

Gestetner® **LANIER**  **RICOH**® **SAVIN**®



B129/B130/B168/B169/B044/B045/B046
SERVICE MANUAL

001960MIU

RICOH GROUP COMPANIES



B129 SERIES/B044 SERIES SERVICE MANUAL

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Gestetner®  **LANIER RICOH® SAVIN®**

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Ricoh Corporation

LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B129	DSm415	LD015	Aficio 1515	3515
B130	DSm415pf	LD015spf	Aficio 1515MF	3515MF
B168	DSm415f	LD015f	Aficio 1515F	3515F
B169*	*	*	*	*
B044	1302	5613	Aficio 1013	2513
B045	---	---	Aficio 120	---
B046	1302f	5613f	Aficio 1013f	2513f

* This model is not currently available in the North or South American markets.

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B129/B130/B168/B169/B044/B045/B046

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FAX UNIT (B130/B168 ONLY)

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INTERNET FAX (IFAX) (B130 ONLY)

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PRINTER/SCANNER B683 (B129 OPTION; B130 STANDARD COMPONENT)

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DOCUMENT FEEDER B444 (B044/B045/B046)

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PAPER TRAY UNIT B421 (B129/B130/B168/B169/B044/B045/B046)

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FAX UNIT B465 (B044/B045/B046)

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PRINTER CONTROLLER B441 (B044/B045/B046)

SEE SECTION B441 FOR 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

INSTALLATION	
	B696 DOCUMENT FEEDER (B129/B130/B168/B169) B444 DOCUMENT FEEDER (B044/B045/B046)
	FAX UNIT (B130/B168/B169) IFAX (B130 ONLY)
PREVENTIVE MAINTENANCE	
	B421 PAPER TRAY UNIT (ALL MODELS)
REPLACEMENT AND ADJUSTMENT	
	B465 FAX UNIT (B044/B045/B046)
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	B683 PRINTER/SCANNER UNIT (B129/B130) B441 PRINTER CONTROLLER (B044/B045/B046)
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POSITION 5

TAB
POSITION 6

TAB
POSITION 7

TAB
POSITION 8

INSTALLATION

1. INSTALLATION

⚠ CAUTION

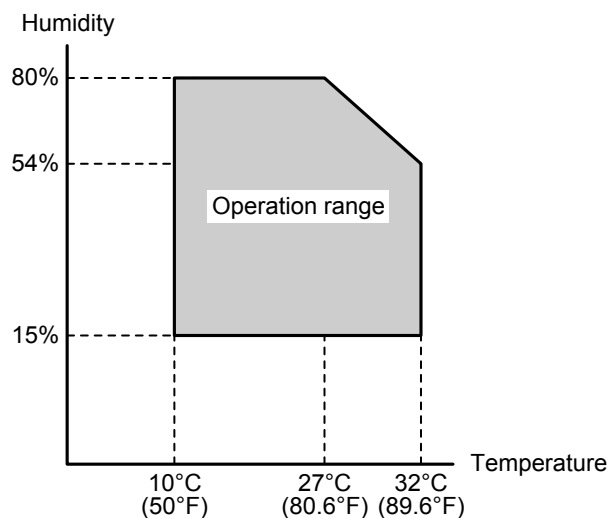
Before installing an optional unit, do the following:

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/m³
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

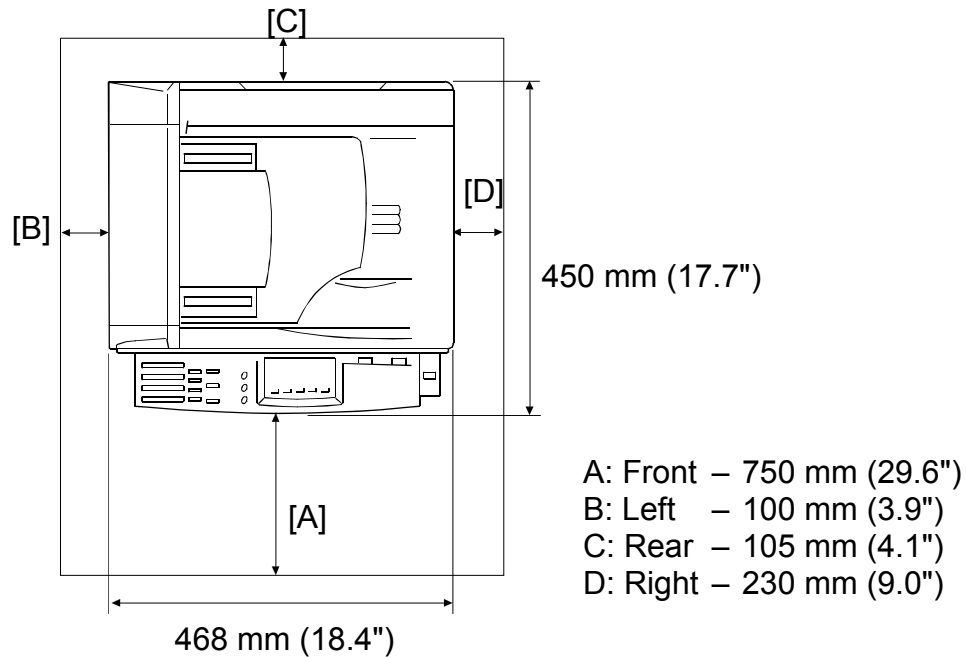
1.1.2 MACHINE LEVEL

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, 60 Hz, 8 A

Europe: 220 – 240 V, 50/60 Hz, 4 A

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

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

1.2 COPIER

1.2.1 ACCESSORY CHECK

Basic Model (B129)

No.	Description	Q'ty
1	General Settings Guide (-17, -21, -29)	1
2	Copy Reference (-17, -21, -29)	1
3	EU Safety Sheet (-22, -24, -26, -27)	1
4	NECR (-17, -21, -27, -29)	1
5	Paper Size Decal	1
6	Brand Decal (-22, -29)	1

MFP Model (B130)

No.	Description	Q'ty
1	General Settings Guide (-17, -21, -29)	1
2	Copy Reference (-17, -21, -29)	1
3	Facsimile Reference <Basic Features> (-17, -21, -29)	1
4	Facsimile Reference <Advanced Features> (-17, -21, -29)	1
5	Printer Setup Guide (-17, -21, -29)	1
6	CD-ROM (Printer Reference/Scanner Reference) (-17, -21, -29)	1
7	CD-ROM (Driver: Printer/Scanner) (-21, -22, -24, -26, -27, -29)	1
8	CD-ROM (Driver: Utility)	1
9	EU Safety Sheet (-22, -24, -26, -27)	1
10	NECR (-17, -21, -27, -29)	1
11	Paper Size Decal	1
12	Modular Cable (-17)	1
13	Handset Bracket (-17)	1
14	Facsimile Panel Decal (-17, -21, -29)	1
15	Ferrite Core	1
16	Brand decals (-22, -29)	1

NOTE: Retain the handset bracket. The optional handset kit does not include the bracket.

Copier/Facsimile Model (B168)

No.	Description	Q'ty
1	General Settings Guide (-17, -21, -29)	1
2	Copy Reference (-17, -21, -29)	1
3	Facsimile Reference <Basic Features> (-17, -21, -29)	1
4	Facsimile Reference <Advanced Features> (-17, -21, -29)	1
5	EU Safety Sheet (-22, -24, -26, -27)	1
6	NECR (-17, -21, -27, -29)	1
7	Paper Size Decal	1
8	Modular Cable (-17)	1
9	Handset Bracket (-17)	1
10	Facsimile Panel Decal (-17, -21, -29)	1
11	Brand decals (-22)	1

NOTE: Retain the handset bracket. The optional handset kit does not include the bracket.

Copier/Printer/Scanner Model (B169) (not sold in U.S. market)

No.	Description	Q'ty
1	CD-ROM (Driver: Printer/Scanner) (-22, -24, -26)	1
2	CD-ROM (Driver: Utility)	1
3	EU Safety Sheet	1
4	NECR (-27)	1
5	Paper Size Decal	1
6	Ferrite Core	1
7	Brand decals (-22)	1

NOTE: For B044/B045 models, use B129 "Basic Model" Accessory Check. For B046, use B168 "Copier/Facsimile" Accessory Check.

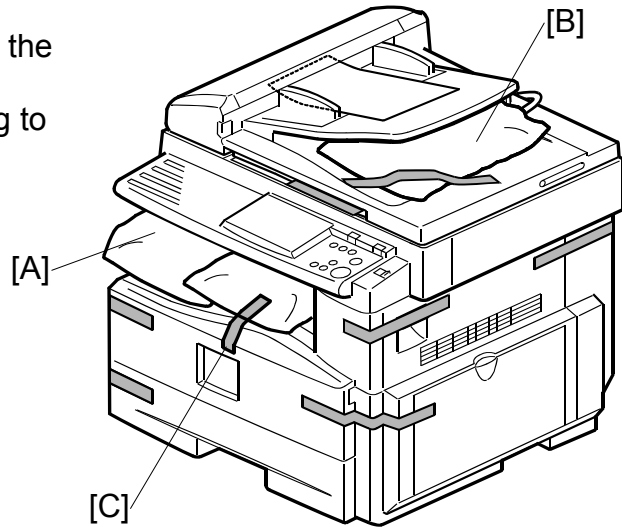
1.2.2 INSTALLATION PROCEDURE

CAUTION

Make sure that the copier remains unplugged during installation.

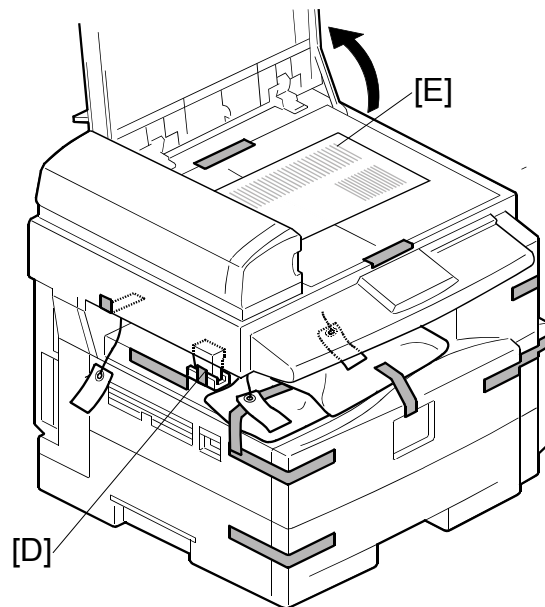
1. Remove the strips of tape.
2. Remove the bags [A][B][C] holding the included accessories.

NOTE: Accessories vary according to models.

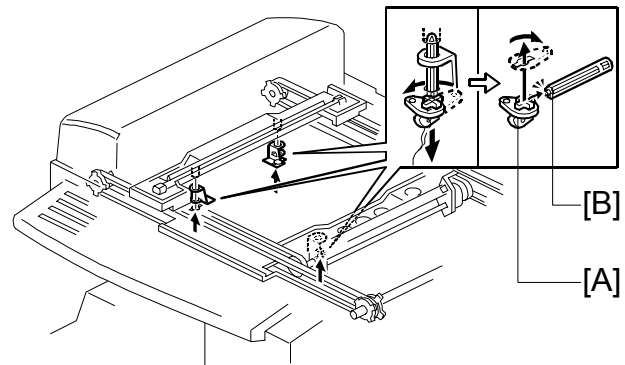


3. Remove the spacing wedge [D].
4. Remove the System Parameter Report [E] and keep it in a safe place.

NOTE: You need this report for adjustment or troubleshooting.

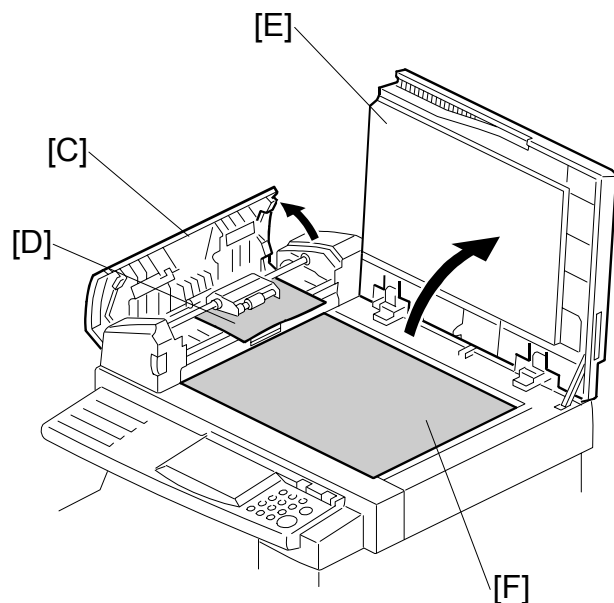


5. Remove the three scanner lock pins. (A tag is hanging from each pin.) To remove: Grasp the base of the pin [A], turn the pin 90 degrees, and pull it down and out.
6. Remove the tags from the pins.
7. Break each pin off the base [A].
8. Discard the pin part [B].



9. 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.)

10. When installing a DF-equipped model (B046/B129/B130/B168/B169), raise the DF upper guide [C] and remove the protective paper [D] at the feed unit. Then lower the guide.
11. Open the platen cover [E] (or DF, if equipped) and remove the protective paper [F] covering the exposure glass. Then close the platen cover/DF.



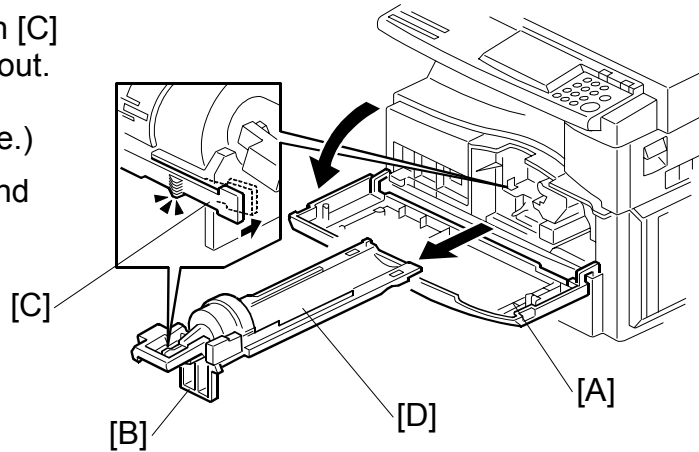
COPIER

12. Open the front door [A].

NOTE: For B045 model only,
skip to step 18a.

13. Lift lever [B], press in on latch [C]
and pull the bottle holder [D] out.
(You do not need to pull it
completely out of the machine.)

14. Take a new bottle of toner, and
shake it several times.



15. Remove the outer cap [E].

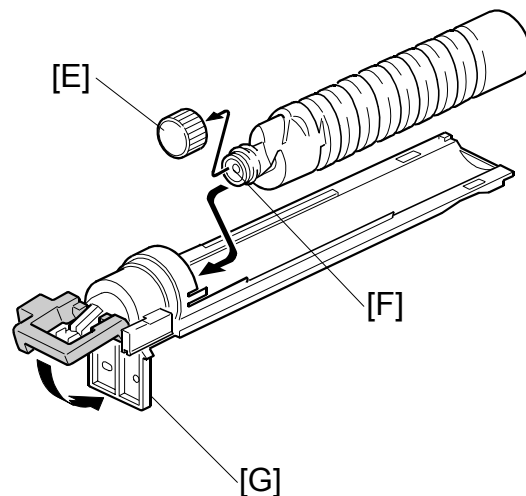
NOTE: DO NOT remove the inner
cap [F].

16. Load the bottle on the holder.

NOTE: DO NOT forcefully turn the
toner bottle on the holder.
After you turn on the main
power switch, the copier sets
the bottle in place.

17. Push the bottle holder back into the
machine.

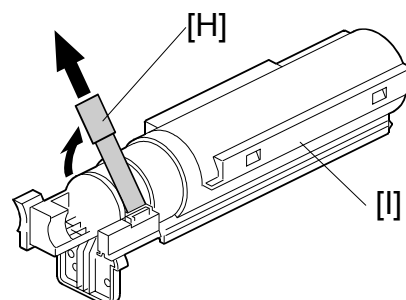
18. Press the latch [G] down to lock the
holder.



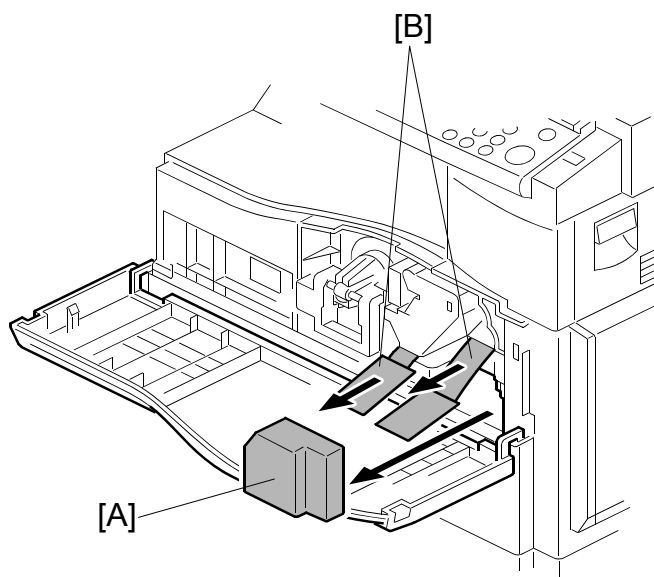
- 18a. (B045 Model only)

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

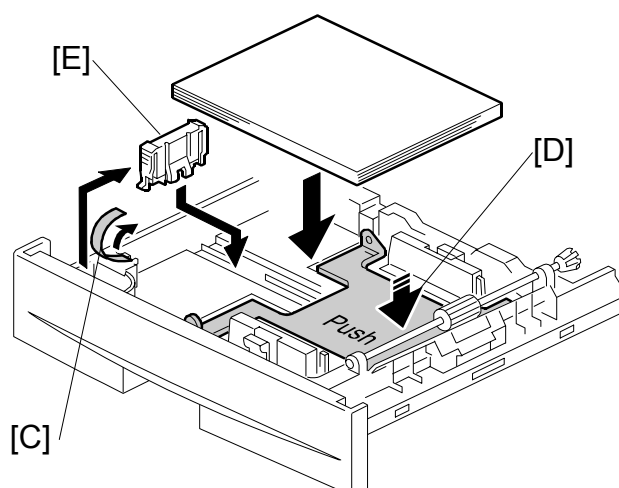
Shake the magazine several
times, then peel off the paper [H]
from a new THM [I], and load the
THM into the machine.



19. Remove the padding [A].
20. Pull the tabbed strips [B] out of the PCU.
21. Close the front door.



22. Pull out the paper tray, and remove the tape [C] securing the end fence in the compartment.
23. Push the bottom plate [D] down.
24. Load the paper.



25. Adjust the side fences. If you load the paper shorter than A4, set the end fence [E] in position.

COPIER

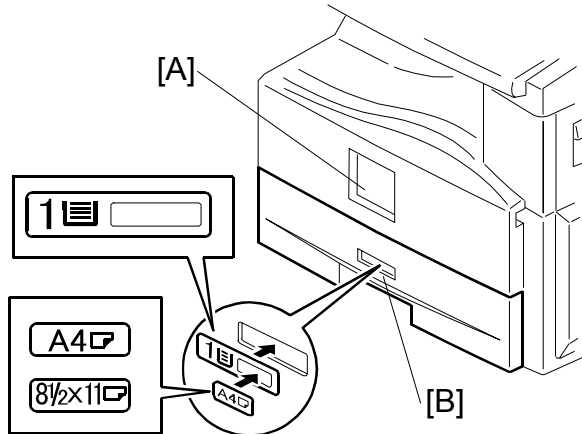
26. Push the tray back in the copier.

27. Attach the appropriate Brand Decal to the center of the front door [A] if necessary.

28. Attach the appropriate tray number decal and paper-size decal to the paper tray [B].

29. Install optional units (if any).

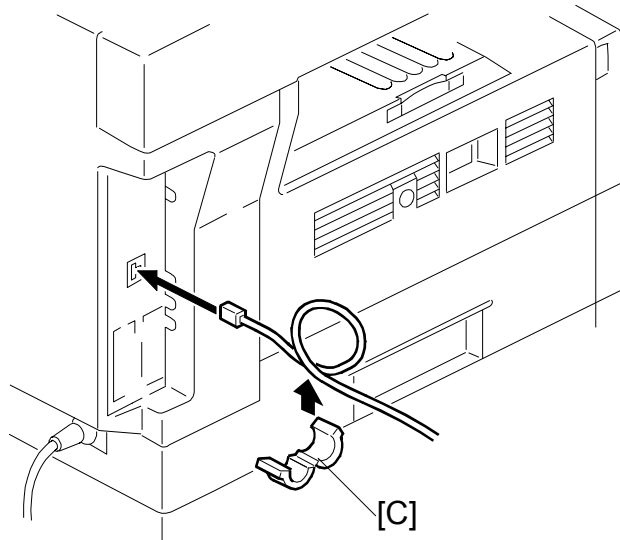
NOTE: Optional unit installation procedures can be found via the Table of Contents/Section 1 of this Service Manual.



30. Attach the ferrite core to the network cable when connecting the cable.

31. Connect a telephone line as necessary (per model configuration).

32. Plug in the machine and turn on the main power switch.



33. Select the language used in the operation panel as necessary ( > Language).
34. Make a full size copy, and check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations.

ATTENTION: The following steps are for the MFP model, the copier/facsimile model, and the copier/printer/scanner model ONLY:

35. Activate the SP mode ( 5.1.1)
36. Select Copy SP 5-302-002 (Time) and specify the time difference.
37. Quit the SP mode.
38. Activate the User Tools ().
39. Specify the date and time (System Settings > Timer Settings > Set Date/Set Time).
40. Quit the User Tools.
41. Activate the SP mode.
42. Select Copy SP5-307.
43. Specify the daylight-saving-time settings.
44. **(B129/B130/B168/B169 Only)** Exit the SP Mode now.
45. **B044/B045/B046 Only**
 1. 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.

2. **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.
3. **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.
4. Program the required items, as indicated below.
5. Exit the SP Mode now.

Initial Programming: Faxless models (B044, B045)

Items to Program (Service Level – SP Mode) ^{*1}	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) ^{*2}	User Tools
Display contrast	User Tools → System Settings
Energy saver level (low power mode)	
Reception mode	
Other items, as necessary	*2

*2: Refer to the Operating Instructions for details.

Initial Programming: Fax-equipped models (B046)

Items to Program (Service Level – Service Functions) ^{*3}	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) ^{*4}	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) ^{*5}	User Tools
Monitor volume	Fax Features → 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.

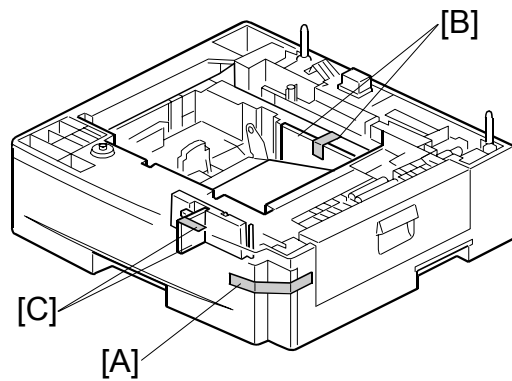
No.	Description	Q'ty
1	Paper-size decals	1 sheet
2	Installation Procedure (for service person)	1
3	Installation Procedure (for user)	1

1.3.2 INSTALLATION PROCEDURE

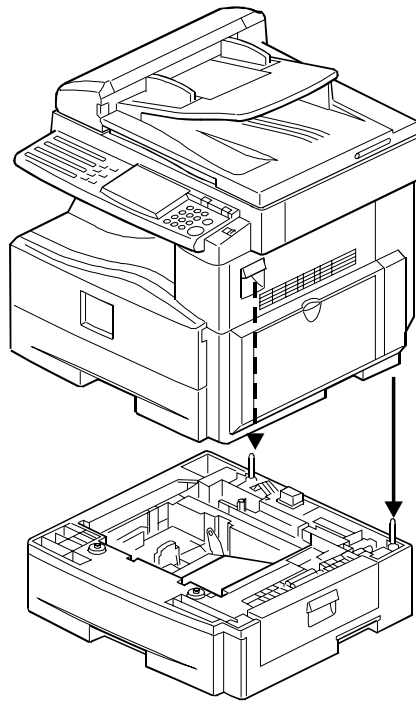
⚠ CAUTION

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

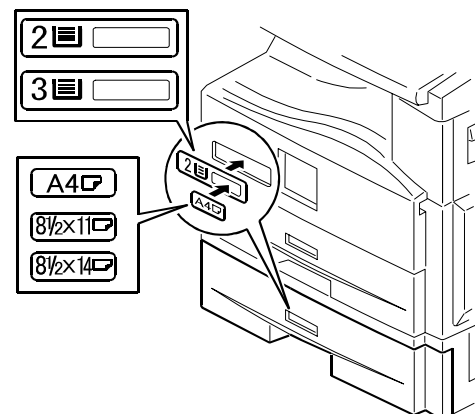
1. Remove the tape at [A], and the tape and cardboard at [B].
2. Pull the paper tray part way out of the unit, remove the tape and cardboard at [C], and push the tray back in.



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. Attach the appropriate tray-number decal and paper-size decal, at the locations indicated in the illustration.

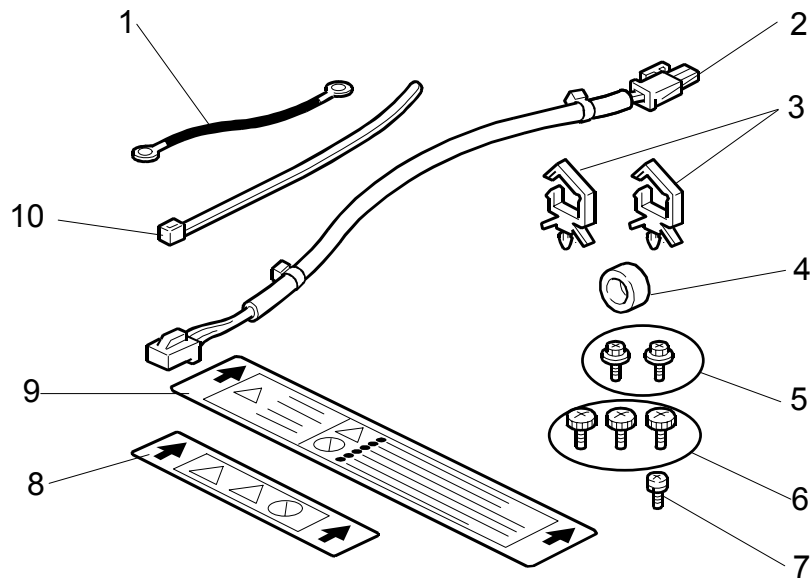


1.4 PAPER TRAY UNIT HEATER

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.

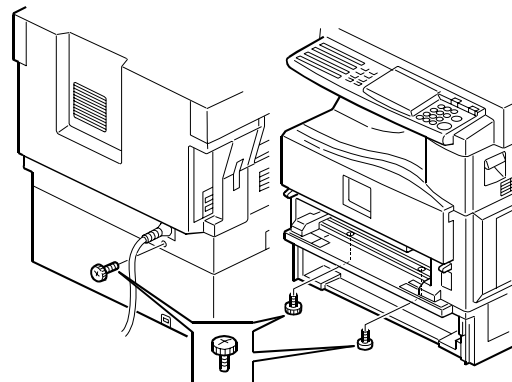
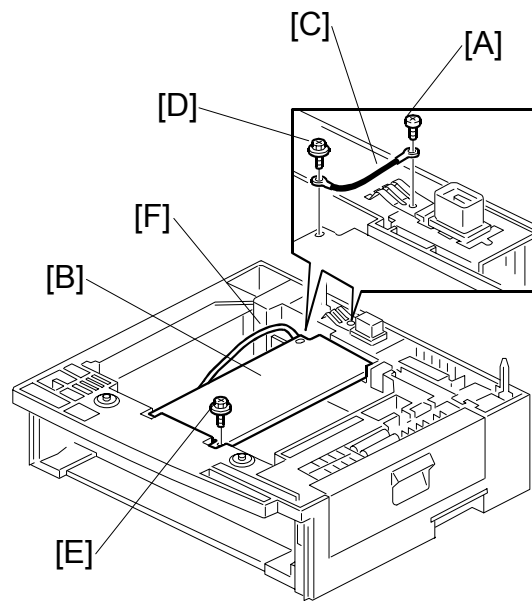
1. Remove the paper tray unit from the copier if it is already installed.
2. Remove the paper trays from the copier and from the paper tray unit.

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 (⌀ x 3). Note that [A] is the ground screw you removed in the previous step 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 are out of the way of the copier when you set it onto the paper tray unit.

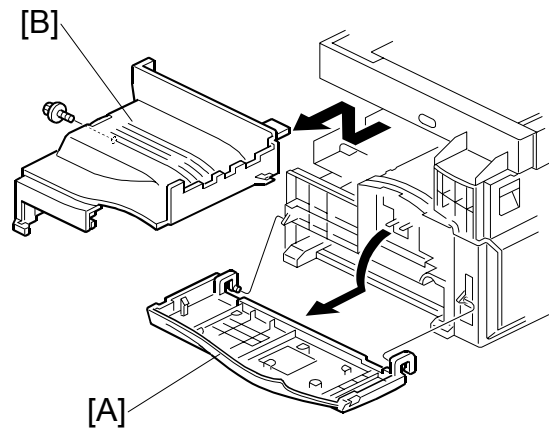
5. Set the copier onto the paper tray unit.

6. Screw the paper tray unit into place using three supplied PTU fastening screws.

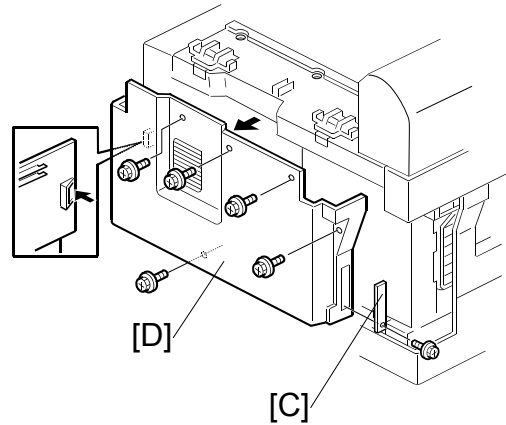


PAPER TRAY UNIT HEATER

7. Open the front door [A].
8. Remove the copy tray [B] (⚙️×1).
9. Close the front door.

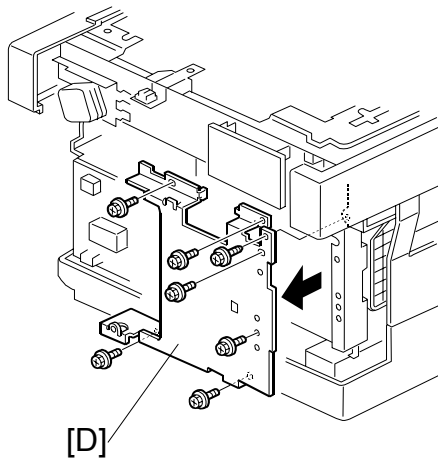


10. (B129/B130/B168/B169 Only) Remove the memory card cover [C] (⚙️ x 1).
11. Remove the rear cover [D] (⚙️ x 5).

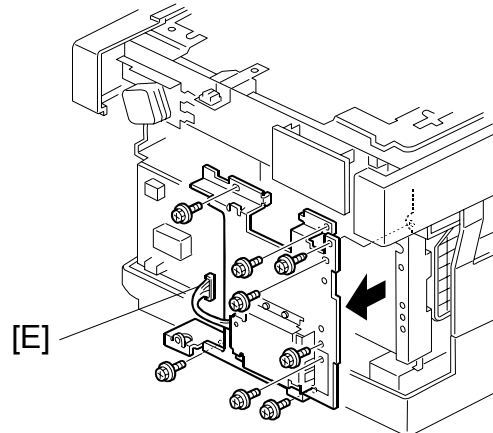


12. (B044/B045/B046 Only) Remove the FCU cover plate [D] (7 screws on faxless machines, 8 screws on fax-equipped machines).
- NOTE:** On fax-equipped machines, detach the NCU connector [E] first.

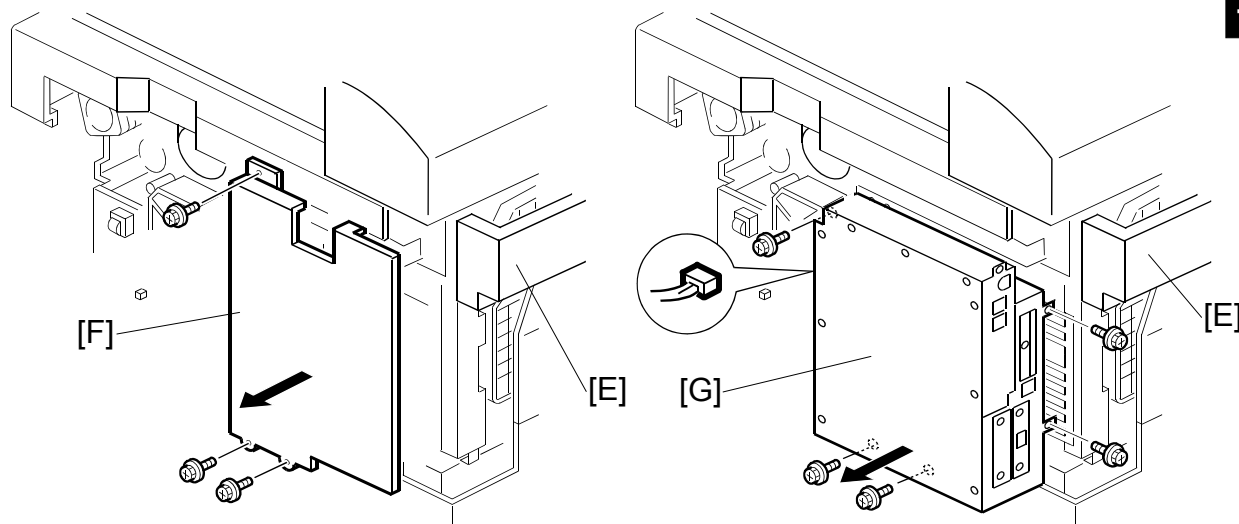
Faxless machines:



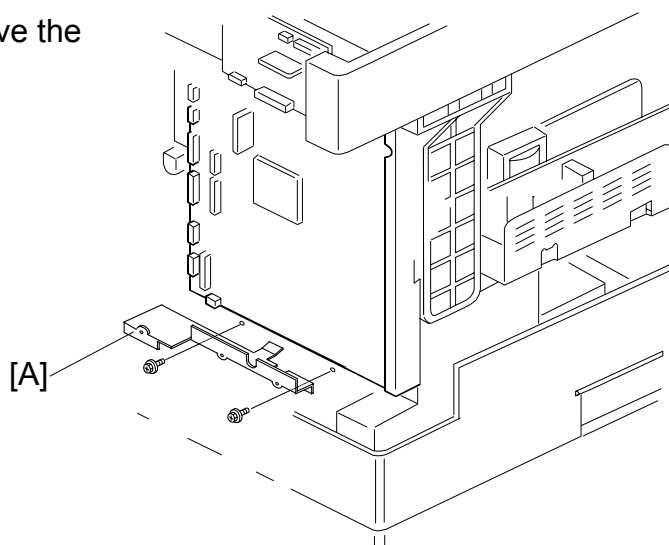
Fax-equipped machines:



13. (B129/B130/B168/B169) Remove the upper left cover [E]. Remove the BICU cover [F] (⌘ x 3) or the controller box [G] (⌘ x 1, ⌘ x 5).

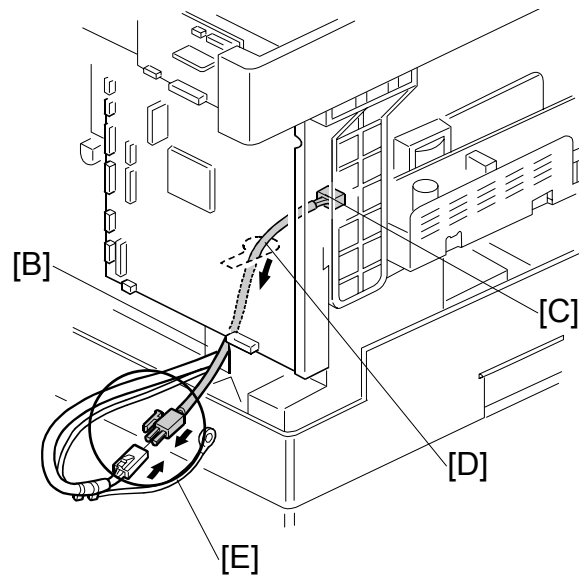


14. (B129/B130/B168/B169) Remove the support bracket [A] (⌘ x 2).

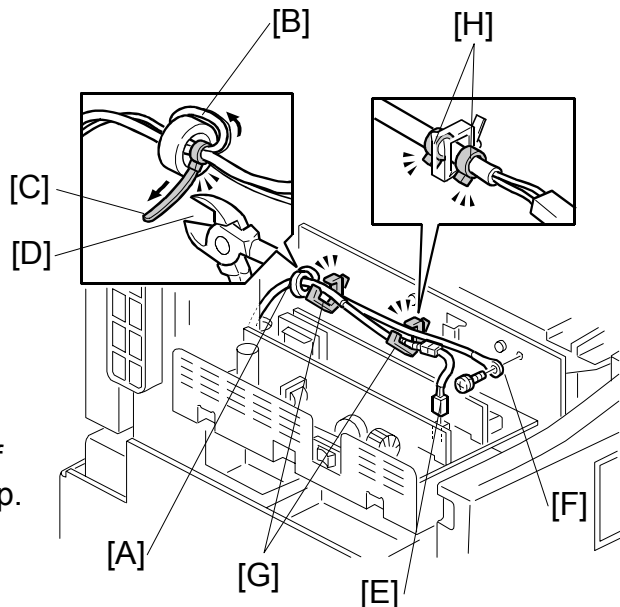


PAPER TRAY UNIT HEATER

15. Pass the heater harness through the hole [B] at the rear of the copier.
16. Pass relay harness [C] through the opening [D] (at the rear of the PSU) and through the other opening [B].
17. Connect the relay harness to the heater's harness [E].



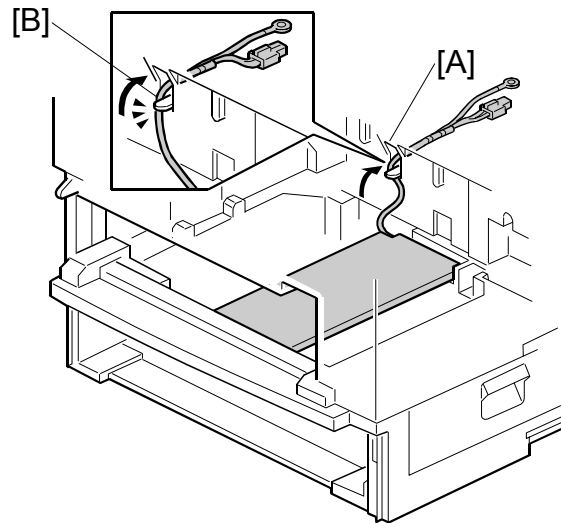
18. Pull the relay harness back into the copier.
19. Attach the ferrite core [A] over the relay harness.
20. Push the ferrite core back so that it is over the heater's harness.
21. Wrap the heater's harness once around the ferrite core [B].
22. Locate the ferrite core at the rear of the copier [A] behind the rear clamp.
23. Secure the ferrite core with the supplied tie wrap [C].
24. Clip off the excess length of the tie wrap [D].
25. Connect the relay harness connector [E] to the large connector at the front center of the PSU.
26. Screw the ground wire [F] to the PSU bracket with the included grounding screw.
27. Attach the clamps [G] to the PSU bracket.
28. Attach the heater harness through the clamps.
29. Position the harness so that the front clamp is between the two bindings [H] on the harness.
30. Fasten the clamps.



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

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

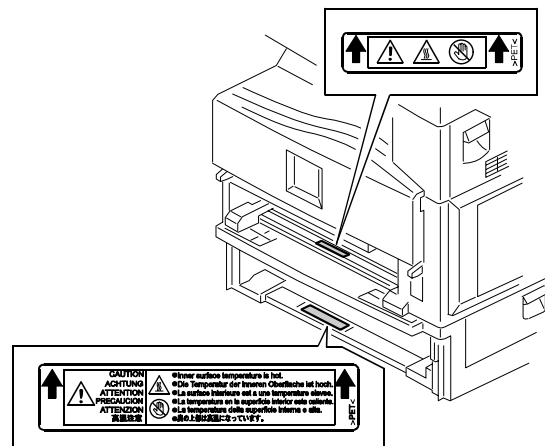
32. Arrange the excess harness length so that it sits beneath the FCU cover plate.



