 5, 10, 20, or 40 ms/line

### Transmission Time

**G3:** 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at 8 x 3.85 l/mm resolution

## SPECIFICATIONS

## 2. FEATURES

### 2.1 FEATURES LIST

KEY:

O = Used X = Not Used

| Video Processing Features                             |   |
|-------------------------------------------------------|---|
| Automatic image density                               | O |
| Contrast                                              | O |
| Halftone<br>(Basic & Error Diffusion)                 | O |
| JBIG compression (copy mode)                          | O |
| MTF                                                   | O |
| Reduction before tx                                   | X |
| Scanning Resolution – Standard                        | O |
| Scanning Resolution – Detail                          | O |
| Scanning Resolution – Fine                            | O |
| Scanning Resolution – Superfine                       | X |
| Smoothing to 400 x 400 dpi<br>when printing (Rx only) | O |

| Communication Features – Automatic      |   |
|-----------------------------------------|---|
| Automatic fallback                      | O |
| Automatic redialing<br>(Memory tx only) | O |
| Dual Access                             | O |
| Length Reduction                        | O |
| Resolutions available for<br>reception  |   |
| Detail                                  | O |
| Fine                                    | X |
| Superfine                               | X |
| Substitute reception                    | O |
| JBIG communication                      | X |
| V34 communication                       | O |

| Communication Features – User<br>Selectable |   |
|---------------------------------------------|---|
| 90° Image Rotation before tx                | X |
| Action as a transfer broadcaster            | X |
| AI Redial (last ten numbers)                | O |
| Answering machine interface                 | X |
| Authorized Reception                        | X |
| Auto Document                               | X |
| Automatic dialing<br>(pulse or DTMF)        | O |

| Communication Features – User<br>Selectable |   |
|---------------------------------------------|---|
| Automatic Voice Message                     | X |
| Batch Transmission                          | O |
| Book Original tx                            | O |
| Broadcasting                                | O |
| Chain Dialing                               | O |
| Communication Record Display                | X |
| Confidential ID Override                    | X |
| Confidential Reception                      | X |
| Confidential Transmission                   | X |
| Direct Fax Number Entry                     | O |
| Economy Transmission                        | X |
| Fax on demand                               | X |
| Forwarding                                  | O |
| Free Polling                                | O |
| Groups (Standard: 5 groups)                 | O |
| Hold                                        | X |
| ID Transmission                             | X |
| Immediate Redialing                         | O |
| Immediate Transmission                      | O |
| ISDN                                        | X |
| Keystroke Programs                          | X |
| Memory transmission                         | O |
| Multi-step Transfer                         | X |
| Non-standard original size<br>transmission  | O |
| OMR                                         | X |
| On Hook Dial                                | O |
| Ordering Toner                              | X |
| Page Count                                  | O |
| Page separation mark                        | O |
| Parallel memory transmission                | O |
| Partial Image Area Scanning                 | X |
| Personal Codes                              | O |
| Personal Codes with Conf. ID                | X |
| Polling Reception                           | O |
| Polling Transmission                        | X |
| Polling tx file lifetime in the SAF         | X |
| Quick Dial (16 stations)                    | O |
| Reception modes (Fax, Tel)                  | O |
| Remote control features                     | X |
| Remote Transfer                             | X |
| Restricted Access                           | O |
| Send Later                                  | O |

## SPECIFICATIONS

| Communication Features – User Selectable |   |
|------------------------------------------|---|
| SEP/SUB/PWD/SID                          | O |
| Silent ringing detection                 | X |
| Specified Image area                     | X |
| Speed Dial (50 stations)                 | O |
| Stamp                                    | X |
| Telephone Directory                      | O |
| Tonal Signal Transmission                | O |
| Transfer Request                         | X |
| Transmission Deadline (TRD)              | X |
| Turnaround Polling                       | X |
| Two in one                               | X |
| Voice Request (immed. tx only)           | X |

| Communication Features - Service Selectable |   |
|---------------------------------------------|---|
| AI Short Protocol                           | O |
| Auto-reduction override option              | O |
| Busy tone detection                         | O |
| Cable Equalizer                             | O |
| Closed Network                              | X |
| Continuous Polling Reception                | O |
| Dedicated tx parameters                     | O |
| ECM                                         | O |
| EFC                                         | X |
| Inch-mm conversion before tx                | O |
| Length Reduction                            | O |
| Page retransmission times                   | O |
| Protection against wrong connection         | O |
| Short Preamble                              | X |

| Other User Features     |   |
|-------------------------|---|
| Area code prefix        | X |
| Center mark             | O |
| Checkered mark          | O |
| Clearing a memory file  | O |
| Clearing a polling file | O |
| Clock                   | O |
| Confidential ID         | X |
| Counters                | O |
| Daylight Saving Time    | O |
| Destination Check       | X |
| Energy Saver            | O |
| File Retention Time     | X |

| Other User Features              |   |
|----------------------------------|---|
| File Retransmission              | X |
| Function Programs (F1 – F3)      | O |
| Hard Disk Filing System          | X |
| ID Code                          | O |
| Label Insertion ("To xxx")       | O |
| Language Selection               | O |
| LCD contrast adjustment          | O |
| Memory file printout (all files) | O |
| Memory Lock                      | O |
| Multi Sort Document Reception    | X |
| Own telephone number             | O |
| Print density control            | X |
| RDS on/off                       | O |
| Reception Mode Switching Timer   | X |
| Reception time printing          | O |
| Remaining memory indicator       | O |
| Reverse Order Printing           | X |
| RTI, TTI, CSI                    | O |
| Service Report Transmission      | X |
| Speaker volume control           | O |
| Specified Cassette Selection     | X |
| Toner Saving Mode                | O |
| TTI on/off                       | O |
| User Function Keys (3 keys)      | O |
| User Parameters                  | O |
| Wild Cards                       | O |

Fax Unit  
B465

## SPECIFICATIONS

| <b>Reports – Automatic</b>   |   |
|------------------------------|---|
| Charge Control Report        | X |
| Communication Failure Report | O |
| Confidential File Report     | X |
| Error Report                 | O |
| Fax On Demand Report         | X |
| File Clear Report            | X |
| File Reserve Report          | O |
| Journal                      | O |
| Polling Result Report        | O |
| Power Failure Report         | O |
| Transfer Result Report       | X |
| Transmission Result Report   | O |

| <b>Reports - User-initiated</b>   |   |
|-----------------------------------|---|
| Authorized Reception List         | X |
| Charge Control Report             | X |
| File List                         | O |
| Forwarding List                   | O |
| Group List                        | O |
| Hard Disk File List               | X |
| Journal                           | O |
| Personal Code List                | O |
| Program List                      | X |
| Quick Dial Label                  | O |
| Quick Dial List                   | O |
| Specified Cassette Selection List | X |
| Speed Dial List                   | O |
| Transmission Status Report        | X |
| User Function List                | O |
| User Parameter List               | O |

| <b>Service Mode Features</b>    |         |
|---------------------------------|---------|
| Back-to-back test               | X       |
| Bit switch programming          | O       |
| Cable equalizer                 | O       |
| Comm. parameter display         | O       |
| Counter check                   | SP mode |
| Country code                    | O       |
| DTMF tone test                  | O       |
| Echo countermeasure             | O       |
| Effective term of service calls | O       |
| Error code display              | O       |
| Excessive jam alarm             | O       |
| File Transfer (all files)       | O       |

| <b>Service Mode Features</b>                      |         |
|---------------------------------------------------|---------|
| Line error mark                                   | O       |
| Modem Software Download                           | X       |
| Modem test (including V.34/V.8)                   | O       |
| NCU parameters                                    | O       |
| Periodic service call                             | O       |
| PM Call                                           | O       |
| Printing all communication records kept in memory | X       |
| Protocol dump list                                | O       |
| RAM display/rewrite                               | O       |
| RAM dump                                          | O       |
| RAM test                                          | X       |
| RDS                                               |         |
| - RAM read/write                                  | O       |
| - Dial data transfer (Quick/Speed Dial)           | O       |
| - Software transfer                               | O       |
| Ringer test                                       | X       |
| ROM version display (FCU)                         | SP mode |
| Serial number                                     | SP mode |
| Service monitor report                            | O       |
| Service station number                            | O       |
| Software Download                                 | SP mode |
| SRAM data backup/restore                          | SP mode |
| System parameter list                             | O       |
| Technical data on the Journal                     | O       |

## 2.2 PROGRAMMABLE CAPACITY

The following table shows the maximum capacity for each programmable item.

| Item                                                                         | Capacity |
|------------------------------------------------------------------------------|----------|
| Maximum number of memory files                                               | 140      |
| Maximum number of destinations per file                                      | 133      |
| Maximum number of pages overall                                              | 500      |
| Number of Quick Dials                                                        | 16       |
| Number of Speed Dials                                                        | 50       |
| Number of Groups                                                             | 5        |
| Maximum number of destinations dialed from the ten-key pad overall           | 67       |
| Maximum number of communication records for the Journal stored in the memory | 10       |
| Maximum number of user function keys                                         | 3        |
| Maximum number of personal codes                                             | 10       |

### 3. OVERALL MACHINE CONTROL

#### 3.1 SYSTEM CONTROL

The basic fax unit consists of two PCBs: the FCU and the NCU.

The FCU controls all fax communications and fax features. The NCU switches the analog line between the fax unit and the external telephone.

Refer to Section 6 of the base copier's service manual for details.

#### 3.2 POWER DISTRIBUTION

The PSU (Power Supply Unit) generates +5V (+5VE) and +24V (+24VE) DC, and supplies these to the FCU.

The FCU includes regulators that generate +3V (specifically, +3.3V) and +12V for internal use, as indicated below.

| Source | Voltage | Description                                                                                                                                          |
|--------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| +24VE  | +5VLD*  | For the LDDR                                                                                                                                         |
|        | +12V    | For the SBU.                                                                                                                                         |
|        | +24VES  | For the lamp stabilizer and DF relay board.                                                                                                          |
|        | +24VM*  | For the main motor, polygon motor, PSU, cooling fan, clutches, power pack, quenching lamp, mechanical counter, optional paper tray.                  |
|        | +24VMM* | For the scanner motor and DF motor.                                                                                                                  |
| +5VE   |         | For the Op-port, sensors, and optional printer unit                                                                                                  |
|        | +3V     | For the SDRAM, VPL, CIOP, and modem.                                                                                                                 |
|        | +3VA    | For analog communication processing                                                                                                                  |
|        | +3VBAT  | Supplied from a long-term lithium battery; backs up the SRAM (programmed settings) on the FCU.                                                       |
|        | +3VD    | Supplied from a rechargeable lithium battery; backs up stored data DRAM and on optional IC card (both on the FCU) for 12 hours after power goes off. |
|        | +3VE    | For the SCP2, flash ROM, and optional DIMM.                                                                                                          |
|        | +3VV    | For the thermistor                                                                                                                                   |
|        | +5V     | For the power pack, sensors, DF relay board, and optional paper tray.                                                                                |
|        | +5VA    | For analog communication processing                                                                                                                  |
|        | +5VCD   | For flash memory card                                                                                                                                |
|        | +5VDS   | For the NCU                                                                                                                                          |
|        | +5VHCT  | For the card I/F                                                                                                                                     |
|        | +5VSPD  | For the monitor speaker                                                                                                                              |
|        | +5VVA   | For video processing                                                                                                                                 |
|        | +5VVD   | For the SBU.                                                                                                                                         |

\*Supply is cut off if interlock switch is open.

### 3.3 MEMORY BACKUP

A non-rechargeable lithium battery provides long-term backup for the SRAM on the FCU, so that system parameters and programmed settings are maintained even when the base copier is unplugged or its main switch is turned off.

A rechargeable lithium battery backs up the SAF memory (SDRAM) on the FCU for about 12 hours in the event that power goes off.

## **4. VIDEO DATA PATH**

### **4.1 TRANSMISSION**

#### ***Memory Transmission and Parallel Memory Transmission***

The base copier's scanner scans the original at the selected resolution in inch format, then the FCU compresses the data in MMR or raw format and stores it in the SAF memory.

At time of transmission, the FCU decompresses the stored data, then recompresses the data for transmission. The NCU transmits the data to the line through the modem.

#### ***Immediate Transmission***

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. Then the FCU stores the data in the memory, and compresses the data for transmission. The NCU transmits the data to the line through the modem.

### **4.2 RECEPTION**

Data from an analog line passes to the modem through the NCU. After the modem demodulates the data, it is decompressed and transferred to the memory for printing.



*Gestetner*<sup>®</sup> **LANIER**  **RICOH**<sup>®</sup> **SAVIN**<sup>®</sup>

**B441 PRINTER CONTROLLER  
TYPE 1013  
SERVICE MANUAL**

001258MIU



# B441

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## SPECIFICATIONS

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### SPECIFICATIONS

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# **INSTALLATION**



---

# 1. INSTALLATION

## 1.1 INSTALLATION REQUIREMENTS

Please refer to section 1 of the main unit service manual.