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

34. Reassemble the copier.

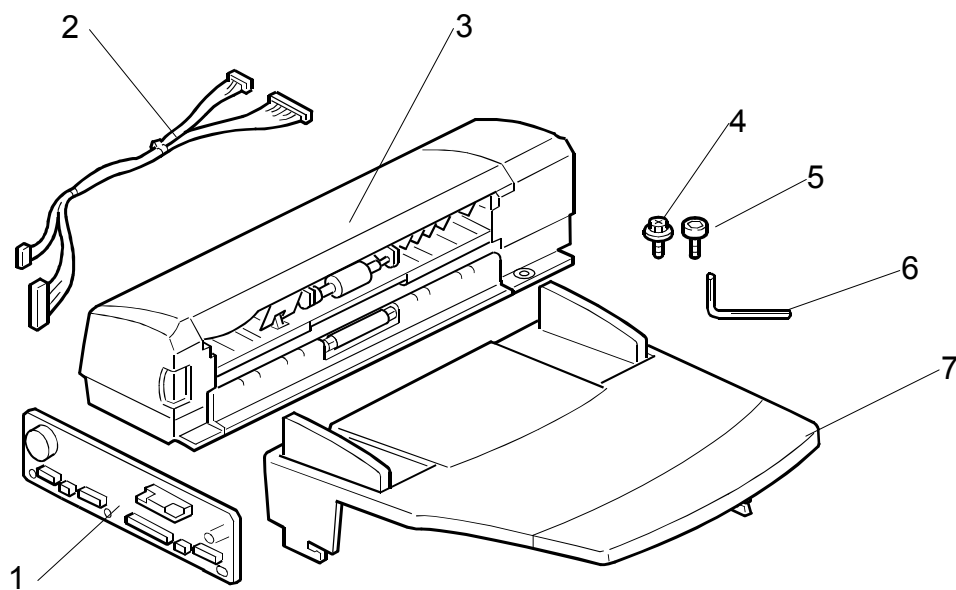
35. Plug in the power cord, and verify component operation.



1.5 DOCUMENT FEEDER (B129/B130/B168/B169)

1.5.1 ACCESSORY CHECK

No.	Description	Q'ty
1	ADF connection board	1
2	Cable	1
3	ADF body	1
4	Screw M3 x 6	2
5	Hex screw	4
6	Hex wrench	1
7	ADF original table	1
8	Installation procedure	1



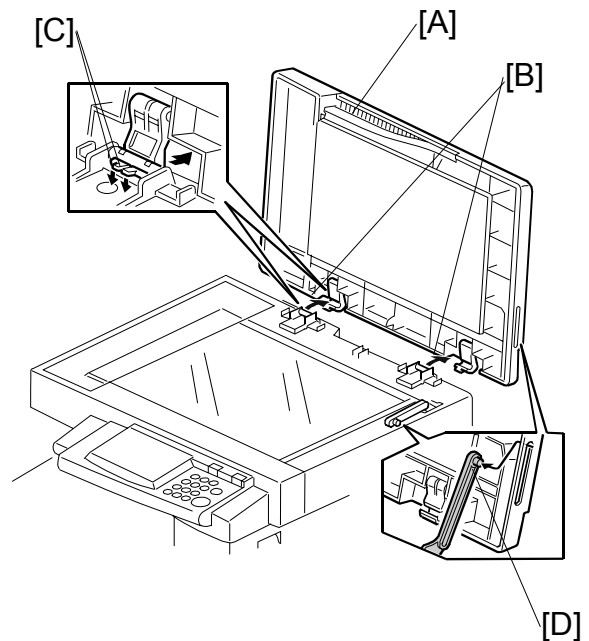
1.5.2 INSTALLATION PROCEDURE

CAUTION

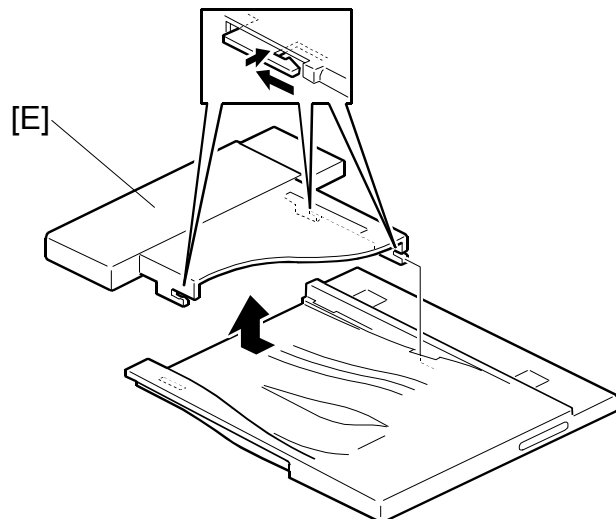
Unplug the main machine's power cord before starting the following procedure.

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

2. Lift the platen cover [A], unlatch the two latches [B] (press down on the tabs [C]), and detach the cover from the hook [D].



3. Push the left piece [E] to the left and pull it up and off.

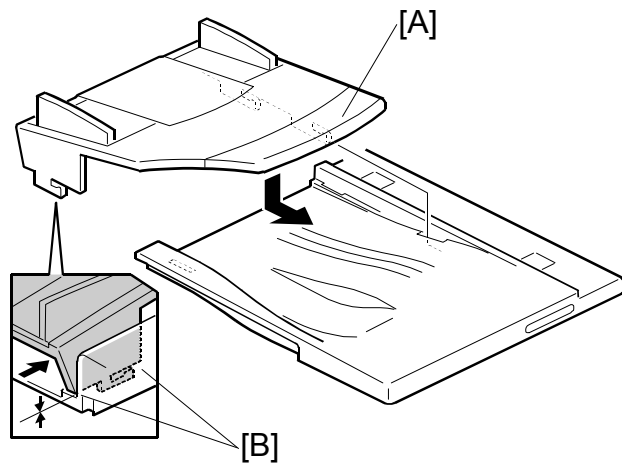


4. Place the ADF original table [A] on the platen cover.

5. Insert the three latches into the openings.

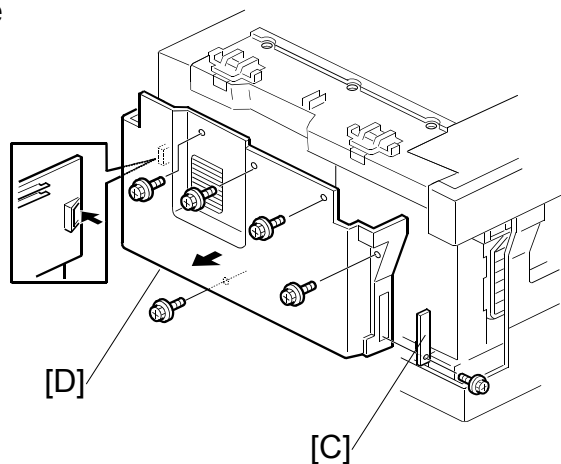
NOTE: The latches may break if you try to push the table in at an angle.

6. Make sure that the contact area [B] around each latch is flush against the cover.

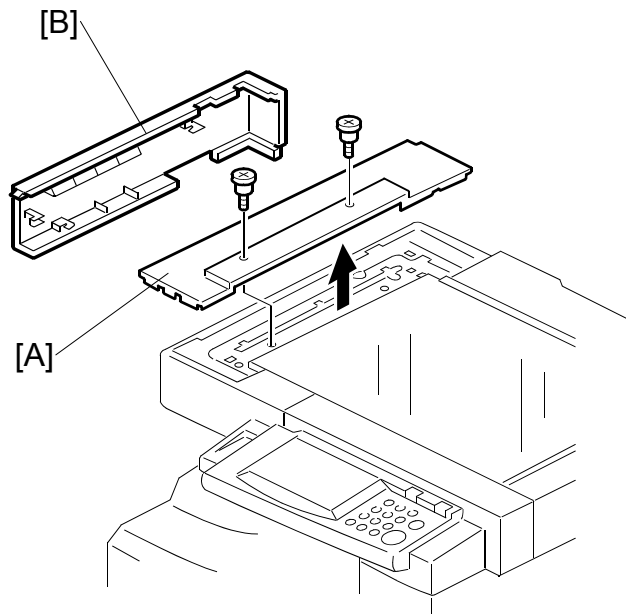


7. (B129/B130/B168/B169 Only) Remove the memory card cover [C] (⚙ x 1)

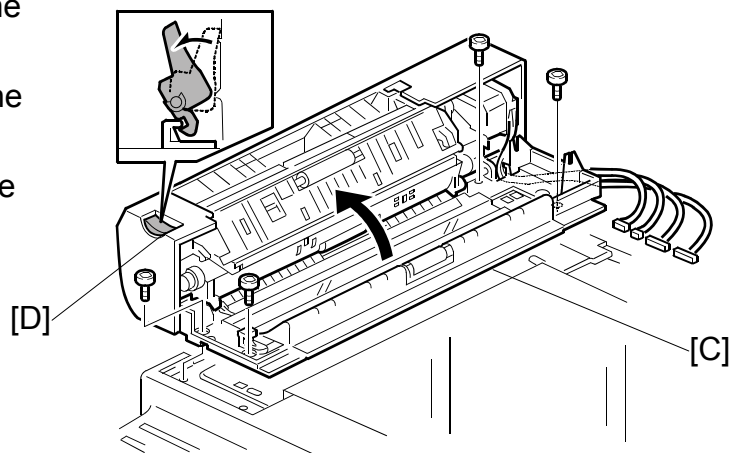
8. Remove the rear cover [D] (⚙ x 5).

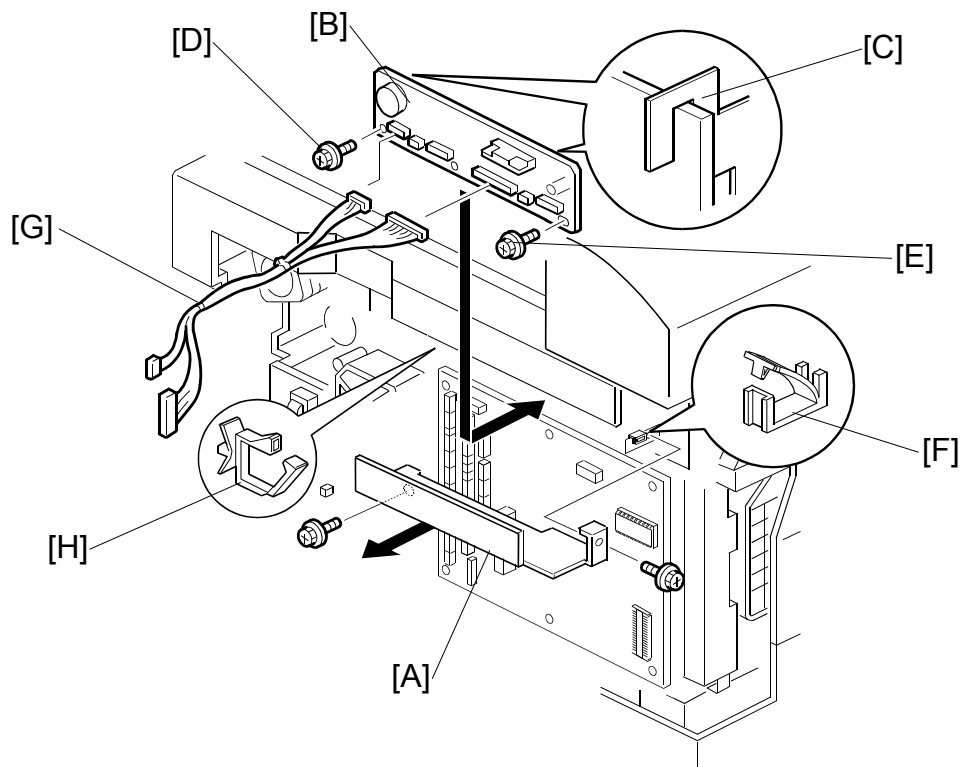


9. Remove the left scale plate [A] (⚙ x 2).
10. Remove the upper left cover [B].



11. Set the ADF body [C] onto the copier.
 12. Press the latch [D] to raise the top half of the body.
 13. Fasten the ADF body with the hex screws (⚙ x 4).
- NOTE:** Use the hex wrench.





For the B129/B130/B168/B169 Models: Use steps 14-21, Then proceed to step 25.

14. Remove the ADF connection board guard [A] (if installed) (⌀ x 2).

15. Insert the top of the ADF connection board [B] into the bracket [C].

16. Fasten the screw [D].

NOTE: Fasten this screw before fastening the other screw [E].

17. Fasten the screw [E].

18. Connect the cables on the ADF connection board:

- CN303
- CN306
- CN305
- CN307

19. Fix the cables with the clamp [F].

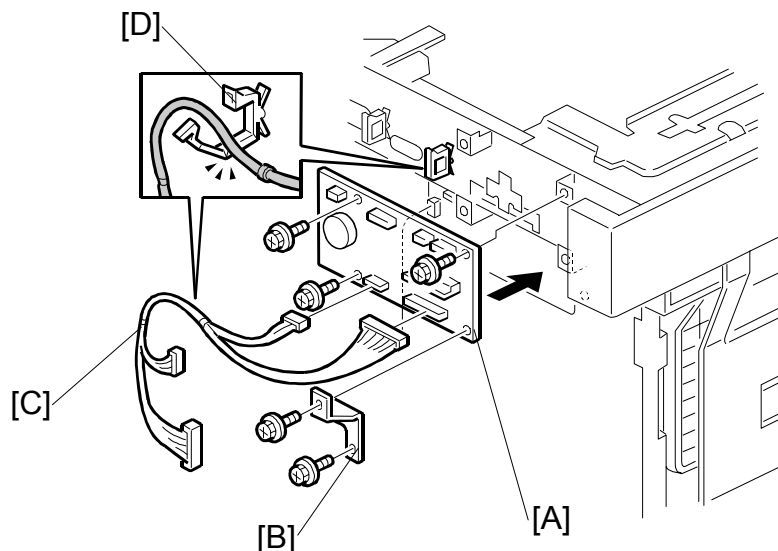
20. Connect the cables [G] between the ADF connection board and the BICU:

- ADF connection board CN302 ↔ BICU CN109
- ADF connection board CN301 ↔ BICU CN110

21. Fasten the cables with the clamp [H].

For the B044/B045/B046 Models: Use steps 22-24. Then proceed to step 25.

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



23. Connect the four wire sets from the DF body to CN103, CN105, CN106, and CN107 on the DF connection board. (Not shown in illustration.)

24. 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.

25. Reassemble the whole copier.

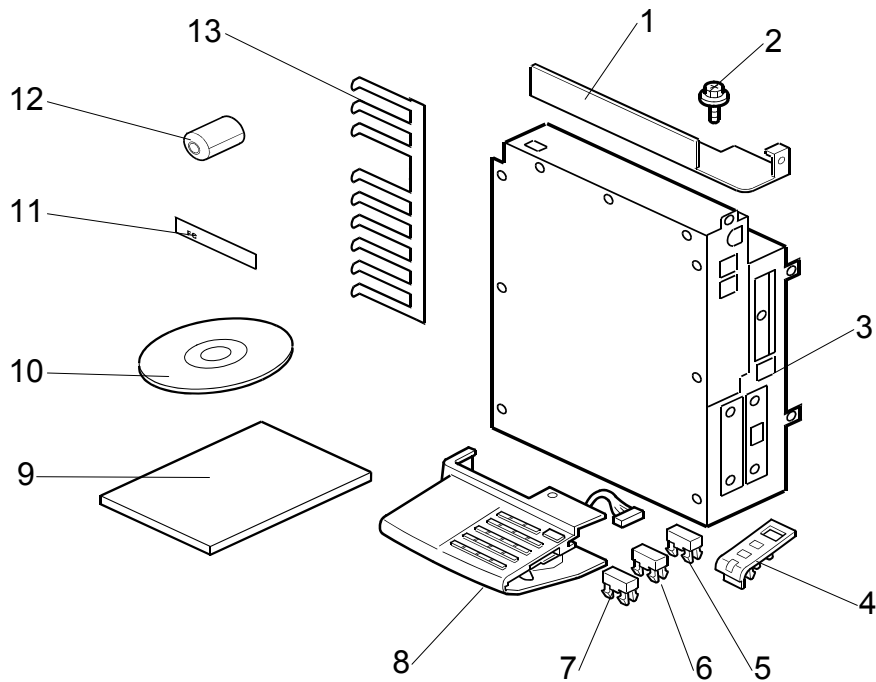
26. Plug in the power cord, and turn on the main switch.

27. Make a full-size copy from the paper tray using the ADF, and check the leading edge registration. Adjust the registration as necessary. (Registration adjustment procedures are located in Section 3 "Replacement and Adjustment" of this Service Manual.)

1.6 PRINTER SCANNER UNIT

1.6.1 ACCESSORY CHECK

No.	Description	Q'ty
1	ADF Connection Board Guard	1
2	Screw M3 x 6	9
3	Controller Box	1
4	Printer Panel	1
5	Printer Key	2
6	Copier Key	2
7	Scanner Key	2
8	Multi-function Panel	1
9	Operation Instruction (Book)	1
10	CD-ROM	1 set
11	FCC Decal (-15)	1
12	Ferrite Core	1
13	Ground Plate	1
14	Installation Procedure	1

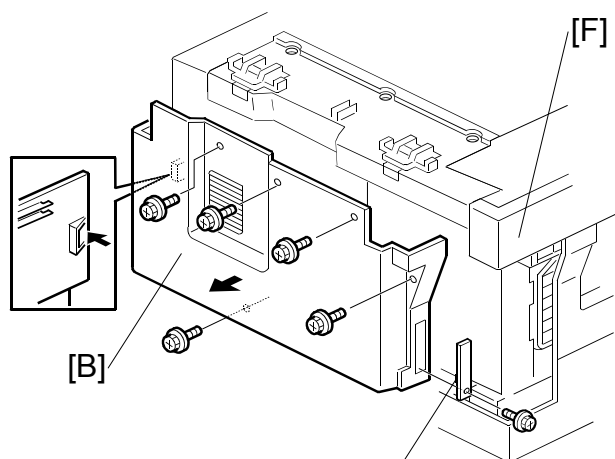


1.6.2 INSTALLATION PROCEDURE

⚠ CAUTION

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

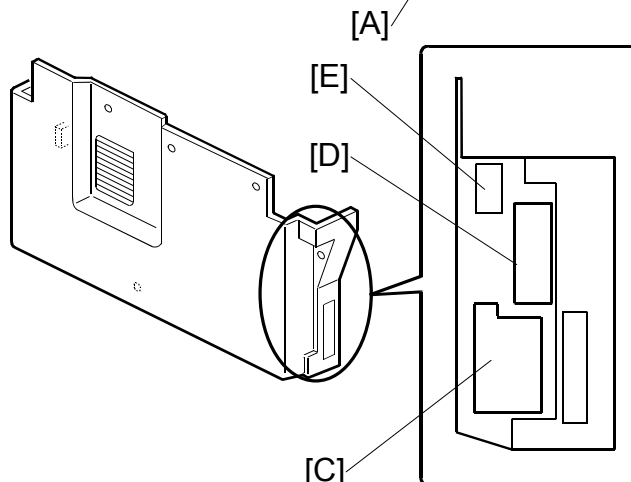
1. Remove the memory card cover [A] (⚙ x 1).
2. Remove the rear cover [B] (⚙ x 5).



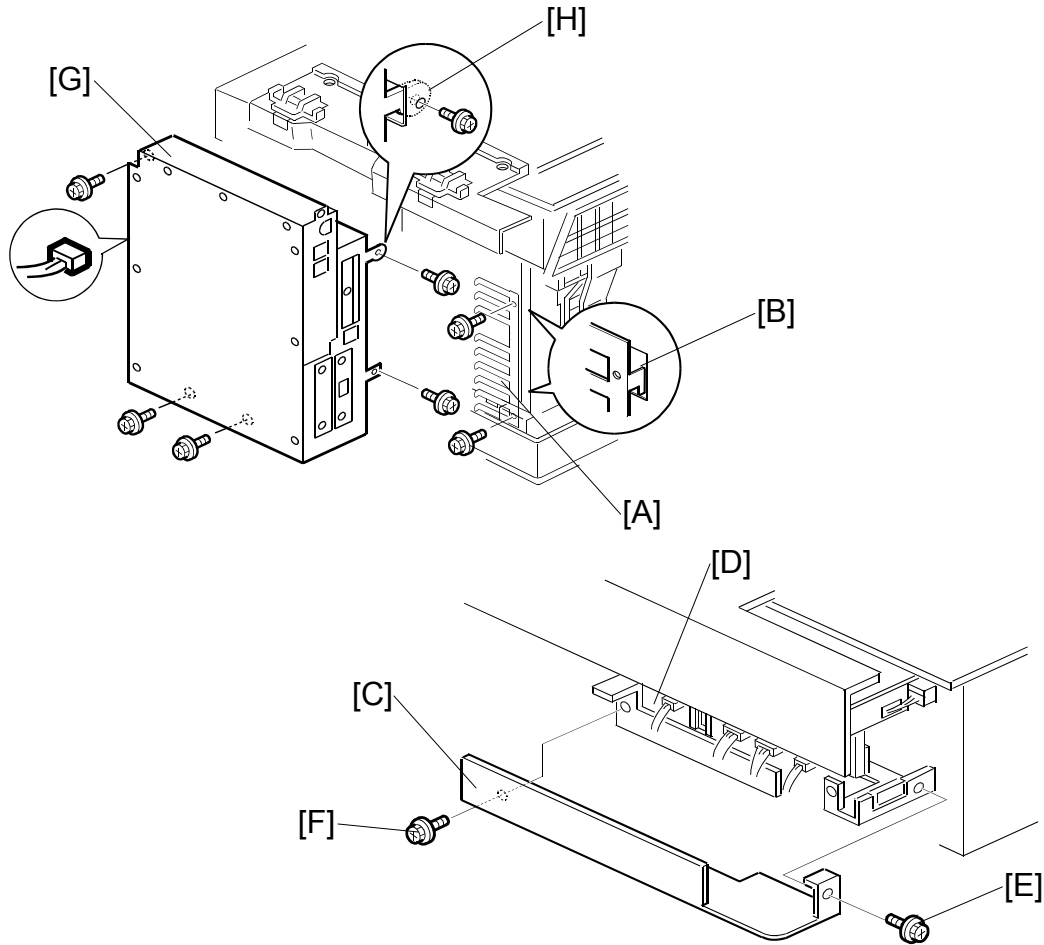
3. Cut the opening [C] on the rear cover. This opening is for the network interfaces.
4. Cut another opening [D] on the rear cover. This opening is for the SD card slot and the LAN cable.

NOTE: DO NOT cut the topmost opening [E] when the machine is the basic model (B129).

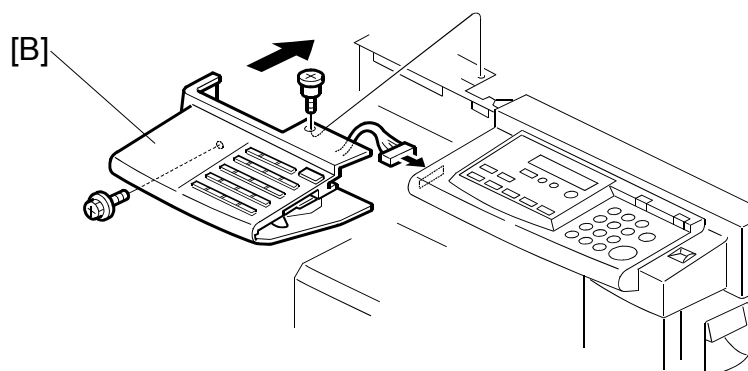
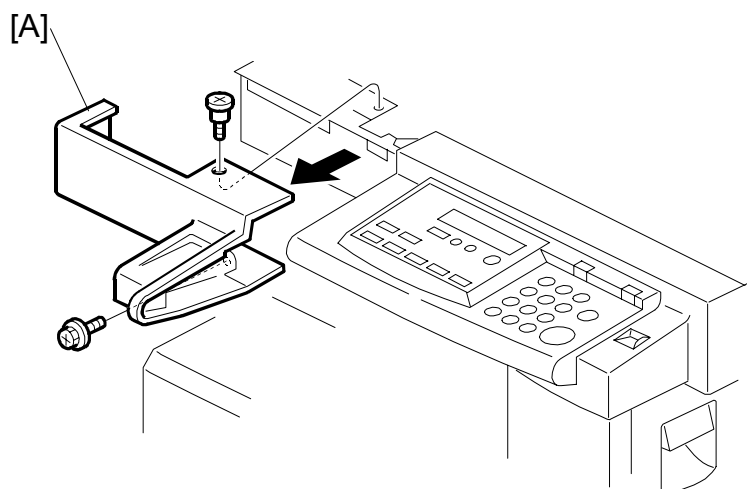
5. Remove the upper left cover [F].



PRINTER SCANNER UNIT



6. Install the ground plate [A] (⚙ x 2).
NOTE: Insert the upper and lower hooks in the openings [B], and fasten the upper screw first.
7. Attach connection board guard [C].
NOTE: The North America model (B129) has the ADF connection board [D].
8. Fasten the side screw [E].
9. Fasten the rear screw [F].
10. Install the controller box [G] (⚙ x 5, 📡 x 1).
NOTE: Insert the bracket [H] into the frame. The connector on the controller box engages with the connector on the BICU.
11. Install PostScript 3 as necessary.

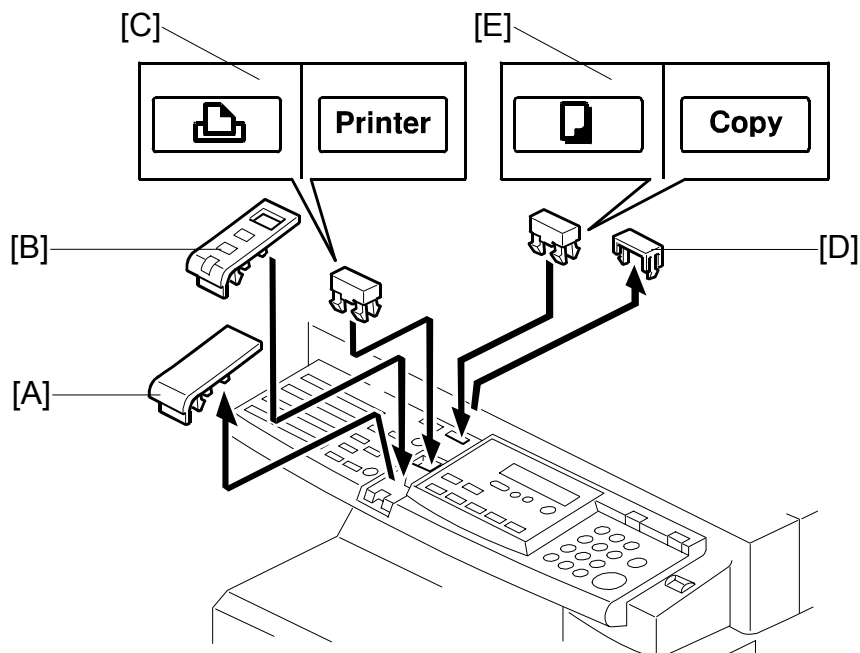


12. Remove the front left cover [A] (⌘ x 2).

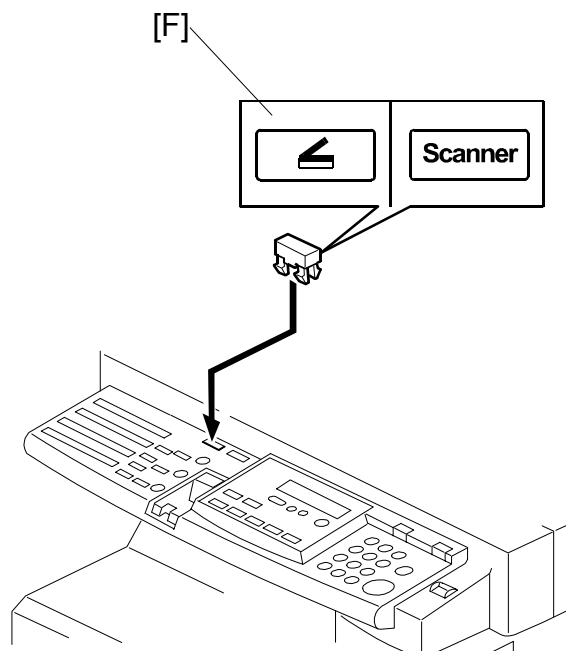
NOTE: Retain the screws and use them in the next step.

13. Install the multi-function panel [B] (⌘ x 1, ⌘ x 2).

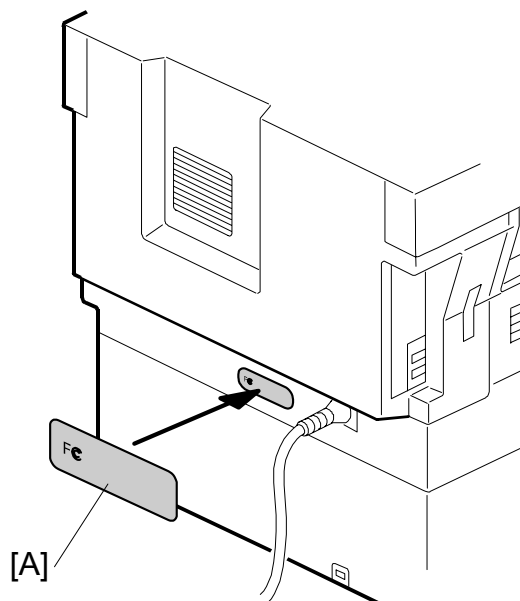
PRINTER SCANNER UNIT



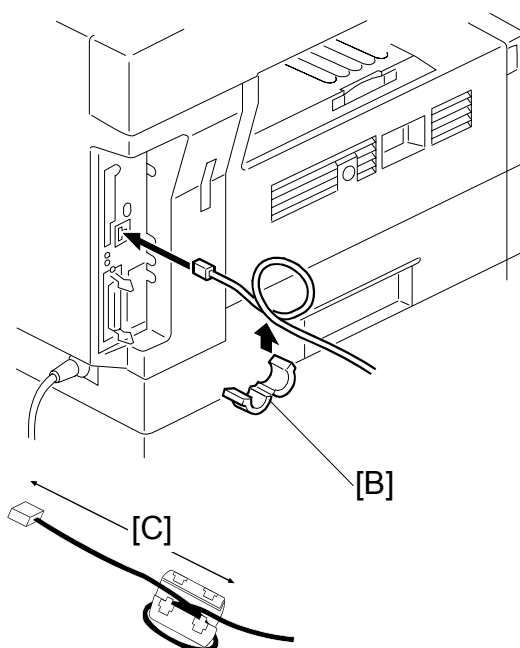
14. Remove the panel cover [A].
15. Remove the filament tape from the printer panel [B].
16. Install the printer panel.
17. Install one of the printer keys [C].
18. Remove the key cover [D].
19. Install one of the copier keys [E].
20. Install one of the scanner keys [F].



21. **For North America model only:**
Attach the FCC decal [A] to the rear side of the copier.
22. Reassemble the whole copier.

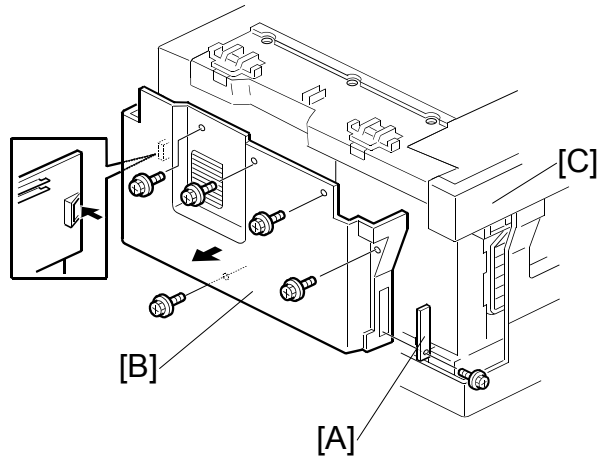


23. Attach the ferrite core [B] to the network cable and attach the cable to the copier if a network cable is used. The end of the ferrite core must be about 15 cm (6") from the end of the cable [C].
24. Plug in the power cord, and turn on the main switch.
25. Verify unit operation.

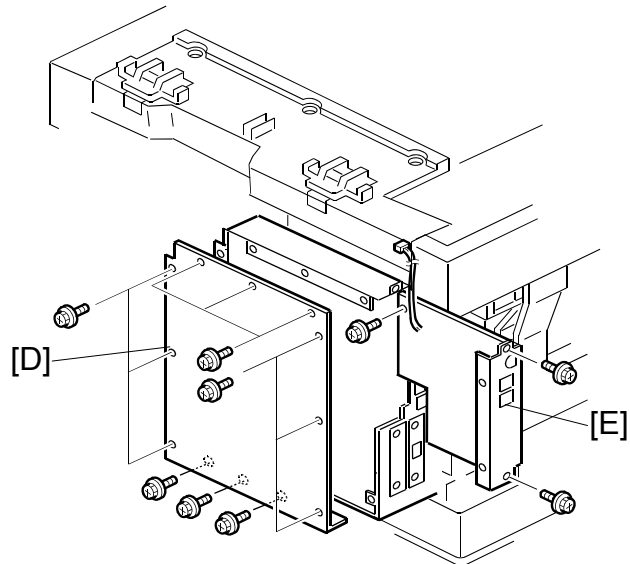


1.7 POSTSCRIPT 3

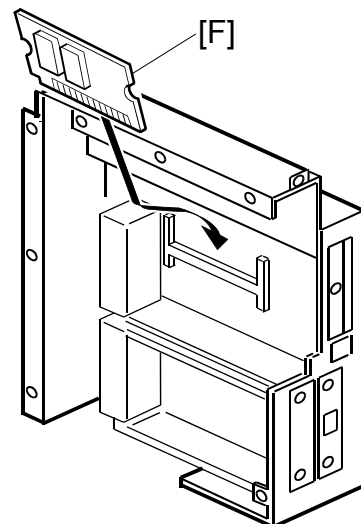
1. Remove the memory card cover [A] (⚙ x 1).
2. Remove the rear cover [B] (⚙ x 5).
3. Remove the upper left cover [C] if the fax control unit is installed.



4. Remove the controller box cover [D] (⚙ x 12).
5. Remove the fax control unit (if installed) [E] (⚙ x 1, ⚙ x 3).



6. Install the PostScript 3 emulation board [F].
7. Reassemble the copier.
8. Plug in the power cord, and turn on the main switch.
9. Verify unit operation.



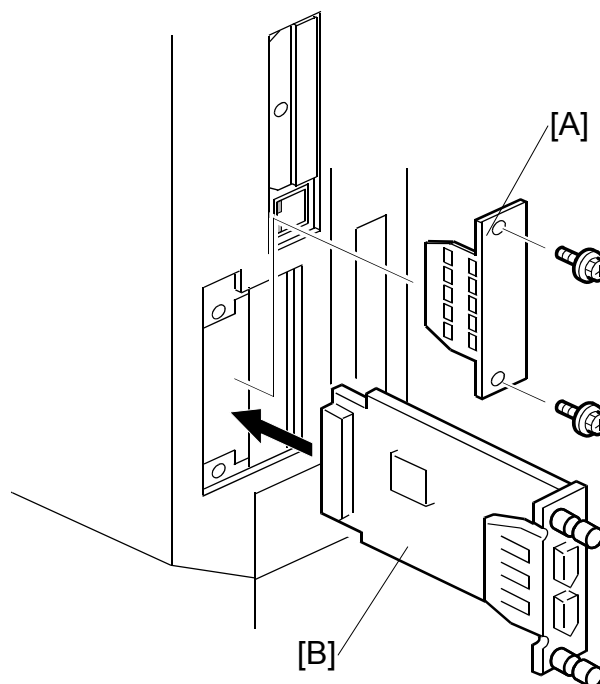
1.8 IEEE 1284/IEEE 1394/BLEETOOTH INTERFACE

⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

NOTE: 1) To install an optional network interface, the Printer/Scanner Option is required.
2) One slot is available. You can install **only one** of the following: IEEE 1284 interface, IEEE 1394 interface, wireless LAN interface, or Bluetooth interface.

1. Remove the slot cover [A] (⚙ x 2).
2. Install the interface board [B] (⚙ x 2).



1.9 WIRELESS LAN

1.9.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

No.	Description	Q'ty
1	Wireless LAN card	1
2	Wireless LAN card cover	1
3	Wireless LAN board	1

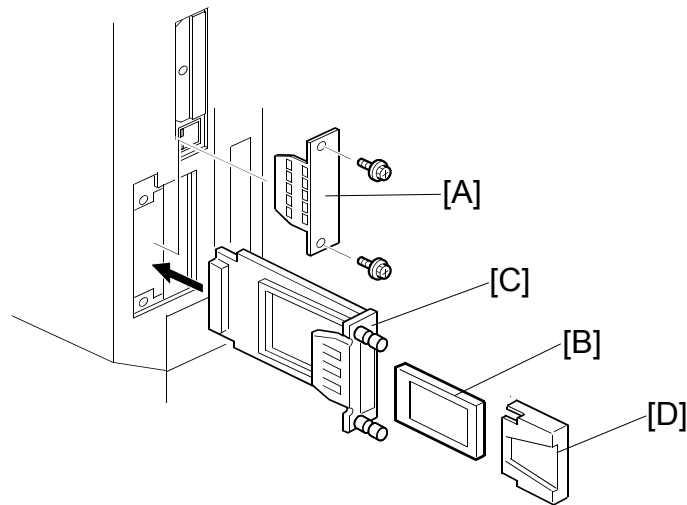
1.9.2 INSTALLATION PROCEDURE

⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

NOTE: 1) To install an optional network interface, the Printer/Scanner Option is required.

2) One slot is available. You can install **only one** of the following: IEEE 1284 interface, IEEE 1394 interface, wireless LAN interface, or Bluetooth interface.



1. Remove the slot cover [A] (⚙ x 2).
2. Turn the card face [B] to the front side of the copier, and insert it into the wireless LAN (IEEE 802.11b) board [C].
3. Install the wireless LAN board (with the card) to the slot (⚙ x 2).
4. Attach the cover [D].
5. If reception is poor, you may need to move the machine:
 - Ensure that the machine is not located near an appliance or any type of equipment that can generate a strong magnetic field.
 - Position the machine as close as possible to the access point.

UP Mode Settings for Wireless LAN

Enter the UP mode and follow the procedure below to perform the initial interface settings for IEEE 802.11b. These settings take effect every time the machine is powered on.

NOTE: The wireless LAN cannot be used if Ethernet is being used.

1. Press the User Tools/Counter key.
2. On the touch panel, press System Settings.
NOTE: The Network I/F (default: Ethernet) must be set for either Ethernet or wireless LAN.
3. Select Interface Settings → Network (tab) → LAN Type
4. Select either “Ethernet” or “IEEE 802.11b”.
5. Press IEEE 802.11b. Only the wireless LAN options are displayed.
6. **Transmission Mode.** Select either “Ad Hoc Mode” or “Infrastructure Mode”.
7. **SSID Setting.** Enter the SSID setting. (The setting is case sensitive.)
8. **Channel.** This setting is required when Ad Hoc Mode is selected.
 Range: 1 ~ 14 (default: 11)
NOTE: The allowed range for the channel settings may vary for different countries.
9. **WEP (Privacy) Setting.** The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There are 64 bit and 128 bit WEP keys.
 Range of Allowed Settings:
 64 bit 10 characters
 128 bit 26 characters
10. **Bandwidth Status.** This setting is enabled only for the Infrastructure Mode.
 Press here to display the current status of the bandwidth. One of the following is displayed to reflect the reception status of the wireless LAN:

Good	76 ~ 100%
Fair	41 ~ 75%
Poor	21 ~ 40%
Unavailable	0 ~ 20%

WIRELESS LAN

11. **Transmission Speed.** Press the Next button to display more settings, then select the transmission speed for the mode: Auto, 11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps (default: Auto). This setting should match the distance between the closest machine or access point, depending upon which mode is selected.

NOTE: For the Ad Hoc Mode, this is the distance between the machine and the closest PC in the network. For the Infrastructure Mode, this is the distance between the machine and the closest access point.