## 1.2 PRINTER INSTALLATION

### *Accessory Check*

Check the accessories in the box against the following list:

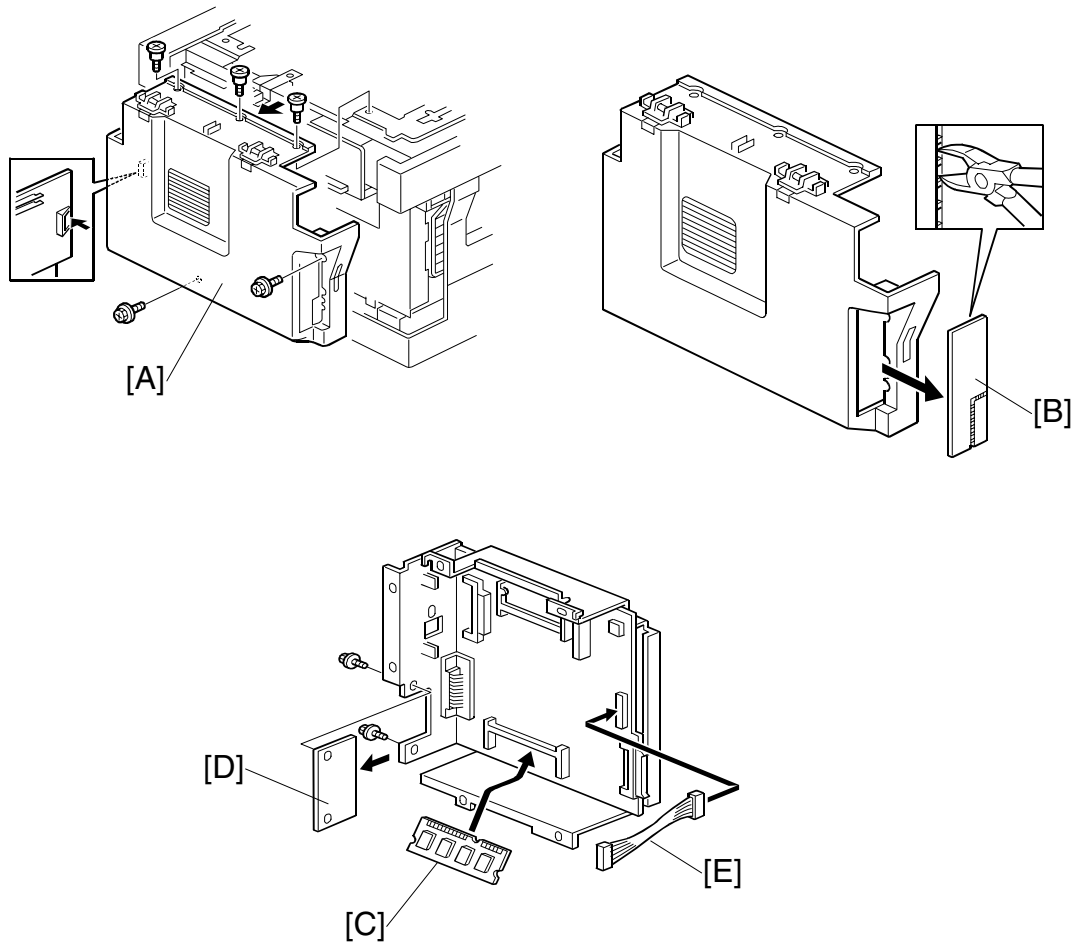
| No. | Description                | Q'ty |
|-----|----------------------------|------|
| 1   | CD ROM                     | 1    |
| 2   | Key Top – Printer          | 1    |
| 3   | Key Top - Copy             | 1    |
| 4   | Printer Key Cover          | 1    |
| 5   | Harness - Controller/FCU   | 1    |
| 6   | Screw - M3x6               | 8    |
| 7   | Installation Procedure     | 1    |
| 8   | Software License Agreement | 1    |

**Printer Controller Installation**

**⚠ CAUTION**

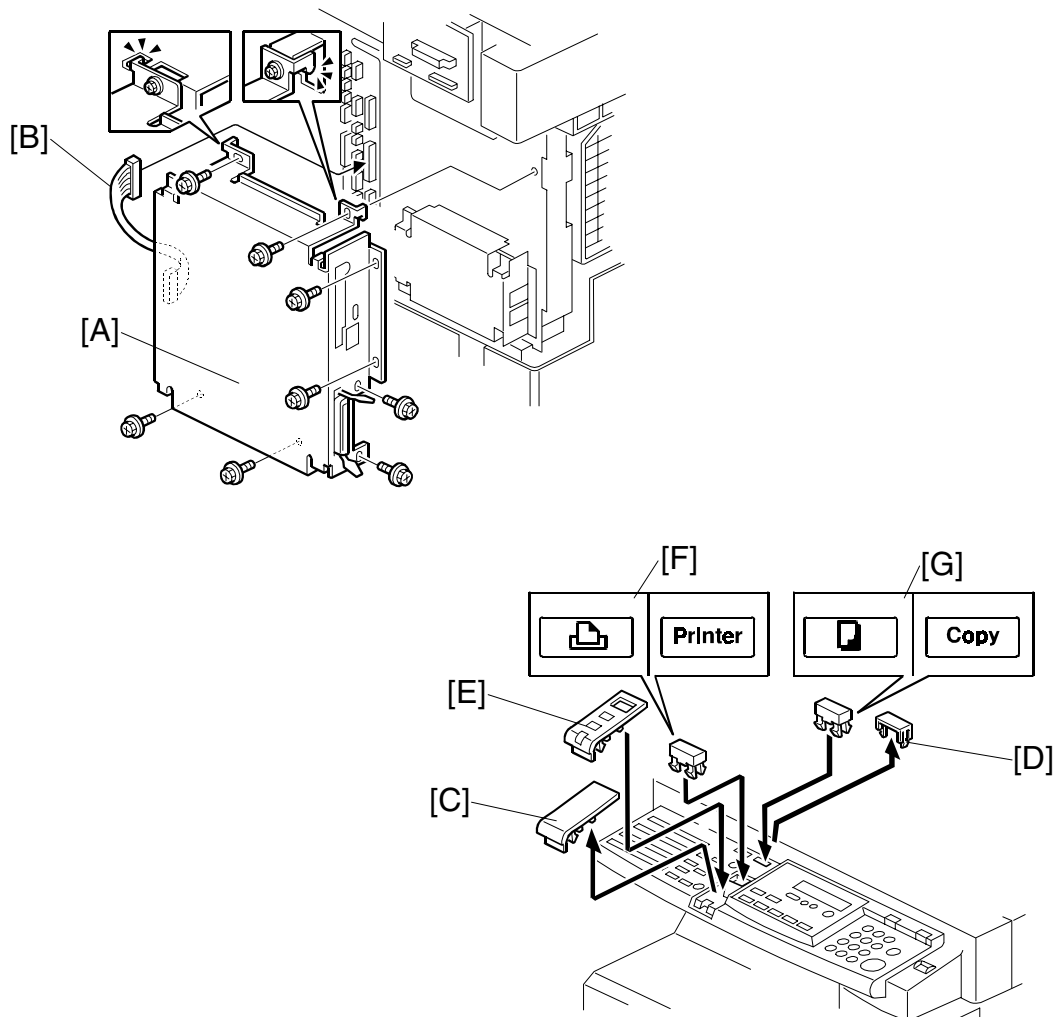
- Unplug the main machine power cord before starting the following procedure.

If you install the fax option at the same time, the fax option must be installed first. Otherwise you cannot install the fax option.



1. Remove the rear cover [A] (5 screws).
2. Remove the small cover [B] from the rear cover (cut it by the nipper).
  - When you install the printer memory at the same time, please connect the memory [C] to CN502 as shown.
  - When you install the fax option, please remove the small cover [D] as shown. Otherwise go to step 3.
3. Connect the harness [E] on CN507 as shown.





Printer Unit  
B441

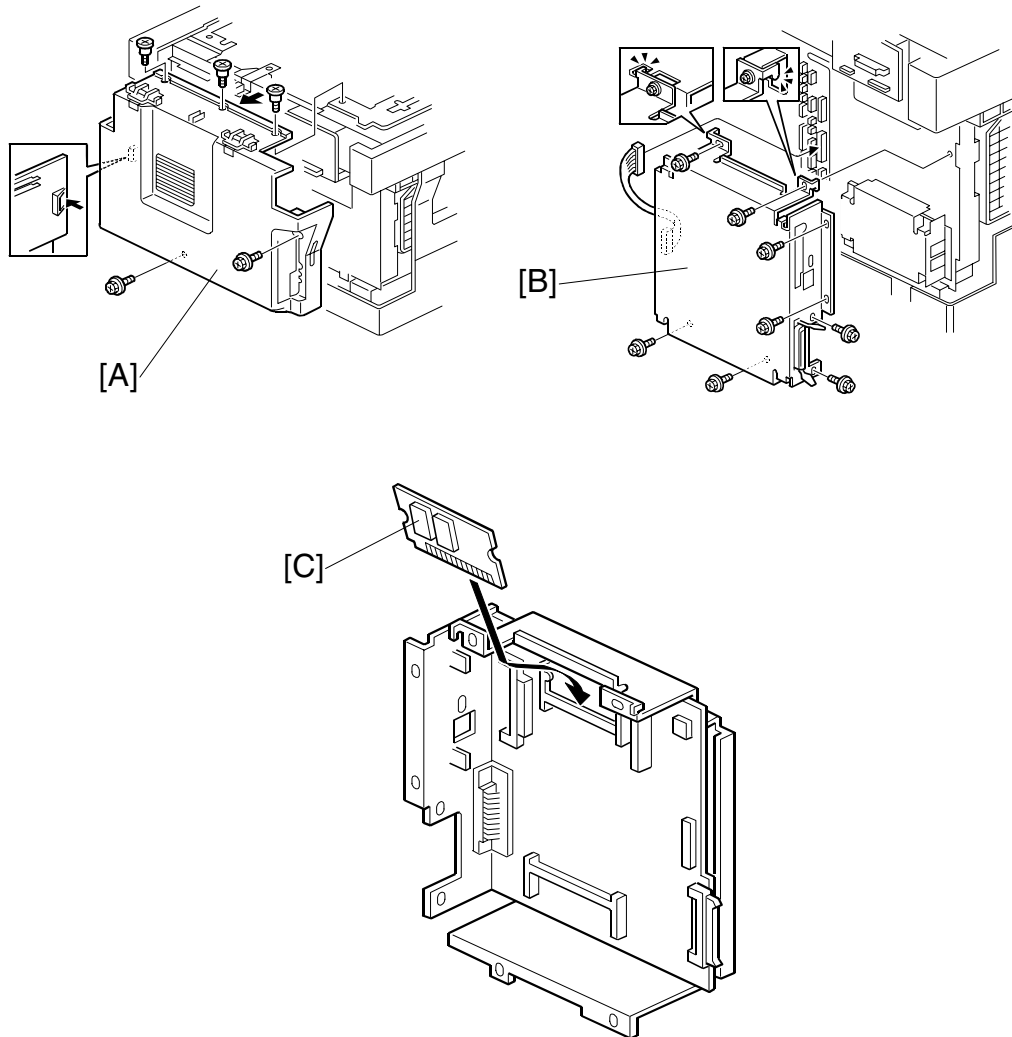
4. Install the controller [A] (1 connector and 8 screws) as shown.
5. Connect the harness [B] into CN3 on the FCU board.
6. Replace the rear cover.
7. Remove the covers [C] and [D] from the operation panel.
8. Install the printer key cover [E], the printer key top [F] and the copy key top [G].

## 1.3 PS 2 EMULATION BOARD (B431)

### CAUTION

**Unplug the main machine power cord before starting the following procedure.**

**NOTE:** To install the Postscript option, the printer option (B441) must be installed also. Please refer to section 1.2 for the printer controller installation procedure.



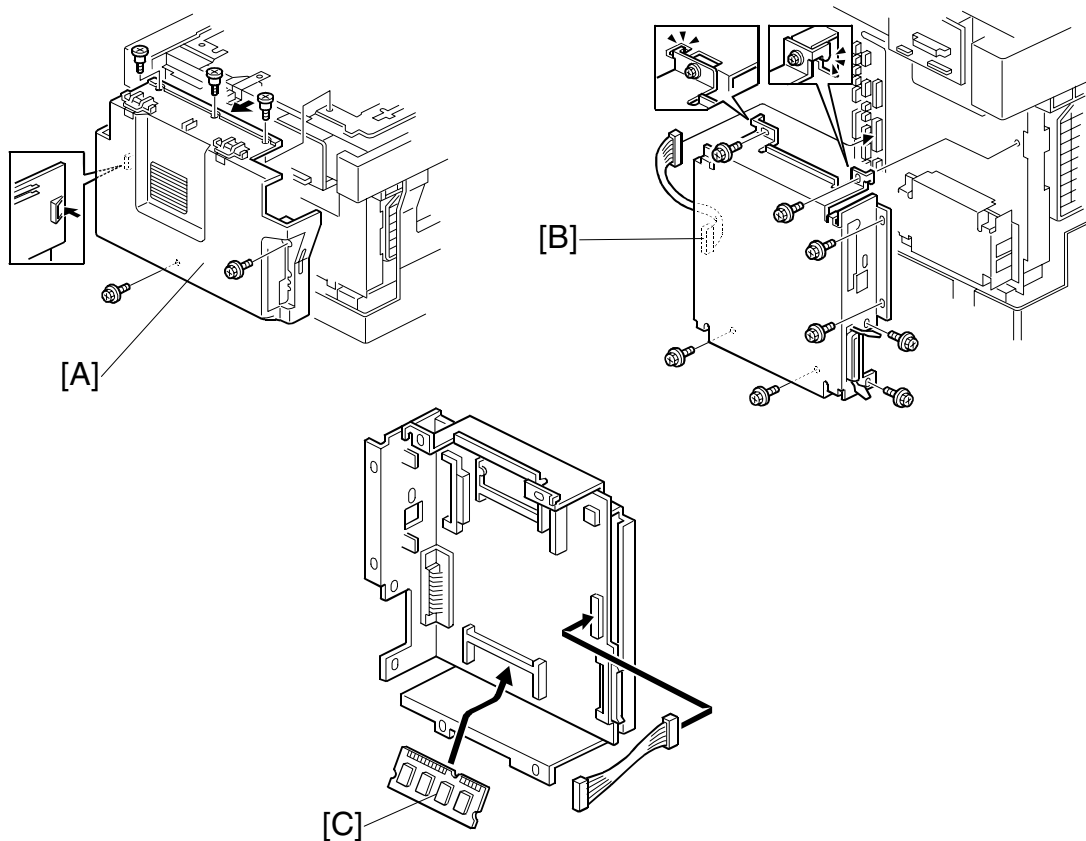
1. Remove the rear cover [A] (5 screws).
2. Remove the controller board [B] from the machine (1 harness and 8 screws or 6 screws if no fax option).
3. Connect the PS 2 emulation board [C] to CN505 on the controller board.
4. Replace the controller board assembly in the machine.
5. Replace the rear cover.