11 Mbps	140 m (153 yd.)
5.5 Mbps	200 m (219 yd.)
2 Mbps	270 m (295 yd.)
1 Mbps	400 m (437 yd.)

12. To initialize the wireless LAN settings, use page 2/2 on the display panel. Press Execute to initialize the following settings:

- Transmission mode
- Channel
- Transmission Speed
- WEP
- SSID
- WEP Key

SP Mode Settings for IEEE 802.11b Wireless LAN

The following SP commands can be set for IEEE 802.11b

SP No.	Name	Function
5840 004	SSID	Used to confirm the current SSID setting.
5840 006	Channel MAX	Sets the maximum range of the channel settings for the country.
5840 007	Channel MIN	Sets the minimum range of the channels settings allowed for your country.
5840 011	WEP Key Select	Used to select the WEP key (Default: 00).
5840 018	SSID Check	Used to check the SSID.
5840 020	WEP Mode	Used to display the maximum length of the string that can be used for the WEP Key entry.

1.10 BLUETOOTH

1.10.1 ACCESSORY CHECK

Check the quantity and condition of the accessories.

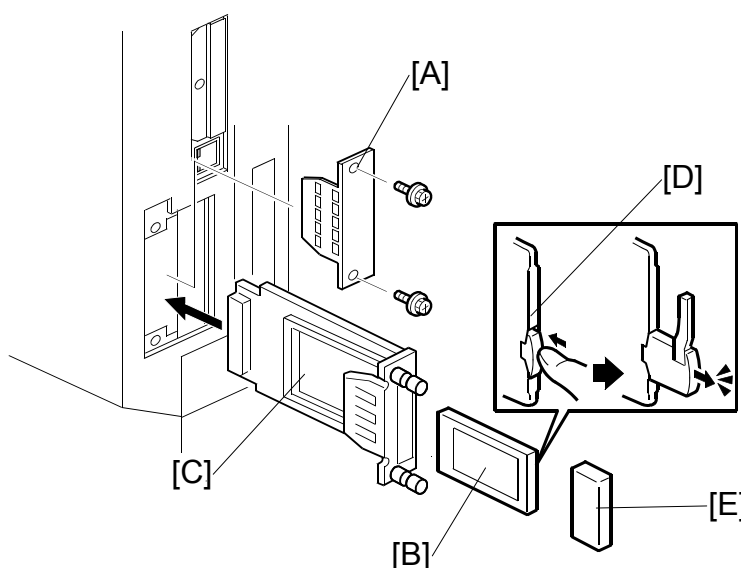
No.	Description	Q'ty
1	Bluetooth card	1
2	Bluetooth card cover	1
3	Bluetooth board	1

1.10.2 INSTALLATION PROCEDURE

⚠ CAUTION

Unplug the machine power cord before starting the following procedure.

NOTE: 1) To install an optional network interface, the Printer/Scanner Option is required.
 2) One slot is available. You can install **only one** of the following: IEEE1394 interface, IEEE 1394 interface, wireless LAN interface, or Bluetooth interface.



1. Remove the slot cover [A] (⚙ x 2).
2. Turn the card [B] to the front side of the copier, and insert it into the Bluetooth board [C].
3. Install the Bluetooth board (with the card) to the slot (⚙ x 2).
4. Press the antenna [D] to extend it.
5. Attach the cover [E].

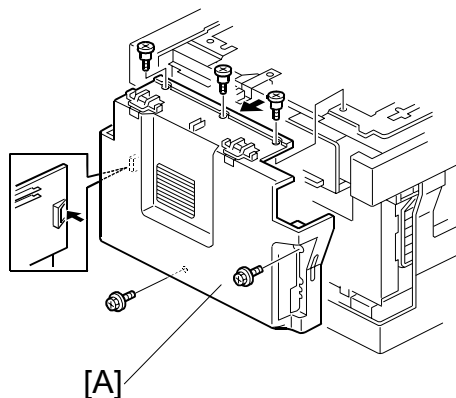
1.11 DIMM (B044/B045/B046 MODELS ONLY)

1.11.1 INSTALLATION PROCEDURE

CAUTION

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

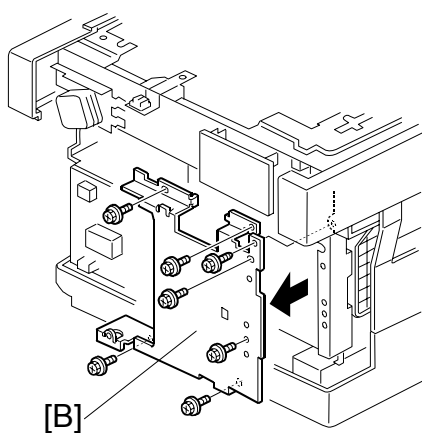
26. Remove the rear cover [A] (⌀ x 5).



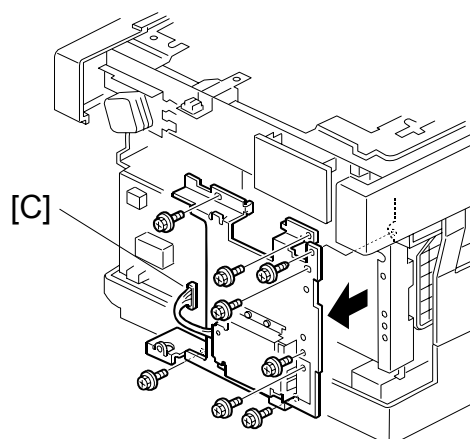
27. Remove the FCU cover plate [B] (7 screws on faxless machines, 8 screws on fax-equipped machines).

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

Faxless machines:

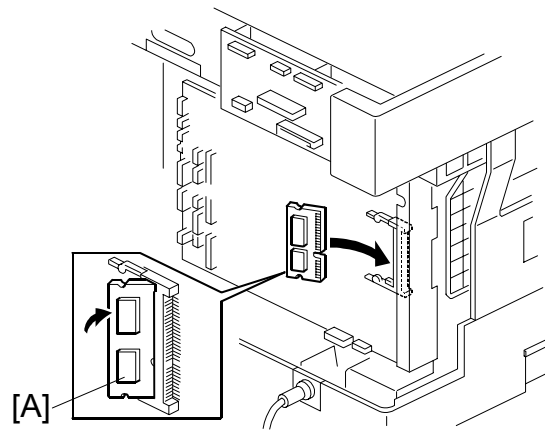


Fax-equipped machines:



DIMM (B044/B045/B046 MODELS ONLY)

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



Installation

PREVENTIVE MAINTENANCE

2. PREVENTIVE MAINTENANCE

2.1 PM TABLES

IMPORTANT: Reset the PM counter (SP7-804-001) after completing all maintenance activities (➡ 2.2).

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

	Every 45k	Every 90k	AN	NOTE
OPTICS				
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
DRUM AREA				
PCU	R			Clean toner-bottle holder.
Transfer roller		R		
Discharge plate		R		
PAPER FEED				
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.
FUSING UNIT				
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

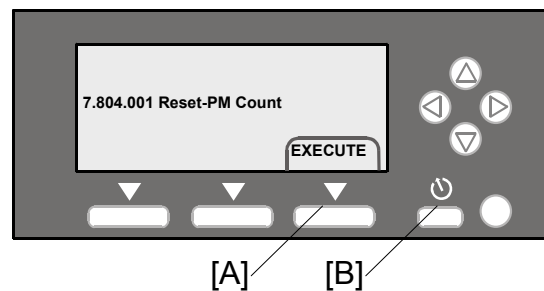
	Every 90k	AN	NOTE
ADF			
Separation roller	R	C	Water or alcohol
Pick-up roller	R	C	Water or alcohol
Feed roller	R	C	Water or alcohol
White plate		C	Water or alcohol
DF exposure glass		C	Water
Rollers R0, R1, R2		C	Water or alcohol

	Every 120k	AN	NOTE
PAPER TRAY UNIT			
Paper feed roller	R		
Bottom-plate pad		C	Dry cloth
Friction pad	R		

2.2 HOW TO CLEAR THE PM COUNTER

Reset the PM counter after completing all maintenance activities.

1. Activate the SP mode.
2. Select SP7-804-001.
3. Press the EXECUTE key [A]. The message "Completed" is displayed when the program ends normally. An error message is displayed if the program ends abnormally.
4. Press the ⏻ (cancel) key [B] to end the program.



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 replacement.

Before turning off the main power switch, check that no mechanical component is operating. Mechanical components may stop out of their home positions if you turn off the main power switch while they are operating. The component may be damaged if you try to remove it when it is not in the home position.

3.1.2 LITHIUM BATTERIES

CAUTION: Lithium Batteries

Incorrect replacement of lithium battery(s) on the controller or on the fax unit 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 HALOGEN-FREE CABLE

CAUTION

Use extreme caution while handling cables.

To comply with local regulations, halogen-free cables are used in this machine. Halogen-free cables are environment-friendly, but no stronger than conventional cables. These cables may be damaged in any of the following cases:

- The cable is caught between hard objects such as brackets, screws, PCBs, and exterior covers.
- The cable is rubbed on a hard object such as brackets, screws, PCBs, and exterior covers.
- The cable is scratched with a hard object such as brackets, screws, PCBs, exterior covers, screwdrivers, and fingernails.

3.1.4 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.

PRECAUTIONS

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.

3.1.5 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.

3.1.6 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.

3.1.7 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.

3.1.8 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.

3.1.9 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.

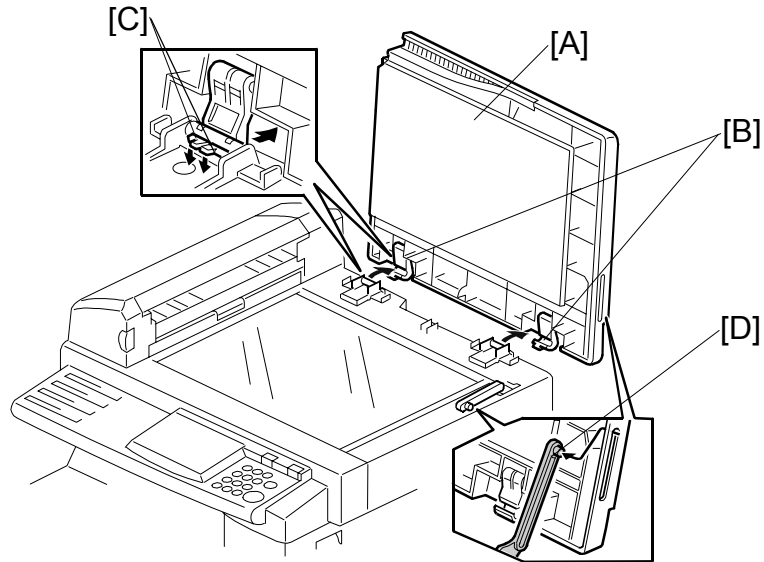
3.2 SPECIAL TOOLS AND LUBRICANTS

Part Number	Description	Q'ty
A1849501	Optics Adjustment Tools (2 pcs/set)	1 set
A2929500	Test Chart – S5S (10 pcs/set)	1 set
VSSM9000	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
B6455010	SD Card Assy	1
B6456700	SD Card Adapter BN-SDAA2	1
B6456800	SD Card USB Writer BN-SDCE2	1

Replacement
and
Adjustment

3.3 EXTERIOR COVER AND OPERATION PANEL

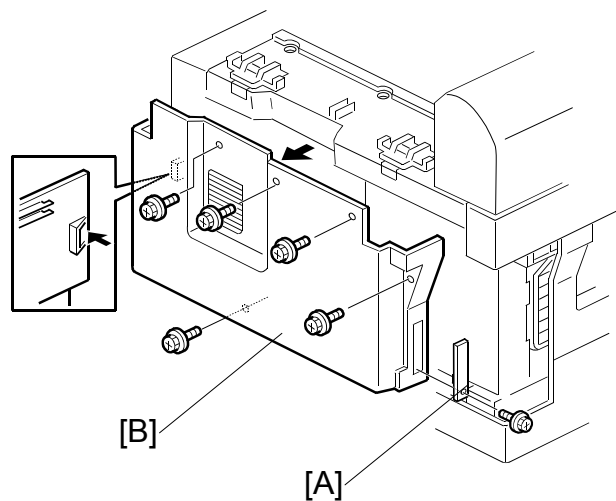
3.3.1 PLATEN COVER



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. Memory card cover [A] (⌀ x 1)
2. Rear cover [B] (⌀ x 5)

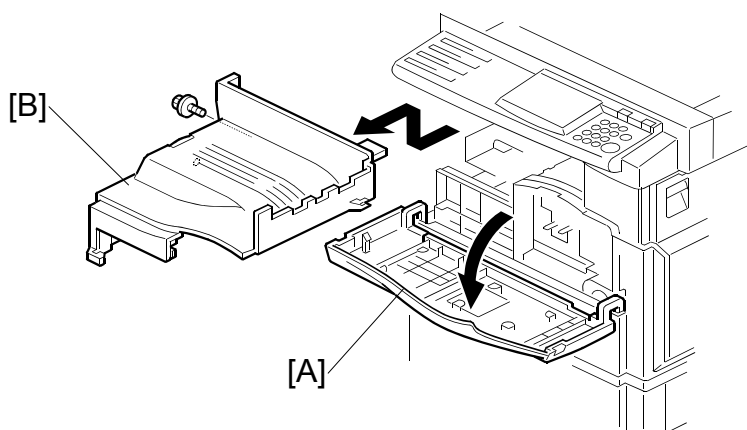


3.3.3 COPY TRAY

⚠ CAUTION

Ensure that the cables under the copy tray are in place before reassembling the copier. If these cables are caught between the copy tray and the inner cover, they may be severely damaged.

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



Replacement
and
Adjustment

Reassembling

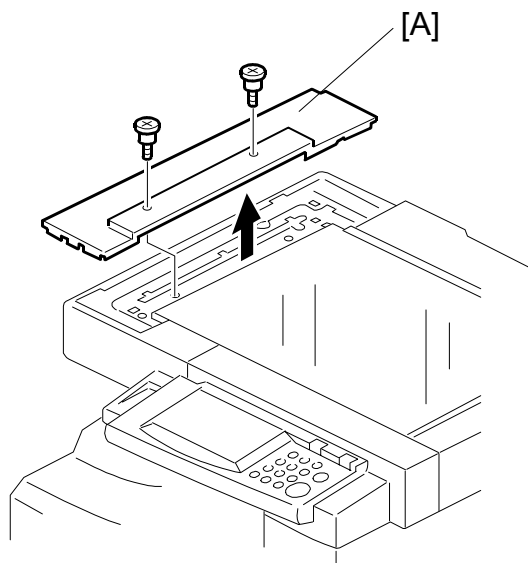
There are several cables under the front end of the copy tray. To set these cables in place, gently pull these cables to the left-hand side (toward the PSU) and hold them there as you attach the copy tray.

3.3.4 SCALE PLATE

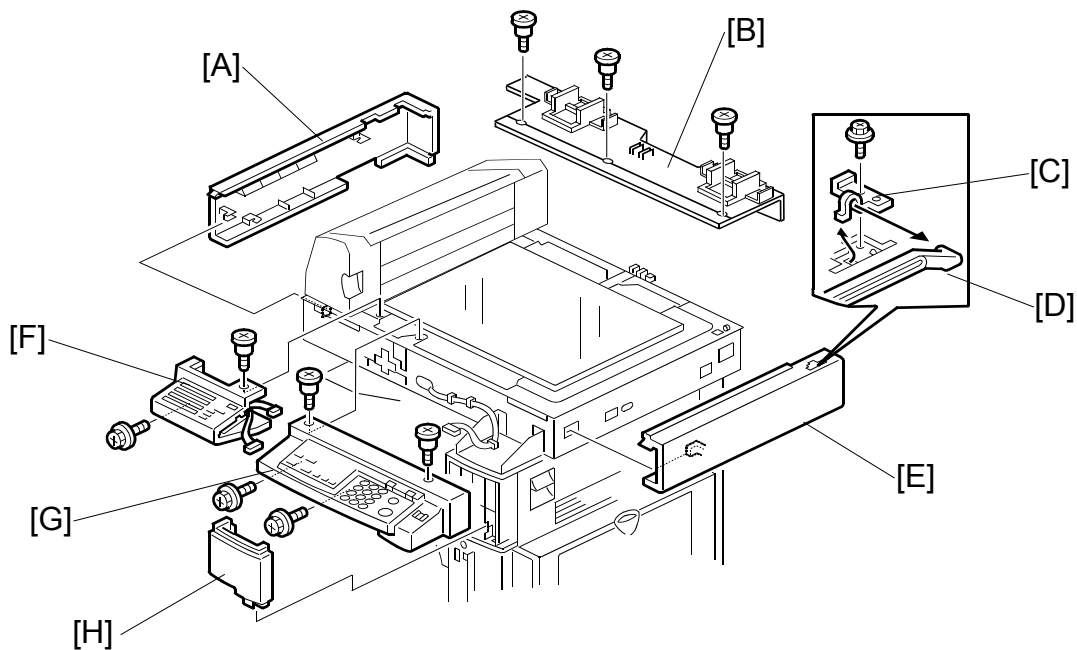
NOTE: The scale plate is for the following models **ONLY**:

- The copier/printer/scanner model (B169)
- The basic model (B129) in Europe
- The B044 and B045 models.

1. Scale plate [A] (⚙ x 2)



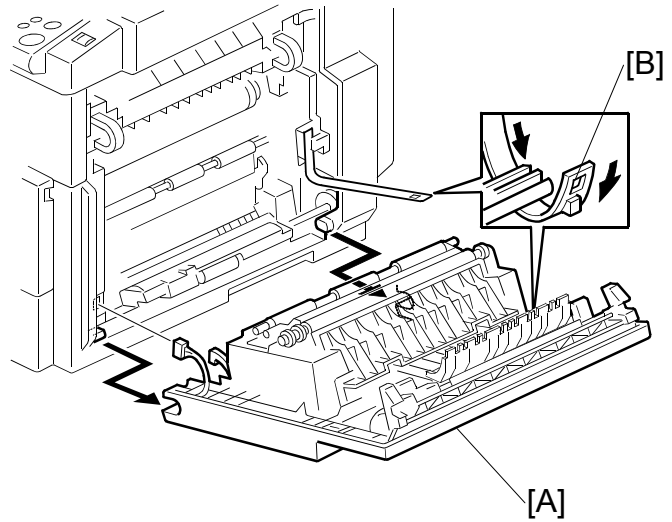
3.3.5 OPERATION PANEL AND UPPER COVERS



1. Rear cover (☛ 3.3.2)
2. Slide the upper left cover [A] to the rear.
3. (B129/B130/B168/B169) Rear scale [B] (🔩 x 3)
4. Remove the metal fitting [C] (🔩 x 1), and the platen-cover arm [D].
5. Slide the upper right cover [E] to the rear.
6. Front left cover [F] (basic model [B129]: 🔩 x 2) or multi-function panel (other models [B130/B168/B169]: 🔩 x 2, 📏 x 2)
NOTE: Model B130 is shown in the illustration above.
7. Operation panel [G] (🔩 x 4, 📏 x 1)
8. Front right cover [H]

3.3.6 RIGHT DOOR

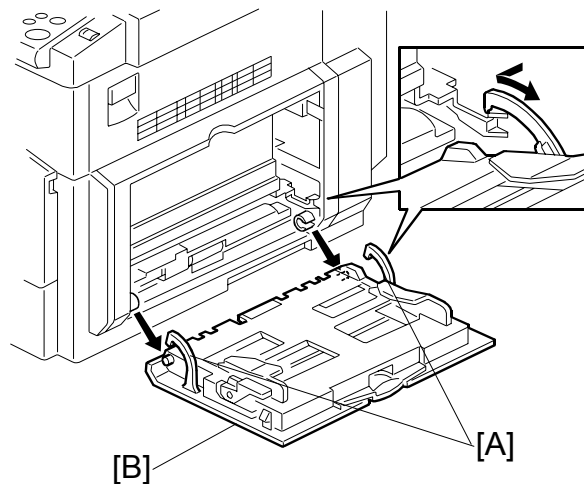
1. Open the right door [A].
2. Release the strap [B].
3. Right door (🔌 × 1)



3.3.7 BYPASS TRAY

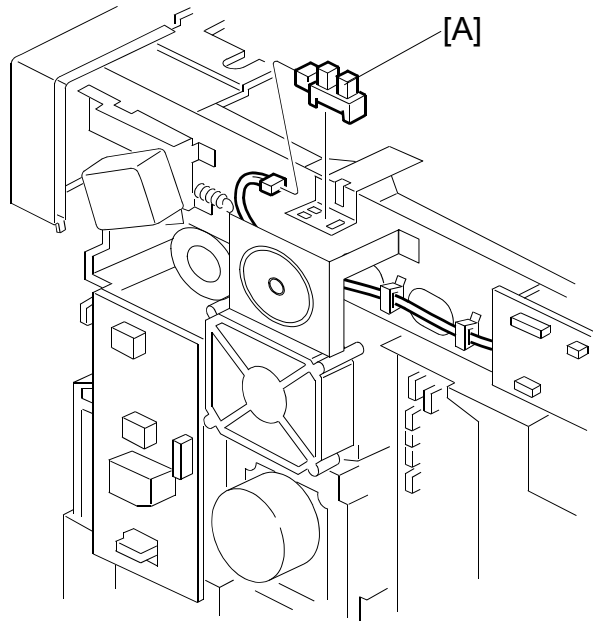
NOTE: Procedure not applicable to Model B045.

1. Press the stopper rails [A] inward.
2. Remove the bypass tray [B].



3.3.8 PLATEN COVER SENSOR

1. Rear cover (☞ 3.3.2)
2. (B129/B130/B168/B169) Rear scale (☞ 3.3.5)
3. Platen cover sensor [A] (☞  × 1)



3.4 SCANNER UNIT

NOTE: To clean the mirrors and lenses, always use only a blower brush or wet cotton.

3.4.1 EXPOSURE GLASS

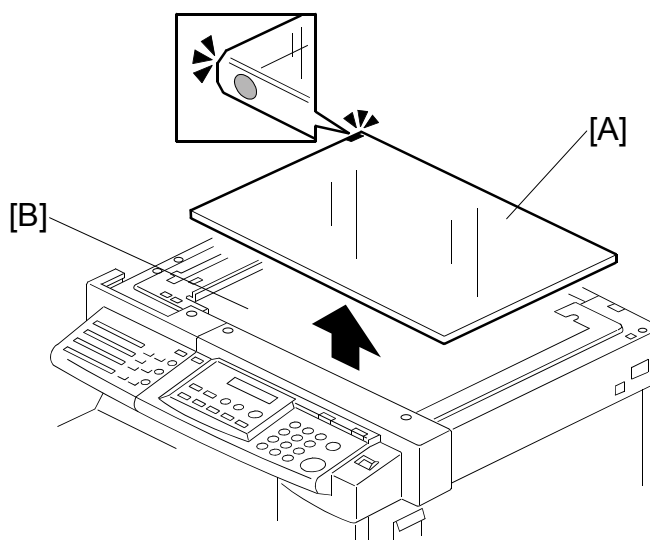
NOTE: To clean the exposure glass, always use only alcohol or glass cleaner.

Non-ADF machines

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

ADF-equipped machines

1. Rear cover (➡ 3.3.2)
2. Rear scale (B129/B130/B168/B169), upper right cover (➡ 3.3.5)
3. Exposure glass [A]



Replacement
and
Adjustment

Reassembling

Ensure that the marking on the glass is at the rear left corner, and that the left edge of the glass is aligned flush against the support ridge [B] on the frame.

Adjustment

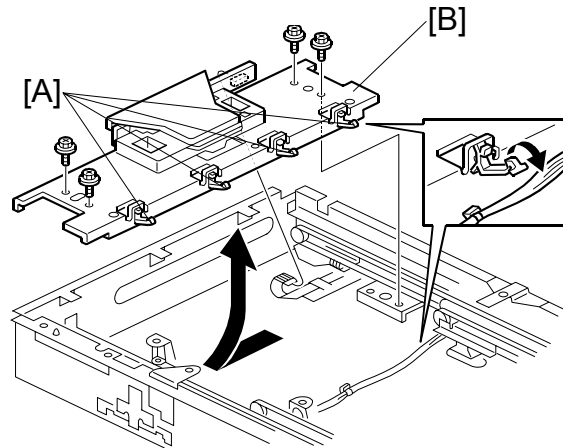
When replacing the white plate, perform the Scan Auto Adjustment (➡ SP4-428-001).

3.4.2 LENS BLOCK

CAUTION: 1) DO NOT disassemble the lens block. The lens block is fine-adjusted before shipment.
2) DO NOT touch the screws on the CCD. The CCD is fine-adjusted before shipment.

1. Exposure glass (☞ 3.4.1)
2. Front left cover, fax operation panel, operation panel (☞ 3.3.5)
3. Release the cable from the four clamps [A].
4. Lens block [B] (⚙ × 4, 1 flat cable)

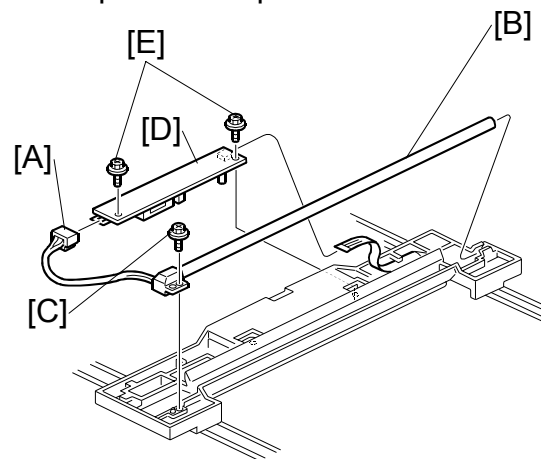
NOTE: 1) Do not loosen the paint-locked screws holding the lens unit in place.
2) After installing a new lens block, perform copy adjustments (☞ 3.14).



3.4.3 EXPOSURE LAMP, LAMP STABILIZER BOARD

NOTE: DO NOT fold the exposure cable on the exposure lamp.

1. Exposure glass (☞ 3.4.1)
2. Front left cover, fax operation panel (☞ 3.3.5)
3. Slide the first 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 [C])
 - Lamp stabilizer board [D] (⚙ × 2 [E], 1 flat cable)



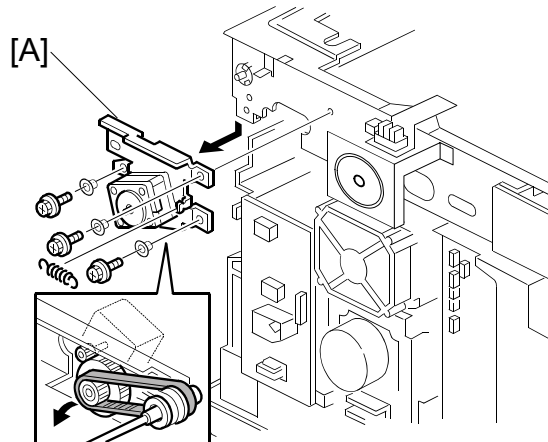
3.4.4 SCANNER MOTOR

(B129/B130/B168/B169)

1. Rear cover (☛ 3.3.2)
2. Rear scale, upper right cover (☛ 3.3.5)

(B044/B045/B046)

1. Right cover (☛ 3.3.5, step 5). Continue to step 3 of this procedure.
3. Scanner motor [A] (⚙ × 3, 1 spring, 3 screw holders, ⚙ × 1)



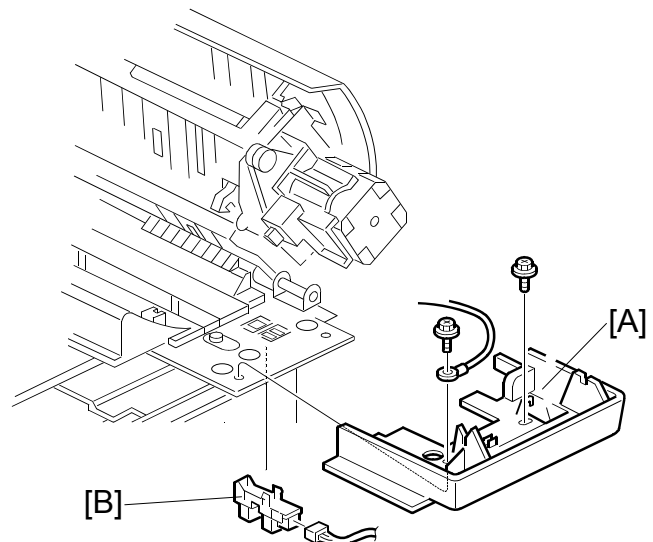
NOTE: When reinstalling: fasten the screws loosely, set the spring in place, and tighten up the screws.

Replacement
and
Adjustment

3.4.5 SCANNER HP SENSOR

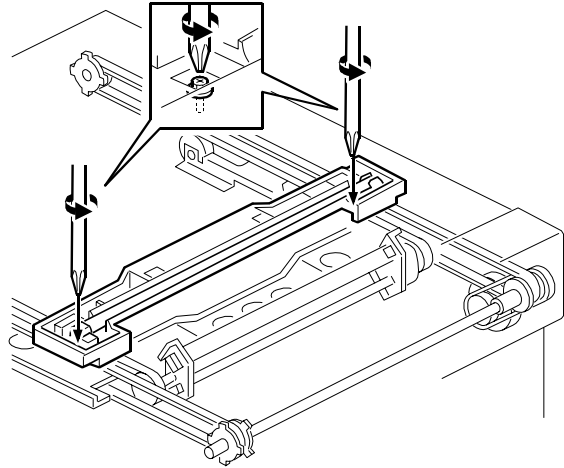
1. Rear cover (☛ 3.3.2)
2. Left cover (☛ 3.3.5)
3. Scale plate (☛ 3.3.4) or DF rear-lower cover [A] (⚙ × 2)
4. Scanner HP sensor [B] (⚙ × 1)

NOTE: Move the first scanner from the home position if you have difficulty removing the sensor.

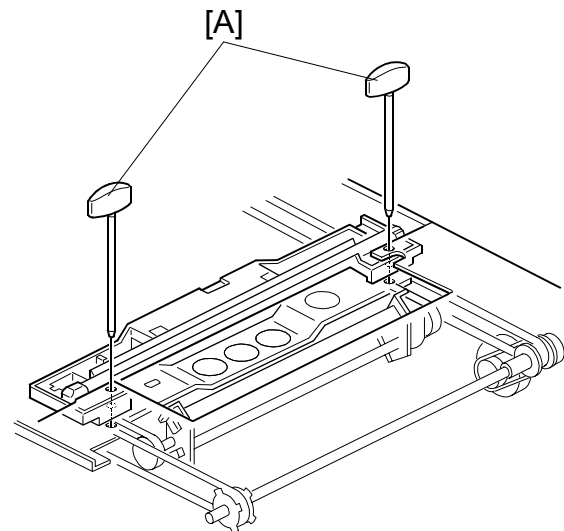


3.4.6 SCANNER ALIGNMENT ADJUSTMENT

1. Rear cover (☞ 3.3.2)
2. Rear scale, upper right cover, front left cover, fax operation panel, operation panel (☞ 3.3.5)
3. Exposure glass (☞ 3.4.1).
4. Loosen the 2 screws holding the 1st and 2nd scanner belts in place.



5. 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
6. Insert the two optics adjustment tools [A], and adjust the scanners as necessary so that the tools go through all four holes.
7. Tighten the two screws that you loosened at step 2 above, so that the belts are firmly clamped into place.
8. Remove the adjustment tools.



3.5 FUSING

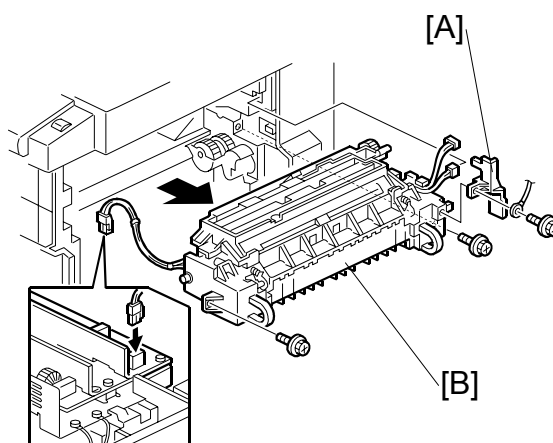
3.5.1 FUSING UNIT

CAUTION

Before handling the fusing unit, ensure that the unit is cool enough. The fusing unit can become very hot.

NOTE: Ensure that the main power switch is off, and the machine is unplugged, before proceeding.

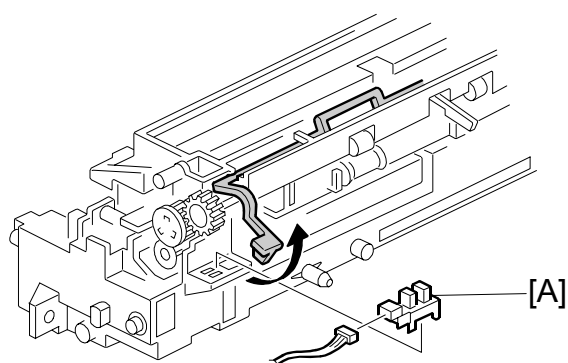
1. Copy tray (☛ 3.3.3)
2. Open the right door.
3. Connector cover [A] (🔩 x 1)
NOTE: When reinstalling, attach the ground wire.
4. Fusing unit [B] (🔩 x 2, 📡 x 4)



Replacement
and
Adjustment

3.5.2 EXIT SENSOR

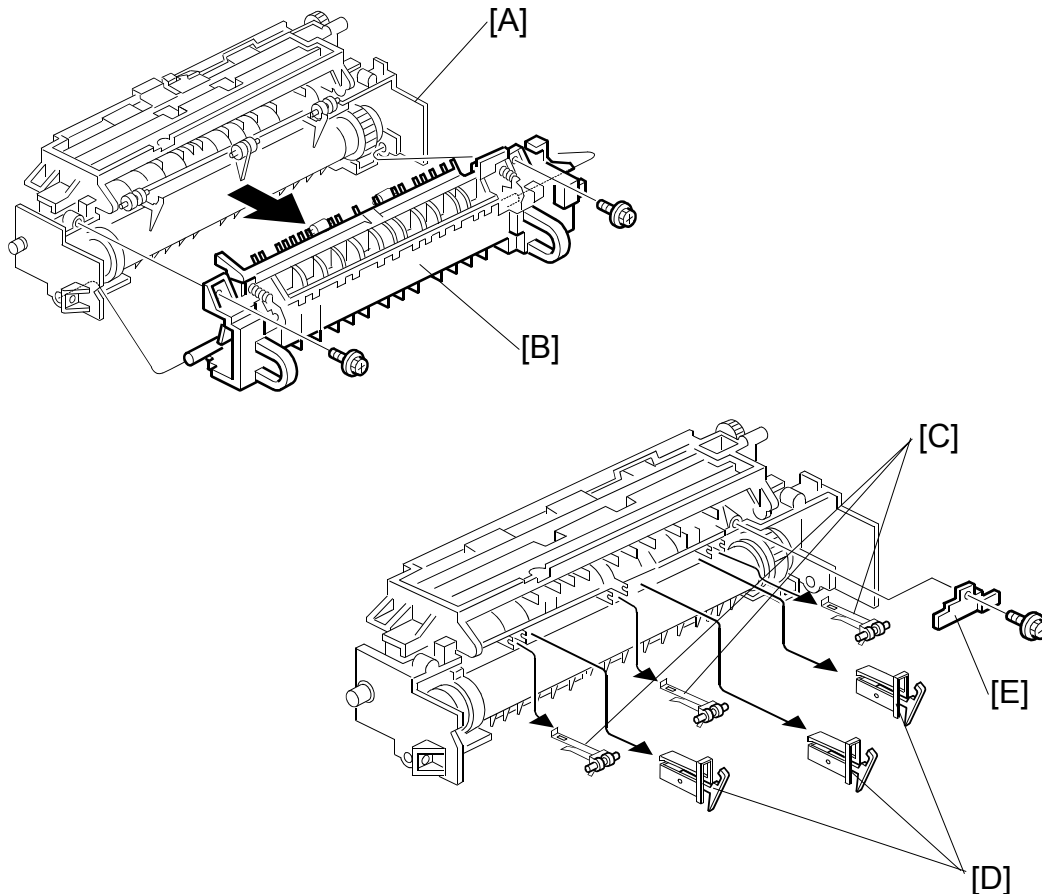
1. Fusing unit (☛ 3.5.1)
2. Exit sensor [A] (📡 x 1)



FUSING

3.5.3 HOT ROLLER STRIPPER PAWLS

CAUTION: Take special care to not damage the hot roller stripper pawls and the tension springs.



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] (⚙ x 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. (B129/B130/B168/B169) Support rollers [C]

4. Hot roller stripper pawls [D]

NOTE 1: Remove the spacer [E] if you are removing the hot roller assembly (☛ 3.5.4).

NOTE 2: To remove the right pawl, first remove the plastic spacer [E].

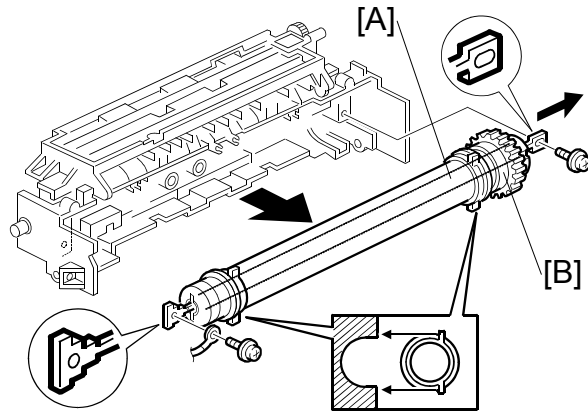
3.5.4 HOT ROLLER & FUSING LAMP

CAUTION: DO NOT touch the fusing lamp and rollers with your bare hands.

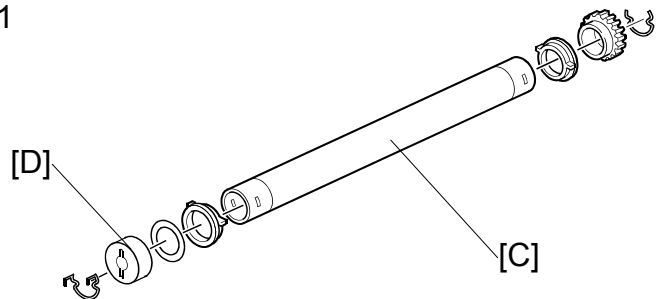
1. Hot roller stripper pawls and spacers (☛ 3.5.3)
2. Hot roller assembly [A] (⚙ x 2)
3. Fusing lamp [B]

NOTE 1: When reassembling, check that the direction of the fusing lamp is correct [C][D].

NOTE 2: The B044/B045/B046 models have one fusing lamp. The B129/B130/B168/B169 models have two lamps.



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

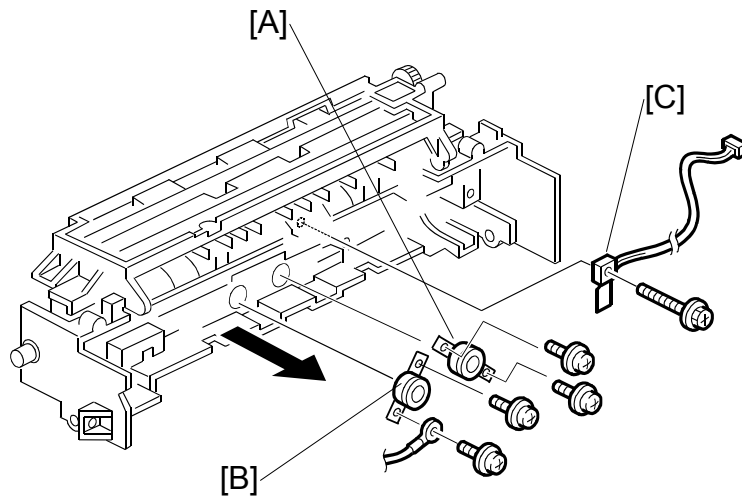


Reassembling

Use caution to ensure that:

- The fusing lamp is positioned correctly.
- The fusing lamp does not touch the internal part of the hot roller.

3.5.5 THERMO-SWITCH AND THERMISTOR



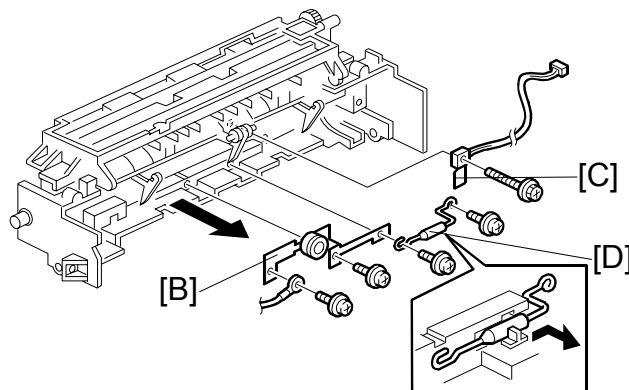
B129/B130/B168/B169

1. Hot roller assembly (☛ 3.5.4)
2. (B044/B045/B046 only) Thermofuse [D] (⚙ x 2)
3. Thermo-switches [A][B] (⚙ x 2 for each)
4. Thermistor [C] (⚙ x 1)

Reassembling

Ensure the following:

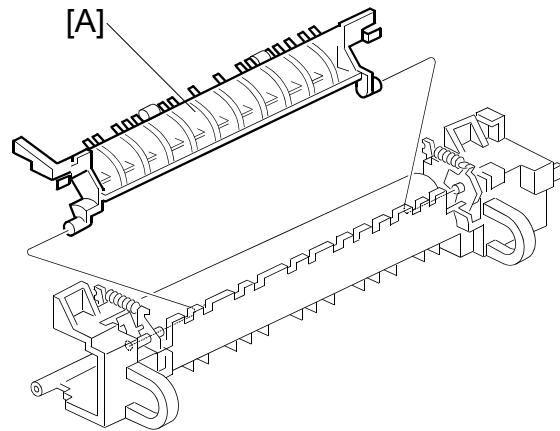
- The thermistor is in contact with the hot roller.
- The hot roller turns smoothly.



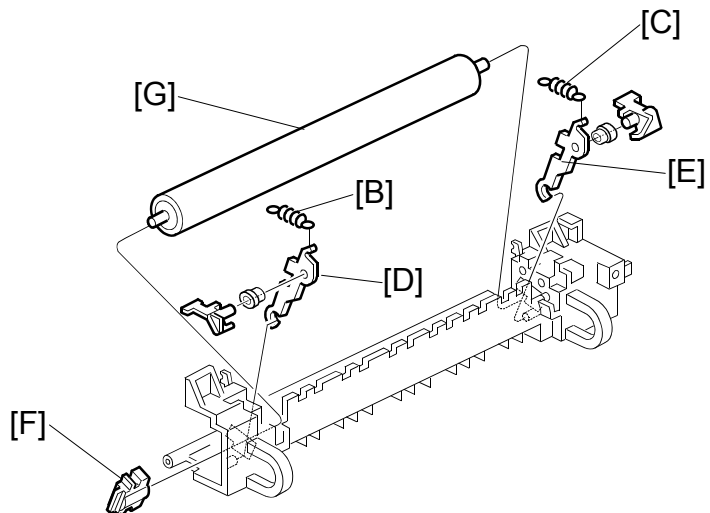
B044/B045/B046

3.5.6 PRESSURE ROLLER

1. Remove fusing unit (☛ 3.5.1).
Separate the fusing unit into two sections (☛ 3.5.3).
2. Fusing entrance guide [A]



3. 2 springs [B][C]
4. 2 pressure arms [D][E]
5. Bushing [F]
(B044/B045/B046: x2)
(B129/B130/B168/B169: x1)
6. Pressure roller [G]



Replacement
and
Adjustment

3.5.7 ADJUSTING NIP BAND

Checking the nip band ensures that the fusing unit is in good condition and properly installed, (in particular if the hot roller and pressure roller are correctly installed).

1. Activate the SP mode.
2. Select SP1-109-001.
3. Specify "1."
4. Press the OK key.
5. Press the  key. The copy mode is activated.
6. Place an OHP sheet on the by-pass tray.
7. Press the  key. The copier feeds the OHP sheet, and reserve it between the hot roller and the pressure roller about 20 seconds.
8. Wait until the OHP sheet is output.
9. Press the  key.
10. Make sure SP1-109-001 is selected.
11. Specify "0."
12. Press the OK key.
13. Quit the SP mode.

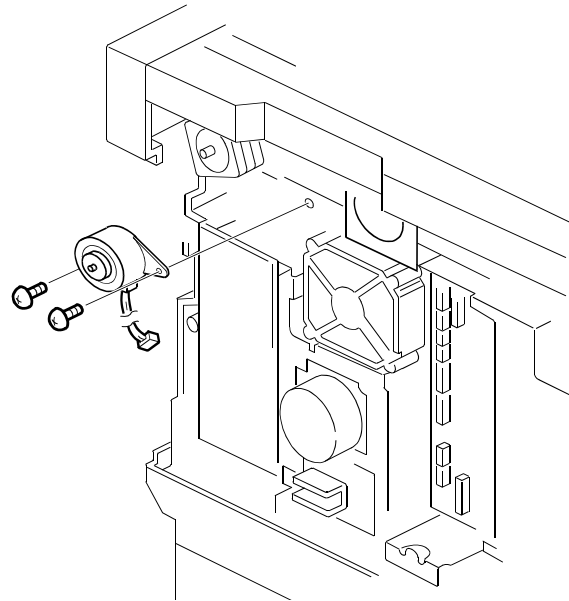
You should see an opaque stripe on the OHP sheet. This is the trace of the nip band. The normal nip band is symmetrical to the OHP sheet. Both ends are slightly thicker than the center.

NOTE 1: There are no specifications or standards for the nip band of this copier.

NOTE 2: If the band is not as described above, change the position of the spring hooks (one on each side of the pressure roller). Then check the nip band again. (The higher hook position produces greater tension.)

3.5.8 DUPLEX MOTOR (B129/B130/B168/B169)

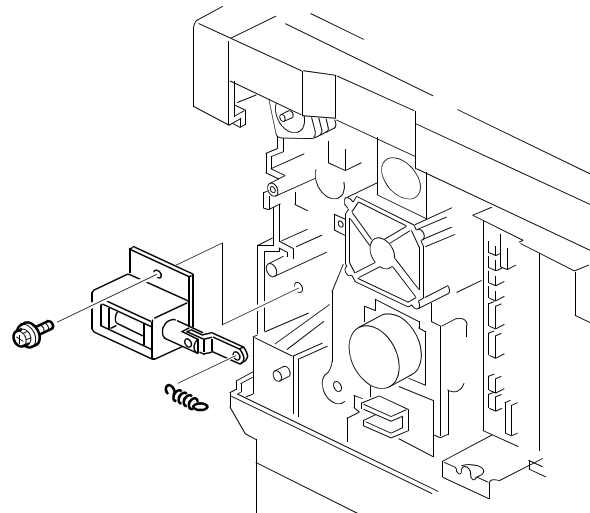
1. Rear cover (☛ 3.3.2)
2. Duplex motor (🔌 x 1, ⚙️ x 2)



Replacement
and
Adjustment

3.5.9 CONTACT-RELEASE SOLENOID (B129/B130/B168/B169)

1. Rear cover (☛ 3.3.2)
2. High-voltage power supply board (☛ 3.8)
3. Contact-release solenoid (1 spring, ⚙️ x 1)



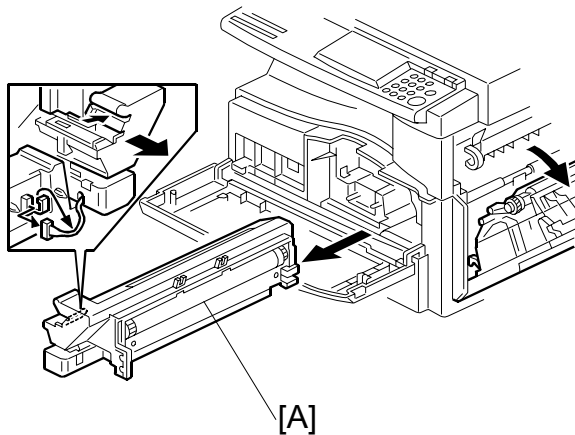
3.6 PCU AND QUENCHING LAMP

When handling the photo conductor unit (PCU), use caution:

- Do not touch the OPC drum with your bare hands. When OPC drum is dirty, clean it with a dry cloth, or clean it with wet cotton and wipe it with a dry cloth.
- Do not use alcohol or any other chemicals to clean the OPC drum. These substances damage the OPC-drum surface.
- Keep PCUs in a cool, dry place.
- Do not expose the OPC to any corrosive gas, such as ammonia.
- Do not shake a used PCU. Remaining toner and developer may spill out.
- Dispose of used PCUs in accordance with local regulations.

3.6.1 PCU

1. Open the right door.
NOTE: 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.
NOTE: Clean all spilled toner off the toner bottle area and the inside of the front door.
4. Pull out the PCU [A] (☞ x 1).
5. After installing the new PCU, remove the styrofoam and tags (☞ 1.2.2).

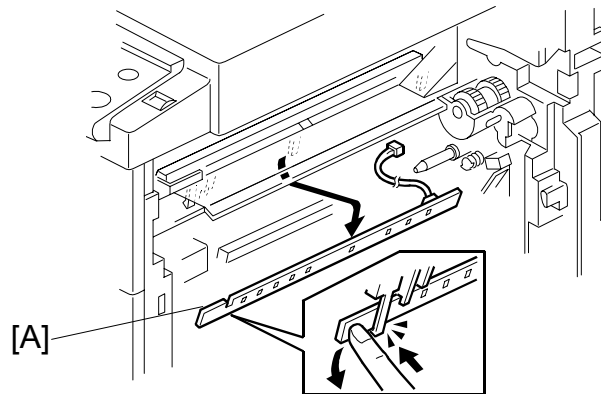


Initialization

After you turn on the main power switch, the copier automatically initializes the new PCU. While the copier is executing initialization, use caution:

- Do not turn off the main power switch.
- Do not open or remove exterior covers.

3.6.2 QUENCHING LAMP

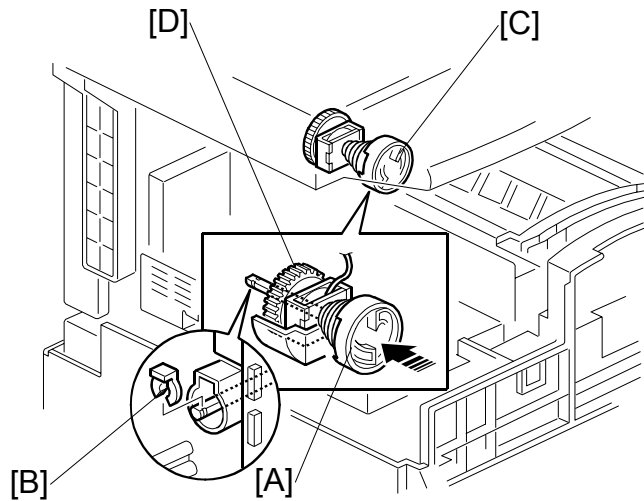


1. PCU (☛ 3.6.1)
2. Quenching lamp [A] (☛ × 1)

Replacement
and
Adjustment

3.7 TONER SUPPLY CLUTCH

1. Toner bottle holder
2. Copy tray (☛ 3.3.3)
3. Rear cover (☛ 3.3.2)
4. Disconnect the connector on C19 on the BICU.
5. Push the clutch coupler [A] to the rear side, and remove the clip ring [B] from the back of the copier.
6. Coupler and spring [C]

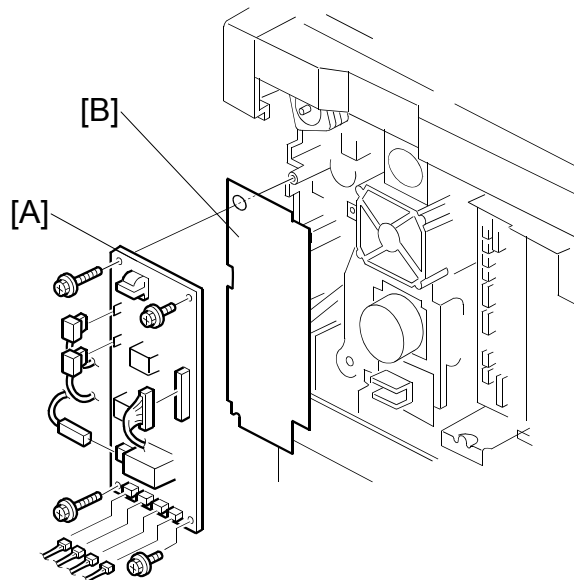


7. Remove the cone and spring (B044/B045/B046 only). Lift the toner supply clutch [D] and remove it.

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

3.8 HIGH-VOLTAGE POWER SUPPLY BOARD

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



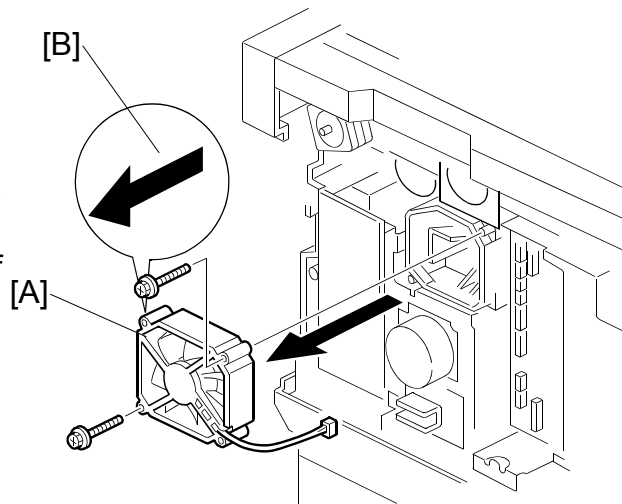
NOTE: Remove the insulating sheet [B] if you are going to remove the contact-release solenoid (☛ 3.5.9) or the gear cover (☛ 3.10.7).

3.9 EXHAUST FAN AND MAIN MOTOR

3.9.1 EXHAUST FAN

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

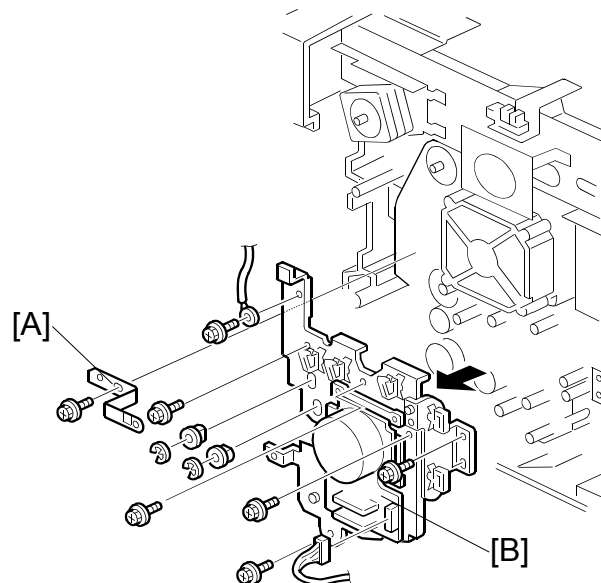
NOTE: When reassembling, ensure that the arrow [B] on the frame points to the rear side. The arrow indicates the direction of airflow.



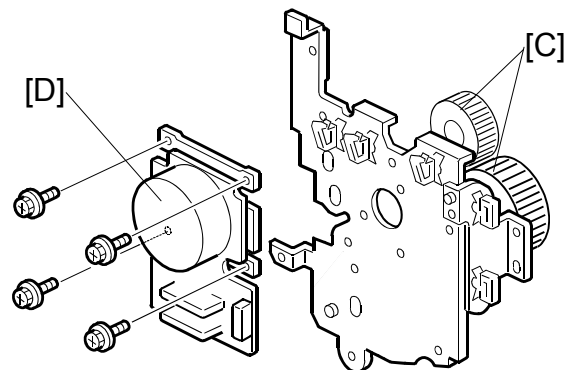
Replacement
and
Adjustment

3.9.2 MAIN MOTOR

1. Rear cover (☛ 3.3.2)
2. High-voltage power supply board (☛ 3.8)
3. Ground plate [A] (⚙ x 1)
4. Main motor with the gear cover [B] (🌀 x 1, ⚙ x 7, Ⓢ x 2, 2 bushings)



5. All gears [C]
6. Main motor [D] (⚙ x 4)



Reassembling

Attach the main motor before attaching the gears.

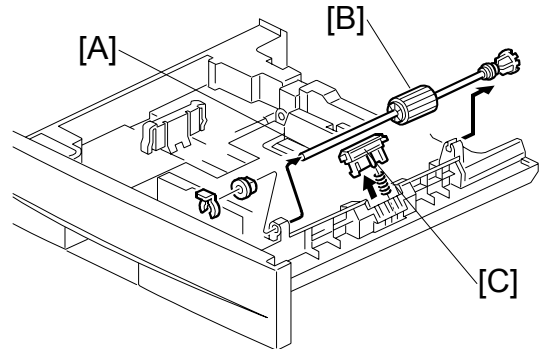
3.10 PAPER FEED

3.10.1 PAPER FEED ROLLER AND FRICTION PAD

When handling the paper tray or the paper feed roller, use caution:

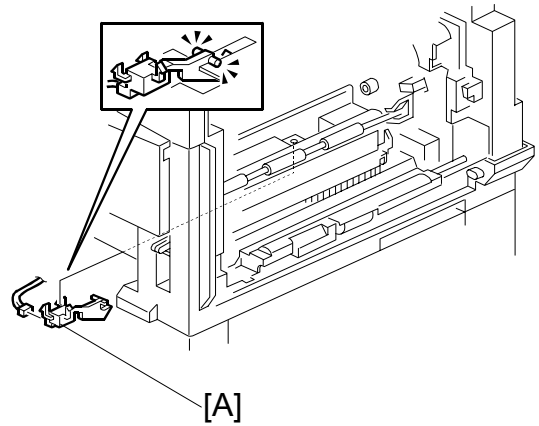
- Do not touch the surface of paper feed rollers.
- To avoid paper jams, ensure that the side and end fences are correctly set within the paper tray.

1. Paper tray
2. Shaft [A] (🔧 x 1)
3. Remove either or both of the following:
 - Paper feed roller [B]
 - Friction pad [C]

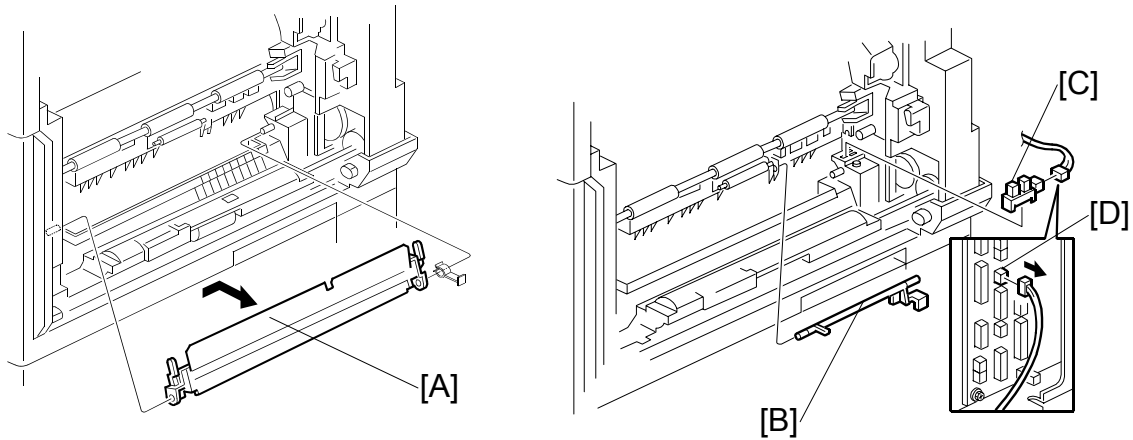


3.10.2 PAPER END SENSOR

1. Paper tray
2. Open the right door.
3. PCU (👉 3.6)
4. Paper end sensor [A] (🔧 x 1)



3.10.3 REGISTRATION SENSOR



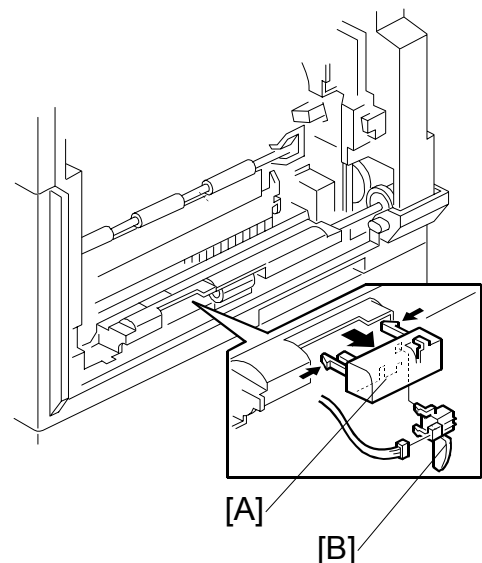
1. Paper tray.
2. Open the right door.
3. Open the paper guide [A].
NOTE: Remove the paper guide (Clip x 1) if you have difficulty removing the registration sensor.
4. Registration sensor feeler [B]
5. Registration sensor [C] (🔧 x 1)
NOTE: Disconnect the connector [D]) if you have difficulty removing the registration sensor.

Replacement
and
Adjustment

3.10.4 BYPASS PAPER END SENSOR

NOTE: This procedure is not applicable to the B045 model.

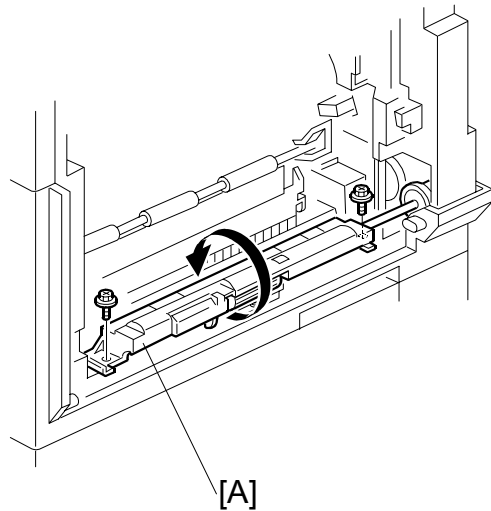
1. Right door (👉 3.3.6)
2. Sensor compartment [A]
3. Bypass paper end sensor [B] (🔧 x 1)



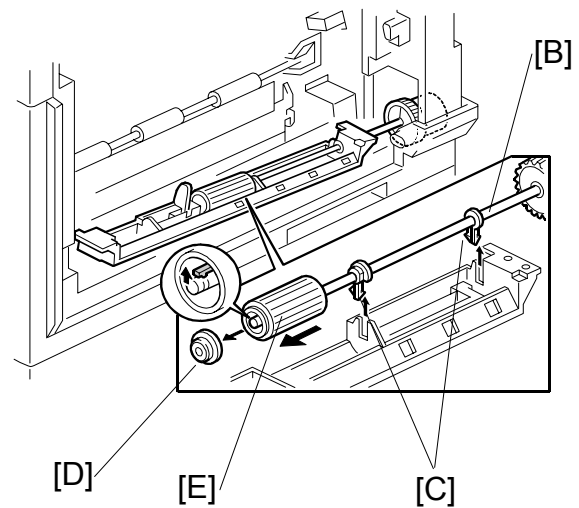
3.10.5 BYPASS FEED ROLLER

NOTE: This procedure is not applicable to the B045 model.

1. Right door (➡ 3.3.6)
2. Turn the feed roller housing upside down
(⚙ × 2).



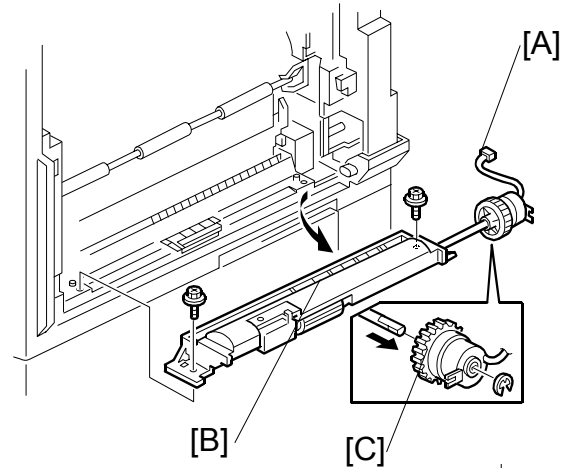
3. Feed roller shaft [B] (2 snap pawls [C],
1 spacer [D])
4. Bypass feed roller [E]



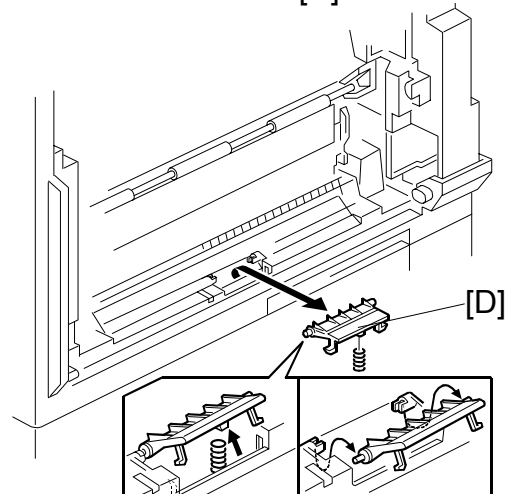
3.10.6 BYPASS FEED CLUTCH AND FRICTION PAD

NOTE: This procedure is not applicable to the B045 model.

1. Rear cover (☛ 3.3.2)
2. Right door (☛ 3.3.6)
3. Disconnect the bypass feed clutch connector [A] (CN93).
4. Bypass feed roller housing [B] (⚙ × 2)
5. Bypass feed clutch [C] (Ⓒ × 1)



6. Bypass friction pad [D]

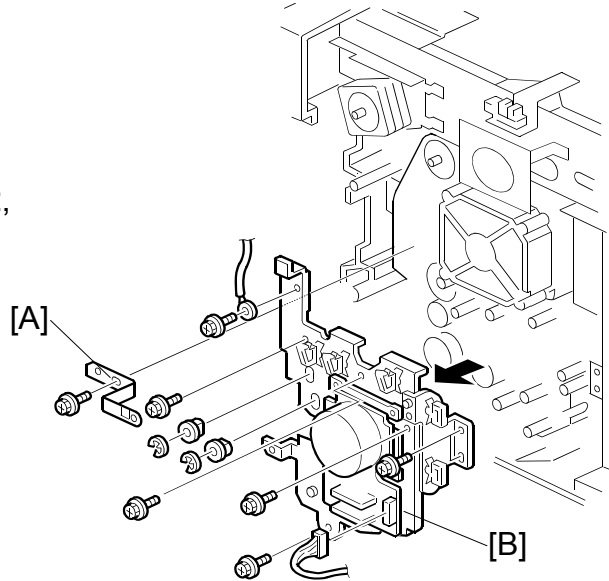


Replacement
and
Adjustment

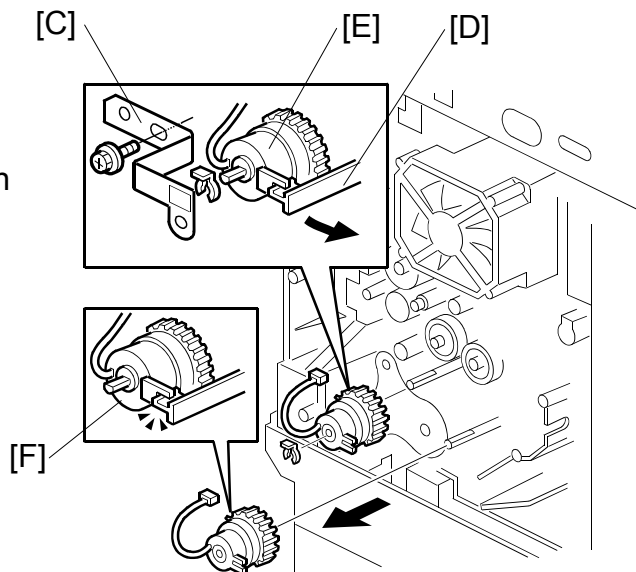
3.10.7 PAPER FEED AND REGISTRATION CLUTCHES

1. Paper tray
2. High-voltage power supply board
(☛ 3.8)
3. Ground plate [A] (⚙ x 1)
4. Gear cover [B] (⚙ x 1, ⚙ x 7, Ⓢ x 2,
2 bushings)

NOTE: Do not remove the main motor from the gear cover.



5. Ground plate [C] (⚙ x 1)
6. Slowly push the clutch holder [D] and remove the registration clutch [E] (⚙ x 1, ⚙ x 1).
7. Paper feed clutch [F]



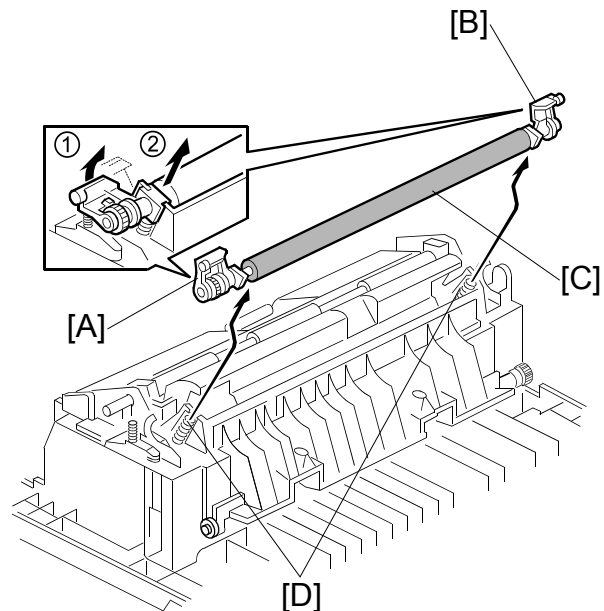
3.11 IMAGE TRANSFER

3.11.1 TRANSFER ROLLER

CAUTION: 1) Do not touch the transfer roller with your bare hands.
2) Do not scratch the transfer roller. Doing so will require replacement of the transfer roller.

1. Right door (☛ 3.3.6)
2. Raise the levers [A][B] at the ends of the image transfer roller.
3. Release the image transfer roller [C].

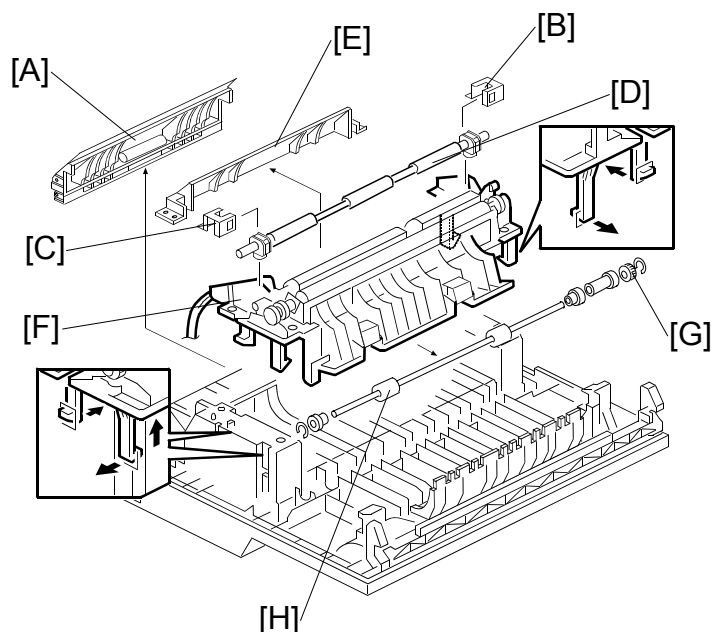
NOTE: When reassembling, ensure that the springs [D] are in the original positions.



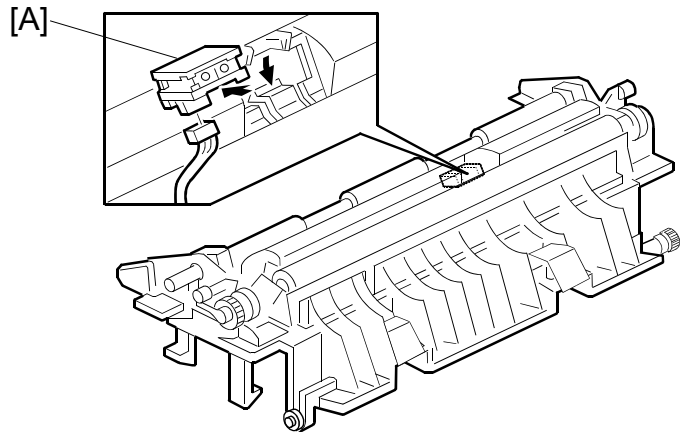
Replacement
and
Adjustment

3.11.2 ID SENSOR AND DUPLEX ROLLER

1. Right door (☛ 3.3.6)
2. Lower guide [A]
3. Idle roller holders [B][C]
4. Idle roller [D]
5. Roller guide [E]
6. Transfer unit [F]
7. One-way gear [G] (⊗ x 1)
8. Duplex roller [H] (⊗ x 1, 3 bushings)



9. ID sensor [A] (🔌 × 1)

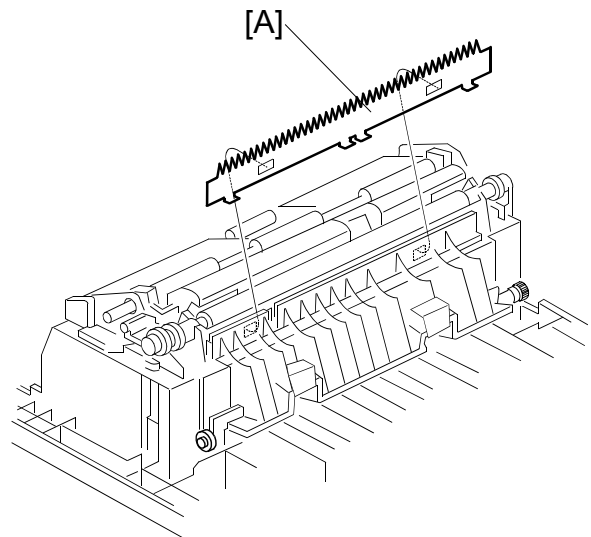


3.11.3 DISCHARGE PLATE

1. Right door (➡ 3.3.6)

2. Discharge plate [A].

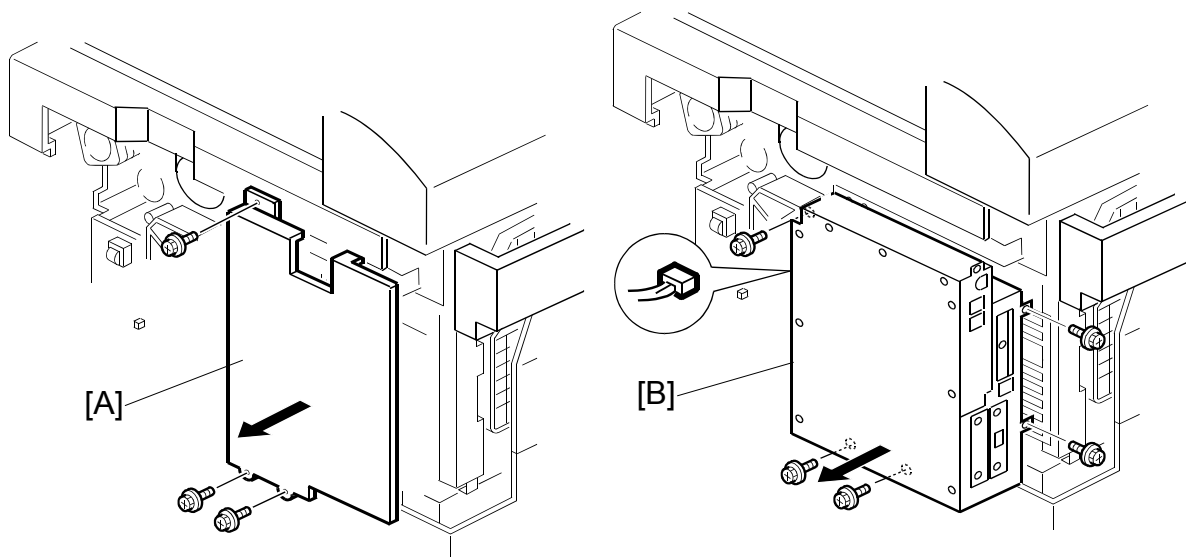
NOTE: If necessary, use tweezers or fine point pliers to remove the discharge plate. Ensure the plate is not damaged in any way.



3.12 CONTROLLER BOX AND BICU (B129/B130/B168/B169)

Note that the basic model (B129) and other models (B130, B168, B169) have different components. The table lists the components and necessary maintenance work.

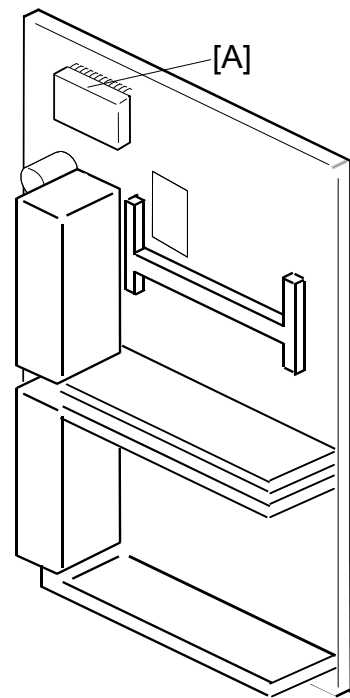
Model	BICU NVRAM	Controller Box	Controller NVRAM	Maintenance Work
Basic	Installed	None	None	Save the data from the NVRAM to a memory card before replacing the NVRAM.
Others	None	Installed	Installed	Save the data from the NVRAM to an SD card before replacing the NVRAM.



- When you are going to replace the NVRAM, save the NVRAM data.
 - From the BICU NVRAM to a memory card (➡ 5.1.9)
 - From the controller NVRAM to an SD card (➡ 5.2.3)
- Rear cover (➡ 3.3.2)
- BICU cover [A] (basic model [B129]: ➡ x 3) or controller box [B] (other models [B130/B168/B169]: ➡ x 1, ➡ x 5)

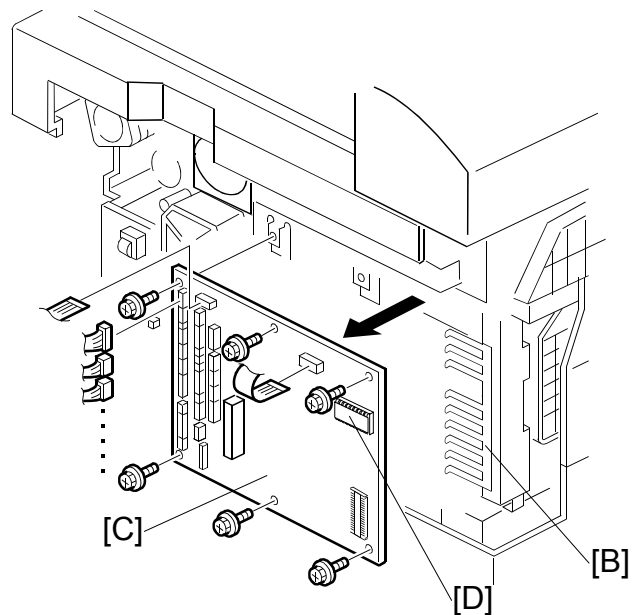
CONTROLLER BOX AND BICU (B129/B130/B168/B169)

- NOTE:** 1) When replacing the controller board, remove the NVRAM [A] from the old controller board. Install the NVRAM to the new controller board.
- 2) Do not change the dip switch settings.