## 1.4 MEMORY BOARD (G578/G579/G580)

### **⚠ CAUTION**

**Unplug the main machine power cord before starting the following procedure.**

**NOTE:** To install the memory option, the printer option (B441) must be installed also. Please refer to section 1.2 for the printer controller installation procedure.



Printer Unit  
B441

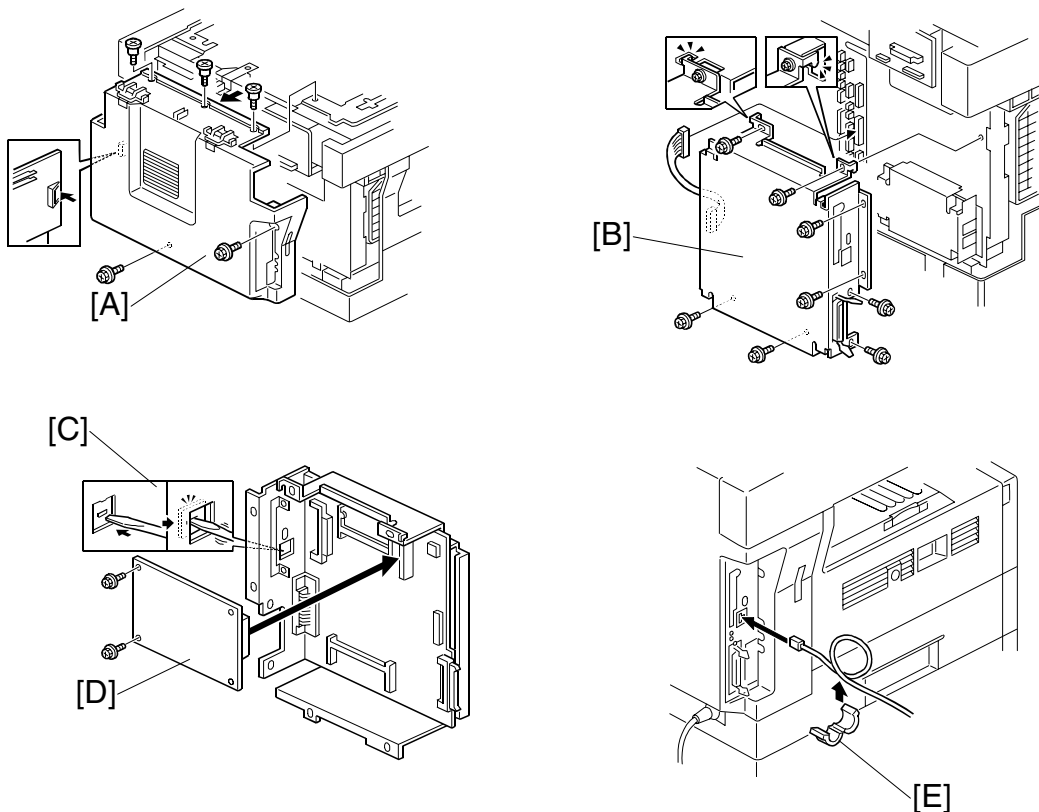
1. Remove the rear cover [A] (5 screws).
2. Remove the controller board [B] from the machine (1 harness and 8 screws or 6 screws if no fax option).
3. Connect the memory board [C] to CN502 on the controller board.
4. Replace the controller board assembly in the machine.
5. Replace the rear cover.

## 1.5 NIB (B430)

### **⚠ CAUTION**

**Unplug the main machine power cord before starting the following procedure.**

**NOTE:** To install the NIB option, the printer option (B441) must be installed also. Please refer to section 1.2 for the printer controller installation procedure. The display takes a few minutes to initialize after installing the NIB.



1. Remove the rear cover [A] (5screws)
2. Remove the controller board [B] from the machine (1 harness and 8 screws or 6 screws if no fax option).
3. Remove the small window [C] on the controller board bracket.
4. Connect the network interface board [D] to the controller board (2 screws) as shown.
5. Replace the controller board assembly in the machine.
6. Replace the rear cover.
7. Wrap the network cable around the core [E], close the core, then connect the cable to the machine.

# **TROUBLESHOOTING**



## 2. TROUBLESHOOTING

### 2.1 ERROR CODES

The following table lists the controller error codes. If an error occurs, SC2001 and one of the following codes are displayed together at power-on, or after the power-on self-test.

Please refer to section 3.4 for details of the Power-On Self-Test.

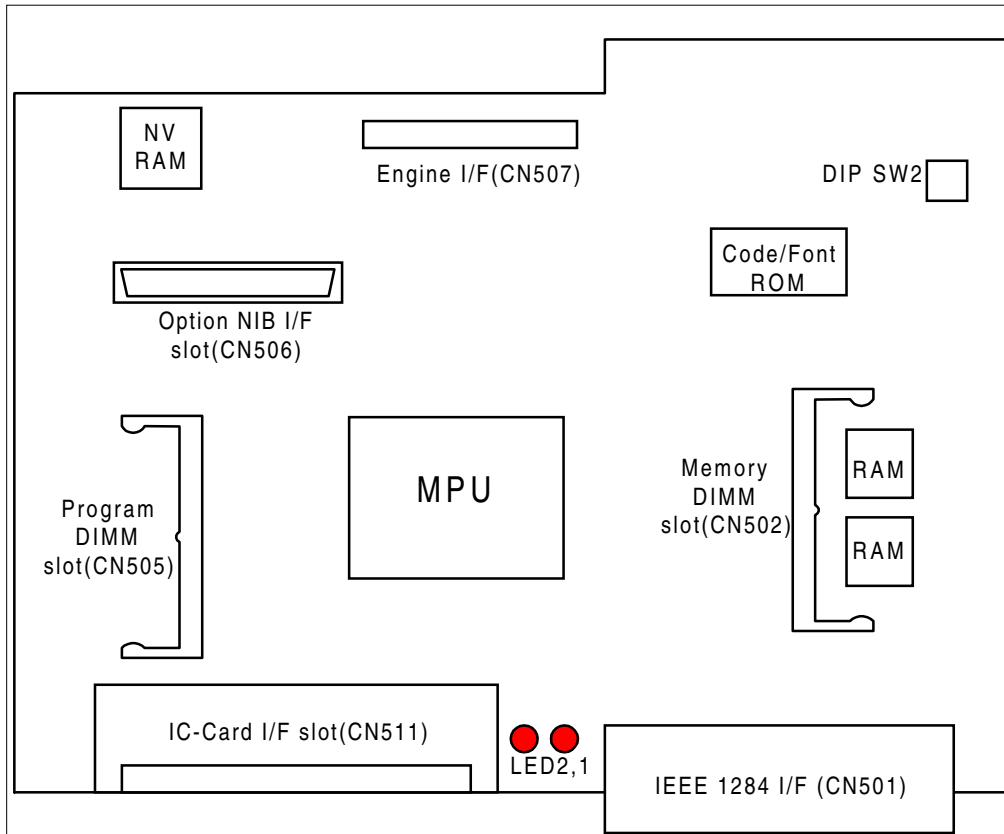
| Code | Description                           | Required Action                                                                                                    |
|------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 00xx | Exceptional operation error           | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 0101 | Code ROM error                        | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 0201 | Resident RAM error                    | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 0301 | Optional RAM error                    | <ul style="list-style-type: none"> <li>Replace the optional DIMM if the error is frequent.</li> </ul>              |
| 06xx | CPU error                             | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 0Fxx | Engine interface and video data error | <ul style="list-style-type: none"> <li>Check the connection between the engine board and the controller</li> </ul> |
| 11xx | Centronics parallel interface error   | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 1401 | NVRAM error                           | <ul style="list-style-type: none"> <li>Replace the NVRAM if the error is frequent.</li> </ul>                      |
| 1601 | Font ROM error                        | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 1Bxx | NIB interface error                   | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 1Cxx | Parallel interface error              | <ul style="list-style-type: none"> <li>Replace the controller if the error is frequent.</li> </ul>                 |
| 25xx | PS2 error                             | <ul style="list-style-type: none"> <li>Replace the PS DIMM if the error is frequent.</li> </ul>                    |

## 2.2 LED DISPLAY

### 2.2.1 LOCATION

The controller uses two LEDs to display error status even while the LED message is not active.

To see these LEDs, remove the machine's rear cover.



When the machine is operating normally, LED 1 blinks (on/off) and LED 2 remains always off. LED 2 only comes on if there is an error; see the next section of the manual.

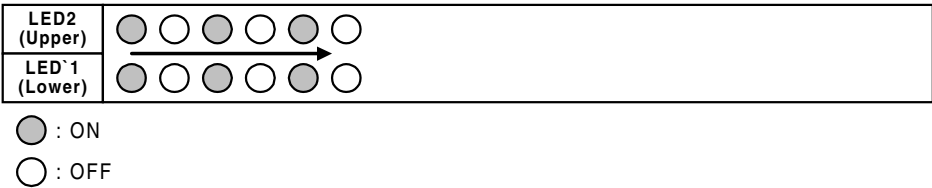


2.2.2 FATAL ERROR

If the controller detected a fatal error during the Power-On Self-Test, it uses 2 LEDs to notify the cause of the error.

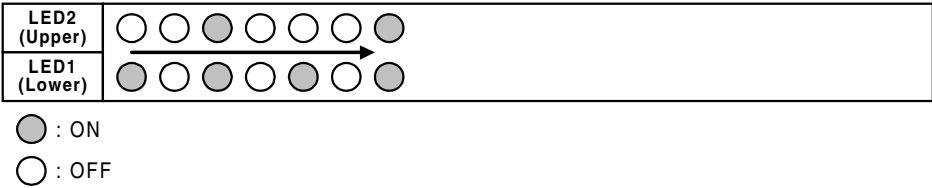
If one of the following fatal errors happens, the LED status changes as shown (read from the left of the diagram to the right).

Code ROM Error



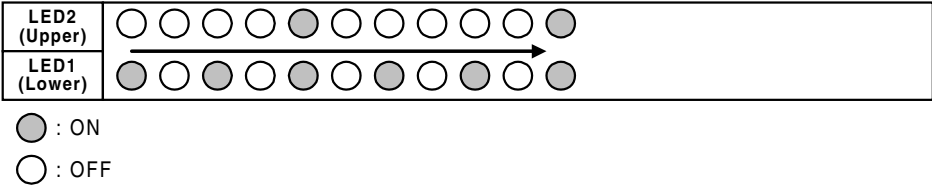
Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

Resident RAM Error



Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

CPU Error

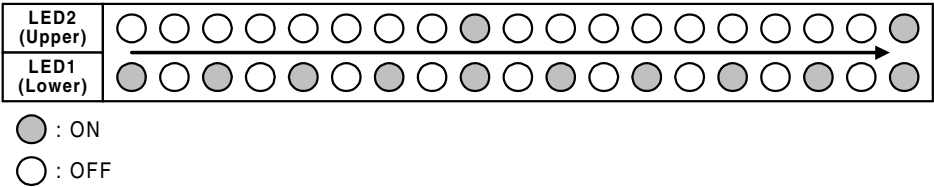


Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

Printer Unit  
B441

LED DISPLAY

Abnormal Termination



Turn off the machine, check the connection to the optional components, and turn on the machine. If the controller detects the same error, replace the controller or NIB.

# **SERVICE TABLES**



## 3. SERVICE TABLES

### 3.1 SERVICE PROGRAM MODE OVERVIEW

#### CAUTION

Before accessing the service menu, do the following:

Confirm that there is no print data in the printer buffer (the Data In LED must not be lit or blinking).

If there is some data in the buffer, wait until all data has been printed.

#### 3.1.1 HOW TO ENTER THE SP MODE

##### *Entering the Service Mode*

 → ① → ② → ③ →  (Hold for more than 3 seconds until the SP mode menu is displayed.)

Select “3” to enter the printer SP mode.

##### *Exiting the Service Mode*

Select “2” to exit from the printer SP mode.

**NOTE:** To make the settings effective, turn the main switch off and on after exiting service mode.

Printer Unit  
B441

#### 3.1.2 SERVICE MENU TABLE

|   | Description      | Function                                                                                    |
|---|------------------|---------------------------------------------------------------------------------------------|
| A | BitSw#1 Set      | Adjusts bit switch settings.<br><b>Note:</b> Currently the bit switches are not being used. |
| B | NVRAM Clear 1    | Initializes the controller NV RAM except bit switches, NIB settings, and log data.          |
| C | NVRAM Clear 2    | Initializes the controller NV RAM except NIB settings.                                      |
| D | NVRAM Clear 3    | Initializes the NIB NV RAM (NIB settings).                                                  |
| E | Counter Clear    | Initializes all counters to zero.                                                           |
| F | Diagnostic Error | Displays the most recent diagnostic error codes on the LCD.                                 |
| G | Service Print    | Prints the service summary sheet.                                                           |

## 3.2 SERVICE MENU

### 3.2.1 BIT SWITCH SETTINGS

The bit switches are not used at the moment.

### 3.2.2 NV RAM CLEAR

#### CAUTION

**Print the service summary report, controller configuration page, and NIB configuration page before resetting the NV RAM(s).**

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select the appropriate menu, and then press "OK".
  - B: NV RAM Clear 1
  - C: NV RAM Clear 2
  - D: NV RAM Clear 3
3. Ensure that you have printed the appropriate configuration sheet, then press "OK".
  - B: Service Summary Sheet
  - C: Service Summary sheet and Controller Configuration Sheet
  - D: NIB Configuration Sheet
4. Press "OK" to execute. Or press "Cancel" to exit.

### 3.1.3 COUNTER CLEAR

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select "E. Counter Clear", then press "OK".
3. Press "OK" to execute. Or press "Cancel" to exit.

### 3.1.4 DIAGNOSTIC ERROR

This displays the latest 8 error codes that were found during the power-on self-test. Refer to section 2.1 for details of the error codes.

1. Enter the printer SP mode, and select "1. Service Menu".
2. Select "F. Diagnostic Error ", then press "OK".
3. Look through the error codes by using the right and left cursor keys.
4. Press "Cancel" to exit.

### 3.1.5 SERVICE PRINT

This prints the summary sheet, which contains the following items:

- Model Number/System Version/Unit Number
- Program List
- Bit Switch (These are not set at the moment.)
- Counters
- Exception Information
- System Logging 1/2
- Options

1. Enter the printer SP mode, and select “1. Service Menu”.
2. Select “G. Service Print”, then press “OK”.
3. Press “Cancel” to exit.

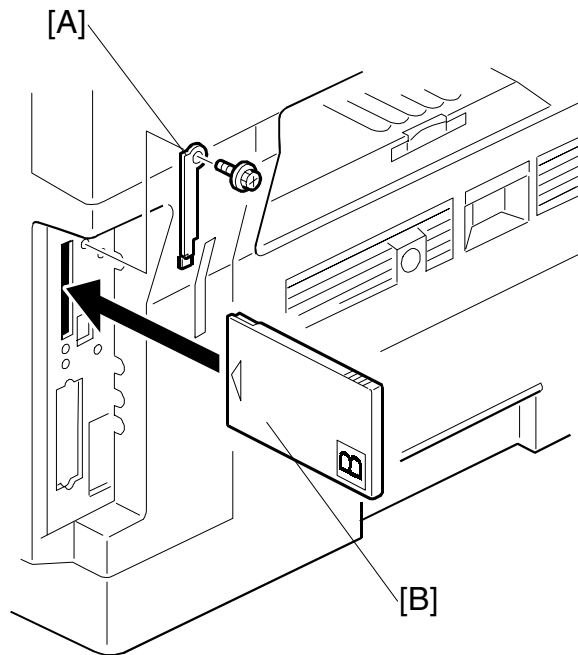
## 3.3 FIRMWARE UPDATE PROCEDURE

### 3.3.1 CONTROLLER/PS2 FIRMWARE UPDATE

This procedure is for upgrading the firmware for the controller and PS2 DIMM module.

**⚠ CAUTION**

**Do not turn off the machine while downloading the firmware.**



1. Prepare an IC card that contains the required firmware.
2. Turn off the machine and remove the cover [A] (1 screw).
3. Insert the card [B] into the IC card slot.  
**NOTE:** The “B” side of the card must face towards the rear of the machine.
4. Turn on the machine. Press the “Printer” key.
5. Start downloading the new firmware by pressing the “OK” key.
6. After the firmware download has finished, turn off the machine, and remove the card. Then, replace the cover.
7. Turn on the machine, and print the printer configuration sheet to confirm that the new firmware version has been installed.

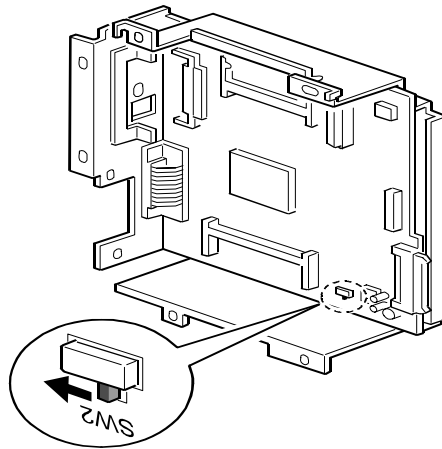


**Error Messages**

| Message                                 | Description                                                                                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Erasing failed ARD:<br>xxxxxxxxxx       | Retry the download.                                                                                                                                              |
| Writing Failed ARDS:<br>xxxxxxxxxx      |                                                                                                                                                                  |
| Melting Failed                          | The firmware file on the card may be damaged. Get a new firmware file and store it on the card.<br><b>NOTE:</b> 'Melting' means 'extraction of compressed data.' |
| DIMM installable<br>program cannot find | Wrong type of firmware on the card.                                                                                                                              |
| CRC error. Please<br>Retry install      | The firmware file on the card may be damaged. Get a new firmware file and store it on the card.                                                                  |

### 3.1.2 ERROR RECOVERY

#### **CONTROLLER**



If the controller does not start up after a failed firmware download, use the following procedure. This procedure will force the controller to boot from the IC card.

1. Prepare an IC card with the required controller firmware version on it.
2. Turn off the machine and remove the controller.
3. Slide DIP SW 2 to the right (as viewed from the rear of the machine), as shown above.
4. Put back the controller and install the card in the IC card slot on the controller.  
**NOTE:** When you see the machine from the back, the “B” side of the card must face the rear of the machine.
5. Turn on the machine.
6. Wait until the LEDs between the IC card slot and the parallel interface are both lit.
7. Turn off the machine, remove the card, and reset DIP SW2. Then, put back the controller.
8. Turn on the machine, and print the configuration sheet.

#### **PS2 DIMM**

If a download attempt failed, try downloading the new firmware again.

### 3.4 POWER-ON SELF TEST

The controller tests the following devices at power-on. If an error is detected, an error code is stored in the NV RAM. Refer to section 3.2.4 for how to check the error codes, and section 2.1 for the details about error codes.

- CPU
- Flash ROM
- Font ROM
- Code ROM
- Resident and optional SDRAM
- Parallel interface
- NIB (If this board is installed)
- Centronics Interface (if a loop-back connector is present)
- NVRAM

### 3.5 SELF DIAGNOSTIC TEST

In addition to the power-on self-test, you can set the machine in a more detailed diagnostic mode to test other components and conditions. It requires a loop-back connector (P/N: G0219350).

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Turn on the machine while pressing the “On Line” key and “OK” key together.
3. The machine prints the diagnostic report automatically.
  - Refer to section 3.2.4 for how to check the error codes.
  - Refer to section 2.1 for the details about the error codes.

### 3.6 USER PROGRAM MODE

Press the “User Tools/Counter ”, then select “Printer Features” to change printer settings.

**User Mode Table**

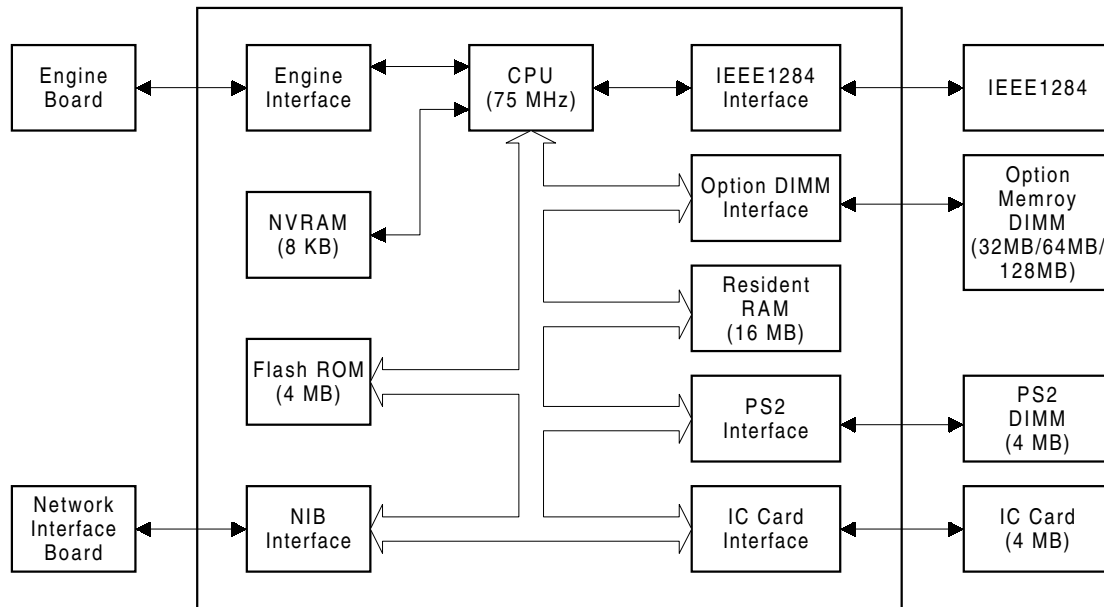
| Category      | Function menu                         |                                          |
|---------------|---------------------------------------|------------------------------------------|
| Job Control   | Paper Input                           | Tray Priority / Default: Tray1           |
|               |                                       | Tray Locking / Default:None              |
|               |                                       | Bypass Paper Size                        |
|               |                                       | Standard Size                            |
|               |                                       | Custom Size                              |
|               | Print Quality                         | Edge Smoothing / Default: On             |
|               |                                       | Resolution                               |
|               |                                       | PCL / Default: 600dpi                    |
|               |                                       | PS / Default: 600dpi                     |
|               |                                       | Toner Saving / Default:Off               |
|               | System                                | I/O Time Out/ Default: 30sec.            |
|               |                                       | I/O Buffer/ Default: 32KB                |
|               |                                       | Prints PS Errors/ Default: Off           |
|               |                                       | Page Protect/ Default: Auto              |
|               |                                       | Auto Continue/ Default: Off              |
|               |                                       | Sub Paper Size/ Default: Off             |
|               | PCL menu                              | Orientation/ Default: Portrait           |
|               |                                       | Form Lines/ Default: 64(Metric) 60(inch) |
|               |                                       | Font Source/ Default: Internal           |
|               |                                       | Font Number/ Default: 0                  |
|               |                                       | Point Size/ Default: 12.00               |
|               |                                       | Font Pitch/ Default: 10.00               |
|               |                                       | Symbol Set/ Default: Roman-8             |
| Network Setup | IP Address/ Default: All zero         |                                          |
|               | Subnet Mask/ Default: 255.000.000.000 |                                          |
|               | Gateway Address/ Default: All zero    |                                          |
| Maintenance   | Restart Printer                       |                                          |
|               | Menu Reset                            |                                          |
|               | Hex Dump/ Default: Off                |                                          |
| List Print    | Configuration Page                    |                                          |
|               | Menu List                             |                                          |
|               | PCL Font List                         |                                          |
|               | PS Font List                          |                                          |

## **DETAILED DESCRIPTIONS**



## 4. DETAILED SECTION DESCRIPTIONS

### 4.1 BLOCK DIAGRAM



Printer Unit  
B441

The CPU (Destiny D8401A, 75MHz) controls the resident RAM, engine interface, ROM interface, IEEE1284 parallel interface, NIB interface, and an IC card interface for upgrading firmware.

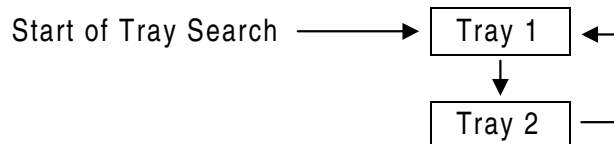
There is one optional memory socket that can have either a 32MB, 64MB, or a 128MB memory DIMM to increase RAM capacity and enable RAM collation. With the 128MB memory DIMM, the RAM capacity is increased to 144MB. There is another memory socket for the optional PS2 DIMM.

The NIB interface allows the user to install an Ethernet NIB. The IC card interface allows the interface for the controller and NIB to be updated.

## 4.2 CONTROLLER FUNCTIONS

### 4.2.1 PAPER SOURCE SELECTION

#### *Tray Priority (Auto Tray Select)*

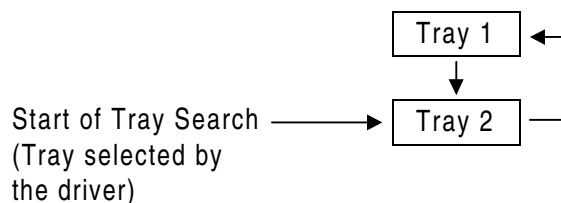


The controller searches for the specified paper size, starting from Tray 1, and uses the first tray that has the specified paper size. If the selected tray is pulled out or runs out of paper during printing, the controller searches for another tray with the specific paper size and if found, automatically switches to it. If the controller cannot find another paper tray with the specified paper size, printing stops and the LCD displays the message “Load Paper”.

The Tray Priority setting can be specified with a user tool.  
(User Tools/Printer features/Job Control/Paper Input/Tray Priority)

**NOTE:** The by-pass tray is not part of the tray search.

#### *Manual Tray Select*



When the printer driver specifies a tray, the selected tray becomes the first tray checked at the start of the tray search. If the selected tray does not have the size of paper specified by the driver, the controller searches the other trays for the same paper size.

**NOTE:** Tray Priority in the Job Control menu does not specify the start of the tray search, but specifies the paper size in the selected tray as the default paper size.