4. Ground plate [B] (⚙ x 2)
5. BICU [C] (all ⚙'s, 2 flat cables, ⚙ x 6)

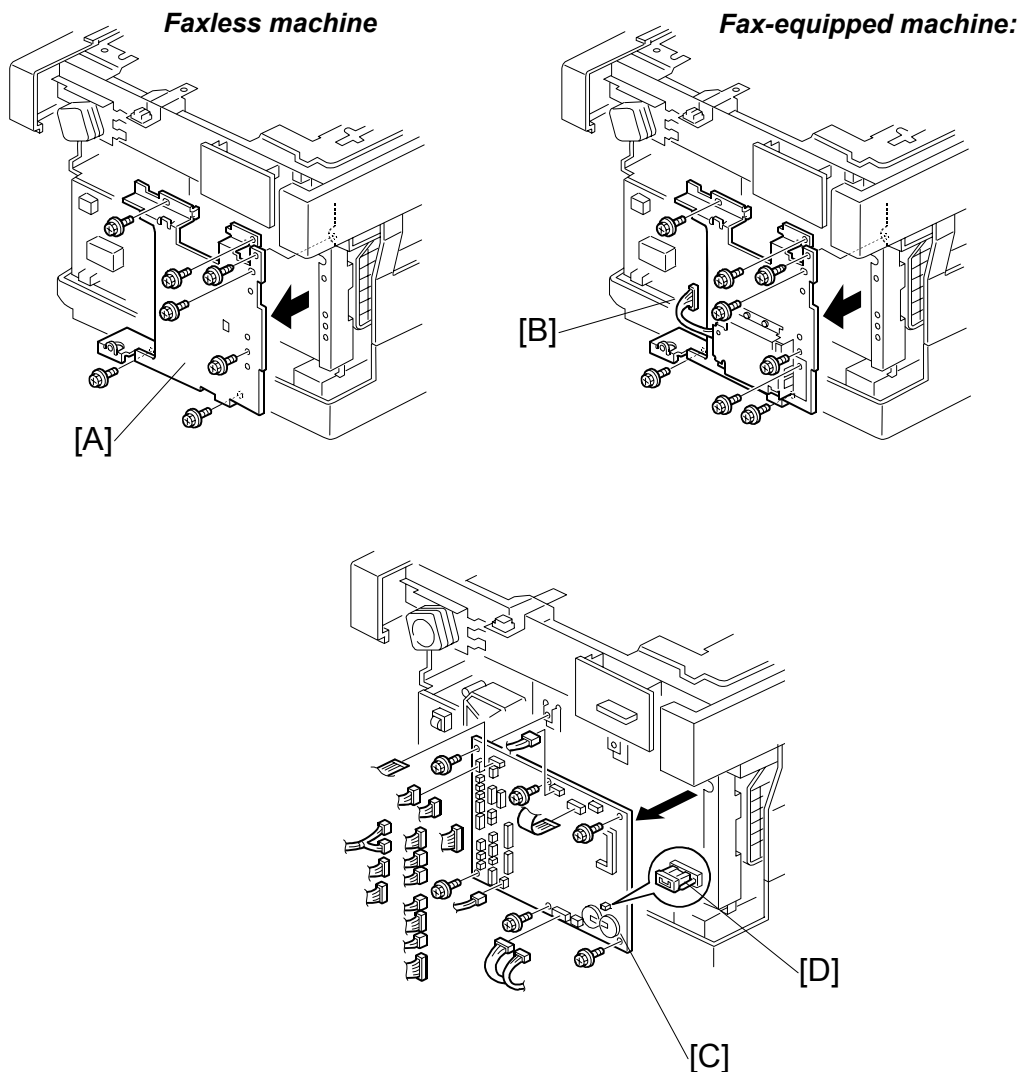
NOTE: The basic model has an NVRAM on the BICU. When replacing the BICU, remove the NVRAM [D] from the board. Install the NVRAM to the new board.



6. When you have replaced the NVRAM, copy the saved data to the NVRAM.
- From a memory card to the NVRAM (☛ 5.1.9)
 - From an SD card to the NVRAM (☛ 5.2.3)

3.13 FUNCTION CONTROL UNIT (FCU) (B044/B045/B046)

- 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.



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.

LASER UNIT

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.

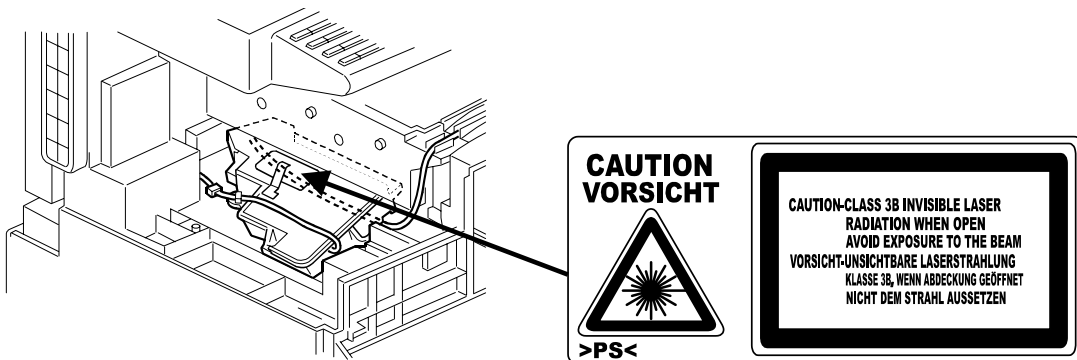
3.14 LASER UNIT

WARNING

Turn off the main power switch and unplug the copier before starting replacement. The laser beam can damage your eyes severely.

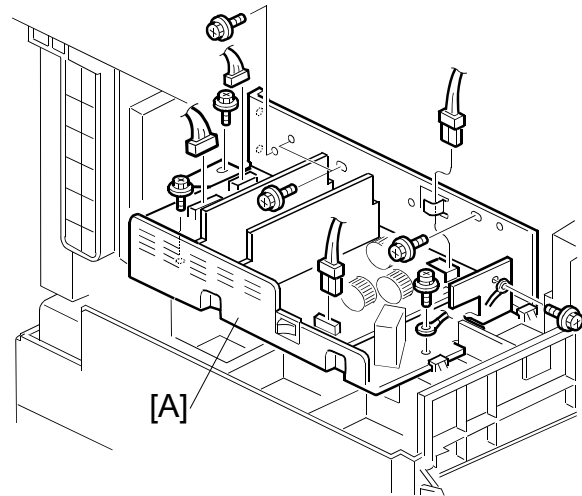
- CAUTION:** 1) DO NOT touch the screws on the LD board on the LD unit. DO NOT try to adjust any part of the LD unit. The LD unit is fine-adjusted before shipment.
- 2) DO NOT touch the polygon mirror, shield glass, or lenses with your bare hands.

3.14.1 LOCATION OF CAUTION DECAL



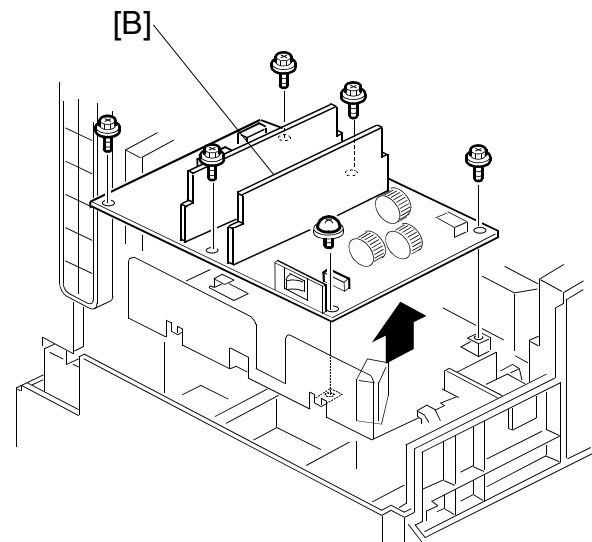
3.14.2 PSU

1. Open the front door.
2. Copy tray (☛ 3.3.3)
3. PSU assembly [A] (☛ x 4, ⚙ x 8)



4. PSU [B] (☛ x 1, ⚙ x 6)

NOTE: North America models do not have a connector.

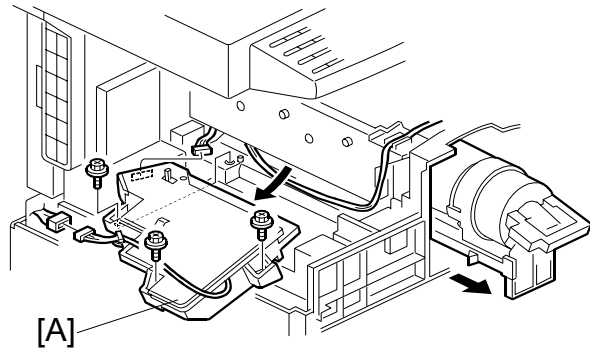


Replacement
and
Adjustment

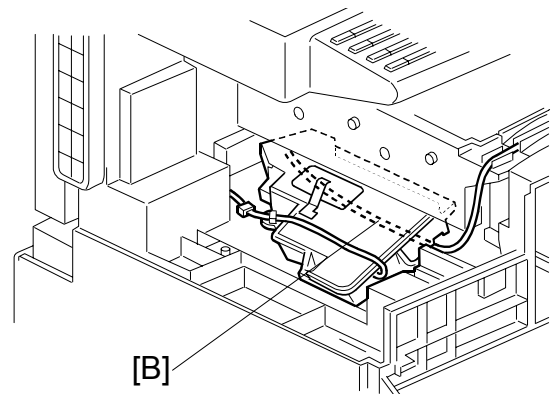
LASER UNIT

3.14.3 LASER UNIT

1. PSU (☛ 3.13.2)
2. Toner bottle holder or THM
3. Laser unit [A] (⚙ x 3, 📡 x 2)



NOTE: When reassembling, ensure that the cable [B] passes under the unit. Ensure no wires are in front of the glass window on the unit.

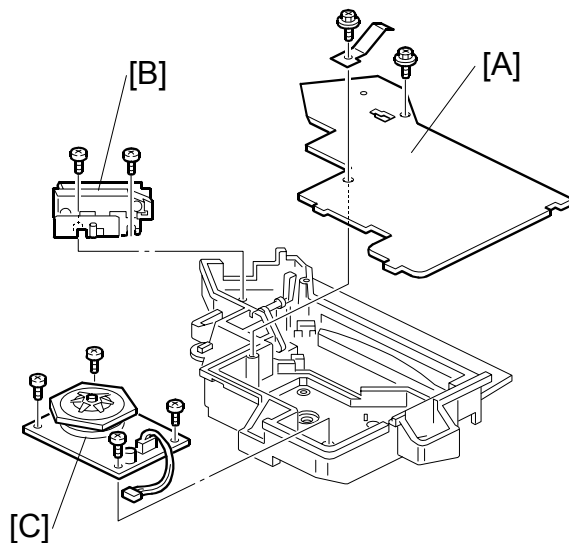


3.14.4 LD UNIT AND POLYGON MIRROR MOTOR

1. Laser unit (☛ 3.13.3)
2. Laser unit cover [A] (⚙ x 2, 1 grounding plate)
3. LD unit [B] (⚙ x 2)
4. Polygon mirror motor [C] (⚙ x 4)

Reassembling

Check that the polygon mirror and toroidal lens are clean. Dust or other foreign substances may interfere with the operation of the LD unit.



3.15 ADJUSTING COPY IMAGE AREA

Adjust the copy image area under any of the following conditions:

- You have cleared engine data (SP5-801-002 or SP5-998-001).
- You have replaced any of the following components:
 - First scanner or second scanner
 - Lens block
 - Scanner motor
 - Polygon mirror motor
 - Paper tray

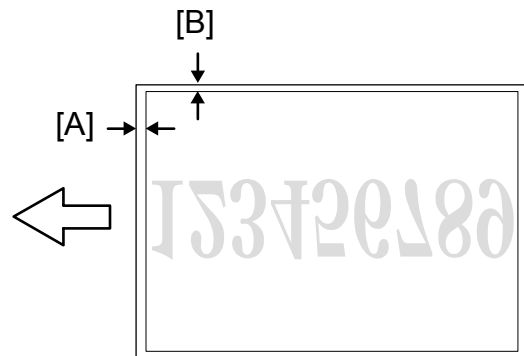
3.15.1 PRINTING

Ensure that the paper is correctly loaded in each paper tray before proceeding with the adjustment procedure in this section.

Adjusting Registration

Use the Trimming Area Pattern (SP5-902-001 > 10) for this adjustment.

1. Print out the test pattern, with the paper fed from the regular paper tray.
2. Print out the test pattern, with the paper fed from the by-pass tray.
3. Print out the test pattern, by selecting duplex printing.
4. Measure the distance between the leading edge of the image area and the leading edge of the paper [A].



NOTE: The diagram shows the paper on the copy tray. Note that the paper is output face down.

5. Adjust the leading edge registration (SP1-001).
6. Measure the distance between the side edge of the image area and the side edge of the paper [B].
7. Adjust the side-to-side registration (SP1-002).
8. Specify "0" (zero) in SP5-902-001 after finishing the adjustment procedure.

SP	Specification
SP1-001-001 (All Trays)	0 ± 2 mm
SP1-001-002 (By-pass)	0 ± 2 mm
SP1-001-003 (Duplex)	0 ± 4 mm

SP	Specification
SP1-002-001 (1st tray)	0 ± 2 mm
SP1-002-002 (2nd tray)	0 ± 2 mm
SP1-002-005 (By-pass)	0 ± 4 mm
SP1-002-006 (Duplex)	0 ± 4 mm

ADJUSTING COPY IMAGE AREA

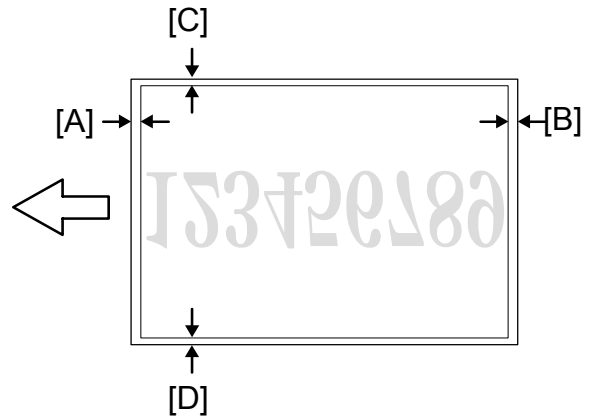
Adjusting Blank Margin

Use the Trimming Area Pattern (SP5-902-001 > 10) for this adjustment.

1. Print out the test pattern.

2. Measure the distance between the four edges of the image area and the four edges of the paper [A][B][C][D].

NOTE: The diagram shows the paper on the copy tray. Note that the paper is output face down.



3. Adjust the blank margin (SP2-101).

SP	Specification
SP2-101-001 (Leading Edge) [A]	2 ± 1.5 mm
SP2-101-002 (Trailing Edge) [B]	$2 +2.5/-1.5$ mm
SP2-101-003 (Left Side) [C]	2 ± 1.5 mm
SP2-101-004 (Right Side) [D]	$2 +2.5/-1.5$ mm

NOTE: The "Left Side" and "Right Side" is on your left-hand side and right-hand side, respectively, when you view the copied image with the leading edge upward.

4. Specify "0" (zero) in SP5-902-001 after finishing the adjustment procedure.

Adjusting Main-Scan Magnification

Use the Grid Pattern (Single Dot) (SP5-902-001 > 5) for this adjustment.

1. Print out the test pattern.
2. Measure the sides of squares. (Each side should be 2.7-mm long.)

3. Adjust the main-scan magnification (SP2-998-001: Main Mag-print).

SP	Specification
SP2-998-001 (Main Mag-print)	$100 \pm 1\%$

4. Specify "0" (zero) in SP5-902-001 after finishing the adjustment procedure.

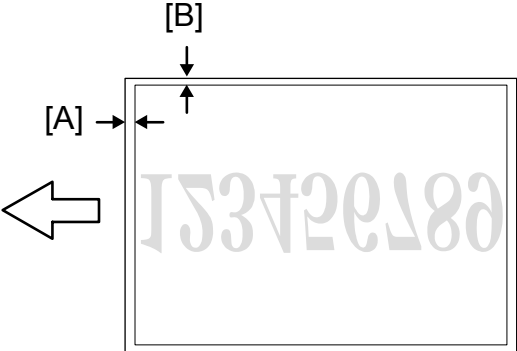
3.15.2 SCANNING

Before adjusting scanning, adjust printing (☛ 3.14.1). **To adjust scanning, use the A4 test chart.**

Adjusting Registration

- 1. Place the test chart on the exposure glass. Make sure that the test chart is aligned with the rear and left scales on the exposure glass.
- 2. Make a copy.
- 3. Measure the distance between the leading edge of the image area and the leading edge of the paper [A].

NOTE: The diagram shows the paper on the copy tray. Note that the paper is output face down.



- 4. Adjust the leading-edge scan registration. (SP4-010-001).
- 5. Measure the distance between the side edge of the image area and the side edge of the paper [B].
- 6. Adjust the side-to-side registration (SP4-011-001).

SP	Specification
SP4-010-001 (LE Scan Regist)	0 ± 2 mm

SP	Specification
SP4-011-001 (S-to-S Scan Regist)	0 ± 2 mm

Adjusting Magnification

- 1. Place the test chart on the exposure glass. Make sure the test chart is aligned with the rear and left scales on the exposure glass.
- 2. Make a copy.
- 3. Compare the copy with the original.
- 4. Adjust the main-scan and sub-scan magnifications. The original image [A] is magnified in the main-scan direction [B] or in the sub-scan direction [C] when you specify a larger value.



ADJUSTING COPY IMAGE AREA

NOTE: The diagrams show the paper on the copy tray. Note that the paper is output face down.

SP	Specification
SP4-009-001 (Main Scan Mag)	$\pm 1.0\%$
SP4-008-001 (Sub Scan Mag)	$\pm 1.0\%$



Standard White Density Adjustment

This procedure adjusts the standard white density level. Adjust the standard white density after any of the following maintenance work:

- Replacing the standard white plate
 - Replacing the BICU
 - Replacing the lens block
 - Executing the memory clear (SP5-801-002 [basic model], SP5-998-001 [other models]).
1. Place 10 sheets of new A4 paper on the exposure glass.
 2. Close the platen cover.
 3. Activate the SP mode.
 4. Select Copy SP4-908.
 5. Specify "1" and press the OK key. The copier automatically adjusts the standard white density.

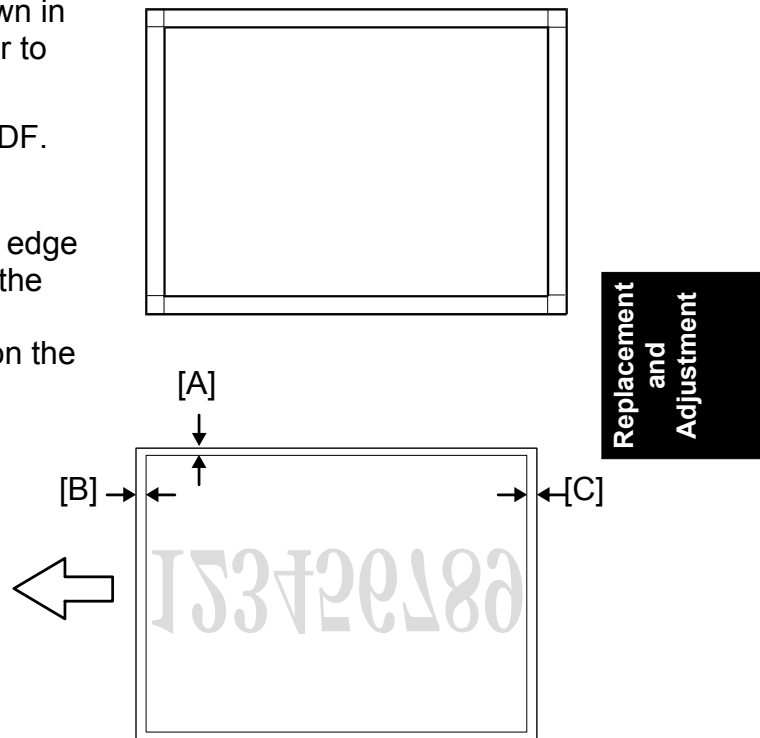
3.15.3 ADF IMAGE ADJUSTMENT

NOTE: Perform the adjustment procedure in this section **ONLY** when the ADF is installed to the copier.

1. Make a temporary test chart [A] as shown in the diagram. Use the A4/8.5 x 11" paper to make it.
2. Place the temporary test chart on the ADF.
3. Make a copy.
4. Measure the distance between the side edge of the image area and the side edge of the paper [A].

NOTE: The diagram shows the paper on the copy tray. Note that the paper is output face down.

5. Adjust the side-to-side registration (S to S/Front Regist: SP6-006-001). The image area moves to the rear side of the copier when you specify a larger value.
6. Measure the distance between the leading of the image area and the leading edge of the paper [B].
7. Adjust the leading edge registration (Leading Regist: SP6-006-002). The image area moves to the right side of the copier when you specify a larger value.
8. Measure the distance between the trailing edge of the image area and the trailing edge of the paper [C].
9. Adjust the erased area on the trailing edge (Trailing Erase: SP6-006-003).
10. Compare the copy with the original.
11. Adjust the sub-scan magnification (SP6-006-005). The specification is $\pm 1.0\%$.



TROUBLESHOOTING

4. TROUBLESHOOTING

4.1 SERVICE CALL CONDITIONS

4.1.1 SUMMARY

There are four levels of service call conditions.

NOTE: The B129/B130/B168/B169 models will use all four levels of service codes.
The B044/B045/B046 models use only Levels A and B.

Level	Definition	Reset Procedure
A	To prevent possible damage, the machine will not operate until the service representative resets the SC code.	Activate the SP mode, and turn the main power switch off and on.
B	Turning the main power switch off and on resets the SC code if the error is caused by incorrect sensor detection.	Turn the main power switch off and on.
C	The machine operates as usual, excluding the unit related to the service call.	Turn the main power switch off and on.
D	The SC history is updated. The machine operates as usual.	No SC code is displayed. Only the SC history is updated.

NOTE: 1) If a problem involves circuit boards, attempt to resolve the problem by disconnecting and reconnecting all connectors before deciding to replace a circuit board.
2) If a problem involves a motor lock, check the mechanical load before deciding to replace a motor or sensor.
3) If working on a fax-equipped machine, switching power off and on may cause loss of data stored in the memory.

4.1.2 SC CODE DESCRIPTIONS

B129/B130/B168/B169 ONLY:

No. Definition		Symptom	Possible Cause
143	D	SBU white/black level correction error	
		The automatic SBU adjustment has failed to correct the black level. The automatic SBU adjustment has failed to correct the white level twenty times consecutively.	• Defective exposure lamp • Unclean white plate • Incorrect position or width of white plate scanning (☛ SP4-015) • Defective BICU board • Defective SBU board
144	B	Communication Error between BICU and SBU	
		The BICU cannot correctly establish communication with the SBU.	• Loose connection of the flat cable between the BICU and the SBU • Defective flat cable between the BICU and the SBU • Defective BICU • Defective SBU
145	D	Automatic SBU adjustment error	
		The white levels of the white plate and the white paper are extraordinarily different during the Scan Auto Adjustment (☛SP4-428-001).	• Defective exposure lamp • Unclean white plate • Incorrect position or width of white plate scanning (☛ SP4-015) • Defective BICU board • Defective SBU board
193	B	Image transfer error	
		Scanned images are not transferred to the controller memory within one minute.	• Defective BICU board • Defective controller board
198	B	Memory address error	
		The BICU does not receive the memory address report from the controller within one minute.	• Inconsistency between the BICU firmware and the controller firmware • Defective BICU • Defective controller
321	B	No laser writing signal (F-GATE) error	
		The polling module does not detect the laser writing signal (F-GATE) asserting after the laser crosses 5 mm from the start point on the drum surface.	• Defective BICU • Loose connection on the fax controller or the printer controller • Defective fax controller or printer controller
545	A	Fusing lamp overheat error	
		After the fusing temperature reaches the target, the fusing lamp remains on for 12 seconds.	• Defective thermistor • Incorrect installation of the thermistor • Defective power supply unit •
590	B	Exhaust fan motor error	
		The exhaust fan motor is locked for five seconds.	• Loose connection of the exhaust fan motor • Overload

No. Definition		Symptom	Possible Cause
630	D	CSS communication error	
		An error occurs while the copier is trying to communicate with the CSS.	• Communication error in the public line
632	C	Accounting error 1	
		An error occurs during communication with the MF accounting device.	• Defective accounting device • Loose connection
633	C	Accounting error 2	
		After the controller establishes communication with the MF accounting device, the MF accounting device sends a brake signal.	• Defective accounting device • Loose connection
634	C	Accounting RAM error	
		An error occurs in the backup RAM for the MF accounting device.	• Defective accounting device
635	B	Accounting battery error	
		An error occurs in the battery of the MF accounting device.	• Defective accounting device
670	B	Engine start error	
		The controller does not receive all or some of the BICU signals within 70 seconds during startup; or the controller detects the BICU stopping unexpectedly.	• Defective BICU • Defective controller • Loose connection
760	B	ADF gate error 1	
		The ADF sends the FGATE signal before it is requested to scan originals.	• Defective ADF board • Defective input/output board • Loose connection
761	B	ADF gate abnormal 2	
		The ADF does not send the FGATE signal within 30 seconds after the ADF starts scanning.	• Defective ADF connector • Defective SBU board
762	B	ADF gate abnormal 3	
		The ADF continues to send the FGATE signal for more than 60 seconds after the ADF starts scanning.	• Defective ADF connector • Defective SBU board
800	B	Video transfer error 1	
		The BICU does not report the video transfer completion within the specified time.	• Defective controller
804	B	Video transfer error 2	
		The scanner does not report the video transfer completion within the specified time.	• Defective controller
818	B	Watchdog error	
		Some data path is exclusively held or some eternal loop occurs; no other process can run.	• Defective controller • Defective firmware • Defective optional unit
819	B	Kernel error	
		An error occurs in the kernel.	• Defective controller • Defective firmware

SERVICE CALL CONDITIONS

No. Definition		Symptom	Possible Cause
820	B	Self-diagnostic error: CPU	
		• An unexpected exception or interruption occurs during the self-diagnostic test. • An error is detected in the MBU.	• Defective controller • Defective firmware • Loose MBU jumper (☛ Fax Service Manual 2.2.3)
821	B	Self-diagnostic error: ASIC	
		The ASIC returns an error during the self-diagnostic test.	• Defective controller
823	C	Self-diagnostic error: Network interface	
		The network interface board returns an error during the self-diagnostic test.	• Defective network interface board • Defective controller
824	B	Self-diagnostic error: NVRAM	
		The resident NVRAM returns an error during the self-diagnostic test.	• Defective NVRAM on the controller • Defective controller board
826	B	Self-diagnostic error: RTC/Optional NVRAM	
		The RTC returns an error or the controller does not detect the RTC during the self-diagnostic test.	• Defective controller
827	B	Self-diagnostic error: RAM	
		An error is detected in the resident RAM during the self-diagnostic test.	• Defective firmware • Defective controller
828	B	Self-diagnostic error: ROM	
		An error is detected in the resident ROM during the self-diagnostic test.	• Defective controller • Defective firmware
829	C	Self-diagnostic error: Optional RAM	
		An error is detected in the optional RAM during the self-diagnostic test.	• Defective optional RAM • Defective controller
838	B	Self-diagnostic error: Clock Generator	
		An error is detected in the clock generator during the self-diagnostic test.	• Defective controller
850	C	Network I/F error	
		The network address is not correct, or an error occurs in the NIB.	• Defective NIB • Defective controller
851	C	IEEE 1394 I/F error	
		An error occurs in the driver.	• Defective IEEE 1394 interface board • Defective controller
853	C	IEEE 802.11b/Bluetooth card error (startup)	
		The controller can access the wireless LAN/Bluetooth board, but cannot access the wireless LAN/Bluetooth card during startup.	• Loose connection • Defective wireless LAN/Bluetooth card • Defective controller
854	C	IEEE 802.11b/Bluetooth card error (during operation)	
		The controller can access the wireless LAN/Bluetooth board, but cannot access the wireless LAN/Bluetooth card during startup.	• Loose connection • Defective wireless LAN/Bluetooth card • Defective controller

No. Definition		Symptom	Possible Cause
855	C	IEEE 802.11b/Bluetooth card error	
		An error is detected in the wireless LAN/Bluetooth card.	• Loose connection • Defective wireless LAN/Bluetooth card • Defective controller
856	C	IEEE 802.11b/Bluetooth interface board error	
		An error is detected in the wireless LAN/Bluetooth interface board.	• Loose connection • Defective wireless LAN/Bluetooth interface board • Defective controller
857	C	USB I/F error	
		An error occurs in the driver.	• Loose connection • Defective controller
866	C	SD card authentication error	
		The SD card does not contain a correct license code.	• Data corruption
867	B	SD card access error 1	
		The SD card is removed from the slot during operation.	• Loose connection
868	B	SD card access error 2	
		An error is detected in the SD card.	• /Bluetooth SD card • /Bluetooth SD controller
870	C	Address book data error	
		An error is detected in the address book data.	• Data corruption • Defective firmware
871	C	Flash ROM error	
		An error is detected in the address book stored in the flash ROM.	• Defective flash ROM device • Defective flash ROM
903	B	Engine total counter error	
		The checksum of the total counter is not correct.	• Defective NVRAM on the BICU
920	C	Printer error	
		A fatal error is detected in the printer application program	• Defective printer application program • Incorrect hardware configuration (including memory shortage)
921	C	Printer font error	
		Necessary font files are not found in the SD card.	• Necessary font files not installed • Data corruption • Defective controller
925	C	Net file error	
		The net-file management-file contains a fatal error.	• Data corruption • Defective firmware • Defective controller
928	B	Memory error	
		An error occurs during the memory check conducted when the main power switch is turned on or when the copier is recovering from the energy saver mode.	• Defective memory • Defective BICU • Loose connection between the BICU and the memory

SERVICE CALL CONDITIONS

No. Definition		Symptom	Possible Cause
929	B	IMAC hardware error	
		A memory control job is not completed within a certain period.	• Defective IMAC • Defective BICU • Loose connection
954	B	Printer application program error	
		The printer application program does not become ready when the printer application program is necessary.	• Defective application program
955	B	Image transfer error	
		The BICU requests the controller to transfer image data; but the controller does not become ready.	• Defective application program
964	B	Status error (laser optics housing unit)	
		The optics-housing unit does not become ready within 17 seconds after a request.	• Defective software
980	B	Controller-engine inconsistency	
		The controller is incompatible with the engine.	• One of the following controllers is installed to the basic model: - The controller of the MFP model - The controller of the copier/facsimile model - The controller of the printer/scanner/copier model • The controller of the optional printer/scanner is installed to one of the following models: - The MFP model - The copier/facsimile model - The printer/scanner/copier model
981	B	NVRAM error	
		An error occurs during engine NVRAM check.	• Defective NVRAM • Loose connection between the BICU and the NVRAM • Incorrect installation of the NVRAM • Defective BICU
982	B	Localization error	
		The localization information in the non-volatile ROM and in the NVRAM is different (☛ SP5-807-001).	• Localization setting not specified (The main power switch is turned on for the first time after the NVRAM is replaced.) • Incorrect localization setting • Defective NVRAM
984	B	Print image transfer error	
		Print images are not transferred.	• Defective controller • Defective BICU • Loose connection between the controller and the BICU

No. Definition		Symptom	Possible Cause
990	B	Unrecoverable software error	
		A software program performs other than as expected.	• Defective firmware • Incorrect internal parameter • Insufficient working memory NOTE: The file name, address, and data are stored in the NVRAM. You can view the information (➡ SP7-403).
991	D	Recoverable software error	
		A software program performs other than as expected; the program can continue normal processing.	• Incorrect internal parameter • Insufficient working memory
992	B	Unexpected Software Error	
		An undefined error occurs.	• Defective firmware
997	C	Application function error	
		The application program does not respond or does not start correctly.	• Defective firmware
998	B	Application start error	• Defective firmware
		No application program starts within 60 seconds after the main power switch is turned on	• Necessary resource not found
999	B	Program download error	
		An error occurs during program download from an IC card.	• Incorrect installation of a PCB • Defective BICU • Defective controller • Defective IC card • Defective NVRAM • Power failure NOTE: SC999 is not logged. Once downloading fails, you may be unable to retry it. In a case like this, you must replace the related PCB.

B044/B045/B046 ONLY

No. Definition			Symptom	Possible Cause
SC Code	Error Code	Level		
122	9-91	B	Scanner home position error 3	
			Scanner home position sensor did not detect OFF condition during book or ADF scan operation.	• Forgot to remove one or more of the scanner stoppers • Scanner motor defective • Scanner HP sensor (or connector) defective • FCU defective • Scanner belt loose or detached
123	9-90	B	Scanner home position error 4	
			Scanner home position sensor did not detect ON condition during book or ADF scan operation.	• Forgot to remove one or more of the scanner stoppers • Scanner motor defective • Scanner HP sensor (or connector) defective • FCU defective • Scanner belt loose or detached
192	1-05	B	SBU auto-adjustment error	
			During SBU auto-adjustment (☛ SP4-908), the detected white level was out of range.	• SBU auto adjustment was not done correctly (☛ 3.13) • Exposure lamp defective • SBU harness defective • Bad connection • Defect in optics system (dirty scanner mirror, mirror out of position. etc.) • Defective stabilizer board (or connector) • Incorrect start position or length for white plate scanning (☛ SP4-015) • Scanner HP sensor out of position
			Detected LD error signal for continuous 1.5 seconds while polygon mirror motor was running at constant speed.	• Synchronization detection mirror defective • LD unit defective • FCU defective • LD harness damaged • THM not in place
548	9-22	A	Fusing-temperature range violation (too high)	
			During paper transport, fusing temperature moved above limit (200°C for plain paper, 210°C for thick paper) and remained above limit for 10 seconds. (☛ 4.4)	• TRIAC short • Fan not running

No. Definition			Symptom	Possible Cause
SC Code	Error Code	Level		
549	9-22	A	Fusing-temperature range violation (too low)	
			During paper transport, fusing temperature fell below lower limit (155°C) and remained below limit for 6 seconds. (☞ 4.4)	• Fusing thermistor defective • PSU defective
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)	• TRIAC short • Fan not running
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)	• TRIAC short
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°C for 20 seconds. (☞ 4.4)	• Fusing thermistor defective • PSU defective
692	9-49	B	Communication error between FCU and printer controller	
			Printer failed to acknowledge message from FCU within 1.2 seconds.	• Printer controller defective • FCU defective • Poor connection between FCU and printer controller
2001	9-48	B	Printer controller self-diagnostic error	
			Printer controller's power-on self-diagnostic detected an error.	• Self-diagnostic error
2002	9-47	B	Printer controller: FGATE error	
			Printer application returned FGATE error notification to copier.	• FGATE error

ALL MODELS

No. Definition		Symptom	Possible Cause
101	B	Exposure Lamp Error	
		The scanner has scanned the white plate, but cannot detect the white level.	• Defective exposure lamp • Defective exposure lamp stabilizer • Defective exposure lamp connector • Unclean scanner mirror • Scanner mirror out of position • Defective SBU board • Defective SBU connector • Lens block out of position • Incorrect position or width of white plate scanning (☛ SP4-015)
120	B	Scanner home position error 1	
		The scanner home position sensor does not detect the scanner leaving the home position.	• Defective scanner home position sensor • Defective scanner drive motor • Defective scanner home position sensor connector • Defective scanner drive motor connector • Defective BICU board
121	B	Scanner home position error 2	
		The scanner home position sensor does not detect the scanner coming back to the home position.	• Defective scanner home position sensor • Defective scanner drive motor • Defective scanner home position sensor connector • Defective scanner drive motor connector • Defective BICU board
302	B	Charge roller current leak	
		The polling module detects a current leak of the charge roller.	• Defective charge roller • Defective high voltage supply board • Loose connection of the PCU
320	B	Polygonal mirror motor error	
		The polygon mirror motor does not reach the operating speed within 10 seconds. Or, the polygon mirror motor remains out of the operating speed for 0.2 second after reaching the operating speed.	• Defective polygon mirror motor • Loose connection between the polygonal mirror motor and the BICU • Defective cable between the BICU and the polygon mirror motor • Defective BICU

No. Definition		Symptom	Possible Cause
322	B	Laser synchronization error	
		The main scan synchronization detector does not detect the laser signal for 0.5 second.	• Toner bottle not installed • Loose connection between the LD unit and the BICU • Defective cable between the BICU and LD unit • LD unit out of position • Defective LD unit • Defective BICU
390	B	TD sensor error	
		The BICU detects the TD sensor outputting abnormal voltage (less than 0.2 V or more than 4.0 V) 10 times consecutively.	• Defective TD sensor • Loose connection of the PCU
391	B	Development bias leak	
		The polling module detects a current leak of the development bias.	• Loose connection of the PCU • Defective high voltage supply board
392	B	Developer initialization error	
		The ID sensor does not detect a correct pattern during developer initialization (☞ 2-214-001).	• Defective ID sensor • Insufficient developer • Defective drum operation • Defective development roller operation • Loose connection of the PCU • Insufficient voltage for the charge roller
401	B	Transfer roller leak error (positive electrode)	
		The feedback voltage of the transfer roller is insufficient.	• Defective high voltage supply board • Loose connection of the PCU • Incorrect installation of the transfer unit or the separation unit • Defective transfer roller
402	B	Transfer roller leak error (negative electrode)	
		The feedback voltage of the transfer roller is insufficient.	• Defective high voltage supply board • Loose connection of the PCU • Incorrect installation of the transfer unit or the separation unit • Defective transfer roller
500	B	Main motor error	
		The main motor does not reach its operation speed within 0.7 second. Or, the main motor remains out of its operation speed for 0.7 second after reaching the operation speed.	• Overload • Defective main motor

No. Definition		Symptom	Possible Cause
541	A	Fusing thermistor open error	
		The fusing temperature remains lower than the specified temperature by 20 degrees Celsius.	• Defective thermistor • Incorrect installation of the thermistor • Defective power supply unit • Loose connectors
542	A	Fusing temperature warm-up error	
		The fusing temperature rises 7 degrees or less in two seconds; and this continues 5 times consecutively. Or, the fusing temperature is not detected within 25 or 35 seconds.	• Defective thermistor • Incorrect installation of the thermistor • Defective fusing lamp • Defective power supply unit
543	A	Fusing overheat error 1	
		The fusing temperature detected by the thermistor is 230°C or higher for one second.	• Defective thermistor • Defective power supply unit
544	A	Fusing overheat error 2	
		The fusing temperature detected by the monitor circuit is 250°C or higher for one second.	• Defective thermistor • Defective power supply unit
546	A	Unstable fusing temperature	
		While the fusing lamp is on, the fusing temperature varies 50°C or more within one second; and this occurs two consecutive times.	• Defective thermistor • Incorrect installation of the thermistor • Defective power supply unit
547	B	Zero cross signal malfunction	
		The zero cross signal is not detected within five seconds after the main power switch is turned on. Or, the zero cross signal is not detected within one second after operation begins.	• Defective power supply unit • Defective BICU
900	B	Electrical total counter error	
		The electrical total counter contains incorrect data.	• Defective NVRAM on the controller
901	B	Mechanical total counter error	
		The polling module does not detect the mechanical total counter.	• Defective mechanical total counter • Defective BICU • Loose connection

4.2 ELECTRICAL COMPONENT DEFECTS

4.2.1 SENSOR/SWITCH OPEN ERRORS (B129/B130/B168/B169)

Sensor	Connector	Message	Remarks
Registration Sensor	CN127	Paper jam	
	SN		
Paper End Sensor	CN129	Load paper	
	SN		
Bypass Paper End Sensor	CN130	Load paper	The red LED in the fax key lights when the application program tries to print out a document.
	SN		
Paper Path Sensor	CN137	Paper jam	
	SN		
Exit Sensor	CN128	Paper jam	
	SN		
Image Density (ID) Sensor	CN132	(None)	Print quality may become worse.
	SN		
Toner Density (TD) Sensor	CN123	SC901	The connector is shared with the mechanical total counter.
	PCU	Reset PCU correctly	
Scanner HP Sensor	CN126	SC120	
	Sensor	SC120	
Platen Cover Sensor	CN126	SC120	
	SN	(None)	
ADF Guide Open Sensor	DF CN305	Cover open	
	SN	Cover open	
ADF Original Set Sensor	DF CN305	Cover open	
	Sensor	(None)	
ADF Registration Sensor	DF CN305	Cover Open	
	SN	Paper jam	
Front Door Switch	CN114	Right door open	
	SW	Front/Right door open	
Right Door Switch	CN114	Right door open	
	SW	Right door open	

CNxxx = The connector on the BICU board.

DF CNxxx = The connector on the ADF connection board.

SN = The connector on the sensor.

SW = The connector on the switch.

PCU = The connector on the PCU.

4.2.2 SENSOR/SWITCH OPEN ERRORS (B044/B045/B046)

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 (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.

4.2.3 BLOWN FUSE CONDITIONS

All of these fuses are on the power supply unit.

B129/B130/B168/B169:

Fuse	Rating		At main switch ON
	120 V	220 – 240 V	
FU1	15A/125V	8A/250 V	No response
FU2	6.3A/250V	3.15A/250V	No response

B044/B045/B046:

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.

4.3 LED DISPLAY

4.3.1 BICU (B129/B130/B168/B169 ONLY)

Number	Function
LED 2	LED 2 blinks in normal operation.