***Tray Lock***

If Tray Lock is enabled for a tray, the controller does not use the “locked” tray in the tray search process. If a tray has, for example, colored A4 size paper for fax prints, enable tray lock for that tray so that the controller does not select the tray for printing.

If the user selects a “locked” tray with the printer driver, the controller uses the tray for printing only when the specified paper size matches the actual paper size in the tray.

The Tray Lock setting can be specified with a user tool.

(User Tools/Printer features/Job Control/Paper Input/Tray Locking)

**NOTE:** The by-pass tray cannot be locked.

***By-pass Tray***

To print from the by-pass tray, select the by-pass tray with the driver. The paper sizes that can only be fed from the by-pass tray (such as custom sizes), can be fed from the by-pass tray using “Auto Tray Select”. But other paper sizes (LT, A4, etc), which can also be fed from the other paper trays, cannot be fed from the by-pass tray using “Auto Tray Select”.

## 4.2.2 COLLATION (SORTING)

This feature is available when the driver specifies it. Is not executed by the driver but by memory board on the controller.

## 4.2.3 AUTO CONTINUE

When this function is enabled, the machine continues printing automatically (after 10 seconds) even if one of the following errors occurs. However, the page where the error occurred may not be printed out correctly.

- Print Overrun
- Memory Overflow
- Memory Full

If Auto Continue is disabled and the one of the above errors occurs, the machine will stop printing and will display an error message on the operation panel.

**NOTE:** The default setting for Auto Continue is “Disabled.”

## 4.2.4 PAGE PROTECT

When a Print Overrun error occurs and this function is set to “Auto”, this error can be avoided by changing the setting to “On”. However, printing may slow down.

**NOTE:** The default setting for Page Protect is “Auto”.

# **SPECIFICATIONS**



---

# SPECIFICATIONS

## 1. SPECIFICATIONS

### 1.1 GENERAL SPECIFICATIONS

|                    |                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Printing Speed:    | B045: Maximum 12 ppm (A4/LT SEF)<br>B044/B046: Maximum 13 ppm (A4/LT SEF)<br>H555: Maximum 13 ppm (A4/LT SEF)                                                               |
| Printer Languages: | PCL6/PCL5e<br>PostScript Level 2 Emulation (option)                                                                                                                         |
| Resolution:        | 600 dpi (PCL6/PCL5e/PS2)<br>300 dpi (PCL5e/PS2)                                                                                                                             |
| Resident Fonts:    | PCL:<br>35 Intellifonts<br>10 True Type fonts<br>1 PCL Bitmap<br>PS2 (Optional):<br>80 PS fonts                                                                             |
| Host Interfaces:   | Bi-directional IEEE1284 parallel x 1 (standard)<br>Ethernet (100 Base-TX/10 Base-T) (option)                                                                                |
| Network Protocols: | TCP/IP, IPX/SPX, Apple Talk                                                                                                                                                 |
| Memory:            | Standard 16 MB<br>Options<br>48 MB (Standard 16 MB + 32 MB optional DIMM)<br>80 MB (Standard 16 MB + 64 MB optional DIMM)<br>144 MB (Standard 16 MB + 128 MB optional DIMM) |

## SPECIFICATIONS

### 1.2 SUPPORTED PAPER SIZES

| Paper           | Size (W x L)                                     | Paper Trays<br>Main Unit/Option |                   | By-pass<br>Tray |
|-----------------|--------------------------------------------------|---------------------------------|-------------------|-----------------|
|                 |                                                  | US                              | Eur/Asia          |                 |
| A4 SEF          | 210 x 297 mm                                     | Y <sup>#</sup> /Y               | Y/Y               | Y               |
| A5 SEF          | 148 x 210 mm                                     | N/N                             | N/N               | Y <sup>#</sup>  |
| A5 LEF          | 210 x 148 mm                                     | Y <sup>#</sup> /N               | Y <sup>#</sup> /N | Y <sup>#</sup>  |
| Legal SEF       | 8.5 x 14"                                        | N/Y <sup>#</sup>                | N/Y <sup>#</sup>  | Y <sup>#</sup>  |
| Letter SEF      | 8.5 x 11"                                        | Y/N                             | Y <sup>#</sup> /N | Y <sup>#</sup>  |
| Half Letter SEF | 5.5 x 8.5"                                       | N/Y <sup>#</sup>                | N/Y <sup>#</sup>  | Y <sup>#</sup>  |
| Half Letter LEF | 8.5 x 5.5"                                       | Y/N                             | Y <sup>#</sup> /N | Y <sup>#</sup>  |
| F               | 8 x 13"                                          | N/N                             | N/N               | Y <sup>#</sup>  |
| Foolscap        | 8.5 x 13"                                        | N/Y <sup>#</sup>                | N/Y <sup>#</sup>  | Y <sup>#</sup>  |
| Folio           | 8.25 x 13"                                       | N/Y <sup>#</sup>                | N/Y <sup>#</sup>  | Y <sup>#</sup>  |
| Custom          | Width:<br>90 - 216 mm<br>Length:<br>140 - 356 mm | N                               | N                 | Y <sup>C</sup>  |

#### Remarks:

|                |                                                                        |
|----------------|------------------------------------------------------------------------|
| Y              | Supported. The paper size sensor detects the paper size.               |
| Y <sup>#</sup> | Supported. The user has to select the correct paper size for the tray. |
| Y <sup>C</sup> | Supported. The user has to enter the width and length of the paper.    |
| N              | Not supported.                                                         |

## 2. SOFTWARE ACCESSORIES

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

### **PRINTER DRIVERS**

| Printer Language | Windows 3.1x | Windows 95/98/Me | Windows 2000/NT4.0 | Macintosh 8.x/9.x |
|------------------|--------------|------------------|--------------------|-------------------|
| PCL 6            | Yes          | Yes              | Yes                | No                |
| PCL 5e           | Yes          | Yes              | Yes                | No                |
| PS2              | No           | Yes              | Yes                | Yes               |
| PS PPD           | No           | Yes              | Yes                | Yes               |

- NOTE:** 1) The printer drivers for Windows NT 4.0 are only for the Intel x86 platform. There is no Windows NT 4.0 printer driver for the PowerPC, Alpha, or MIPS platforms.
- 2) The PCL drivers for Windows 3.1x are not included on the CD. Web release only.
- 3) There are mini-drivers on the web site also.
- 4) Macintosh OS 10 is not supported.

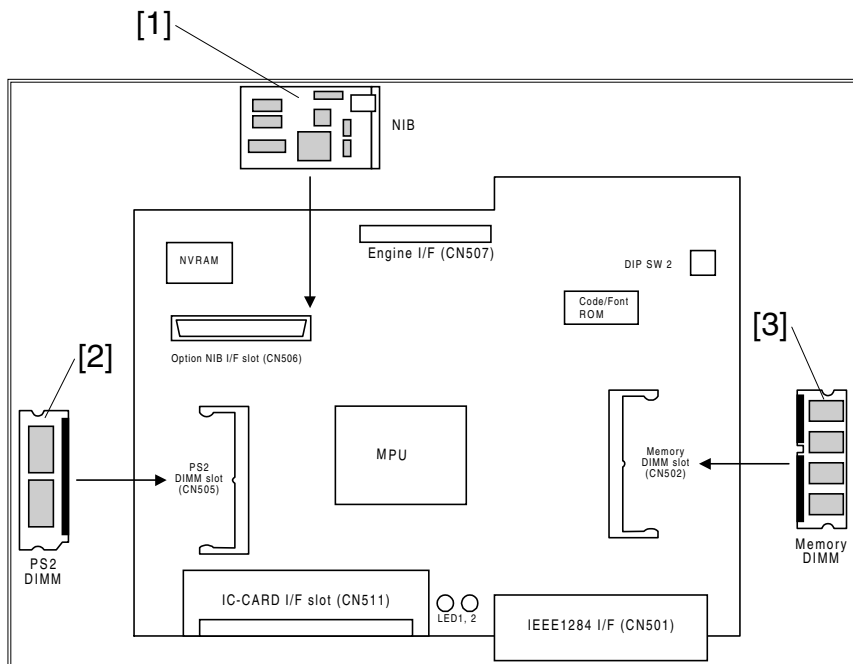
### **UTILITY SOFTWARE**

| Software                                                | Description                                                                                                                                           |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Agfa Font Manager<br>(Win 95/98/Me, NT4, 2000)          | A font management utility with screen fonts for the printer.                                                                                          |
| SmartNetMonitor for Admin<br>(Win 95/98/Me, NT4, 2000)  | A printer management utility for network administrators. NIB setup utilities are also available.                                                      |
| SmartNetMonitor for Client<br>(Win 95/98/Me, NT4, 2000) | A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.                   |
| Printer Utility for Mac                                 | This software provides several convenient functions for printing from Macintosh clients.                                                              |
| Install Shell for Unix                                  | This software allows the machine to be used with Unix. The supported OS are Solaris, HP-UX, and RedHat Linux. Sun OS and Unix Ware are not supported. |

## SPECIFICATIONS

### 3. MACHINE CONFIGURATION

#### 3.1 SYSTEM COMPONENTS



| Item                         | Machine Code | No. | Remarks                                               |
|------------------------------|--------------|-----|-------------------------------------------------------|
| NIB                          | B430         | 1   |                                                       |
| PostScript Level 2 Emulation | B431         | 2   |                                                       |
| Memory 32 MB                 | G578         | 3   | Used in common with the models G056, A283, G060, etc. |
| Memory 64 MB                 | G579         | 3   | Same as above                                         |
| Memory 128 MB                | G580         | 3   | Same as above                                         |



# **TECHNICAL SERVICE BULLETINS**



**BULLETIN NUMBER: B044/B045/B046 - 001****04/19/2002****APPLICABLE MODEL:****GESTETNER – 1302/1302F****RICOH – AFICIO 1013/120/1013F****SAVIN – 2513/2513F****SUBJECT: NO POWER TO MACHINE AFTER DF INSTALLATION****SYMPTOM:**

Several SC codes may be displayed in succession and "false jams" may occur. The machine may become inoperative when **IC-11** becomes permanently damaged on the FCU board.

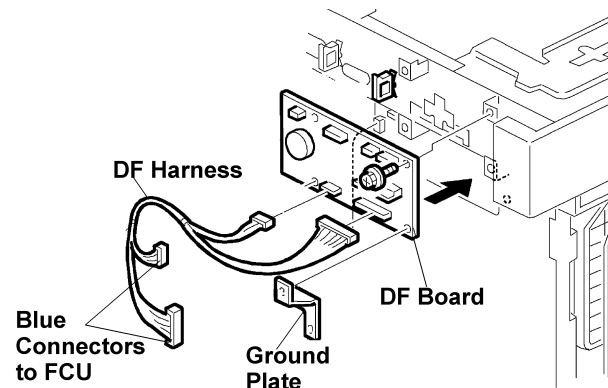
**CAUSE:**

Incorrect installation of the DF connection board.

**SOLUTION:****Field Countermeasure:**

Replace the DF connection board and perform the following checks before turning on the machine.

1. Check for possible pinched wires between the DF main body and the DF connection board.
2. The "**Ricoh**" emblem on the DF connection board should be at the bottom left hand corner.
3. CN9 (blue connector) on the FCU should be connected to the blue connector on the DF harness, which originates at CN102 on the DF connection board.
4. CN10 (blue connector) on the FCU should be connected to the blue connector on the DF harness, which originates at CN101 on the DF connection board.
5. CN3 (white connector) on the FCU should only be used when installing a print controller.

**Production Countermeasure:**

The shape of the Ground Plate, which is attached at the bottom right corner of the DF connection board, will be changed so that the board cannot be installed upside down.

Note: This copy is intended as a master original  
for reproduction of additional bulletins.



■ ELECTRICAL

**BULLETIN NUMBER: B044/B045/B046 – 002**

**07/26/2002**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**  
**RICOH – AFICIO 1013/120/1013F**  
**SAVIN – 2513/2513F**

**SUBJECT: PAPER JAM**

**SYMPTOM:**

Paper jams at the Paper Feed Guide Plate.

**CAUSE:**

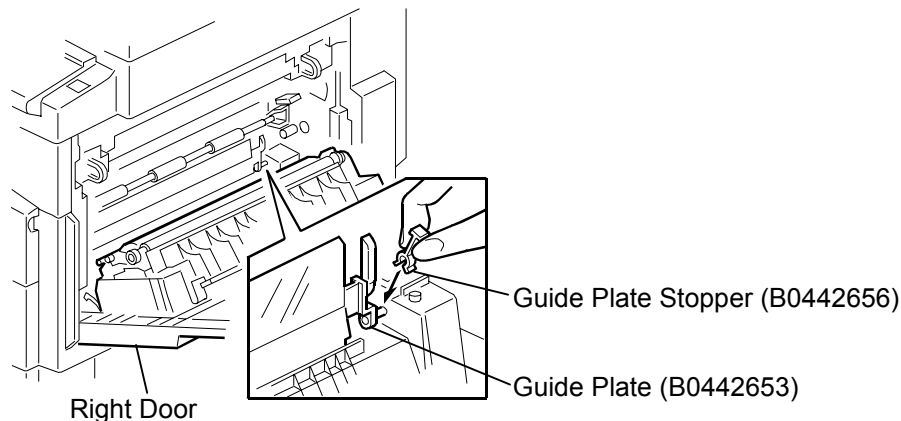
The Paper Feed Guide Plate (P/N B0442653) disconnects from the pivot area. (See illustration below.)

**SOLUTION:**

A Guide Plate Stopper (P/N B0442656) has been added as shown in the illustration below.