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 SERVICE PROGRAM

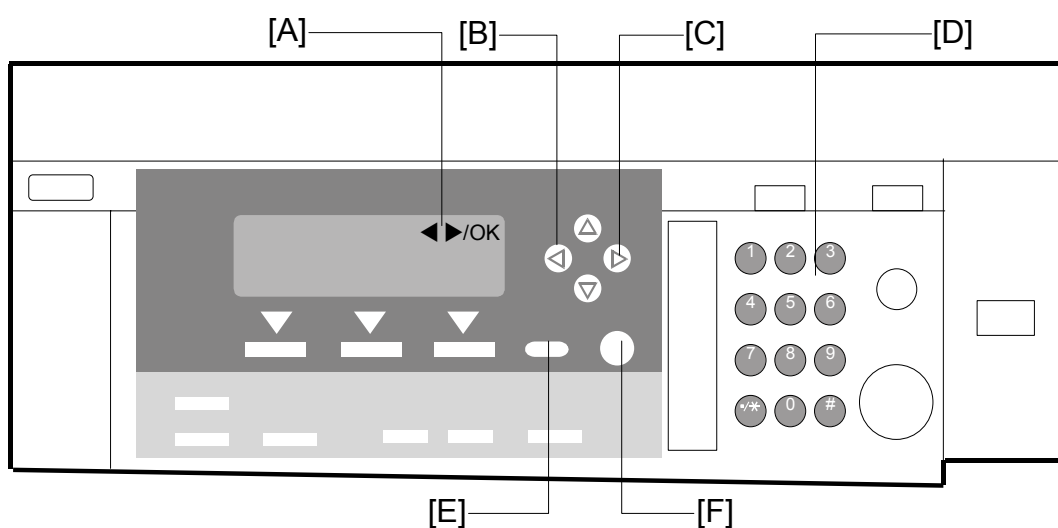
⚠ IMPORTANT

Do not let the user access the SP mode or the SSP mode. Only service representatives are allowed to access these modes. The machine operation is NOT guaranteed after any person other than service representatives accesses the SP mode or the SSP mode.

5.1.1 USING SP AND SSP MODES

The following two modes are available:

- SP Mode (Service Program Mode): The SP Mode includes the programs that are necessary for standard maintenance or troubleshooting activities.
- SSP Mode (Special SP Mode): The SSP Mode includes SP-Mode programs and some special programs. Extra knowledge of machine operation is required to use these special programs. For details, consult your supervisor.



Service
Tables

Starting SP Mode

1. Type the keys as follows: → ① → ⑦ → ⑦
2. Press the key and hold it down until the SP-mode menu is displayed (about 3 seconds).

Starting SSP Mode

NOTE: The SSP mode is not available in the basic model (the machine without the controller box).

1. Type the keys as follows:  →  →  → 
2. Press the  key and hold it down until the SP-mode menu is displayed (about 3 seconds).
3. Press the  key and hold it down.
4. While holding down the  key, press the  key (on the numeric keypad).
5. While holding down the  key, press the “OK” key.

Selecting Programs

- When a blinking underscore (or several blinking underscores) is displayed, you can type a number from the numeric keypad [D].
- When the sign “◀▶/OK” [A] is displayed upper right corner, you can scroll through the menu by pressing the left-arrow key [B] or the right-arrow key [C]. To select a program, press the OK key [F].

Specifying Values

1. After locating a program, press the OK key. A blinking underscore (or several blinking underscores) indicates which value you can change. The value in parentheses is the default value of the menu.
2. Type a necessary value from the numeric keypad. To switch between positive (plus) and negative (minus) values, press the  key.
3. To validate the value, press the OK key. To cancel the value, press the cancel key [E].

Activating Copy Mode

You can activate the copy mode while the SP mode is running. When you do so, the copier outputs images or patterns that help you adjust the SP setting.

1. Press the  key. The copy mode is activated.
2. Specify copy settings and press the  key.
3. To return to the SP mode, press the  key.

NOTE: You cannot end the SP mode while the copy mode is activated.

Quitting Programs/Ending (S)SP Mode

Press the  key or the cancel key to quit the program. You can end the SP mode by pressing one of these keys several times.

5.1.2 SP MODE TABLES—BASIC MODEL (B129)

The tables in this section (5.1.2) list the service programs (SPs) that are available when the controller box is NOT installed. For the SPs available on models with the controller box, see the next section (5.1.3).

Keys in the tables:

- Asterisk (*): The settings are saved in the NVRAM. Most will return to the default values when you execute SP5-801-002 (☛ 5.1.5).
- DFU: This program is for design/factory use only. Do not change these settings.
- Brackets ([]): The brackets enclose the setting range, default value, and minimum step with unit ([Minimum ~ Maximum / Default / Step]).

SP1-XXX (Feed)

1001*	Leading Edge Registration	[−9.0 ~ 9.0 / 0.0 / 0.1 mm/step]
1001 1	All Trays	Adjusts the leading-edge registration (☛ 3.14).
1001 2	By-pass	
1001 3	Duplex	

1002*	Side-to-Side Registration	[−9.0 ~ 9.0 / 0.0 / 0.1 mm/step]
1002 1	1st Tray	Adjusts the side-to-side registration (☛ 3.14). SP1-002-001 is applied to all trays. SP1-002-002 and 005 adjusts the difference from SP1-002-001.
1002 2	Optional Tray	
1002 5	By-pass	
1002 6	Duplex	Adjusts the side-to-side registration of the 2nd side in duplex copying. The 1st side is adjusted by SP1-002-001 through 005.

1003*	Paper Feed Timing	Adjusts the amount of paper buckle on the registration roller.
1003 1	1st tray	[0 ~ 10 / 5 / 1 mm/step]
1003 3	Optional tray	[0 ~ 10 / 5 / 1 mm/step]
1003 4	By-pass feed	[0 ~ 10 / 5 / 1 mm/step]
1003 5	Duplex	[0 ~ 20 / 5 / 1 mm/step]

1103*	Fusing Idling	[0 = No / 1 = Yes]
1103 1	Enables or disables the contact-release control. The table below lists the results.	
	Setting	0 = No 1 = Yes
	C-R control	Works Does not work
	Idling time	Shorter Longer
	Fusing quality	Lower Higher

SERVICE PROGRAM

1105*	Fusing Temperature Adjustment	
	Adjusts the target fusing temperature. Note that the thermistor is at the center of the hot roller.	
1105 1	Warm Up-Center	[140 ~ 180 / 160 / 1°C/step]
1105 3	Standby-Center	[140 ~ 160 / 150 / 1°C/step]
1105 5	Copying-Center	[140 ~ 180 / 160 / 1°C/step]
1105 7	Low Level 2-Center	[0 ~ 80 / 60 / 1°C/step]
1105 9	Thick-Center	[140 ~ 185 / 165 / 1°C/step]

1106	Display Fusing
1106 1	Displays the fusing temperature.

1107*	Fusing Soft Start DFU	
	Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to bring the fusing lamp power to 100% while bringing the lamp up to the standby temperature or while copying. Increase this value if the machine is experiencing sudden power dropouts.	
1107 1	Warm Up Soft Start	[0 = 10 cycles / 1 = 20 cycles / 2 = 50 cycles]
1107 2	Other Soft Start	[0 = 10 cycles / 1 = 20 cycles / 2 = 50 cycles / 3 = 1 cycle]
1107 3	Soft Stop Setting	[0: No / 1: Yes]

1108*	Set-Fusing Start	[0 = 1s / 1 = 1.5s / 2 = 2s]
1108 1	Specifies the interval for fusing-temperature control.	

1109	Nip Band Check
1109 1	Conducts the nip band check (☛ 3.5.7).

1110*	Fan Control Timer	[30 ~ 60 / 30 / 1 s/step]
1110 1	Specifies the fan control time. The fan motor keeps its operating speed for the specified time before changing the speed or stopping. The fan control timer prevents the exhaust fan from suddenly stopping. This function protects the copier from overheating.	

1902	Display-AC Frequency
1902 1	Displays the fusing lamp power control frequency (as detected by the zero cross signal generator). The displayed value is 1/5 the actual frequency: 10 and lower = 50 Hz, 11 and higher = 60 Hz.

1911*	By-pass Envelope	[0 = Disabled / 1= Enabled]
1911 1	The program dedicated to envelope printing runs when you enable this program (SP1-911-001) and you select "Thick Paper" as the paper type of the by-pass tray (☛ 3.5.7 > System Settings > Tray Paper Settings > Paper Type: Bypass Tray).	

SP2-XXX (Drum)

2001*	Charge Roller Bias Adjustment	
2001 1	Printing	[−2100 ~ −1500 / −1650 / 1 V/step]
	Adjusts the voltage applied to the charge roller for printing. The voltage changes automatically as charge-roller voltage control works. The value here is the base value for the charge-roller voltage control.	
2001 2	ID sensor pattern	[0 ~ 400 / 300 / 1 V/step]
	Adjusts the voltage applied to the charge roller for the ID sensor pattern (as part of charge-roller voltage correction). The charge-roller voltage is obtained by adding SP2-001-002 to the value of SP2-001-001.	

2101*	Erase Margin Adjustment	Adjusts the width of the erased area (☛ 3.14).
2101 1	Leading edge	[0.0 ~ 9.0 / 3.0 / 0.1 mm/step] Specification: 2 ± 1.5 mm
2101 2	Trailing	[0.0 ~ 9.0 / 4.0 / 0.1 mm/step] Specification: 2 +2.5/−1.5 mm
	The rear trailing edge is this value plus 1.2 mm.	
2101 3	Left side	[0.0 ~ 9.0 / 2.0 / 0.1 mm/step] Specification: 2 ± 1.5 mm
	The rear left edge is this value plus 0.3 mm.	
2101 4	Right side	[0.0 ~ 9.0 / 2.0 / 0.1 mm/step] Specification: 2 +2.5/−1.5 mm
	The rear right edge is this value plus 0.3 mm.	

2201*	Development Bias Adjustment	
2201 1	Printing	[−1500 ~ −200 / −650 / 1 V/step]
	Adjusts the voltage applied to the development roller for printing. Image density becomes higher when you specify a smaller value (a greater absolute value). Image density becomes lower when you specify a greater value (a smaller absolute value).	
2201 2	ID sensor pattern	[−2 = LL (220 V) / −1 = L (260 V) / 0 = N (300 V) / 1 = H (340 V) / 2 = HH (380 V)]
	Adjusts the voltage applied to the development roller for the ID sensor pattern. The voltage applied is obtained by adding SP2-201-002 to SP2-201-1. The setting affects ID sensor pattern density, which in turn affects the toner supply.	

2213*	Outputs after Near End	
2213 1	[0 = 50 pages / 1 = 20 pages] Sets the number of copy/print/fax pages that can be made after toner near-end has been detected. Reduce the number of pages if the user normally makes copies with a high image ratio.	

2214	Developer Initialization	
2214 1	Initializes the TD sensor toner supply target voltage and the TD sensor gain value. Execute this SP replacing the developer or the TD sensor.	

SERVICE PROGRAM

2220	TD Sensor Output Value Display
2220 1	Displays: a) Vt: the current TD sensor output value and b) Vref: the target TD output value Vts (SP2-926) + correction for ID sensor output. The TD sensor output value changes every copy. If $a > b$, toner is supplied to the development unit.

2221	ID Sensor Error Analysis (🔍 5.1.4)	
2221 1	Vsg	Displays the Vsg value.
2221 2	Vsp	Displays the Vsp value.
2221 3	PWM	Displays the PWM value.
2221 4	Vsdp	Displays the Vsdp value.
2221 5	Vt	Displays the Vt value.
2221 6	Vts	Displays the Vts value.

2301*	Transfer Current Adjustment (☛ 6.6).	
2301 1	Normal paper	$[-2 = -4 \mu\text{A} / -1 = -2 \mu\text{A} / \mathbf{0 = 0 \mu\text{A}} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray	
2301 2	Thick/Special paper	$[-2 = -4 \mu\text{A} / -1 = -2 \mu\text{A} / \mathbf{0 = 0 \mu\text{A}} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when feeding from the by-pass tray. Use a high setting (a) if the user normally feeds relatively thick paper from the by-pass tray, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies).	
2301 3	Duplex	$[-2 = -4 \mu\text{A} / -1 = -2 \mu / \mathbf{0 = 0 \mu\text{A}} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when carrying out a duplex job. Use this SP if there is poor image transfer on the rear side of duplex copies.	
2301 4	Cleaning	$[-10 \sim 1 / \mathbf{-1} / 1 \mu\text{A/step}]$
	Adjusts the current applied to the transfer roller for roller cleaning. Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.)	

2802	Forced Developer Churning
2802 1	Initializes the developer and checks the TD sensor output (Vt). The machine mixes the developer for 2 minutes while reading and displaying the Vt value. The machine does not initialize the TD sensor output. If the machine has not been used for a long period, prints may have a dirty background. In a case like this, use this SP to mix the developer. The message "Completed" is displayed when the program ends normally.

2906*	Tailing Correction	
2906 1	Shift value	[0.0 ~ 1.0 / 0.0 / 0.1 mm/step]
	Shifts the image position at the intervals specified by SP2-906-002. When the copier is continuously printing vertical lines (such as in tables), the paper may not separate correctly. This SP can prevent this.	
2906 2	Interval	[1 ~ 10 / 1 / 1 page/step]
	Changes the interval of the image position shift specified by SP2-906-001.	

2908	Forced Toner Supply	
2908 1	Supplies the toner to the development unit. The processing stops under either of the following conditions: • The toner density in the development unit reaches the standard level. • The processing has continued for two 2 minutes.	

2915*	Polygon Mirror Motor Idling Time	[0 = None / 1 = 15 s / 2 = 25 s]
2915 1	Specifies the polygon mirror motor idling time. The polygon mirror motor starts its operation when an original is set, a key is pressed, or the platen cover or ADF is opened. The motor stops if no manual operation is performed for the specified time. When you set "0", the motor does not stop while the copier is in the standby status.	

2921*	Toner Supply Mode	
2921 1	[0 = Sensor 1 / 1 = Sensor 2 (DFU)] Selects the toner supply mode. Keep the default setting as long as the TD sensor is working.	

2922*	Toner Supply Time	[0.1 ~ 5.0 / 0.6 / 0.1 s/step]
2922 1	Adjusts the toner supply time. The toner supply motor remains on for the specified time. To validate this setting, select "0" in SP2-921-001. Specify a greater value if the user tends to make many copies having high proportions of solid black image areas.	

2926*	Standard Vt	[0.00 ~ 5.00 / 2.50 / 0.01 V/step] DFU
2926 1	Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process. This SP is effective only when SP2-921001 is "0", "1", or "2".	

2927*	ID Sensor Control	[0 = No / 1 = Yes]
2927 1	Determines whether the ID sensor signal is referenced or not for the toner density control. Keep the default value in usual operations.	

SERVICE PROGRAM

2928	Toner End Clear
2928 1	Clears the following messages and counters without supplying the toner: • Toner near end message • Toner end message • Toner near end counter • Toner end counter Do not use this SP in normal operating conditions. When the toner in the development unit is abnormally insufficient, the drum may attract the toner carrier to its surface. Excess toner carrier damages the drum surface.

2929*	Vref Limits	Adjust the upper or lower Vref limit.
2929 1	Upper	[0.50 ~ 3.50 / 3.20 / 0.01V/step] DFU
2929 2	Lower	[0.50 ~ 3.50 / 0.70 / 0.01V/step] DFU

2994*	ID Sensor Detection Temperature	[30 ~ 90 / 30 / 1 °C/step]
2994 1	Adjusts the temperature threshold. The ID sensor signal is not referenced when the fusing temperature is at the specified level or higher while the copier is recovering or starting up.	

2996*	Transfer Roller Cleaning	[0 = No / 1 = Yes]
2996 1	Cleans or does not clean the transfer roller before each job. Select "1" if the backside of the paper becomes dirty when output. Note that the copier takes a longer time to output the first copy when you select "1". If you select "0", the transfer roller is never cleaned.	

2998*	Main Scan Magnification	[-0.5 ~ +0.5 / 0.0 / 0.1%/step]
2998 1	Adjusts the magnification (➡ 3.14). The specification is 100 ± 1.0%.	

SP4-XXX (Scanner)

4008*	Sub-Scan Magnification (Scanner)	[−0.9 ~ +0.9 / 0.0 / 0.1%/step]
4008 1	Adjusts the sub-scan magnification (☛ 3.14).	

4009*	Main Scan Magnification (Scanner)	[−0.9 ~ +0.9 / 0.0 / 0.1%/step]
4009 1	Adjusts the main-scan magnification (☛ 3.14).	

4010*	Leading Edge Registration (Scanner)	[−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
4010 1	Adjusts the leading edge registration (☛ 3.14).	

4011*	Side-to-side Registration (Scanner)	[−1.0 ~ +1.0 / 0.0 / 0.1 mm/step]
4011 1	Adjusts the side-to-side registration for scanning in platen mode (☛ 3.14).	

4012*	Scan Erase Margin	[0 ~ 9.0 / 1.0 / 0.1 mm/step]
4012 1	Leading edge	Adjusts the scanning margin. Generally, the scanning margin should be as little as possible. To adjust the image area, use SP2-101.
4012 2	Trailing edge	
4012 3	Left	
4012 4	Right	

4013	Scanner Free Run	
4013 1	Conducts the scanner free run with the exposure lamp on.	

4015*	White Plate Scanning	
4015 1	Start position	[−3.0 ~ +6.0 / 0.0 / 0.1 mm/step]
	Adjusts the scanning start position on the white plate. The base value is 17.8 mm from the scanner home position. This SP specifies the offset from this base value.	
4015 2	Scanning length	[−3.0 ~ +6.0 / 0.0 / 0.1 mm/step]
	Adjusts the distance of the white plate scan. The scan begins from the start position (SP4-015-001) and ends at the specified distance. The base value is 2.0 mm. This SP decides the offset from this base value. Specify 0 (zero) or a larger value.	

4428	Scan Auto Adjustment	
4428 1	Conducts the automatic scanner adjustment. Use this SP after replacing the white plate (☛ 3.14.2).	

SERVICE PROGRAM

4901	SBU White Level Adjustment	
4901 1	Black Display-Error	[0 = Normal / 1 = Error]
	Displays the return code of the black-level adjustment. When an error is detected, SC143 or SC145 is generated.	
4901 2	Black Feedback-EVEN	[0 ~ 8191]
	Displays the feedback value of the even channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 3	Black Feedback-ODD	[0 ~ 8191]
	Displays the feedback value of the odd channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 4	Black Display-Target	[0 ~ 63 / 10 / 1/step]
	Displays the target value for the black-level adjustment executed during machine initialization. Normally, the value is 10. Other values indicate that the adjustment has ended unsuccessfully.	
4901 5*	White Target	[0 ~ 511 / 511 / 1/step]
	Displays the target value for the white-level adjustment.	
4901 6	White Result	[0 ~ 511 / 0 / 1/step]
	Displays the result of the white-level adjustment.	
4901 8	White Display-Error	[0 = Normal / 1 = Error]
	Displays the return code of the white-level adjustment. When an error is detected, SC143 is generated.	
4901 9	White Display-Overflow	[0 = Normal / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result is not in the range of the values in SP4-901-6.	
4901 10	White Number of Attempt	[0 ~ 20 / 0 / 1/step]
	Displays how many times the white-level adjustment is retried. The value does not include the first execution of the white adjustment. For example, if the value is "2", this indicates that the white-level adjustment has been executed three times. The white-level adjustment can be executed 20 times or less. Therefore, if the value is "20", this indicates that the white-level adjustment has ended abnormally (as described, the value "20" does not include the first execution). If the white-level adjustment is unsuccessful, the machine uses the result of the latest, successful white-level adjustment.	
4901 11*	Auto Adjustment Setting	[222 ~ 281 / 256 / 1/step]
	Displays the parameter of the white-level adjustment. The value is based on the result of SP4-901-12.	
4901 12	Auto Adjustment-Result	[0 ~ 600 / 0 / 1/step]
	Displays the result of the white-level adjustment. Normally, the value is between 228 and 281 (including the both values). When the value is normal, it is stored as the value of SP4-901-11.	
4901 14	Auto Adjustment-Error	[0 = Normal / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result value is less than 228 or larger than 281 (☛ SP4-901-012).	

4902*	Exposure Lamp ON	[0: OFF / 1: ON]
4902 1	Turns the exposure lamp on or off. To turn on the exposure lamp, specify "1"; to turn it off specify "0".	

4903*	ADS Level	[0 ~ 255 / 252 / 1/step]
4903 1	Adjusts the ADS level.	

4904*	ADS Lower Limit	[0 ~ 255 / 80 / 1/step]
4904 1	Adjusts the ADS lower limit.	

4905*	ADS Level	[0 = All / 1 = One]
4905 1	Checks the whole area (0 = All) or the specific areas (1 = One) to adjust the ADS level. The specific areas are as follows: • ADF: ± 37.5 mm from the center • Platen Cover: 15 to 90 mm from the left edge	

4921*	Image Adj Selection	
4921 1	Copy	[0 ~ 10 / 0 / 1/step]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None 1 = Text 1 2 = Text 2 3 = Photo 1 4 = Photo 2 5 = Photo 3 6 = Special 1 7 = Special 2 8 = Special 3 9 = Special 4 10 = Special 5	

4922*	Scanner Gamma	[0=System default/1=Text/2=Photo]
4922 1	Copy	Selects "text" or "photo" as the priority output mode. This setting is applied to all image processing modes of SP4-921.

4923*	Notch Selection	
	Selects the value of the center ID adjustment notch for the ID adjustment LEDs. • 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). • This setting is applied to all image processing modes of SP4-921.	
4923 1	Copy	[-1 = Light / 0 = Normal / +1 = Dark]

4926*	Texture Removal	
	Adjusts the texture removal level that is used with error diffusion. 0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 and Photo 1, 3 have a default of 1. 1: No removal applied. 2 – 5: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal). This setting is only applied to the originals in SP4-921.	
4926 1	Copy	[0 ~ 6 / 0 / 1/step]

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4927*	Line Width Correction	
	Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP4-921.	
4927 1	Copy	[-2 ~ 2 / 0 / 1/step]

4928*	Independent Dot Erase	
	Selects the dot erase level. Higher settings provide greater erasure. This setting is only applied to the originals in SP4-921.	
4928 1	Copy	[-2 ~ 2 / 0 / 1/step]

4929*	Positive/Negative	[0 = No, 1 = Yes]
4929 1	Copy	Inverts white and black. This setting is only applied to the originals in SP4-921.

4930*	Sharpness-Edge	[-2 ~ 2 / 0 / 1/step]
4930 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.

4931*	Sharpness-Solid	[-2 ~ 2 / 0 / 1/step]
4931 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.

4932*	Sharpness-Low ID	[-2 ~ 2 / 0 / 1/step]
4932 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.

4941*	White Line Erase	[0 ~ 2 / 1 / 1/step]
4941 1	Selects the white line erase level. 0: None 1: Weak 2: Strong • This setting is effective only Photo 1, Photo 3, Special 3 or Special 4 mode. • 0: White line erase is not used, and white level correction is used instead. • This setting is applied regardless of what mode has been selected in SP4-921.	

4942*	Black Line Erase	[0 ~ 3 / 2 / 1/step]
4942 1	Selects the black line erase level. This setting is effective only when originals are scanned by the ADF. [0 = No / 1 = Very weak / 2 = Weak / 3 = Strong] This setting is applied regardless of what mode has been selected in SP4-921.	

SP5-XXX (Mode)

5001	All Indicators On
5001 1	Turns on all LEDs. The LCD turns on or off every 3 seconds. Press the reset key to end this program.

5113*	Optional Counter Type	0: None 11: MF key card (Increment) 12: MF key card (Decrement)
5113 1	Selects the corresponding key for installed devices such as coin lock.	

5120*	Clear-OP Count Remove	[0=Yes / 1=Standby only / 2=No]
5120 1	Specifies the condition to reset the copy job settings when the key counter is removed. • 0 = Yes: The settings are cleared when the counter is removed. • 1 = Standby only: The settings are cleared when the counter is removed at the end of a job. • 2 = No: The settings are not cleared under either condition. As for duplex copying, the job settings are always preserved regardless of these setting.	

5121*	Count Up Timing	[0 = Feed In / 1 = Exit]
5121 1	Selects the count-up timing. • 0 = Feed: At each paper feed • 1 = Exit: At each paper exit	



5501*	PM Alarm Mode	
5501 1	Interval	Sets the base PM interval. [1 ~ 255 / 90 / 1K copies/step] <i>This setting is meaningful only if SP5-501-2 is set to "1".</i> Specifies when the PM alarm occurs.
5501 2	On/Off	Enables/disables the PM alarm for the total number of prints, copies, and faxes. [0 = Disable / 1 = Enable]

5801	Memory Clear (basic model only)
5801 2	Engine 5.1.5

5802	Machine Free Run
5802 1	Conducts machine free run (including the scanner unit). Press "ON" to start; press "OFF" to stop.

5803	Input Check
	5.1.6

5804	Output Check
	5.1.7

SERVICE PROGRAM

5807*	Area Selection
5807 1	Selects the display language. 2 North America 3 Europe 5 Asia 6 China SP5-807-001 is not cleared by SP5-801-002 (☛ 5.1.5). NOTE: SC982 is displayed if you specify a language that is inconsistent with your local model.

5811*	Serial Num Input
5811 1	☛ 5.1.8

5812*	Service TEL
5812 1	Telephone Specifies the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press ☎. To delete the current telephone number, press ☎.
5812 2	Facsimile Specifies the fax number printed on user counter reports. To input a dash, press ☎. To delete the current fax number, press ☎.

5824	NVRAM Upload
5824 1	☛ 5.1.9

5825	NVRAM Download
5825 1	☛ 5.1.9

5827	Program Download (☛ 5.1.10)
5827 1	Copies the software program from the IC card to the flash ROM. To execute this SP, ① turn off the main power switch, ② insert the IC card, ③ press the power key and hold it down, and ④ turn on the main power switch (while you keep holding the power key). The copier reads the software program from the IC card if you turn on the copier in this manner. The SP mode is automatically activated.

5901	Printer Free Run
5901 1	Executes the free run. Press "ON" to start; press "OFF" to stop.

5902	Test Pattern Print
5902 1	☛ 5.1.11

5907*	Plug & Play Setting
5907 1	Selects the brand name and production name for the Plug and Play function. These names are stored in the NVRAM. When the NVRAM data is corrupted, selects these names once again. Use the right-arrow or left-arrow key to scroll through the list of brand names. To select a brand name, press the OK key. An asterisk (*) indicates which manufacture is currently selected. ☛ 5.1.5



5912*	PCU Alarm	
5912 1	Alarm Display On/Off	Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2. [0 = Display / 1 = Do not display]
5912 2	Interval	Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs. [1 ~ 255 / 45 / 1000 sheets/step]

5990	SMC Print	
5990 1	All	5.1.12
5990 2	SP	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Big font	

SP6-XXX (Peripherals)

6006*	ADF Adjustment (☛ 3.14) NOTE: Available menus depend on the machine model and its configuration.	
6006 1	StoS/Front Regist	[−1.0 ~ +1.0 / 0.0 / 0.1 mm/step]
	Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the  key to select “+” or “−” before entering the value	
6006 2	Leading Regist	[−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
	Adjusts the leading edge registration for ADF mode. Use the  key to select “+” or “−” before entering the value.	
6006 3	Trailing Erase	[−3.0 ~ +3.0 / −1.0 / 0.1 mm/step]
	Adjusts the trailing edge erase margin for ADF mode. Use the  key to select “+” or “−” before entering the value.	
6006 5	Sub-scan Magnif	[−0.9 ~ +0.9 / 0.0 / 0.1 %/step]
	Adjust the sub-scan magnification for the ADF.	

6009	ADF Free Run	
6009 1	Performs an ADF free run. Press "ON" to start; press "OFF" to stop.	

6910*	ADF Shading Time	[0 ~ 60 / 30 / 1 s/step]
6910 1	Adjusts the interval used for the shading processing in the ADF mode. Light and heat in the room may affect the scanner response. Reduce this setting if copy quality indicates that the white level is drifting during ADF copy jobs.	

SP7-XXX (Data Log)

7001*	Total Operation
7001 1	Displays the total operation time (total drum rotation time).

7401*	Counter–SC Total	[0 ~ 9999 / 0 / 1/step]
7401 1	Displays how many times SC codes are generated.	

7403*	SC History
7403 1	Displays the histories of the latest 10 SC codes.

7502*	Counter–Paper Jam	[0 ~ 9999 / 0 / 1/step]
7502 1	Displays the total number of copy paper jams.	

7503*	Counter–Orgn Jam	[0 ~ 9999 / 0 / 1/step]
7503 1	Displays the total number of original jams,	

7504*	Counter–Each P Jam	[0 ~ 9999 / 0 / 1/step]
	Displays the total number of the paper jams classified by timing and location.	
7504 1	At power on	
	Paper jam occurs at power on.	
7504 10	Off-Regist NoFeed	
	Paper does not reach the registration sensor (from a paper tray).	
7504 11	Off-1 Vertical SN	
	Paper does not reach the relay sensor.	
7504 12	On-1 Vertical SN	
	Paper is caught at the relay sensor.	
7504 50	Off-Regist Bypass	
	Paper does not reach the registration sensor (from the by-pass tray).	
7504 60	Off-Regist Duplex	
	Paper does not reach the registration sensor during reverse-side printing (for duplex printing).	
7504 70	On-Regist SN	
	Paper is caught at the registration sensor.	
7504 120	On-Exit SN	
	Paper is caught at the exit sensor (previous page).	
7504 121	Off-Exit SN	
	Paper does not reach the exit sensor.	
7504 122	On-Exit SN	
	Paper is caught at the exit sensor.	
7504 123	Off-Dup Inverter	
	Paper does not reach the duplex inverter sensor (from the registration roller).	
7504 125	On-Dup Inverter	
	Paper is caught at the duplex inverter sensor.	

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7505*	Counter-Each O Jam	[0 ~ 9999 / 0 / 1/step]
	Displays the total number of the original jams on the ADF that have occurred at a certain timing or at a certain location.	
7505 210	Off-Regist SN	
	The original does not reach the registration sensor.	
7505 211	On-Regist SN	
	The original is caught at the registration sensor.	
7505 216	Insufficient gap	
	The distance between originals is not sufficient. This jam can occur when the original is not of the standard size.	

7507*	Display-P Jam History	
7507 1	Displays the latest 10 paper-jam history. The list below shows the possible 12 codes:	
	1	10 11 12 50 60
	70	120 121 122 123 125
	The codes correspond to the menus of SP7-504. For example, the code 1 corresponds to SP7-504-001, and the code 10 corresponds to SP7-504-10.	

7508*	Display-O Jam History	
7508 1	Displays the total number of the original-jams history. The possible codes are as follows:	
	210	211 216
	The codes correspond to the menus of SP7-505. For example, the code 210 corresponds to SP7-505-210, and the code 211 corresponds to SP7-505-211.	

7801	Memory/Version/PN	
7801 2	Memory/Version (BICU)	
	Displays the version of the BICU board	

7803*	Display-PM Count	
7803 1	Displays the PM counter.	

7804	Reset-PM Counter	
7804 1	Resets the PM counter (SP7-803-001). When the program ends normally, the message "Completed" is displayed.	

7807	Reset-SC/Jam Counters	
7807 1	Resets the SC, paper, original, and total jam counters. When the program ends normally, the message "Completed" is displayed. SP7-807-1 does not reset the following logs: SP7-507 (Display-Paper Jam History) and SP7-508 (Display-Original Jam History).	

7808	Reset-Counters
7808 1	Resets all counters except for the management counters. The management counters are the counters that are not changed by NVRAM Download (SP5-825-001;  NVRAM Download (SP5-825-001) in section 5.1.9). When the program ends normally, the message the message "Completed" is displayed.

7810	Reset-Key Op Code
7810 1	Resets the key operator code. Use SP7-810-1 when the customer has forgotten the key-operator code. When the program ends normally, the message "Completed" is displayed, if the program ends abnormally, an error message is displayed. If the customer forgets the key operator code. To specify a new key-operator code, use the User Tools: System Settings → Key Operator Tools → Key Operator Code → On → Enter Key Operator Code.

7832*	Display-Self-Diag
7832 1	Displays the SC codes and the number of their occurrences. Each number is in the range of 0 to 9999.

7991*	Dsply-Info Count
	Displays the total operating time or the total number of operations. The time is displayed in the following format: day:hour:minute:second.
7991 1	Dsply-Timer Count
	The total of the time when the main switch is kept on (excluding the time when the safety switch is off).
7991 3	Dsply-ID S Work
	The total of the time when the ID sensor is working.
7991 4	Dsply-Dev Counter
	The total number of paper outputs.
7991 5	Dsply-ID Er Count
	The total number of ID-sensor errors.

7992*	Reset-Info Count
7992 1	Reset-Timer Count
	Clears the timer counter (SP7-991-001).
7992 4	Reset-Dev Count
	Clears the development counter (SP7-991-004).
7992 5	Reset-ID Er Count
	Clears the ID sensor error counter (SP7-991-005).

SERVICE PROGRAM

SP8-XXX (History)

8192*	C: Total Scan PGS	[0 ~ 9999999 / 0 / 1 sheet/step]
8192 1	Displays the total number of scanned originals. The both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

8221*	ADF Org Feed	[0 ~ 9999999 / 0 / 1 sheet/step]
8221 1	Front	
	Displays the total number of scanned front sides of originals fed from the ADF.	

8381*	T: Total Prt PGS	[0 ~ 9999999 / 0 / 1 sheet/step]
8381 1	Displays the print count of all application programs.	

8382*	C: Total Prt PGS	[0 ~ 9999999 / 0 / 1 sheet/step]
8382 1	Displays the print count of the copier application program.	

8411*	Prints/Duplex	[0 ~ 9999999 / 0 / 1 sheet/step]
8411 1	Displays the total count of the duplex printing.	

8422*	C: PrtPGS/Dup Comb	[0 ~ 9999999 / 0 / 1 sheet/step]
8422 1	C: PrtPGS/Dup Comb (Simplex > Duplex)	Displays the total print count of copier application classified by combination/duple type.
8422 4	C: PrtPGS/Dup Comb (Simplex Combine)	
8422 5	C: PrtPGS/Dup Comb (Duplex Combine)	
8422 6	C: PrtPGS/Dup Comb (2>)	

8442*	C: PrtPGS/Ppr Size	[0 ~ 9999999 / 0 / 1 sheet/step]
8442 2	A4	Displays the number of pages printed by the copier application program.
8442 3	A5	
8442 5	B5	
8442 7	LG	
8442 8	LT	
8442 9	HLT	
8442 254	Other (Standard)	
8442 255	Other (Custom)	

8451*	C: PrtPGS/Ppr Tray	[0 ~ 9999999 / 0 / 1 sheet/step]
8451 1	Bypass Tray	Displays the total print count classified by paper source.
8451 2	Tray 1	
8451 3	Optional Tray	

SERVICE PROGRAM

8462*	C: PrtPGS/Ppr Type	[0 ~ 9999999 / 0 / 1 sheet/step]
8462 1	Normal	Displays the total number of pages printed by the copier application program.
8462 4	Thick	
8462 7	OHP	
8462 8	Other	

8522*	C:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
8522 1	Sort	The SP counts by finishing mode the total number of pages printed by the Copy application.

5.1.3 SP MODE TABLES—OTHER MODELS

The tables in this section (5.1.3) list the service programs (SPs) that are available when the controller box is installed. For the SPs available on the model without the controller box, see the previous section (5.1.2).

Keys in the tables:

- Asterisk (*): The settings are saved in the NVRAM. Most return to the default values when you execute SP5-998-001 (Engine) and SP5-801-001 (All Clear) (☛ 5.1.5).
- DFU: This program is for design/factory use only. Do not change these settings.
- Brackets ([]): The brackets enclose the setting range, default value, and minimum step with unit ([Minimum ~ Maximum / Default / Step]).
- SSP: This program is in the SSP Mode only. Consult your supervisor before using this program.

SP1-XXX (Feed)

1001*	Leading Edge Registration	[–9.0 ~ 9.0 / 0.0 / 0.1 mm/step]
1001 1	All Trays	Adjusts the leading-edge registration (☛ 3.14).
1001 2	By-pass	
1001 3	Duplex	

1002*	Side-to-Side Registration	[–9.0 ~ 9.0 / 0.0 / 0.1 mm/step]
1002 1	1st Tray	Adjusts the side-to-side registration (☛ 3.14). SP1-002-001 is applied to all trays. SP1-002-002 and 005 adjusts the difference from SP1-002-001.
1002 2	Optional tray	
1002 5	By-pass	
1002 6	Duplex	Adjusts the side-to-side registration of the 2nd side in duplex copying. The 1st side is adjusted by SP1-002-001 through 005.

1003*	Paper Feed Timing	Adjusts the amount of paper buckle on the registration roller.
1003 1	1st tray	[0 ~ 10 / 5 / 1 mm/step]
1003 3	Optional tray	[0 ~ 10 / 5 / 1 mm/step]
1003 4	By-pass feed	[0 ~ 10 / 5 / 1 mm/step]
1003 5	Duplex	[0 ~ 20 / 5 / 1 mm/step]

1103*	Fusing Idling	[0 = No / 1 = Yes]
1103 1	Enables or disables the contact-release control. The table below lists the results.	
	Setting	0 = No 1 = Yes
	C-R control	Works Does not work
	Idling time	Shorter Longer
	Fusing quality	Lower Higher

1105*	Fusing Temperature Adjustment	
	Adjusts the target fusing temperature. Note that the thermistor is at the center of the hot roller.	
1105 1	Warm Up-Center	[140 ~ 180 / 160 / 1°C/step]
1105 3	Standby-Center	[140 ~ 160 / 150 / 1°C/step]
1105 5	Copying-Center	[140 ~ 180 / 160 / 1°C/step]
1105 7	Low Level 2-Center	[0 ~ 80 / 60 / 1°C/step]
1105 9	Thick-Center	[140 ~ 185 / 165 / 1°C/step]

1106	Display Fusing	
1106 1	Center	Displays the fusing temperature.

1107*	Fusing Soft Start DFU	
	Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to bring the fusing lamp power to 100% while bringing the lamp up to the standby temperature or while copying. Increase this value if the machine is experiencing sudden power dropouts.	
1107 1	Warm Up Soft Start	[0 = 10 cycles / 1 = 20 cycles / 2 = 50 cycles]
1107 2	Other Soft Start	[0 = 10 cycles / 1 = 20 cycles / 2 = 50 cycles / 3 = 1 cycle]
1107 3	Soft Stop Setting	[0: No / 1: Yes]

1108*	Set-Fusing Start	[0 = 1s / 1 = 1.5s / 2 = 2s]
1108 1	Specifies the interval for fusing-temperature control.	

1109	Nip Band Check	
1109 1	Conducts the nip band check (☞ 3.5.7).	

1110*	Fan Control Timer	[30 ~ 60 / 30 / 1 s/step]
1110 1	Specifies the fan control time. The fan motor keeps its operating speed for the specified time before changing the speed or stopping. The fan control timer prevents the exhaust fan from suddenly stopping. This function protects the copier from overheating.	

1902	Display-AC Freq.	
1902 1	Displays the fusing lamp power control frequency (as detected by the zero cross signal generator). The displayed value is 1/5 the actual frequency: 10 and lower = 50 Hz, 12 and lower = 60 Hz.	

1911*	By-pass Envelope	[0 = Disabled / 1= Enabled]
1911 1	The program dedicated to envelope printing runs when you enable this program (SP1-911-001) and you select "Thick Paper" as the paper type of the by-pass tray (☞ 19.2) > System Settings > Tray Paper Settings > Paper Type: Bypass Tray).	

SERVICE PROGRAM

SP2-XXX (Drum)

2001*	Charge Roller Bias Adjustment	
2001 1	Printing	[−2100 ~ −1500 / −1650 / 1 V/step]
	Adjusts the voltage applied to the charge roller for printing. The voltage changes automatically as charge-roller voltage control works. The value here is the base value for the charge-roller voltage control.	
2001 2	ID sensor pattern	[0 ~ 400 / 300 / 1 V/step]
	Adjusts the voltage applied to the charge roller for the ID sensor pattern (as part of charge-roller voltage correction). The charge-roller voltage is obtained by adding SP2-001-002 to the value of SP2-001-001.	

2101*	Erase Margin Adjustment		Adjusts the width of the erased area (☛ 3.14).
2101 1	Leading edge	[0.0 ~ 9.0 / 3.0 / 0.1 mm/step]	Specification: 2 ± 1.5 mm
2101 2	Trailing	[0.0 ~ 9.0 / 4.0 / 0.1 mm/step]	Specification: 2 +2.5/−1.5 mm
	The rear trailing edge is this value plus 1.2 mm.		
2101 3	Left side	[0.0 ~ 9.0 / 2.0 / 0.1 mm/step]	Specification: 2 ± 1.5 mm
	The rear left edge is this value plus 0.3 mm.		
2101 4	Right side	[0.0 ~ 9.0 / 2.0 / 0.1 mm/step]	Specification: 2 +2.5/−1.5 mm
	The rear right edge is this value plus 0.3 mm.		

2201*	Development Bias Adjustment	
2201 1	Printing	[−1500 ~ −200 / −650 / 1 V/step]
	Adjusts the voltage applied to the development roller for printing. Image density becomes higher when you specify a smaller value (a greater absolute value). Image density becomes lower when you specify a greater value (a smaller absolute value).	
2201 2	ID sensor pattern	[−2 = LL (220 V) / −1 = L (260 V) / 0 = N (300 V) / 1 = H (340 V) / 2 = HH (380 V)]
	Adjusts the voltage applied to the development roller for the ID sensor pattern. The voltage applied is obtained by adding SP2-201-002 to SP2-201-1. The setting affects ID sensor pattern density, which in turn affects the toner supply.	

2213*	Outputs after Near End	
2213 1	[0 = 50 pages / 1 = 20 pages] Sets the number of copy/print/fax pages that can be made after toner near-end has been detected. Reduce the number of pages if the user normally makes copies with a high image ratio.	

2214	Developer Initialization	
2214 1	Initializes the TD sensor toner supply target voltage and the TD sensor gain value. Execute this SP replacing the developer or the TD sensor.	

2221	ID Sensor Error Analysis (☛ 5.1.4)	
2221 1	Vsg	Displays the Vsg value.
2221 2	Vsp	Displays the Vsp value.
2221 3	PWM	Displays the PWM value.
2221 4	Vsdp	Displays the Vsdp value.
2221 5	Vt	Displays the Vt value.
2221 6	Vts	Displays the Vts value.

2301*	Transfer Current Adjustment (☛ 6.6).	
2301 1	Normal paper	$[-2 = -4 \mu\text{A} / -1 = -2 \mu\text{A} / 0 = 0 \mu\text{A} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray	
2301 2	Thick/Special paper	$[-2 = -4 \mu\text{A} / -1 = -2 \mu\text{A} / 0 = 0 \mu\text{A} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when feeding from the by-pass tray. Use a high setting (a) if the user normally feeds relatively thick paper from the by-pass tray, or (b) if waste toner is re-attracted from the drum (which can occur when using transparencies).	
2301 3	Duplex	$[-2 = -4 \mu\text{A} / -1 = -2 \mu\text{A} / 0 = 0 \mu\text{A} / 1 = 2 \mu\text{A} / 2 = +4 \mu\text{A}]$
	Adjusts the current applied to the transfer roller when carrying out a duplex job. Use this SP if there is poor image transfer on the rear side of duplex copies.	
2301 4	Cleaning	$[-10 \sim 1 / -1 / 1 \mu\text{A}/\text{step}]$
	Adjusts the current applied to the transfer roller for roller cleaning. Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.)	

2802	Forced Developer Churning	
2802 1	Initializes the developer and checks the TD sensor output (Vt). The machine mixes the developer for 2 minutes while reading and displaying the Vt value. The machine does not initialize the TD sensor output. If the machine has not been used for a long period, prints may have a dirty background. In a case like this, use this SP to mix the developer. The message "Completed" is displayed when the program ends normally.	

2906*	Tailing Correction	
2906 1	Shift value	$[0.0 \sim 1.0 / 0.0 / 0.1 \text{ mm}/\text{step}]$
	Shifts the image position at the intervals specified by SP2-906-002. When the copier is continuously printing vertical lines (such as in tables), the paper may not separate correctly. This SP can prevent this.	
2906 2	Interval	$[1 \sim 10 / 1 / 1 \text{ page}/\text{step}]$
	Changes the interval of the image position shift specified by SP2-906-001.	

SERVICE PROGRAM

2908	Forced Toner Supply
2908 1	Supplies the toner to the development unit. The processing stops under either of the following conditions: • The toner density in the development unit reaches the standard level. • The processing has continued for two 2 minutes.

2915*	Polygon Mirror Motor Idling Time	[0 = None / 1 = 15 s / 2 = 25 s]
2915 1	Specifies the polygon mirror motor idling time. The polygon mirror motor starts its operation when an original is set, a key is pressed, or the platen cover or ADF is opened. The motor stops if no manual operation is performed for the specified time. When you set "0", the motor does not stop while the copier is in the standby status.	

2921*	Toner Supply Mode
2921 1	[0 = Sensor 1 / 1 = Sensor 2 (DFU)] Selects the toner supply mode. Keep the default setting as long as the TD sensor is working. You can select "3" only when the TD sensor is abnormal. Do not select "1" or "2".

2922*	Toner Supply Time	[0.1 ~ 5.0 / 0.6 / 0.1 s/step]
2922 1	Adjusts the toner supply time. The toner supply motor remains on for the specified time. To validate this setting, select "0" in SP2-921-001. Specify a greater value if the user tends to make many copies having high proportions of solid black image areas.	

2926*	Standard Vt	[0.00 ~ 5.00 / 2.50 / 0.01 V/step] DFU
2926 1	Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process. This SP is effective only when SP2-921001 is "0", "1", or "2".	

2927*	ID Sensor Control	[0 = No / 1 = Yes]
2927 1	Determines whether the ID sensor signal is referenced or not for the toner density control. Keep the default value in usual operations.	

2928	Toner End Clear
2928 1	Clears the following messages and counters without supplying the toner: • Toner near end message • Toner end message • Toner near end counter • Toner end counter Do not use this SP in normal operations. When the toner in the development unit is excessively low, the drum may attract the toner carrier to its surface. The toner carrier damages the drum surface.

2929*	Vref Limits	Adjust the upper or lower Vref limit.
2929 1	Upper	[0.50 ~ 3.50 / 3.20 / 0.01V/step] DFU
2929 2	Lower	[0.50 ~ 3.50 / 0.70 / 0.01V/step] DFU

2994*	ID Sensor Detection Temperature	[30 ~ 90 / 30 / 1 °C/step]
2994 1	Adjusts the temperature threshold. The ID sensor signal is not referenced when the fusing temperature is at the specified level or higher while the copier is recovering or starting up.	

2996*	Transfer Roller Cleaning	[0 = No / 1 = Yes]
2996 1	Cleans or does not clean the transfer roller before each job. Select "1" if the rear side of the paper becomes dirty when output. Note that the copier takes a longer time to output the first copy when you select "1". If you select "0," the transfer roller is never cleaned.	

2998*	Main Scan Magnification	[-0.5 ~ +0.5 / 0.0 / 0.1%/step]
2998 1	Adjusts the magnification (➡ 3.14). The specification is 100 ± 1.0%.	

SERVICE PROGRAM

SP4-XXX (Scanner)

4008*	Sub-Scan Magnification (Scanner)	[−0.9 ~ +0.9 / 0.0 / 0.1%/step]
4008 1	Adjusts the sub-scan magnification (☛ 3.14).	

4009*	Main Scan Magnification (Scanner)	[−0.9 ~ +0.9 / 0.0 / 0.1%/step]
4009 1	Adjusts the main-scan magnification (☛ 3.14).	

4010*	Leading Edge Registration (Scanner)	[−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
4010 1	Adjusts the leading edge registration (☛ 3.14).	

4011*	Side-to-side Registration (Scanner)	[−1.0 ~ +1.0 / 0.0 / 0.1 mm/step]
4011 1	Adjusts the side-to-side registration for scanning in platen mode (☛ 3.14).	

4012*	Scan Erase Margin	[0 ~ 9.0 / 1.0 / 0.1 mm/step]
4012 1	Leading edge	Adjusts the scanning margin. Generally, the scanning margin should be as little as possible. To adjust the image area, use SP2-101.
4012 2	Trailing edge	
4012 3	Left	
4012 4	Right	

4013	Scanner Free Run	
4013 1	Conducts the scanner free run with the exposure lamp on.	

4015*	White Plate Scanning	
4015 1	Start position	[−3.0 ~ +6.0 / 0.0 / 0.1 mm/step]
	Adjusts the scanning start position on the white plate. The base value is 17.8 mm from the scanner home position. This SP specifies the offset from this base value.	
4015 2	Scanning length	[−3.0 ~ +6.0 / 0.0 / 0.1 mm/step]
	Adjusts the distance of the white plate scan. The scan begins from the start position (SP4-015-001) and ends at the specified distance. The base value is 2.0 mm. This SP decides the offset from this base value. Specify 0 (zero) or a larger value.	

4428	Scan Auto Adjustment	
4428 1	Conducts the automatic scanner adjustment. Use this SP after replacing the white plate (☛ 3.14.2).	

4901	SBU White Level Adjustment	
4901 1	Black Display-Error	[0 = Normal / 1 = Error]
	Displays the return code of the black-level adjustment. When an error is detected, SC143 or SC145 is generated.	
4901 2	Black Feedback-EVEN	[0 ~ 8191]
	Displays the feedback value of the even channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 3	Black Feedback-ODD	[0 ~ 8191]
	Displays the feedback value of the odd channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 4	Black Display-Target	[0 ~ 63 / 10 / 1/step]
	Displays the target value for the black-level adjustment executed during machine initialization. Normally, the value is 10. Other values indicate that the adjustment has ended unsuccessfully.	
4901 5*	White Target	[0 ~ 511 / 511 / 1/step]
	Displays the target value for the white-level adjustment.	
4901 6	White Result	[0 ~ 511 / 0 / 1/step]
	Displays the result of the white-level adjustment.	
4901 8	White Display-Error	[0 = Normal / 1 = Error]
	Displays the return code of the white-level adjustment. When an error is detected, SC143 is generated.	
4901 9	White Display-Overflow	[0 = Normal / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result is not in the range of the values in SP4-901-6.	
4901 10	White Number of Attempt	[0 ~ 20 / 0 / 1/step]
	Displays how many times the white-level adjustment is re-tried. The value does not include the first execution of the white adjustment. For example, if the value is "2", this indicates that the white-level adjustment has been executed three times. The white-level adjustment can be executed 20 times or less. Therefore, if the value is "20", this indicates that the white-level adjustment has ended abnormally (as described, the value "20" does not include the first execution). If the white-level adjustment is unsuccessful, the machine uses the result of the latest, successful white-level adjustment.	
4901 11*	Auto Adjustment Setting	[222 ~ 281 / 256 / 1/step]
	Displays the parameter of the white-level adjustment. The value is based on the result of SP4-901-12.	
4901 12	Auto Adjustment-Result	[0 ~ 600 / 0 / 1/step]
	Displays the result of the white-level adjustment. Normally, the value is between 228 and 281 (including the both values). When the value is normal, it is stored as the value of SP4-901-11.	
4901 14	Auto Adjustment-Error	[0 = Normal / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result value is less than 228 or larger than 281 (☛ SP4-901-012).	

4902*	Exposure Lamp ON	
4902 1	Turns the exposure lamp on or off. To turn off the exposure lamp, select "OFF." The exposure lamp turns off automatically after 180 seconds.	

SERVICE PROGRAM

4903*	ADS Level	[0 ~ 255 / 252 / 1/step]
4903 1	Adjusts the ADS level.	

4904*	ADS Lower Limit	[0 ~ 255 / 80 / 1/step]
4904 1	Adjusts the ADS lower limit.	

4905*	ADS Level	[0 = All / 1 = One]
4905 1	Checks the whole area (0 = All) or the specific areas (1 = One) to adjust the ADS level. The specific areas are as follows: • ADF: ± 37.5 mm from the center • Platen Cover: 15 to 90 mm from the left edge	

4921*	Image Adj Selection	
4921 1	Copy	[0 ~ 10 / 0 / 1/step]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None 1 = Text 1 2 = Text 2 3 = Photo 1 4 = Photo 2 5 = Photo 3 6 = Special 1 7 = Special 2 8 = Special 3 9 = Special 4 10 = Special 5	
4921 2	Fax	[0 ~ 5 / 0 / 1/step]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None 1 = Text 1 2 = Text 2 3 = Photo 1 4 = Photo 2 5 = Special 1	
4921 3	Scanner	[0 ~ 4 / 0 / 1/step]
	Selects which mode the settings from SP4-922 to SP4-932 are used for. 0 = None 1 = Text 1 2 = Text 2 3 = Photo 1 4 = Photo 2	

4922*	Scanner Gamma	[0=System default/1=Text/2=Photo]
4922 1	Copy	Selects "text" or "photo" as the priority output mode. This setting is applied to all image processing modes of SP4-921.
4922 2	Fax	
4922 3	Scanner	

4923*	Notch Selection	
	Selects the value of the center ID adjustment notch for the ID adjustment LEDs. • 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). • This setting is applied to all image processing modes of SP4-921.	
4923 1	Copy	[-1 = Light / 0 = Normal / +1 = Dark]
4923 2	Fax	
4923 3	Scanner	

4926*	Texture Removal	
	Adjusts the texture removal level that is used with error diffusion. 0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 and Photo 1-3 have a default of 1. 1: No removal applied. 2 – 5: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal). This setting is only applied to the originals in SP4-921.	
4926 1	Copy	[0 ~ 6 / 0 / 1/step]
4926 2	Fax	
4926 3	Scanner	

4927*	Line Width Correction	
	Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP4-921.	
4927 1	Copy	[-2 ~ 2 / 0 / 1/step]
4927 2	Fax	
4927 3	Scanner	

4928*	Independent Dot Erase	
	Selects the dot erase level. Higher settings provide greater erasure. This setting is only applied to the originals in SP4-921.	
4928 1	Copy	[-2 ~ 2 / 0 / 1/step]
4928 2	Fax	
4928 3	Scanner	

4929*	Positive/Negative	[0 = No, 1 = Yes]
4929 1	Copy	Inverts white and black. This setting is only applied to the originals in SP4-921.
4929 2	Fax	

4930*	Sharpness-Edge	[-2 ~ 2 / 0 / 1/step]
4930 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.
4930 2	Fax	
4930 3	Scanner	

4931*	Sharpness-Solid	[-2 ~ 2 / 0 / 1/step]
4931 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.
4931 2	Fax	
4931 3	Scanner	

4932*	Sharpness-Low ID	[-2 ~ 2 / 0 / 1/step]
4932 1	Copy	Adjust the clarity. This setting is only applied to the originals in SP4-921.
4932 2	Fax	
4932 3	Scanner	

SERVICE PROGRAM

4941*	White Line Erase	[0 ~ 2 / 1 / 1/step]
4941 1	Selects the white line erase level. 0: None 1: Weak 2: Strong • This setting is effective only Photo 1, Photo 3, Special 3 or Special 4 mode. • 0: White line erase is not used, and white level correction is used instead. • This setting is applied regardless of what mode has been selected in SP4-921.	

4942*	Black Line Erase	[0 ~ 3 / 2 / 1/step]
4942 1	Selects the black line erase level. This setting is effective only when originals are scanned by the ADF. [0 = No / 1 = Very weak / 2 = Weak / 3 = Strong] This setting is applied regardless of what mode has been selected in SP4-921.	

SP5-XXX (Mode)

5001	All Indicators On
5001 1	Turns on all LEDs.

SSP 5044*	Operation Panel Bit Switch DFU

5113*	Optional Counter Type	0: None 5: MF key card (Peace) Japan Only 11: MF key card (Increment) 12: MF key card (Decrement)
5113 1	Selects the corresponding key for installed devices such as coin lock.	

5120*	Clear-OP Count Remove	[0=Yes / 1=Standby only / 2=No]
5120 1	Specifies the condition to reset the copy job settings when the key counter is removed. • 0 = Yes: The settings are cleared when the counter is removed. • 1 = Standby only: The settings are cleared when the counter is removed at the end of a job. • 2 = No: The settings are not cleared under either condition. As for duplex copying, the job settings are always preserved regardless of these setting.	

5121*	Count Up Timing	[0 = Feed In / 1 = Exit]
5121 1	Selects the count-up timing. • 0 = Feed: At each paper feed • 1 = Exit: At each paper exit	

5162*	Application Switching Method	[0 = Soft Key Set / 1 = Hard Key Set]
5162 1	Determines whether the application screen is switched with the hardware switch or the software switch.	

5302*	Time	[-1440 ~ +1440 / -300 / 1 minute/step]
5302 2	Time Difference	Species the time difference from GMT.

5307*	Summer Time	
5307 1	On/Off	Validates or invalidates the daylight-saving-time settings (SP5-307-003 and 004). OFF=0 ON=1
5307 3	Start (☛ 5.1.13)	Specifies the start of the daylight saving time.
5307 4	End (☛ 5.1.13)	Specifies the end of the daylight saving time.

SERVICE PROGRAM

5404*	User Code Count Clear
5404 1	Initializes the user code counter.

5501*	PM Alarm Interval
5501 1	Printout [0 ~ 9999 / 0 / 0K copies/step] Specifies when the PM alarm occurs.
5501 2	ADF [0 = Off / 1 = On] Enables or disables the original count alarm.

5504*	Jam Alarm	[0~3 / 3 / 1 step] 0: Zero (Off) 1: Low (2.5K jams) 2: Medium (3K jams) 3: High (6K jams)
5504 1	Selects the jam alarm level. The jam alarm counter increases if a paper jam occurs (excluding ADF-related jams). The jam alarm counter decreases if no paper jam occurs while the copier prints the specified number of paper. The alarm call occurs if the jam alarm counter reaches 10.	

5505*	Error Alarm	[0 ~ 255 / 20 / 1 hundred sheets/step]
5505 1	Specifies the number of paper (in hundred) used as the error alarm level. The error alarm starts if 5 SC codes are generated before the copier prints the specified number of paper. When the copier has printed the specified number of paper, the SC code counter (of this SP) is cleared to zero.	

5507*	Supply Alarm	Specifies the supply alarm level.
5507 1	Paper Supply Alarm	0: Off, 1: On, DFU
5507 3	Toner Supply Alarm	0: Off, 1: On, DFU
5507 128	Interval :Others	[00250 ~ 10000 / 1000 / 1 Step] DFU
5507 133	Interval: A4	
5507 134	Interval: A5	
5507 142	Interval: B5	
5507 164	Interval: LG	
5507 166	Interval: LT	
5507 172	Interval: HLT	

5508*	CC Call	
5508 1*	Jam Remains	[0: Disable, 1: Enable]
	Enables/disables initiating a call for an unattended paper jam.	
5508 2*	Continuous Jams	[0: Disable, 1: Enable]
	Enables/disables initiating a call for consecutive paper jams.	
5508 3*	Continuous Door Open	[0: Disable, 1: Enable]
	Enables/disables initiating a call when the front door remains open.	
5508 4*	Low Call Mode	[0: Normal mode, 1: Reduced mode]
	Enables/disables the new call specifications designed to reduce the number of calls.	
5508 11*	Jam Detection: Time Length	[03~30 / 10 / 1/step]
	Sets the time a jam must remain before it becomes an "unattended paper jam". This setting is enabled only when SP5508 004 is set to 1.	
5508 12*	Jam Detection: Continuous Count	[02~10 / 5 / 1/step]
	Sets the number of consecutive paper jams required to initiate a call. This setting is enabled only when SP5508 004 is set to 1.	
5508 13*	Door Open: Time Length	[03~30 / 10 / 1/step]
	Sets the length of time the door remains open before the machine initiates a call. This setting is enabled only when SP5508 004 is set to 1.	
5508 21	CC Call: Long Time Jam	[0 = Auto call / 1 = Alarm]
	Selects the machine reaction to long time jams.	
5508 22	CC Call: Continuous Jam	[0 = Auto call / 1 = Alarm]
	Selects the machine reaction to continuous jams.	
5508 23	CC Call: Door Open	[0 = Auto call / 1 = Alarm]
	Selects the machine reaction to door open.	

5801	Memory Clear	
5801 1	All Clear	Executes the following memory clears at the same time: SP5-801-2 through 12.
5801 3	SCS	Initializes the system-control-service settings.
5801 4	IMH Memory Clear	Initializes the image-memory-handler settings.
5801 5	MCS	Initializes the memory-control-service settings.
5801 6	Copier application	Initializes the copier-application settings.
5801 7	Fax application	Initializes the fax-application settings.
5801 8	Printer application	Initializes the printer-application settings.
5801 9	Scanner application	Initializes the scanner-application settings.
5801 10	Web service/Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.
5801 11	NCS	Initializes the network-control-service settings: the system defaults and interface settings (including IP addresses), Smart Net Monitor for Administrator, Web Status Monitor settings, and the TELNET settings.
5801 12	R-Fax	Initializes the job log in ID, Smart Net Monitor for Administrator, job history, and local storage file numbers.
5801 14	Clear DCS Settings	
5801 15	Clear UCS Settings	

SERVICE PROGRAM

5802	Machine Free Run
5802 1	Conducts machine free run (including the scanner unit). Press “ON” to start; press “OFF” to stop.

5803	Input Check
	☛ 5.1.6

5804	Output Check
	☛ 5.1.7

5807*	Area Selection
5807 1	Selects the display language group. 2 North America 3 Europe 5 Asia 6 China SP5-807-001 is not cleared by SP5-801-001 and SP5-998-001 (☛ 5.1.5).

5811*	Serial Num Input
5811 1	☛ 5.1.8

5812*	Service TEL
5812 1	Telephone Specifies the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press ☎. To delete the current telephone number, press ☎.
5812 2	Facsimile Specifies the fax number printed on user counter reports. To input a dash, press ☎. To delete the current fax number, press ☎.

5816*	Remote Service
5816 1	I/F Setting [0=Remote diagnostics off/1=Serial (CSS or NRS) remote diagnostics on/2=Network remote diagnostics] Enables or disables the remote diagnostics function.
5816 2	CE Call Allows the customer representative to start or end the remote machine check using CSS or NRS by pressing the center report key.
5816 3	Function Flag [0 = Disabled / 1 = Enabled] Enables or disables remote diagnosis via the NRS network.
5816 6	Device Information Call Display [0 = Disabled / 1 = Enabled] Determines whether the device information call (NRS) is displayed.
5816 7	SSL Disable [0 = Disabled / 1 = Enabled] Determines whether the SSL sends the remote-communication-gate confirmation.
5816 8	RCG Connect Timeout [1~ 90 / 10 / 1 second/step] Sets the timer for the remote-communication-gate connection (NRS).
5816 9	RCG Write to Timeout [0~ 100 / 60 / 1 second/step] Sets the timer for writing data to the remote communication gate (NRS).
5816 10	RCG Read Timeout [0~ 100 / 60 / 1 second/step] Sets the timer for reading data from the remote communication gate (NRS).

5816*	Remote Service
5816 11	Port 80 Enable
	Determines whether permission is granted for access to the SOP via Port 80 (NRS).

5821*	Remote Service Address	Japan Only.
5821 1*	CSS PI Device Code	Sets the PI device code. After changing this setting, you must switch the machine off and on.
5821 2*	RCG IP Address	Sets the IP address of the RCG (Remote Communication Gate) destination for call processing at the remote service center. [00000000h ~ FFFFFFFFh/ 00000000h /

5824	NVRAM Upload
5824 1	5.1.9

5825	NVRAM Download
1	5.1.9

5828*	Network Setting
5828 74*	Delete Password
	Deletes the NCS (Network Control Service) password. Sets the Telnet, WSM (Web Status Monitor), and remote ROM update passwords to NULL (empty)
5828 84*	Print Settings List
	Prints a list of the NCS parameter settings.
5828 90*	TELNET (0: OFF 1: ON)
	[0 = Disabled / 1 = Enabled]
	Disables or enables Telnet operation. If this SP is disabled the Telnet port is closed.
5828 91*	Web (0: OFF 1: ON)
	[0 = Disabled / 1 = Enabled]
	Disables or enables the Web operation.
5828 115*	SMB Computer Name
	Specifies the SMB computer name.
5828 116*	SMB Work Group Name
	Specifies the SMB work group name.

SSP 5834	Panel Image	[0: Off (disabled)/1: On (enabled)]
5834 1	Enables and disables the operation-panel image-transfer feature. Set "1" to enable this feature. When changing the setting to "0", turn the main power switch off and on validate the setting.	

SERVICE PROGRAM

5839*	IEEE 1394	
5839 4	Host Name	Enter name
	Specifies the host name. Example: RNP0000000000	
5839 7*	Cycle Master	OFF / ON
	Enables or disables the cycle master function for the 1394 bus standard.	
5839 8*	BCR mode	
	Determines how BCR (Broadcast Channel Register) operates on the 1394 standard bus when the independent node is in any mode other than IRM. (NVRAM: 2bits) Always Effective: Writes from the IRM. Standard: Copies BCR of the IRM after no data is written from the IRM after the prescribed time has elapsed. IRM Color Copy: BCR normally enabled.	
5839 9*	IRM 1394a Check	
	Conducts a 1394a check of IRM when the independent node is in any mode other than IRM. OFF: Checks whether IRM conforms to 1394a. ON: After IRM is checked, if IRM does not conform then independent node switches to IRM.	
5839 10*	Unique ID	
	Lists the ID (Node_Unique_ID) assigned to the device by the system administrator. OFF: Does not list the Node_Unique_ID assigned by the system administrator. Instead, the Source_ID of the GASP header in the ARP is used. ON: The Node_Unique_ID assigned by the system administrator is used, and the Source_ID of the GASP header in the ARP is ignored. Also, when the serial bus is reset, extra bus transactions are opened for enumeration.	
5839 11*	Logout	
	Handles the login request of the login initiator for SBP-2. (1bit) OFF: Disable (refuse login). Initiator retry during login. Login refusal on arrival of login request (standard operation) ON: Enable (force logout). Initiator retry during login. Login refusal on arrival of login request, and the initiator forces the login.	
5839 12*	Login	
	Enables or disables the exclusive login feature (SBP-2 related). OFF: Disables. The exclusive login (LOGIN ORB exClusvie it) is ignored. ON: Enables. Exclusive login is in effect.	
5839 13*	Login MAX	[0~63 / 8 / 1/step], (0 and 63: Reserved)
	Sets the maximum number of logins from the initiator (6-bits)	

5840*	IEEE 802.11b		
5840 4*	SSID		
	Specifies a unique ID (up to 32 characters long) to identify the device when it is operating in an area with another wireless LAN network.		
5840 6*	Channel MAX	[1~14 / 14 / 1/step]	
	Sets the maximum number of channels available for data transmission via the wireless LAN. The number of channels available varies according to location. The default settings are set for the maximum end of the range for each area. Adjust the upper 4 bits to set the maximum number of channels. This program is displayed only when the optional IEEE 802.11b interface is installed.		
5840 7*	Channel MIN	[1~14 / 14 / 1/step]	
	Sets the minimum number of channels available for data transmission via the wireless LAN. The number of channels available varies according to location. The default settings are set for the minimum end of the range for each area. Adjust the lower 4 bits to set the minimum number of channels. This program is displayed only when the optional IEEE 802.11b interface is installed.		
5840 11*	WEP Key Select	00: Key #1	0000 0000
		01: Key #2 (Reserved)	0000 0001
		10: Key #3 (Reserved)	0000 0010
		11: Key #4 (Reserved)	0000 0011
	Selects the WEP key. [00~11 / 00 / 1 binary]		
5840 18*	SSID		
	Checks that the specified SSID is correct. This SP is effective only when the optional IEEE 802.11b interface is installed. This SP sees if any incorrect character is included in the SSID that is input from the operation panel. (The characters out of the range from 0x20 to 0x7e are incorrect.) The result is returned to the operation panel: 2: OK, 3: NG NOTE: This SP is necessary for the models that support the multi-function panel, since this panel can input incorrect characters.		
5840 20*	WEP Mode	0: Max. 64-bit (10 characters)	
		1: Max. 128-bit (10, 26 characters)	
Determines the operation mode of the WEP key. This program is displayed only when the optional IEEE 802.11b interface is installed.			

5842	Net File Analysis
5842 1*	Specifies the output mode for debugging of each net file process. The 8th bit is reserved. The 7th bit is the switch of debugging output for each module.

SERVICE PROGRAM

5844*	USB	
5844 1*	Transfer Rate	Full Speed / Auto Change
	Sets the speed for USB data transmission. Full Speed: (12 Mbps fixed) Auto Change: 480 Mbps/12 Mbps auto adjust	
5844 2*	Vendor ID	[0x0000~0xFFFF/ 0x05CA /1/step], DFU
	Sets the vendor ID: Initial Setting: 0x05CA Ricoh Company.	
5844 3*	Product ID	[0x0000~0xFFFF/ 0x0403 /1/step], DFU
	Sets the product ID.	
5844 4*	Device Release Number	[0000~9999/ 0100 /1/step], DFU
	Sets the device release number of the BCD (binary coded decimal) display. Enter as a decimal number. NCS converts the number to hexadecimal number recognized as the BCD.	

5845*	Delivery Server Setting	
	Provides items for delivery server settings.	
5845 1*	FTP Port No.	[1~65535 / 3670 / 1/step]
	Sets the FTP port number used when image files to the Scan Router Server.	
5845 2*	IP Address (Primary)	Range: 000.000.000.000 ~ 255.255.255.255
	Use this SP to set the Scan Router Server address. The IP address under the transfer tab can be referenced by the initial system setting.	
5845 6*	Error Display Time	[0~999 / 300 / 1/step]
	Use this setting to determine the length of time the prompt message is displayed when a test error occurs during document transfer with the NetFile application and an external device.	
5845 8*	IP Address (Secondary)	Range: 000.000.000.000 ~ 255.255.255.255
	Specifies the IP address assigned to the computer designated to function as the secondary delivery server of Scan Router. This SP allows only the setting of the IP address without reference to the DNS setting.	
5845 9*	Delivery Server Model	[0~4/ 0 / 1/step]
	Allows changing the model of the delivery server registered by the I/O device. 0: Unknown 1: SG1 Provided 2: SG1 Package 3: SG2 Provided 4: SG2 Package	
5845 10*	Delivery Svr Capability	[0~255 / 0 / 1/step]
	Bit7 = 1 Comment information exists	Changes the capability of the registered that the I/O device registered.
	Bit6 = 1 Direct specification of mail address possible	
	Bit5 = 1 Mail RX confirmation setting possible	
	Bit4 = 1 Address book automatic update function exists	
	Bit3 = 1 Fax RX delivery function exists	
	Bit2 = 1 Sender password function exists	
	Bit1 = 1 Function to link MK-1 user and Sender exists	
	Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0")	

5846*	UCS Settings	
5846 1*	Machine ID (For Delivery Server)	Displays ID
	Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6-byte or 8-byte binary.	
5846 2*	Machine ID Clear (For Delivery Server)	Clears ID
	Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.	
5846 3*	Maximum Entries	[150~999/ 150 /1/step]
	Changes the maximum number of entries that UCS can handle. If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.	
5846 6*	Delivery Server Retry Timer	[0~255/ 0 /1/step]
	Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book.	
5846 7*	Delivery Server Retry Times	[0~255/ 0 /1/step]
	Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book.	
5846 8*	Delivery Server Maximum Entries	[200~999 / 200 / 1/step]
	Sets the maximum number account entries of the delivery server user information managed by UCS.	
5846 50*	Initialize All Directory Info.	Clears all directory information managed by UCS, including all user codes.
5846 51*	Upload All Directory Info.	Uploads all directory information to the SD card in the service slot.
5846 52*	Download All Directory Info.	Downloads all directory information from the SD card in the service slot.
5846 53	Upload Info Clear	Clears the user information uploaded to the SD card in the service slot.
5846 80*	Backup FCU	Backs up all directory information in the SD card to the FCU ROM.
5846 90*	Plain Data Forbidden	Allows you to prevent the address from plain data. This is a security function that prevents unauthorized access to address book data. 0 : No check. Address book data not protected. 1 : Check. Allows operation of UCS without data from HDD or SD card and without creating address book information with plain data.
SSP 5846 99*	Bit SW	Sets UCS debug output. DFU

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5848*	Web Service	
	5847 2 sets the 4-bit switch assignment for the access control setting. Setting of 0001 has no effect on access and delivery from Scan Router. 5847 100 sets the maximum size allowed for downloaded images. The default is equal to 1 gigabyte.	
5848 1*	NetFile (Lower 4 Bits Only)	Bit switch settings.
	0000: No access control 0001: Denies access to DeskTop Binder. Access and deliveries from Scan Router have no effect on capture.	
5848 4*	User Directory (Lower 4 Bits)	Switches access control on and off. 0000: OFF
5848 5*	Delivery Input (Lower 4 Bits)	
5848 6*	Fax Control (Lower 4 Bits)	
5848 7*	Comm. Log Fax (Lower 4 Bits)	

5849*	Installation Date	
5849 1*	Display	DFU
5849 2*	Switch to Print	DFU

5856	Remote ROM Update	
5856 2	Local port	[0 = Not allowed / 1 = Allowed]
	Allows or does not allow firmware update via the local port (IEEE 1284) during a remote ROM update. This setting is reset to zero after the main power switch is turned off.	

5857*	Debug Log Save Function	
5857 1*	On/Off (1: ON 0: OFF)	0: OFF, 1: ON
	Switches the debug log feature on and off. The debug log cannot be captured until this feature is switched on.	
5857 6	Save to SD Card	
	Specifies the decimal key number of the log to be written to the SD Card.	
5857 12	Erase Debug Data From SD Card	
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP5857 010 or 011 is executed. <i>To enable this SP, the machine must be cycled off and on.</i>	
5857 13	SD Card Space Available	
	Displays the amount of space available on the SD card.	
5857 14	SD to SD Latest	
	Copies the latest 4 -MB logs to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). The SP gives a unique name to the file newly saved file. You can save multiple logs from multiple machines in one SD card.	
5857 15	SD to SD Any	
	Copies the specified log to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). This SP copies 4-MB data at the maximum, and gives a unique name to the newly saved file. You can save multiple logs from multiple machines in one SD card. If you specify the log number that is not in the HDD, the SP does not execute.	

5857*	Debug Log Save Function	
5857 17	Make SD Debug File	
	Makes a 4-MB file on the HDD to save logs. The file stores the contents of key number 2225 of SCS (for example, the information of NV usage in SCS). A file is made in the SD when the first log is saved in the SD even if you do not execute this SP. This processing, however, takes a long time; the user may turn the main switch off and on before completion (the user see no message that indicates the completion of the logging when logs are made on the occurrence of an event). The logging takes a shorter time if you have made a log file beforehand. If you try to make a log file on the HDD where another log file has been already made, the contents of key number 2225 is added to the log file in the SD card. In a case like this, a new log file is not made. To make a new log file to supersede an old log file, you must execute SP5-857-012 before executing this SP.	

5858*	Debug Log Save: SC	
	Selects the content of the debugging information saved to the destination selected by SP5-857. SP5-858-003 stores the log of the specified SC.	
5858 1*	Engine SC	Stores SC codes generated by copier engine errors.
5858 2*	Controller SC	Stores SC codes generated by GW controller errors.
5858 3*	Any SC	[0~65535 / 0 / 1/step]
5858 4*	Jam	Stores jam errors.

5859*	Debug Log Save Function	[-9999999~9999999 / 0 / 1/step]
5859 1*	Key 1	Allows you to set up to 10 keys for log files for functions that use common memory on the controller board.
5859 2*	Key 2	
5859 3*	Key 3	
5859 4*	Key 4	
5859 5*	Key 5	
5859 6*	Key 6	
5859 7*	Key 7	
5859 8*	Key 8	
5859 9*	Key 9	
5859 10*	Key 10	

5860*	SMTP/POP3/IMAP4	
5860 20*	Partial Mail Receive Timeout	[1~168 / 72 / 1/step]
	Sets the amount of time to wait before saving a mail that breaks up during reception. The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.	
5860 21*	MDN Response RFC2298 Compliance	[0 = No / 1 = Yes]
	Determines whether RFC2298 compliance is switched on for MDN reply mail.	
5860 22*	SMTP Auth. From Field Replacement	[0 = No / 1 = Yes]
	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated.	

5869	RAM Disk	
5869 1	Main Function	Enables or disables the use of the RAM disk.

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5870	Common Key Info
5870 1	Common Key Info Writing Writes to flash ROM the common proof for validating the device for NRS specifications.
SSP 5870 3	Common Key Info Initialize Initializes the area for the key information.

5873	SD Card Application
5873 1	Move Exec Transfers the application programs.
5873 2	Undo Exec Nullifies the processing of SP5-873-001.

5902	Test Pattern Print
5902 1	5.1.11

5907*	Plug & Play Setting
5907 1	Selects the brand name and production name for the Plug and Play function. These names are stored in the NVRAM. When the NVRAM data is corrupted, selects these names once again. Use the right-arrow or left-arrow key to scroll through the list of brand names. To select a brand name, press the OK key. An asterisk (*) indicates which manufacture is currently selected. 5.1.5

5912*	PCU Alarm Counter (Printout)	[0 ~ 255 / 45 / 1/step]
5912 1	Specifies the PCU alarm level. The PCU alarm is issued when the following condition is met: PAC x 1000 >= PCUc where PAC is the value specified in this SP and PCUc is the PCU counter. When you specify 0 (zero), the PCU alarm is deactivated.	

5913	Switchover Permission Time	[3~30 / 3 / 1 s/step]
5913 2	Sets the amount of time to elapse while the machine is in standby mode (and the operation panel keys have not been used) before another application can gain control of the display.	

5914*	Application Counter Display	[0 = Off / 1 = On]
5914 1*	Printer Counter	Selects whether or not these total counters are displayed in the UP mode.
5914 3*	Copy Counter	

SSP 5970*	Debug Serial Output DFU	[0 = Off / 1 = On]
5970 1	Determines whether the debug information is output by the serial port when the machine is powered on.	

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5974*	Cherry Server	0: Lite, 1: Full
5974 1	Switches writing between the Scan Router Lite application provided and the optional full (Professional) version.	

5990	SMC Print	
5990 1	All	☛ 5.1.12
5990 2	SP	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Diagnostic Report	
5990 6	Non-Default	
5990 7	NIB Summary	
5990 21	Copier UP	
5990 22	Scanner SP	
5990 23	Scanner UP	

5998	Memory Clear	
5998 1	☛ 5.1.5	

SP6-XXX (Peripherals)

6006*	ADF Adjustment (☛ 3.14) NOTE: Available menus depend on the machine model and its configuration.	
6006 1	StoS/Front Regist	[−1.0 ~ +1.0 / 0.0 / 0.1 mm/step]
	Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the  key to select “+” or “−” before entering the value	
6006 2	Leading Regist	[−5.0 ~ +5.0 / 0.0 / 0.1 mm/step]
	Adjusts the leading edge registration for ADF mode. Use the  key to select “+” or “−” before entering the value.	
6006 3	Trailing Erase	[−3.0 ~ +3.0 / −1.0 / 0.1 mm/step]
	Adjusts the trailing edge erase margin for ADF mode. Use the  key to select “+” or “−” before entering the value.	
6006 5	Sub-scan Magnif	[−0.9 ~ +0.9 / 0.0 / 0.1 %/step]
	Adjust the sub-scan magnification for the ADF.	

6009	ADF Free Run	
6009 1	Performs an ADF free run. Press "ON" to start; press "OFF" to stop.	

6910*	ADF Shading Time	[0 ~ 60 / 30 / 1 s/step]
6910 1	Adjusts the interval used for the shading processing in the ADF mode. Light and heat in the room may affect the scanner response. Reduce this setting if copy quality indicates that the white level is drifting during ADF copy jobs.	

SP7-XXX (Data Log)

7001	Total Operation
7001 1	Displays the total operation time (total drum rotation time).

7401*	Counter-SC Total	[0 ~ 9999 / 0 / 1/step]
7401 1	Displays how many times SC codes are generated.	

7403*	SC History	
7403 1	Latest	Displays the histories of the latest 10 SC codes.
7403 2	Latest 1	
7403 3	Latest 2	
7403 4	Latest 3	
7403 5	Latest 4	
7403 6	Latest 5	
7403 7	Latest 6	
7403 8	Latest 7	
7403 9	Latest 8	
7403 10	Latest 9	

7502*	Counter-Paper Jam	[0 ~ 9999 / 0 / 1/step]
7502 1	Displays the total number of copy paper jams.	

7503*	Counter-Orgn Jam	[0 ~ 9999 / 0 / 1/step]
7503 1	Displays the total number of original jams,	

7504*	Counter-Each P Jam	[0 ~ 9999 / 0 / 1/step]
	Displays the total number of the paper jams classified by timing and location.	
7504 1	At power on	Paper jam occurs at power on.
7504 10	Off-Regist NoFeed	Paper does not reach the registration sensor (from a paper tray).
7504 11	Off-1 Vertical SN	Paper does not reach the relay sensor.
7504 12	On-1 Vertical SN	Paper is caught at the relay sensor.
7504 50	Off-Regist Bypass	Paper does not reach the registration sensor (from the by-pass tray).
7504 60	Off-Regist Duplex	Paper does not reach the registration sensor during reverse-side printing (for duplex printing).
7504 70	On-Regist SN	Paper is caught at the registration sensor.
7504 120	On-Exit SN	Paper is caught at the exit sensor (previous page).
7504 121	Off-Exit SN	Paper does not reach the exit sensor.