**GENERAL:**

The following part update is being issued for all B044/B045/B046 Parts Catalogs.



|              |              |                     |     |     | REFERENCE |      |
|--------------|--------------|---------------------|-----|-----|-----------|------|
| OLD PART NO. | NEW PART NO. | DESCRIPTION         | QTY | INT | PAGE      | ITEM |
| -            | B0442656     | Guide Plate Stopper | 1   | -   | 13        | 28 * |

\* Denotes new item number.

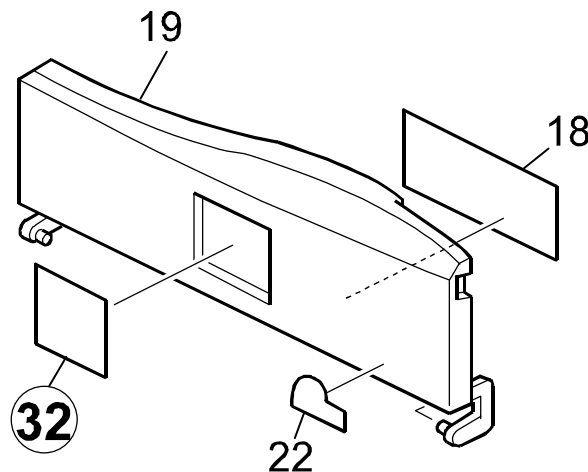
**UNITS AFFECTED:**

The Guide Plate Stopper was applied to B044/B045/B046 mainframe production from June '02. The serial number cut-in information was not available at time of publication.

**BULLETIN NUMBER: B044/B045/B046 - 003**
**01/20/2003**
**APPLICABLE MODEL:**
**GESTETNER - 1302/1302F**
**RICOH - AFICIO 1013/120/1013F**
**SAVIN - 2513/2513F**
**SUBJECT: PARTS CATALOG UPDATES**
**GENERAL:**

The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.

- **UPDATE 1:**      **Model Name Plate** – The Model Name Plate was omitted from the parts catalog. Please add the following information to your B044/B045/B046 Parts Catalog.

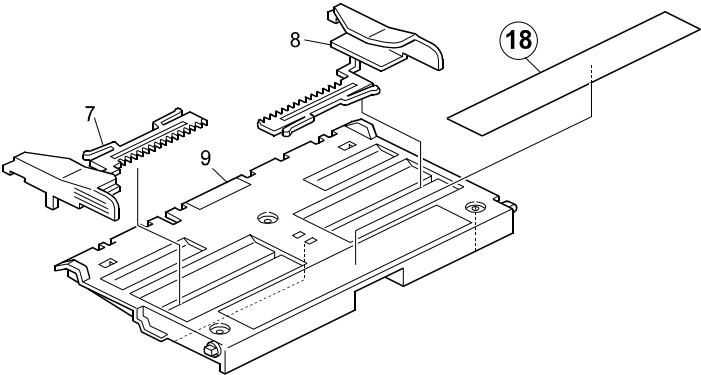


|                 |                                |     | REFERENCE |      |
|-----------------|--------------------------------|-----|-----------|------|
| NEW PART NO.    | DESCRIPTION                    | QTY | PAGE      | ITEM |
| B0447508        | Model Name Plate-GES EU (B044) | 1   | 7         | 32 * |
| B0457508        | Model Name Plate-GES EU (B045) | 1   | 7         | 32 * |
| B0467508        | Model Name Plate-GES EU (B046) | 1   | 7         | 32 * |
| B0447501        | Model Name Plate-RIC (B044)    | 1   | 7         | 32 * |
| B0457501        | Model Name Plate-RIC (B045)    | 1   | 7         | 32 * |
| B0467501        | Model Name Plate-RIC (B046)    | 1   | 7         | 32 * |
| B0447502        | Model Name Plate-NSA (B044)    | 1   | 7         | 32 * |
| B0457502        | Model Name Plate-NSA (B045)    | 1   | 7         | 32 * |
| B0467502        | Model Name Plate-NSA (B046)    | 1   | 7         | 32 * |
| <i>B0447504</i> | Model Name Plate-LAN (B044)    | 1   | 7         | 32 * |
| B0457504        | Model Name Plate-LAN (B045)    | 1   | 7         | 32 * |
| B0467504        | Model Name Plate-LAN (B046)    | 1   | 7         | 32 * |

\*DENOTES NEW ITEM NUMBER

Continued...

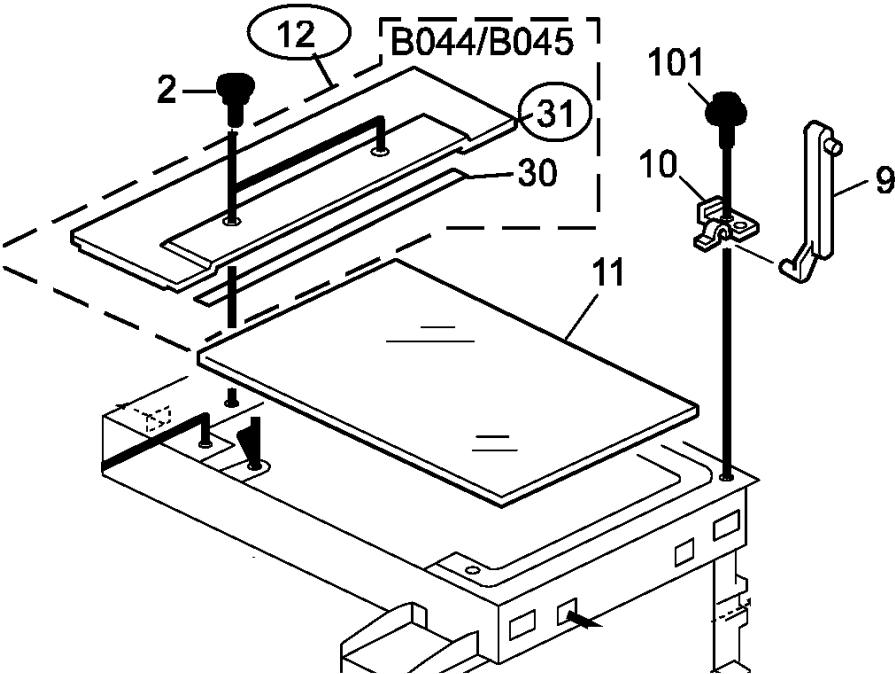
- **UPDATE 2:**      **Manual Feed Decal** – The Manual Feed Decal was omitted from the parts catalog. Please add the following information to your B044/B045/B046 Parts Catalog.



|              |                   |     | REFERENCE |      |
|--------------|-------------------|-----|-----------|------|
| NEW PART NO. | DESCRIPTION       | QTY | PAGE      | ITEM |
| AA003011     | Manual Feed Decal | 1   | 11        | 18 * |

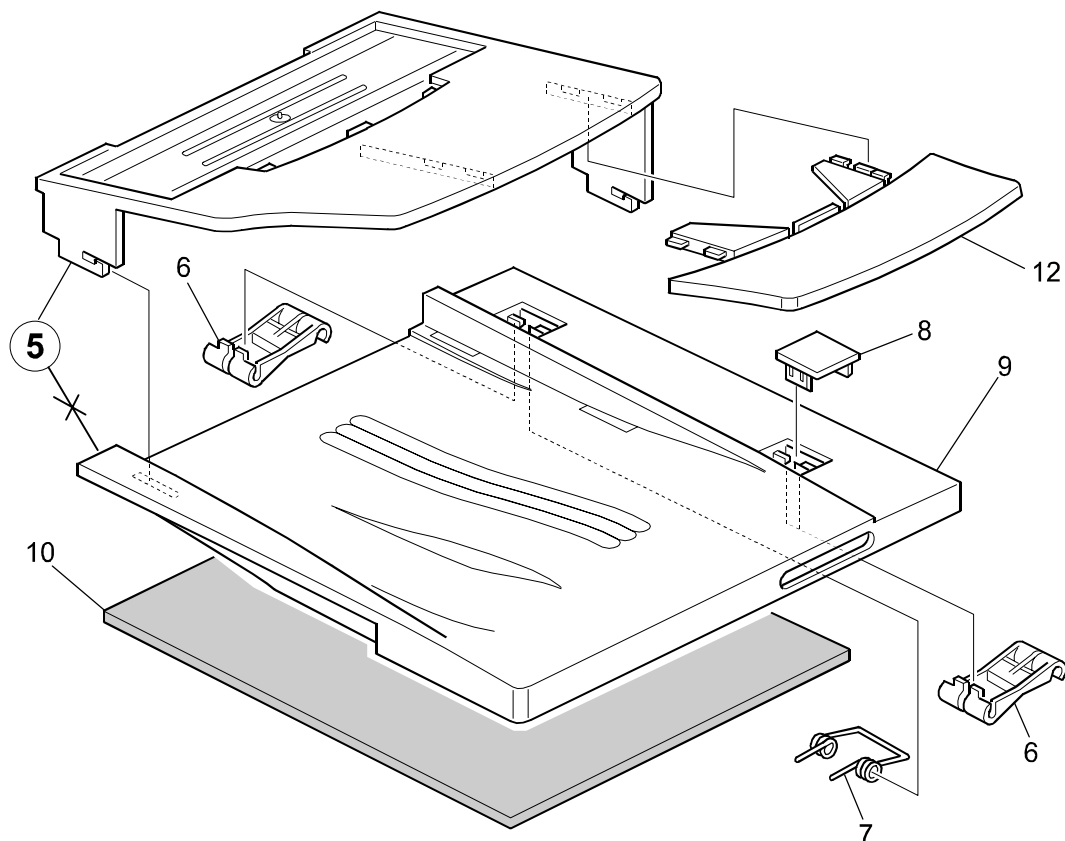
\*DENOTES NEW ITEM NUMBER

- **UPDATE 3:**      **Left Scale** – The description for the Left Scale was incorrect in the parts catalog. Please correct the following information in your B044/B045/B046 Parts Catalog.



| PART NO. | INCORRECT DESCRIPTION | CORRECT DESCRIPTION         | PAGE | ITEM |
|----------|-----------------------|-----------------------------|------|------|
| B0441804 | Left Scale Ass'y - AA | Left Scale Ass'y - NA, ASIA | 7    | 12   |
| B0441831 | Left Scale            | Left Scale Ass'y - NA, ASIA | 7    | 31   |

- **UPDATE 4:**     **ADF 1** – The illustration for ADF 1 was incorrect in the parts catalog. Item 5 and 9 both pointed to the Platen Cover. Item 5 should point to the Original Table and item 9 should remain pointing at the Platen Cover. Please correct the illustration as shown below in your B044/B045/B046 Parts Catalog.



**BULLETIN NUMBER: B044/B045/B046 – 004**

**04/16/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612/5613F**

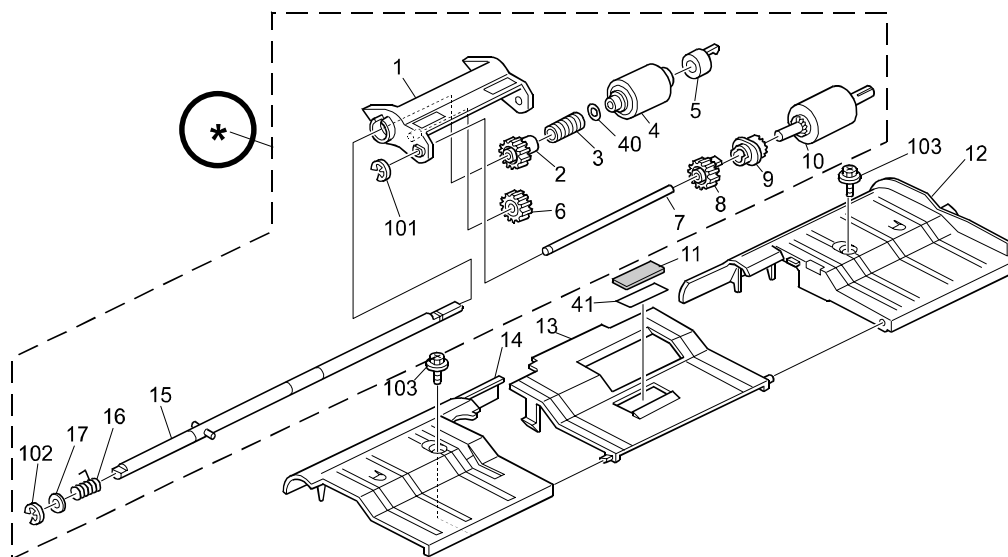
**RICOH – AFICIO 1013/120/1013F**

**SAVIN – 2513/2513F**

**SUBJECT: ORIGINAL FEED UNIT**

**GENERAL:**

The Original Feed Unit has been registered as a service part. The following part update is being issued for all B044/B045/B046 Parts Catalogs. Please update your parts catalog with the following information.



|                 |                    |     | REFERENCE |      |
|-----------------|--------------------|-----|-----------|------|
| NEW PART NUMBER | DESCRIPTION        | QTY | PAGE      | ITEM |
| B0444811        | Original Feed Unit | 1   | 23        | *    |

**\* DENOTES NEW ITEM NUMBER**



**BULLETIN NUMBER: B044/B045/B046 – 005**

**04/25/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**  
**LANIER – 5613/5612/5613F**  
**RICOH – AFICIO 1013/120/1013F**  
**SAVIN – 2513/2513F**

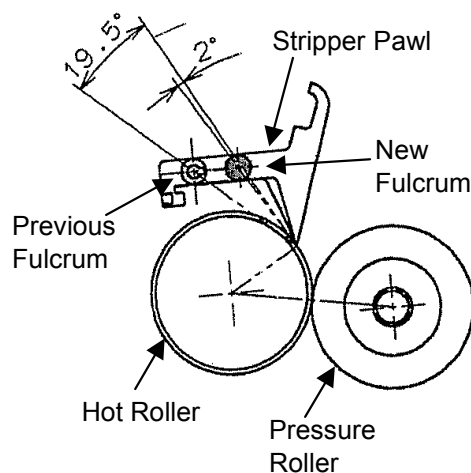
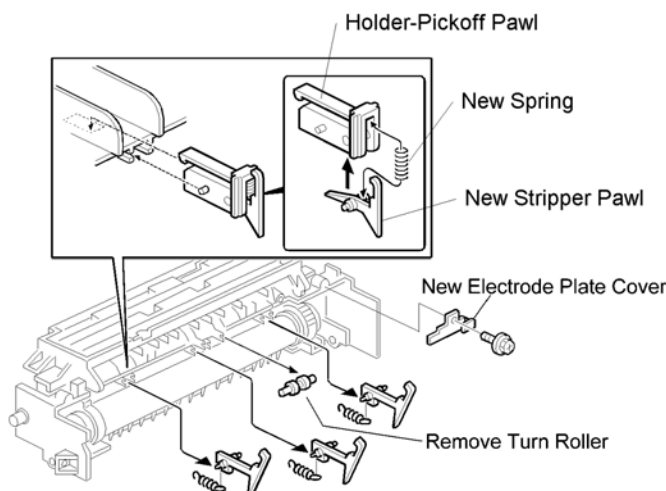
**SUBJECT: STRIPPER PAWLS & FUSING FRAME**

**GENERAL:**

The fulcrum of the Stripper Pawls has been changed as shown in the illustrations below to eliminate squeaking noises coming from the pawls. In addition, pawl holders have been added for attachment to the pawls before installation in the fusing frame. To further ensure that new Ricoh safety standards are met, the assembly process for the fusing frame has been changed so that the fusing frame screw is not inserted below the frame surface. The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.



■ PARTS



|              |              |                       |     |     | REFERENCE |      |
|--------------|--------------|-----------------------|-----|-----|-----------|------|
| OLD PART NO. | NEW PART NO. | DESCRIPTION           | QTY | INT | PAGE      | ITEM |
| AE044036     | AE044045     | Stripper Pawl         | 3   | 3/S | 35        | 21   |
| AF022141     |              | Turn Roller           | 3→2 | -   | 35        | 6    |
| B0444151     | B0444155     | Spring – Pickoff Pawl | 3   | 3/S | 35        | 20   |
|              | B0444179     | Holder – Pickoff Pawl | 3   | 3/S | 35        | 48 * |
| B0444144     | B0444143     | Electrode Plate Cover | 1   | 3/S | 35        | 15   |
| B0444101     | B0444102     | Fusing Frame          | 1   | 0   | 35        | 16   |

**\* DENOTES NEW ITEM NUMBER**

**NOTE:** Be sure to install all four parts marked 3/S as a set. You will also need to remove the Turn Roller.

**UNITS AFFECTED:**

All B044/B045/B046 copiers manufactured after the serial numbers listed below will have the new style Stripper Pawls and Fusing Frame installed during production.

| MODEL NAME                                                           | SERIAL NUMBER |
|----------------------------------------------------------------------|---------------|
| Gestetner 1302<br>Lanier 5613<br>Ricoh Aficio 1013<br>Savin 2513     | H9029300001   |
| Lanier 5612<br>Ricoh Aficio 120                                      | H91294xxxxx   |
| Gestetner 1302f<br>Lanier 5613F<br>Ricoh Aficio 1013F<br>Savin 2513F | H9229300001   |

**INTERCHANGEABILITY CHART:**

|     |                                                                                                                                                                                     |   |                                                                                              |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------|
| 0   | OLD and NEW parts can be used in both OLD and NEW machines.                                                                                                                         | 2 | NEW parts CAN NOT be used in OLD machines.<br>OLD parts can be used in OLD and NEW machines. |
| 1   | NEW parts can be used in OLD and NEW machines.<br>OLD parts CAN NOT be used in NEW machines.                                                                                        | 3 | OLD parts CAN NOT be used in NEW machines.<br>NEW parts CAN NOT be used in OLD machines.     |
| 3/S | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually. |   |                                                                                              |

# TECHNICAL SERVICE BULLETIN

**BULLETIN NUMBER: B044/B045/B046 – 006**

**06/30/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612/5613F**

**RICOH – AFICIO 1013/120/1013F**

**SAVIN – 2513/2513F**

**SUBJECT: SC551**

**SYMPTOM:**

An SC551 has occurred indicating that the temperature remained too high during stand-by or lower power mode.

**CAUSE:**

A firmware bug exists in units using version 86 or earlier firmware.

**SOLUTION:**

Firmware version 87 has been released. Firmware version 87 contains a countermeasure for preventing SC551's from occurring and has been released starting with the August 2002 production. When updating the firmware from version 86 to version 87 or newer, set SP7-955 (Memory Read/Write) to a value of 40191D 04. (☞ 5.1.12 in the B044 Service Manual.)

**NOTE:** *Firmware version 86 and earlier was contained in machines produced up until July 2002.*



■  
FIRMWARE

# TECHNICAL SERVICE BULLETIN

**BULLETIN NUMBER: B044/B045/B046 – 007**

**09/15/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612/5613F**

**RICOH – AFICIO 1013/120/1013F**

**SAVIN – 2513/2513F**

**SUBJECT: LOWER DIAL DECAL**

**GENERAL:**

The Lower Dial Decal (“Shift/Space/Symbols”) was omitted from the parts catalog. The following part update is being issued for all B044/B045/B046 Parts Catalogs.

|       |       |         |
|-------|-------|---------|
| Shift | Space | Symbols |
|-------|-------|---------|

|              |              |                       |     |     | REFERENCE |      |
|--------------|--------------|-----------------------|-----|-----|-----------|------|
| OLD PART NO. | NEW PART NO. | DESCRIPTION           | QTY | INT | PAGE      | ITEM |
| -            | B0461462     | Lower Dial Decal - NA | 1   | -   | 43        | 18 * |
| -            | B0461462     | Lower Dial Decal - NA | 1   | -   | 61        | 11 * |

\* DENOTES NEW ITEM NUMBER



■ PARTS

**BULLETIN NUMBER: B044/B045/B046 – 008**

**10/03/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612/5613F**

**RICOH – AFICIO 1013/120/1013F**

**SAVIN – 2513/2513F**

**SUBJECT: MANUAL RECEIVE**

**GENERAL:**

The following information is being issued for all B044/B045/B046 Operating Instructions. The Operating Instructions contain the following errors and insufficient explanation regarding the Manual Receive function. An errata sheet will be prepared for machines in production alerting users to these two points.

Operating Instructions – Facsimile Reference – Basic Features, pg. 31.  
Re: Manual Receive.

1. Correction:

The Manual Receive indicator is lit when the machine is in this mode.  
→ *This sentence should be deleted, as there is no such indicator.*

2. Content addition:

Present explanation:

You must manually press the [Start] key to receive a fax.

Proper explanation:

Perform the following procedure to receive a fax in this mode.

- 1) When the machine rings, pick up the handset.
- 2) If you hear a fax tone, remove any originals from the feeder, then press the [Start] key or the User Function key that has been programmed for Manual Reception ([F1] – [F3]).  
Note: If you used the [Start] key, make sure that “Receive” is selected on the display before going on.
- 3) Press [OK] and then replace the handset.

**BULLETIN NUMBER: B044/B045/B046 – 009**

**10/28/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**  
**LANIER – 5613/5612/5613F**  
**RICOH – AFICIO 1013/120/1013F**  
**SAVIN – 2513/2513F**

**SUBJECT: PARTS CATALOG UPDATES**

**GENERAL:**

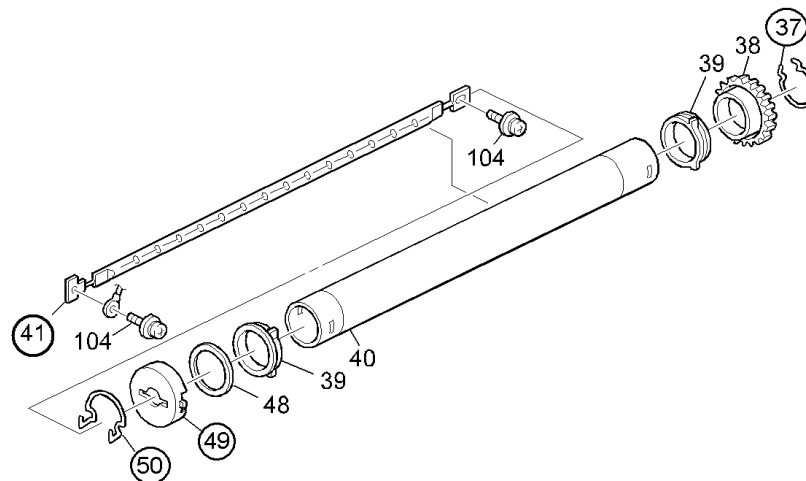
The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.

● **UPDATE 1:**

**Fusing Lamp** – The following changes have been made to minimize fusing offset images:

1. Fusing lamp filament changed for an even more stable fusing temperature.
2. Cap added to the front side of the hot roller (see illustration below).
3. Front stopper on hot roller changed to accommodate hot roller cap (see illustration below).

The following parts updates are being issued for all B044/B045/B046 Parts Catalogs. Please update your parts catalog with the following information.



|              |              |                          |     |     | REFERENCE |      |
|--------------|--------------|--------------------------|-----|-----|-----------|------|
| OLD PART NO. | NEW PART NO. | DESCRIPTION              | QTY | INT | PAGE      | ITEM |
| AX440137     | AX440187     | Fusing Lamp - 120V 650W  | 1-1 | 3/S | 35        | 41   |
| AX440138     | AX440188     | Fusing Lamp – 230V 650W  | 1-1 | 3/S | 35        | 41   |
| -            | B0444112     | Hot roller Cap           | 0-1 | 3/S | 35        | 49 * |
| -            | B0444156     | Front Hot Roller Stopper | 0-1 | 3/S | 35        | 50 * |
| B0444150     | -            | Hot Roller Stopper       | 2→1 | 3/S | 35        | 37   |

\* DENOTES NEW ITEM NUMBER

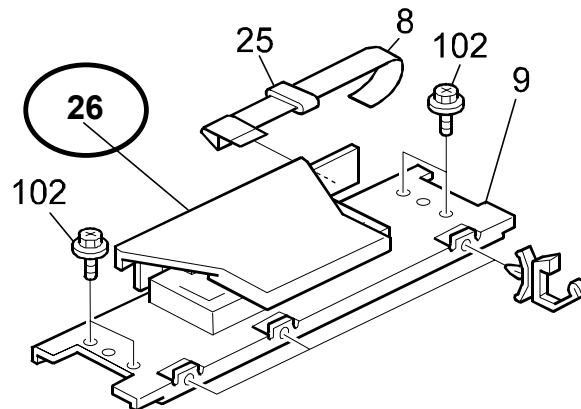
## UNITS AFFECTED:

All B044/B045/B046 copiers manufactured after the serial numbers listed below will have the new style Fusing Lamp installed during production.

| MODEL NAME                                                           | SERIAL NUMBER |
|----------------------------------------------------------------------|---------------|
| Gestetner 1302<br>Lanier 5613<br>Ricoh Aficio 1013<br>Savin 2513     | H9029600001   |
| Gestetner NA<br>Lanier 5612<br>Ricoh Aficio 120<br>Savin NA          | H91296xxxxx   |
| Gestetner 1302F<br>Lanier 5613F<br>Ricoh Aficio 1013F<br>Savin 2513F | H9229600001   |

## ● UPDATE 2:

**Lens Cover** – The Lens Cover was omitted from the B044/B045/B046 Parts Catalog. Please update your parts catalog with the following information.



|                 |             |     | REFERENCE |      |
|-----------------|-------------|-----|-----------|------|
| NEW PART NUMBER | DESCRIPTION | QTY | PAGE      | ITEM |
| B0441777        | Lens Cover  | 1   | 27        | 26 * |

\* DENOTES NEW ITEM NUMBER

## INTERCHANGEABILITY CHART:

|     |                                                                                                                                                                                     |   |                                                                                           |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------|
| 0   | OLD and NEW parts can be used in both OLD and NEW machines.                                                                                                                         | 2 | NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines. |
| 1   | NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.                                                                                           | 3 | OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.     |
| 3/S | Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually. |   |                                                                                           |

# TECHNICAL SERVICE BULLETIN

**BULLETIN NUMBER: B044/B045/B046 – 010**

**10/28/2003**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612/5613F**

**RICOH – AFICIO 1013/120/1013F**

**SAVIN – 2513/2513F**

**SUBJECT: SERVICE MANUAL - INSERT**

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

**PAGES:**

- Legend Updated Information (Legend page)



**SERVICE  
MANUAL**



# LEGEND

| PRODUCT CODE | COMPANY   |        |              |       |
|--------------|-----------|--------|--------------|-------|
|              | GESTETNER | LANIER | RICOH        | SAVIN |
| B044         | 1302      | 5613   | Aficio 1013  | 2513  |
| B045         | –         | 5612   | Aficio 120   | –     |
| B046         | 1302f     | 5613F  | Aficio 1013f | 2513f |
|              |           |        |              |       |
|              |           |        |              |       |
|              |           |        |              |       |

# DOCUMENTATION HISTORY

| REV. NO. | DATE    | COMMENTS          |
|----------|---------|-------------------|
| *        | 10/2001 | Original Printing |
|          |         |                   |
|          |         |                   |
|          |         |                   |

**BULLETIN NUMBER: B044/B045/B046 – 011**

**04/21/2004**

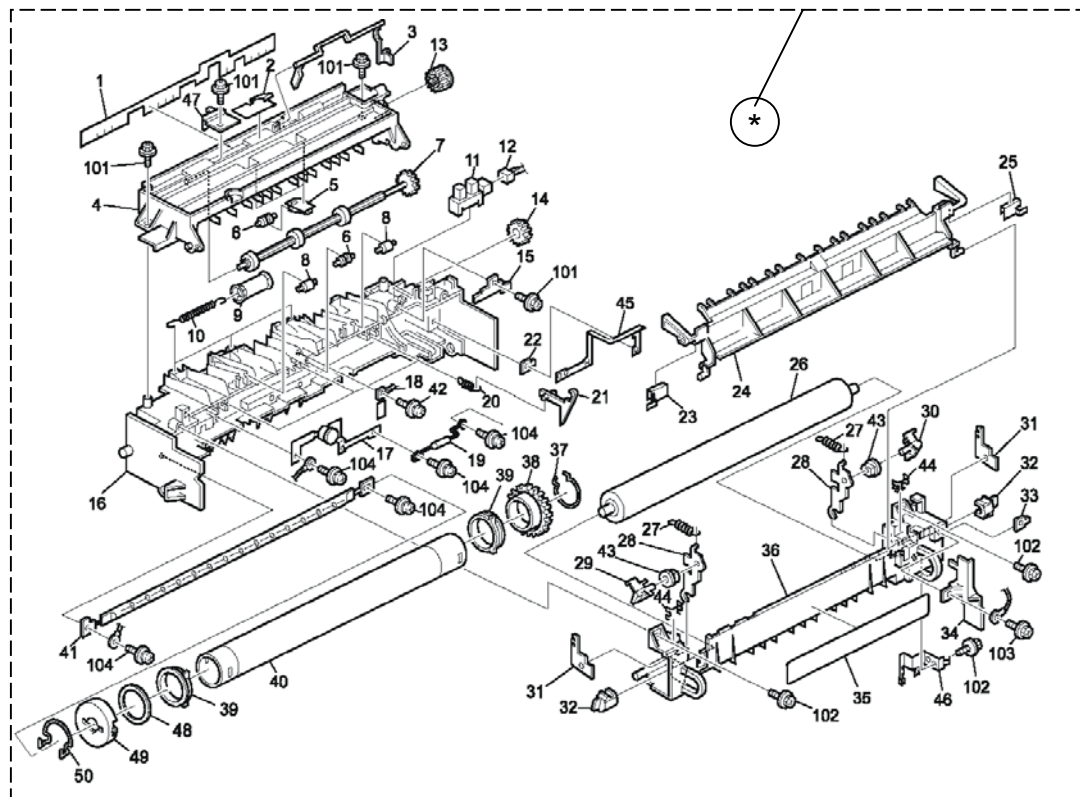
**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**  
**LANIER – 5613/5612/5613F**  
**RICOH – AFICIO 1013/120/1013F**  
**SAVIN – 2513/2513F**

**SUBJECT: FUSING UNIT**

**GENERAL:**

The fusing unit has been registered as a service part to facilitate servicing in the field.  
The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.



|                 |                    |     | REFERENCE |      |
|-----------------|--------------------|-----|-----------|------|
| NEW PART NUMBER | DESCRIPTION        | QTY | PAGE      | ITEM |
| B0444017        | Fusing Unit – 120V | 1   | 35        | *    |
| B0444027        | Fusing Unit – 230V | 1   | 35        | *    |

**\* DENOTES NEW ITEM NUMBER**

**BULLETIN NUMBER: B044/B045/B046 – 012**

**04/21/2004**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**

**LANIER – 5613/5612**

**RICOH – AFICIO 1013/120**

**SAVIN – 2513/2513F**

**SUBJECT: COM SW16 SETTING AT FAX OPTION INSTALLATION**

**GENERAL:**

This is an important setting for model B044/B045 FAX option installation.

When installing the FAX option (new FCU board, NCU board) on the B044/B045, be sure to perform the following to ensure the FAX function is properly enabled.

1. As described in the FSM adjustment section 3.10 I, first back up the SRAM data on the original FCU board for installation to the new FAX option FCU board.
2. Replace the FCU with new FCU board in accordance with the installation procedure from section 3.10 of the FSM, and then upload the SRAM data backed up in Step 1 to the new FCU board 3.
3. Change Com SW16 to a setting of 1.

NOTE: Refer to section 5.1.9 for the upload/download procedure.

■  
GENERAL  
INFORMATION

| Communication Switch 16 |                                                |                                                                                                                                                                |
|-------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No                      | FUNCTION                                       | COMMENTS                                                                                                                                                       |
| 0                       | Standard G3 (NCU)<br>0: Disabled<br>1: Enabled | 0: Change this bit to 0 if you wish to disable the standard G3 line.<br>1: Change this bit to 1 to enable the standard G3 line when installing the FAX option. |

# TECHNICAL SERVICE BULLETIN

**BULLETIN NUMBER: B044/B045/B046 – 013**

**05/10/2004**

**APPLICABLE MODEL:**

**GESTETNER – 1302/1302F**  
**LANIER – 5613/5612/5613F**  
**RICOH – AFICIO 1013/120/1013F**  
**SAVIN – 2513/2513F**

**SUBJECT: PARTS CATALOG CORRECTIONS**

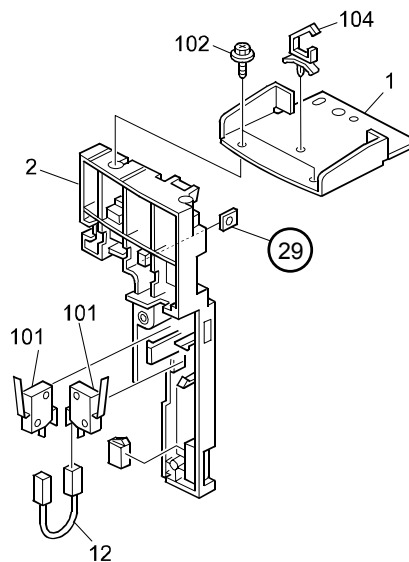
**GENERAL:**

The following parts corrections are being issued for all B044/B0045/B046 Parts Catalogs.



● **UPDATE 1:**

**Fusing Plate Nut** – The Fusing Plate Nut was omitted from the parts listing in the Paper Registration section. Please correct your parts catalog with the following information.

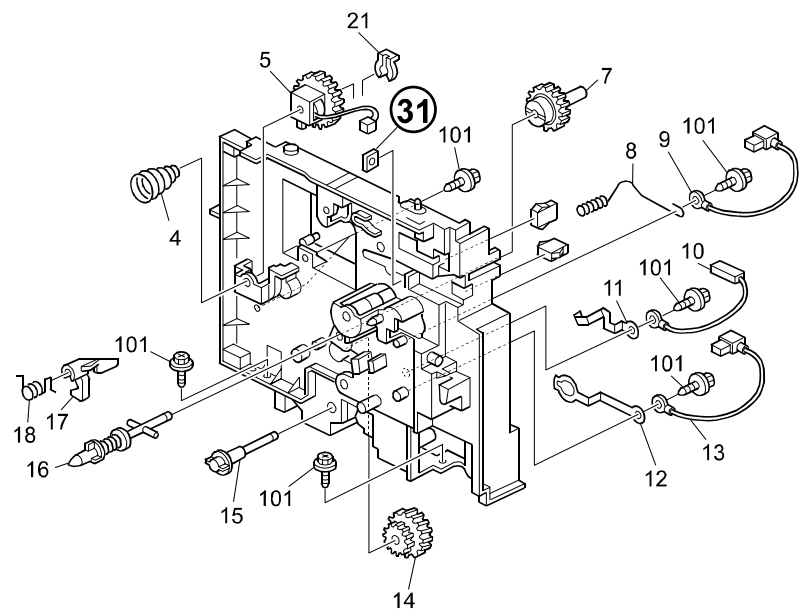


|                 |                  |     | REFERENCE |      |
|-----------------|------------------|-----|-----------|------|
| NEW PART NUMBER | DESCRIPTION      | QTY | PAGE      | ITEM |
| B0444200        | Fusing Plate Nut | 1   | 13        | 29 * |

\* DENOTES NEW ITEM NUMBER

● **UPDATE 2:**

**Fusing Plate Nut** – The Fusing Plate Nut was omitted from the parts listing in the PCU section. Please correct your parts catalog with the following information.

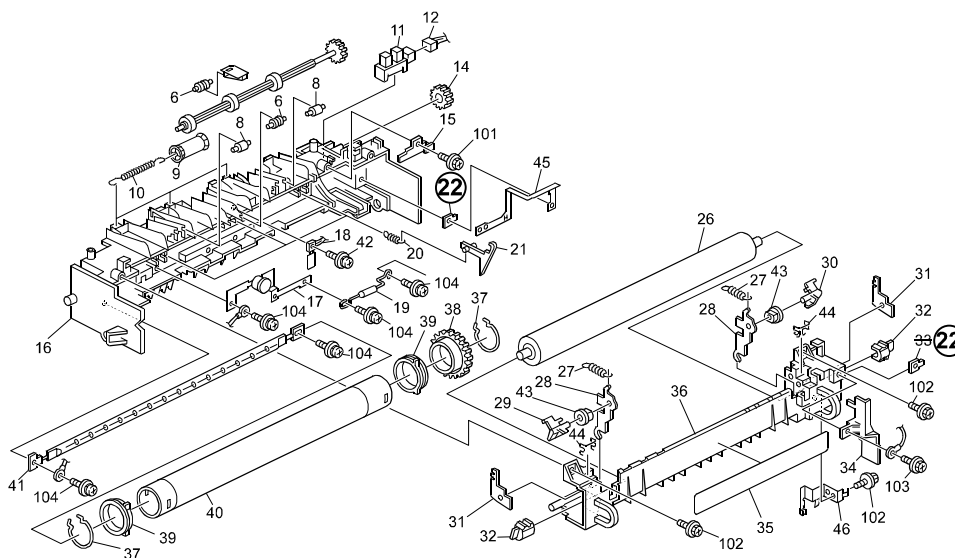


|                 |                  |     | REFERENCE |      |
|-----------------|------------------|-----|-----------|------|
| NEW PART NUMBER | DESCRIPTION      | QTY | PAGE      | ITEM |
| B0444200        | Fusing Plate Nut | 1   | 33        | 31 * |

\* DENOTES NEW ITEM NUMBER

● **UPDATE 3:**

**Lamp Holder** – The Lamp Holder was incorrectly called the Fusing Plate Nut in the parts listing in the Fusing Unit section. Please correct your parts catalog with the following information.



|              |              |                  |     |     | REFERENCE |      |
|--------------|--------------|------------------|-----|-----|-----------|------|
| OLD PART NO. | NEW PART NO. | DESCRIPTION      | QTY | INT | PAGE      | ITEM |
| B0444200     | B0444135     | Lamp Holder      | 1→2 | -   | 35        | 22   |
| B0444200     | -            | Fusing Nut Plate | 1→0 | -   | 35        | 33   |

**BULLETIN NUMBER: B431- 001**

**03/06/2002**

**APPLICABLE MODEL:**

**GESTETNER – B431 PS Option for 1302/1302F/2212/2712 Print Controller**

**RICOH – B431 PS Option for 1013/1013F/1022/1027 Print Controller**

**SAVIN – B431 PS Option for 2513/2513F/2522/2527 Print Controller**

**SUBJECT: POSTSCRIPT FIRMWARE**

**SYMPTOM:**

When the PS Option is installed the following symptoms occur:

1. "Processing" is displayed on the LCD and Post Script printing is not possible.
2. The PS font list prints out reduced and continues to print until paper end occurs.

**CAUSE:**

PS2 Firmware.

**SOLUTION:**

Download and update both the PostScript (ver.1.04) and Controller Firmware to the latest revision that's posted on the TSC web site.

Note: This copy is intended as a master original  
for reproduction of additional bulletins.



■ FIRMWARE

**BULLETIN NUMBER: B431 - 002**

**02/19/2003**

**APPLICABLE MODEL:**

**GESTETNER – PS2 PRINTER OPTION for F9103/1502/1802/1802D/1302/1302F**

**RICOH - PS2 PRINTER OPTION for FAX 3310L/ AFICIO 1015/1018/1018D/**

**AFICIO 1013/120/1013F**

**SAVIN - PS2 PRINTER OPTION for FAX 3725/2515/2518/2518D/2513/2513F**

**SUBJECT: FIRMWARE MODIFICATION**

**GENERAL:**

The latest firmware version can be downloaded at the Technology Solution Center FTP Site  
<http://tsc.ricohcorp.com>. Be sure to check the README file for important notes and explanations.

**NOTE:** Refer to Facts Line Bulletin # FL002 and Publication Bulletin #023 for more information about the FTP Internet Web Site and EPROM/Flash Card Exchange program.



FIRMWARE

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| B431 PRINTER OPTION PS2 FIRMWARE MODIFICATION                                                                                                                                                                                               |                |                         |                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------|------------------|
| DESCRIPTION OF MODIFICATION                                                                                                                                                                                                                 | FIRMWARE LEVEL | SERIAL NUMBER           | FIRMWARE VERSION |
| Corrects the following: <ul style="list-style-type: none"> <li>Sometimes a PS file made in a UNIX environment cannot be printed.</li> <li>Print image density in PostScript mode has been fine tuned to the same level as PCLXL.</li> </ul> | B4315280 H     | January 2003 Production | 1.90             |