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7504*	Counter-Each P Jam	[0 ~ 9999 / 0 / 1/step]
	Displays the total number of the paper jams classified by timing and location.	
7504 122	On-Exit SN	
	Paper is caught at the exit sensor.	
7504 123	Off-Dup Inverter	
	Paper does not reach the duplex inverter sensor (from the registration roller).	
7504 125	On-Dup Inverter	
	Paper is caught at the duplex inverter sensor.	

7505*	Counter-Each O Jam	[0 ~ 9999 / 0 / 1/step]
	Displays the total number of the original jams on the ADF that have occurred at a certain timing or at a certain location.	
7505 210	Off-Regist SN	
	The original does not reach the registration sensor.	
7505 211	On-Regist SN	
	The original is caught at the registration sensor.	

7506*	Counter-Each P Jam	[0 ~ 9999 / 0 / 1/step]
7506 6	A5 LEF	Displays the total number of the paper jams classified by the paper sizes.
7506 44	HLT LEF	
7506 133	A4 SEF	
7506 134	A5 SEF	
7506 142	B5 SEF	
7506 164	LG SEF	
7506 166	LT SEF	
7506 172	HLT SEF	
7506 255	Other	

7507*	Dsply-P Jam Hist
7507 1	Displays the latest 10 paper-jam history. The list below shows the possible 12 codes: 1 10 11 12 50 60 70 120 121 122 123 125 The codes correspond to the menus of SP7-504. For example, the code 1 corresponds to SP7-504-001, and the code 10 corresponds to SP7-504-10.

7508*	Dsply-O Jam Hist
7508 1	Displays the total number of the original-jams history. The possible codes are as follows: 210, 211. The codes correspond to the menus of SP7-505. For example, the code 210 corresponds to SP7-505-210.

7801	Memory/Version/PN	
7801 255	System/Copy	Displays the serial number and the version.

7803*	Display-PM Count
7803 1	Displays the PM counter.

7804	Reset-PM Counter
7804 1	Resets the PM counter (SP7-803-001). When the program ends normally, the message "Completed" is displayed.

7807	Reset-SC/Jam Counters
7807 1	Resets the SC, paper, original, and total jam counters. When the program ends normally, the message "Completed" is displayed. SP7-807-1 does not reset the following logs: SP7-507 (Display-Paper Jam History) and SP7-508 (Display-Original Jam History).

7808	Reset-Counters
7808 1	Resets all counters except for the management counters. The management counters are the counters that are not changed by NVRAM Download (SP5-825-1;  NVRAM Download (SP5-825-001) in section 5.1.9). When the program ends normally, the message the message "Completed" is displayed.

7810	Reset-Key Op Code
7810 1	Resets the key operator code. Use SP7-810-1 when the customer has forgotten the key-operator code. When the program ends normally, the message "Completed" is displayed, if the program ends abnormally, an error message is displayed. If the customer forgets the key operator code. To specify a new key-operator code, use the User Tools: System Settings → Key Operator Tools → Key Operator Code → On → Enter Key Operator Code.

7832*	Display-Self-Diag
7832 1	Displays the SC codes found during the self-diagnostics test, and the number of their occurrences. Each number is in the range of 0 to 9999.

7901*	Assert Info. DFU	
	These SP numbers display the results of the occurrence of the most recent SC code generated by the machine.	
7901 1*	Source File Name	Module name
7901 2*	Line Number	Number of lines
7901 3*	Result	Value

7991	Dsply-Info Count	
	Displays the total operating time or the total number of operations. The time is displayed in the following format: day:hour:minute:second.	
7991 3	Dsply-Info Count (Dsply-ID S Work)	
	The total of the time when the ID sensor is working.	
7991 4	Dsply-Info Count (Dsply-Dev Counter)	
	The total number of paper outputs.	
7991 5	Dsply-Info Count (Dsply-ID Er Count)	
	The total number of ID-sensor errors.	

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7992	Reset-Info Count
7992 4	Reset-Dev Count
	Clears the development counter (SP7-991-004).
7992 5	Reset-Info Count (Reset-ID Er Count)
	Clears the ID sensor error counter (SP7-991-005).

SP8-XXX (History)**Counters in SP8**

SP8 consists of various history counters. These counters are commonly used by several machines. Your machine may display some irrelevant counters such as the counters of unsupported paper sizes and unsupported trays. These counters do not affect the other counters or the operations of your machine.

Resetting Counters

SP5-801-001 (Memory Clear > All Clear) resets all counters in SP8.

Prefix

The counter names start with a prefix. You find such counters as “T: Total Jobs,” “C: Total Jobs,” and “F: Total Jobs.” These prefixes—“T”, “C”, “F”, and others—have the same meanings through SP8. The table lists the prefixes and their meanings.

PREFIX	WHAT IT MEANS	
T:	Total: (Grand Total)	Grand total of the items counted for all applications (C, F, P, etc.).
C:	Copy application	Totals (pages, jobs, etc.) executed for each application when the job was <i>not</i> stored on the document server.
F:	Fax application	
P:	Print application	
S:	Scan application	
O:	Other applications (external network applications, for example)	Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) will also be counted with this group in the future.

Abbreviation

The counter names are abbreviated. You find such counters as “T: Jobs/LS”, “T: Jobs/PGS”, and “T: Jobs/Apl”. These abbreviations—“LS,” “PGS,” “Apl,” and others—have the same meanings through SP8. The table lists the abbreviations and their meanings.

ABBREVIATION	WHAT IT MEANS
/	“By”, e.g. “T:Jobs/Apl” = Total Jobs “by” Application
>	More (2> “2 or more”, 4> “4 or more”
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine
Comp	Compression

SERVICE PROGRAM

ABBREVIATION	WHAT IT MEANS
Deliv	Delivery
DesApl	Designated Application. The application (Copy, Fax, Scan, Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides
Emul	Emulation
FC	Full Color
FIN	Post-print processing, i.e. finishing (punching, stapling, etc.)
Full Bleed	No Margins
GenCopy	Generation Copy Mode
GPC	Get Print Counter. For jobs 10 pages or less, this counter does not count up. For jobs larger than 10 pages, this counter counts up by the number that is in excess of 10 (e.g., for an 11-page job, the counter counts up 11-10 =1)
IFax	Internet Fax
ImgEdt	Image Edit performed on the original with the copier GUI, e.g. border removal, adding stamps, page numbers, etc.
K	Black (YMCK)
LS	Local Storage. Refers to the document server.
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	New Remote Service, which allows a service center to monitor machines remotely. "NRS" is used overseas, "CSS" is used in Japan.
Org	Original for scanning
OrgJam	Original Jam
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats.
PC	Personal Computer
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs
Ppr	Paper
PrtJam	Printer (plotter) Jam
PrtPGS	Print Pages
R	Red (Toner Remaining). Applies to the wide format model A2 only. This machine is under development and currently not available.
Rez	Resolution
SC	Service Code (Error SC code displayed)
Scn	Scan
Sim, Simplex	Simplex, printing on 1 side.
S-to-Email	Scan-to-E-mail
SMC	SMC report printed with SP5990. All of the Group 8 counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, Black

Counters

8 191	T:Total Scan PGS	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~9999999/ 0 / 1/step]
8 192	C:Total Scan PGS	
8 193	F:Total Scan PGS	
8 195	S:Total Scan PGS	

- SP8-191 to 196 count the number of scanned sides of pages.
- Previews done with a scanner driver are not counted.
- A count is done only after all images of a job have been scanned.
- Scans made in the SP mode are not counted.

8 201	T:LSize Scan PGS	[0~9999999/ 0 / 1/step]
	These SPs count the total number of large pages input with the scanner for scan and copy jobs. Large size paper (A3/DLT) scanned for fax transmission are not counted. Note: These counters are displayed in the SMC Report, and in the User Tools display.	
8 205	S:LSize Scan PGS	[0~9999999/ 0 / 1/step]
	These SPs count the total number of large pages input with the scanner for scan jobs only. Large size paper (A3/DLT) scanned for fax transmission are not counted. Note: These counters are displayed in the SMC Report, and in the User Tools display..	

8 221	ADF Org Feeds		[0~9999999/ 0 / 1/step]
8 221 1	Front	Number of front sides fed through the ADF for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)	

- If a jam occurs during the job, recovery processing is not counted to avoid double counting. Also, the pages are not counted if the jam occurs before the first sheet is output.

8 291	T:Scan PGS/Stamp	These SPs count the number of pages stamped with the stamp in the ADF unit. [0~9999999/ 0 / 1/step]
8 293	F:Scan PGS/Stamp	
8 295	S:Scan PGS/Stamp	

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8 301	T:Scan PGS/Size	[0~9999999/ 0 / 1/step]
	These SPs count by size the total number of pages scanned by all applications. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-441].	
8 302	C:Scan PGS/Size	[0~9999999/ 0 / 1/step]
	These SPs count by size the total number of pages scanned by the Copy application. Use these totals to compare original page size (scanning) and output (printing) page size [SP 8-442].	
8 303	F:Scan PGS/Size	[0~9999999/ 0 / 1/step]
	These SPs count by size the total number of pages scanned by the Fax application. Use these totals to compare original page size (scanning) and output page size [SP 8-443].	
8 305	S:Scan PGS/Size	[0~9999999/ 0 / 1/step]
	These SPs count by size the total number of pages scanned by the Scan application. Use these totals to compare original page size (scanning) and output page size [SP 8-445].	
8 30x 1	A3	
8 30x 2	A4	
8 30x 3	A5	
8 30x 4	B4	
8 30x 5	B5	
8 30x 6	DLT	
8 30x 7	LG	
8 30x 8	LT	
8 30x 9	HLT	
8 30x 10	Full Bleed	
8 30x 254	Other (Standard)	
8 30x 255	Other (Custom)	

8 381	T:Total PrtPGS	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999/ 0 / 1/step]
8 382	C:Total PrtPGS	
8 383	F:Total PrtPGS	
8 384	P:Total PrtPGS	
8 385	S:Total PrtPGS	
8 387	O:Total PrtPGS	

- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
 - Blank pages in a duplex printing job.
 - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
 - Reports printed to confirm counts.
 - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
 - Test prints for machine image adjustment.
 - Error notification reports.
 - Partially printed pages as the result of a copier jam.

8 391	LSize PrtPGS	[0~9999999/ 0 / 1/step]
	These SPs count pages printed on paper sizes A3/DLT and larger. Note: In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.	

8 411	Prints/Duplex	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/ 0 / 1/step]

SERVICE PROGRAM

8 421	T:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.	
8 422	C:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the copier application.	
8 423	F:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the fax application.	
8 424	P:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.	
8 425	S:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the scanner application.	
8 427	O:PrtPGS/Dup Comb	[0~9999999/ 0 / 1/step]
	These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications	
8 42x 1	Simplex> Duplex	
8 42x 2	Duplex> Duplex	
8 42x 3	Book> Duplex	
8 42x 4	Simplex Combine	
8 42x 5	Duplex Combine	
8 42x 6	2>	2 pages on 1 side (2-Up)
8 42x 7	4>	4 pages on 1 side (4-Up)
8 42x 8	6>	6 pages on 1 side (6-Up)
8 42x 9	8>	8 pages on 1 side (8-Up)
8 42x 10	9>	9 pages on 1 side (9-Up)
8 42x 11	16>	16 pages on 1 side (16-Up)
8 42x 12	Booklet	
8 42x 13	Magazine	

- These counts (SP8-421 to SP8-427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as one page.

8 441	T:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by all applications.	
8 442	C:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by the copy application.	
8 443	F:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by the fax application.	
8 444	P:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by the printer application.	
8 445	S:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by the scanner application.	
8 447	O:PrtPGS/Ppr Size	[0~9999999/ 0 / 1/step]
	These SPs count by print paper size the number of pages printed by Other applications.	
8 44x 1	A3	
8 44x 2	A4	
8 44x 3	A5	
8 44x 4	B4	
8 44x 5	B5	
8 44x 6	DLT	
8 44x 7	LG	
8 44x 8	LT	
8 44x 9	HLT	
8 44x 10	Full Bleed	
8 44x 254	Other (Standard)	
8 44x 255	Other (Custom)	

- These counters do not distinguish between LEF and SEF.

8 451	PrtPGS/Ppr Tray	[0~9999999/ 0 / 1/step]
	These SPs count the number of sheets fed from each paper feed station.	
8 451 1	Bypass	Bypass Tray
8 451 2	Tray 1	Copier
8 451 3	Tray 2	Copier
8 451 4	Tray 3	Paper Tray Unit (Option)
8 451 5	Tray 4	Paper Tray Unit (Option)
8 451 6	Tray 5	LCT (Option)
8 451 7	Tray 6	Not used
8 451 8	Tray 7	Not used
8 451 9	Tray 8	Not used
8 451 10	Tray 9	Not used

SERVICE PROGRAM

8 461	T:PrtPGS/Ppr Type	[0~9999999/ 0 / 1/step]
	These SPs count by paper type the number pages printed by all applications. • These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. However, these counts are based on output timing. • Blank sheets (covers, chapter covers, slip sheets) are also counted. • During duplex printing, pages printed on both sides count as 1, and a page printed on one side counts as 1.	
8 462	C:PrtPGS/Ppr Type	[0~9999999/ 0 / 1/step]
	These SPs count by paper type the number pages printed by the copy application.	
8 463	F:PrtPGS/Ppr Type	[0~9999999/ 0 / 1/step]
	These SPs count by paper type the number pages printed by the fax application.	
8 464	P:PrtPGS/Ppr Type	[0~9999999/ 0 / 1/step]
	These SPs count by paper type the number pages printed by the printer application.	
8 46x 1	Normal	
8 46x 2	Recycled	
8 46x 3	Special	
8 46x 4	Thick	
8 46x 5	Normal (Back)	
8 46x 6	Thick (Back)	
8 46x 7	OHP	
8 46x 8	Other	

8 521	T:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8 522	C:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
	These SPs count by finishing mode the total number of pages printed by the Copy application.	
8 523	F:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
	These SPs count by finishing mode the total number of pages printed by the Fax application. Note: Print finishing options for received faxes are currently not available.	
8 524	P:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
8 525	S:PrtPGS/FIN	[0~9999999/ 0 / 1/step]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.	
8 52x 1	Sort	
8 52x 2	Stack	
8 52x 3	Staple	
8 52x 4	Booklet	
8 52x 5	Z-Fold	
8 52x 6	Punch	
8 52x 7	Other	

8 581	T:Counter	[0~9999999/ 0 / 1/step]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine. Note: This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8 591	O:Counter	[0~9999999/ 0 / 1/step]
	These SPs count the totals for A3/DLT paper use, number of duplex pages printed, and the number of staples used. These totals are for Other (O:) applications only.	
8 591 1	A3/DLT	
8 591 2	Duplex	
8 591 3	Staple	

8 771	Dev Counter	[0~9999999/ 0 / 1/step]
	These SPs count the frequency of use (number of rotations of the development rollers) for black and other color toners. Note: For machines that do not support color, the Black toner count is the same as the Total count.	

SERVICE PROGRAM

8 801	Toner Remain	[0~100/ 0 / 1/step]
	This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time. Note: • This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). • This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8 941	Machine Status	[0~9999999/ 0 / 1/step]
	These SPs count the amount of time the machine spends in each operation mode. These SPs are useful for customers who need to investigate machine operation for improvement in their compliance with ISO Standards.	
8 941 1	Operation Time	Engine operation time. Does not include time while controller is saving data to HDD (while engine is not operating).
8 941 2	Standby Time	Engine not operating. Includes time while controller saves data to HDD. Does not include time spent in Energy Save, Low Power, or Off modes.
8 941 3	Energy Save Time	Includes time while the machine is performing background printing.
8 941 4	Low Power Time	Includes time in Energy Save mode with Engine on. Includes time while machine is performing background printing.
8 941 5	Off Mode Time	Includes time while machine is performing background printing. Does not include time machine remains powered off with the power switches.
8 941 6	Down Time/SC	Total down time due to SC errors.
8 941 7	Down Time/PrtJam	Total down time due to paper jams during printing.
8 941 8	Down Time/OrgJam	Total down time due to original jams during scanning.
8 941 9	Down Time/TonEnd	Total down time due to toner end.

5.1.4 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		
	1	Paper tray (copy, fax)	Adjusts the plotter leading-edge registration from each paper feed station. Use the Trimming Area Pattern (SP5-902, No.10) to make the adjustment.) [−9.0 ~ 9.0 / 0.0 / 0.1 mm/step] IAJ • <i>Specification: 0 ± 2 mm</i> • <i>Use the  key to select “+” or “−” when entering the value.</i>
	2	Bypass (copy fax)	
	4	Paper tray (optional printer)	
	5	Bypass (optional printer)	
002*	Side-to-Side Registration		
	1	1st tray	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. [−9.0 ~ 9.0 / 0.0 / 0.1 mm/step] IAJ • <i>Specification: 0 ± 2 mm</i> • <i>Use the  key to select “+” or “−” when entering the value.</i>
	2	2nd tray	
	5	Bypass	
003*	Paper Feed Timing		
	1	1st tray	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. [0 ~ 10 / 5 / 1 mm/step]
	2	Other trays	
	3	Bypass	
106	Fusing Temperature Display		
	1		Displays the fusing temperature. Press  to exit the display.

SERVICE PROGRAM

1	Mode Number/Name	Function/[Setting]
109	Fusing Nip Band Check	
	1	Checks the fusing nip band. [1 = No / 0 = Yes] DFU
901	Auto-Restart Interval	
	1	Sets the time interval between completion of one copy and automatic start of next copy. [0 ~ 9999 / 0 / 1 s] DFU
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)

2	Mode Number/Name	Function/[Setting]
001*	Charge Bias Adjustment	
	1 Image area	Adjusts the voltage applied to the charge roller when printing. [−1800 ~ −1500 / −1650 / 1 V/step] <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. [0 ~ 400 / 200 / 1 V/step] <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. [−1900 ~ 0 / 0 / 1 V/step] - The value is applied as an offset to the value set by SP2-001-001. - This setting is lost at power-off.
005	Charge Bias Correction	
	1 Vsdp min.	Sets lower limit for application of charge-bias correction. [0 ~ 100 / 90 / 1%/step] <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. [0 ~ 100 / 95 / 1%/step] <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). [0 ~ 200 / 50 / 1V/step]

2	Mode Number/Name	Function/[Setting]
101*	Erase Margin Adjustment	
	1	Leading edge Adjusts the leading edge erase margin. [0.0 ~ 9.0 / 3.0 / 0.1 mm/step] IAJ <i>Does not apply to 1-sheet bypass feed.</i>
	4	Trailing Adjusts the trailing edge erase margin. [0.0 ~ 9.0 / 4.0 / 0.1 mm/step] IAJ <i>Does not apply to 1-sheet bypass feed.</i>
	5	Left side Adjusts the left edge erase margin. [0.0 ~ 9.0 / 2.0 / 0.1 mm/step] IAJ
	6	Right side Adjusts the right edge erase margin. [0.0 ~ 9.0 / 2.0 / 0.1 mm/step] IAJ
	11	1-sheet bypass leading edge Adjusts the leading edge erase margin for 1-sheet bypass. [0.0 ~ 9.0 / 4.5 / 0.1 mm/step] IAJ
	12	1-sheet bypass trailing Adjusts the trailing edge erase margin for 1-sheet bypass. [0.0 ~ 9.0 / 4.5 / 0.1 mm/step] IAJ
201*	Development Bias Adjustment	
	1	Image area Adjusts the voltage applied to the development roller when printing. [−800 ~ 0 / −600 / 1 V/step] <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. [0 = N (200 V) / 1 = H (240 V) / 3 = HH (280 V) / 4 = LL (120V)] <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. [0 = 50 pages / 1 = 20 pages] <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). [0 = No / 1 = Yes] <i>To start forced developer initialization, you must turn the machine off and back on.</i> <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> <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>

SERVICE PROGRAM

2	Mode Number/Name		Function/[Setting]
220	TD Sensor Value Display		
	1		Displays: a) Current TD sensor output value (Vt) b) Target TD output value [Vts corrected by ID sensor output] • <i>The TD sensor output value changes every copy. If $a > b$, toner is supplied to the development unit.</i> • Press  to exit the display.
221	ID Sensor Display		
	1		Displays Vsg, Vsp, Vsdp, Vt, and the ID sensor's PWM output. Use these values to check the operational status of the ID sensor. [0 = No / 1 = Yes] • <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> • <i>You can use SP7-911 to check the number of ID sensor errors that have occurred.</i> • (☞ 5.1.11)
301*	Transfer Current		
	1	Normal paper	Adjusts the current applied to the transfer roller when feeding from a paper tray. [0 = -2 μA / 1 = 0 μA / 2 = +2 μA / 3 = +4 μA] • <i>Use a high setting if the user normally feeds relatively thick paper (within spec).</i> • (☞ 6.14.2, , "Image Transfer Current Timing")
	2	Thick/Thin paper	Adjusts the current applied to the transfer roller when feeding from the bypass tray. [0 = -2 μA / -1 = 0 μA / 2 = +2 μA / 3 = +4 μA] • <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> • (☞ 6.14.2, , "Image Transfer Current Timing")
	4	Cleaning	Adjusts the current applied to the transfer roller for roller cleaning. [-10 ~ 0 / -4 / 1 μA/step] • <i>Increase the current if toner remains on the roller after cleaning. (Remaining toner may cause dirty background on the rear side.)</i> • (☞ 6.14.2, "Image Transfer Current Timing")
	5	Manual (Temporary)	DFU

2	Mode Number/Name	Function/[Setting]
906*	Tailing Correction	
	1 Shift value	When printing multiple copies, the machine will shift the image writing position by the specified amount after every n copies, where n is given by SP2-906-2. [0.0 ~ 1.0 / 0.0 / 0.1 mm/step] <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>
	2 Interval	Changes the interval for the image shift specified by SP2-906-1. [1 ~ 10 / 1 / 1 page/step] <i>If the setting is n, the machine executes the shift after the first n copies, then shifts back to standard position after the next n copies, and so on.</i>
908	Forced Toner Supply	
	1	Forces the toner bottle (or toner hopper) to supply toner to the toner supply unit. Press "1" to start. [0 = No / 1 = Yes] <i>The machine supplies toner over a total of 15 seconds (1.5 second on, 1.5 second off, repeated 5 times).</i>
915*	Polygon Mirror Motor Idling Time	
	1	Selects the polygon mirror motor idling time. [0 = None / 1 = 15 s / 2 = 25 s] <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>
922*	Toner Supply Time	
	1	Adjusts the toner supply motor ON time. [0.1 ~ 5.0 / 0.6 / 0.1 s/step] - 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. (☞ 6.12.4, "Toner Density Control")
926*	Standard Vt	
	1	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. [0.00 ~ 3.3 / 1.25 / 0.01 V/step] DFU

SERVICE PROGRAM

2	Mode Number/Name		Function/[Setting]
927*	ID Sensor Control		
	1		Selects whether the ID sensor is or is not used for toner density control. [0 = No / 1 = Yes] <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>
928	Toner End Clear		
	1		Clears the toner end condition without adding new toner. Select "1" then press the  key to clear the condition. [0 = No / 1 = Yes] <i>Setting this to "1" will clear the following:</i> • Toner end and near-end indicator • Toner near-end counter • Toner end counter (sheets) • Toner end counter (level) <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>
929*	Vref Limits		
	1	Upper	Adjust the upper Vref limit. [0.50 ~ 3.50 / 1.80 / 0.01V/step]
	2	Lower	Adjust the lower Vref limit. [0.00 ~ 3.50 / 0.45 / 0.01V/step]
995*	ID Detection Interval		
	1		Sets the interval after which ID detection will be carried out at start of printing (relative to previous ID detection). [0 ~ 999 / 480 / 1 minute/step] <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>
998*	Main Scan Magnification (Printing)		
	1		Adjusts the magnification along the main scan direction, for all print modes (copy, fax, printing). [-0.5 ~ +0.5 / 0.0 / 0.1%/step] IAJ • Use the  key to select "+" or "-" when entering the value.

SP4-XXX (Scanner)

4	Mode Number/Name		Function/[Setting]
008*	Main Scan Magnification (Scanner)		
	1		Adjusts the magnification along the main scan direction, for scanning. [−0.9 ~ +9.0 / 0.0 / 0.1%/step] IAJ 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. [−2.0 ~ +5.0 / 0.0 / 0.1 mm/step] IAJ (−): The image moves toward the leading edge. (+): The image moves toward the trailing edge. - 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. [−0.9 ~ 0.9 / 0.0 / 0.1 mm/step] IAJ - Increasing the value shifts the image to the right - Use the  key to select “+” or “−” when entering the value
013	Scanner Free Run		
			Performs a scanner free run with the exposure lamp on. [0 = No / 1 = Yes] - For details about free runs:  5.1.7. - 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. [−3.0 ~ +6.0 / 0.0 / 0.1 mm/step] 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. [−3.0 ~ +6.0 / 0.0 / 0.1 mm/step] 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. [−0.9 ~ +0.9 / 0.0 / 0.1%/step]

SERVICE PROGRAM

4	Mode Number/Name	Function/[Setting]											
902*	Exposure Lamp ON												
		Lets you turn the exposure lamp on and off. [0 = Lamp Off / 1 = Lamp On] - To turn the exposure lamp on, press "1". To turn the lamp off, press "0". To exit, press  or Cancel to exit. - The scanner moves to the shading position and remains there until you exit the SP. - The display also shows the minimum and maximum white-plate values (updated every 0.5 sec.).											
908	SBU Auto-Adjustment												
	1	Performs auto scanner adjustment. [0 = No (normal operation) / 1 = Yes (start adjustment)] - Use this SP after replacing the white plate, FCU, or lens block, and after executing a Memory All Clear (SP5-801). ( IAJ, "Standard White Density Adjustment".)											
913*	DF Shading Interval Time												
	1	Adjusts the interval used for shading processing in DF mode. [0 ~ 255 / 30 / 1s/step] - Setting this value to 255 will switch off auto-shading between pages of DF copy jobs. - Light and heat may affect scanner response. Reduce this setting if copy quality indicates that the white level is drifting during DF copy jobs.											
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. IP There are 11 modes ("Pattern 1" to "Pattern 11"), as follows. <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> 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. If you press "0" and then press OK, SPs 4-922 to 4-966 will not operate.	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													

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

SERVICE PROGRAM

4	Mode Number/Name	Function/[Setting]
932*	Auto Density Adjustment	[-2 ~ 2 / 0 / 1/step] DFU (Not effective on this machine.)
933*	Blank-Page Sensor Level Adjustment	[-2 ~ 2 / 0 / 1] DFU (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. [-128 ~ 127 / 0 / 1/step] - If AE tracking is enabled, the applied peak becomes: [(detected peak + this setting) x approx. 40%] - If AE tracking is disabled, the applied peak becomes: [(detected peak + this setting)]
935*	AE Tracking Speed	Adjusts the white-peak tracking speed for the mode selected by SP4-921. [-2 ~ 2 / 0 / 1/step] <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. [-2 ~ 2 / 0 / 1/step] IP <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. IP [0 = Selected processing mode's default / 1 = Normal (no correction) / 2 = Toner save / 3 = FCI The default varies according to the processing mode selected by SP4-241
962*	Marking Image Density Conversion	Selects the image density conversion for the processing mode selected by SP4-921. [-2 ~ 2 / 0 / 1/step] IP <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. IP [0 ~ 5 / 0 / 1/step], where: 0: The mode's default value is used. 1: Distortion prevention 2: Distortion prevention and edge correction 3: Normal 4: Light edge correction 5: Dense edge correction
964*	Spot Dot Enhancement Select	

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

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). <i>After checking, press  or Cancel to exit.</i>
302*	Date/Time	
		Sets the date and time. • For the year value, you can set the last two digits only. (The first two digits are fixed at "20".) • You cannot set the seconds value directly. Instead, the seconds value automatically resets to 0 when you enter the setting for the minutes value. • 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.
⇒ 501*	PM Alarm Mode	
	1 Interval	Sets the base PM interval. [1 ~ 255 / 90 / 1K copies/step] <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. [0 = Disable / 1 = Enable]
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) [0 = No / 1 = Yes] • Before clearing the SRAM, be sure to output an SMC printout of all current SRAM content. (☛ SP5-992). • This SP mode should generally not be used.
802	Free Run	
		Starts a free run of both the scanner and the printer. [0: = No / 1 = Yes] • For details about free runs: ☛ 5.1.7. • After selecting "1", press the OK key (or the  key) twice to start the free run. Press  to stop the free run.
803	Input Check	
		Displays the signals being received from a selected sensor or switch. (☛ 5.1.3) <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. [0 = No / 1 = Yes] - 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!!!". ( 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.) - To input a dash, press . - 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) [0 = No / 1 = Yes] 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) [0 = No / 1 = Yes] 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) [0 = No / 1 = Yes] 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) [0 = No / 1 = Download first 2MB / 2= Download last 2MB] This SP is effective only if you have booted the machine from a flash memory card.

SERVICE PROGRAM

5	Mode Number/Name	Function/[Setting]
837	Program Checksums	Displays checksums of the contents of the machine's SRAM. - The screen shows three check sums: "SUM" (total checksum, "B" (boot sum), and "M" (main sum). - 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.)
901	Printer Free Run	Starts a printer free run. [0 = No / 1 = Yes] - For details about free runs: 5.1.7. - After selecting "1", press the OK key (or the  key) twice to start the free run. Press  to stop the free run.
902	Test Pattern Print	
	1	Prints a test pattern. (5.1.2)
906*	Exhaust-Fan Control Timer	
	1	Inputs the fan control time. [30 ~ 120 / 30 / 1 s/step] <i>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).</i>
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. - 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. - 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). - To exit, press  or the Cancel key.
908*	C1a/C1b Select	
	1	Selects whether the machine identifies itself as a C1a (B045) or C1b (B044/B046) when reporting to firmware. [0 = no setting / 1 = C1a / 2 = C1b] - 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. - If the setting is "0", the machine automatically checks its own bypass type to determine how to report itself.



5	Mode Number/Name		Function/[Setting]
912*	PCU Alarm		
	1	Alarm Display On/Off	Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2. [0 = Display / 1 = Do not display]
	2	Interval	Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs. [1 ~ 255 / 45 / 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). [0 = No / 1 = Yes] <i>This operation is equivalent to executing a System Reset with the User Tools.</i> <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>
956	Preset Small-Size Setting		
	1		Enables setting of small paper sizes. [0 = No / 1 = Yes] <i>Setting this value to "1" enables setting of the following standard small sizes, for both paper tray and bypass tray: B5 SEF, Executive SEF.</i> 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 / 0 / 1/step] DFU
992	SMC Printing		
			Prints out machine data. (5.1.5) [0 = No / 1 = SP settings / 2 = All / 3 = Memory]

SP6-XXX (Peripherals)

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

SERVICE PROGRAM

7	Mode Number/Name	Function/[Setting]
801	ROM Versions and Option Connections 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])	
		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. [0 = No / 1 = Yes] 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. [0 = No / 1 = Yes] 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). [0 = No / 1 = Yes] 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. [0 = No / 1 = Yes] - 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. - 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!!!".
901	SC History Display	
	1	Displays the codes of the last fifty errors that have occurred. [0 = No / 1 = Yes] <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. [0 = No / 1 = Yes] - Note that when executed on fax-equipped models, this operation will not clear the machine's service-report data. - 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!!!".
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. [0 = No / 1 = Yes] <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. <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. [0 = No / 1 = Yes] <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>

SERVICE PROGRAM

7	Mode Number/Name	Function/[Setting]
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. DFU <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>

5.1.5 ID SENSOR ERROR ANALYSIS (SP2-221)

The image quality may degrade severely when the ID sensor does not operate properly. However, there is no SC code that indicates ID-sensor malfunction. Instead, SP2-221 shows information on the ID sensor. Check this information when the image quality is degraded.

The table lists the information shown with SP2-221 (ID Sensor Error Analysis).
B129/B130/B168/B169:

SP	Error condition	Possible cause	Remarks
SP2-221-1 Vsg (VG in the display)	$V_{sg} < 2.5V$ or $(V_{sg} - V_{sp}) < 1.00V$	• ID sensor defective • ID sensor dirty • Drum not charged	
SP2-221-2 Vsp (VP in the display)	$V_{sp} > 2.5V$ or $(V_{sg} - V_{sp}) < 1.00V$	• Toner density very low • ID sensor pattern not created	
SP2-221-3 Power (PW in the display)	$V_{sg} < 3.5V$ when maximum power (979) is applied	• ID sensor defective • ID sensor dirty • Drum not get charged	Power source for the ID- sensor light
SP2-221-4 Vsdp	No Error Conditions		
SP2-221-5 Vt	$V_t > 4.5V$ or $V_t < 0.2V$	• TD sensor defective	
SP2-221-6 Vts			

B044/B045/B046:

$V_g 4.05, V_p 0.56, PW 59$
 $V_g - V_p 3.49, V_t 2.16$

Service
Tables

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: $V_{sg} < 1.65$

Possible causes:

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

2. Vsp ("Vp" in the display)

Error Condition: $V_{sp} > 1.65$

Possible causes:

- Toner density is very low

SERVICE PROGRAM

- 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: $V_{sg} < 2.31$ at maximum power
- Possible causes:
- ID sensor defective
 - ID sensor dirty
 - Drum does not get charged
4. V_{sdp} ("Vg-Vp" in the display)
- No Error Conditions
5. V_t
- Error Condition: $V_t > 2.64$ or $V_t < 0.20$
- Possible cause:
- TD sensor defective

5.1.6 MEMORY CLEAR

B129/B130/B168/B169

NOTE: For Memory Clear procedures for the B044/B045/B046 models, go to page 5-84.

The basic model (the machine without the controller box) stores all data in the NVRAM on the BICU. The data is cleared by SP5-801-002 (for exceptions, see “Exceptions”).

The other models (the machine with the controller box) store engine data in the NVRAM on the BICU, and store other data in the NVRAM on the controller. To distinguish between the engine data and other data, see SP5-801-003 through 015. SP5-801 handles the controller data. Any other data is the engine data. The data in the BICU NVRAM (engine data) is cleared by SP5-998-001 while the data in the controller NVRAM (controller data) is cleared by SP5-801-xxx (for exceptions, see “Exceptions”).

Machine	Data	NVRAM	Cleared by	Remarks
Basic	All data	BICU	SP5-801-002	
Other	Engine data	BICU	SP5-998-001	Any data other than controller data
	Controller data	Controller	SP5-801-xxx	SCS, IMH, MCS, Copier application, Fax application, Printer application, Scanner application, Web service/network application, NCS, R-Fax, DCS, UCS

Exceptions

SP5-801-002 (basic model) and SP5-998-001 (other models) clears most of the settings and counters stored in the NVRAM on the BICU (the values return to their default values). However, the following settings are not cleared:

- SP5-807 (Area Selection)
- SP5-811-001 (Serial Num Input > Code Set)
- SP5-812-001 (Service TEL > Telephone)
- SP5-812-002 (Service TEL > Facsimile)
- SP5-907-001 (Plug & Play)
- SP7 (Data Log)
- SP8 (History)

Initializing Memory Data

Use SP5-801-002 (basic model) or SP5-998-001 (other models) after you have replaced the BICU NVRAM or when the BICU NVRAM data is corrupted. When the program ends normally, the message “Completed” is displayed. When you have replaced the controller NVRAM, or when the controller NVRAM data is corrupted, use SP5-801-001. The message is the same as that for SP5-801-002 and SP5-998-001.

NOTE: Always upload the NVRAM data before performing a Memory Clear. Refer to section 5.1.9 for the B129 Basic Model, and section 5.2.3 for other models.

Executing Memory Clear on Basic Model

1. Upload the NVRAM data to a flash memory card (☛ 5.1.9).
2. Print out all SMC data lists (☛ 5.1.12).
NOTE: Be sure to print out all the lists. You have to manually change the SP settings if the NVRAM data upload ends abnormally.
3. Select SP5-801-002.
4. Press the OK key.
5. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.
6. Select "Execute."
7. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message is displayed.
8. Press the cancel key.
9. Turn the main switch off and on.
10. Download the NVRAM data from a flash memory card (☛ 5.1.9).

Executing Memory Clear on Other Models

1. Print out all SMC data lists (☛ 5.1.12).
2. Select SP5-801-002 (basic model) or SP5-998-001 (other models).
NOTE: SP5-998-001 clears the memory on the BICU. SP5-801-001 clears the memory on the controller.
3. Press the OK key.
4. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.
5. Select "Execute."
6. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message is displayed.
7. Turn the main switch off and on.
8. Adjust the printer and scanner registration and magnification (☛ 3.14).
9. Refer to the SMC lists, and enter any values that differ from the factory settings. Double-check the values for SP4-901.
10. Adjust the standard white level (SP4-428).
11. Initialize the TD sensor (SP 2-214).
12. Check the copy quality.

MEMORY CLEAR B044/B045/B046

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  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 INPUT CHECK (SP5-803)**B129/B130/B168/B169**

1. Select SP5-803.
2. Select the number (see the table below) corresponding to the component.
3. Select "Execute." The copy mode is activated.
4. The sign "01H" or "00H" is displayed (see the table below).

Input Check Table

Num.	Sensor/Switch	1h	0h
001	Safety SW	Open	Closed
003	Right Cover SW	Open	Closed
005	Tray Cover SW	Open	Closed
006	Upper Relay S	Paper detected	Not detected
009	Registration Sensor	Paper detected	Not detected
010	Exit Sensor	Paper detected	Not detected
011	Duplex Inverter S	Paper detected	Not detected
014	By-pass PE S	Paper detected	Not detected
016	Upper PE S	Paper detected	Not detected
017	Lower PE S	Paper detected	Not detected
027	PCU Set Signal	Installed	Not installed
028	Optional Tray	*	*
030	Duplex Installed	Installed	Not installed
032	Main M Lock	Locked	Not locked
033	Polygon M Lock	Locked	Not locked
035	Total CO Install	Installed	Not installed
036	Key CO Install	Installed	Not installed
037	L-Synchronization	Detected	Not detected
039	DF-Cover Open S	Detected	Not detected
040	DF-Original Set S	Detected	Not detected
041	DF-Registration S	Detected	Not detected
045	Platen Cover S	Open	Closed
050	Fan Motor Lock (High speed)	Locked (High speed)	Not locked
052	Front Cover SW	Open	Closed
053	HP Sensor	Detected	Not detected

* Available Paper Feed Unit

00	None
30	1-tray paper feed unit

B044/B045/B046

Input Check 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 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

5.1.8 OUTPUT CHECK (SP5-804)**B129/B130/B168/B169*****Conducting Output Check***

CAUTION: To prevent mechanical or electrical damage, do not keep an electrical component on for extended periods of operation.

1. Select SP5-804.
2. Select the number (see the table below) corresponding to the component.
3. Select "ON."
4. To stop the operation, select "OFF."

Output Check Table

Num.	Component
001	Main Motor Forward
002	Main Motor Reverse
003	Quenching Lamp
004	Toner Supply Clutch Forward
005	Fan Motor High
006	Fan Motor Low
007	Registration Clutch
008	By-pass Feed Clutch
009	Upper Feed Clutch
010	Lower Feed Clutch
017	BK-Lift Motor
020	Duplex Inv Motor Reverse
021	Duplex Inv Motor Forward
024	Duplex Inv Motor Hold
026	Polygon Motor
027	Polygon M/LD
028	LD
029	DF-Transport Motor
031	DF-Feed Clutch
038	Fusing Solenoid
039	Fast Dup Inv M-Rev

When checking Fan Motor High (005) or Fan Motor Low (006) note the following:

- These motors may not respond when the fusing temperature is high.
- Selecting "ON" verifies that one of these motors operates properly. Selecting "OFF" turns off the motor that you have started by selecting "ON." However, this does not guarantee that the motor stops properly during normal operation.

B044/B045/B046

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 .
3. Press "1", then press *OK* or the  key to check that component.
4. To interrupt the test, re-enter SP 5-804 and enter a value of "0".

Output 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)

5.1.9 SERIAL NUMBER INPUT (SP5-811-001)

Specifying Characters

SP5-811-001 specifies the serial number. For the B129 basic model (the machine without the controller box), and the B044/B045/B046 models, use the numeric keypad to input serial number information. For other models (the machine with the controller box), use the numeric keypad *and* the multi-function panel.

B129 Basic Model and B044/B045/B046

A serial number consists of 11 characters. You can change each character by pressing one of the first 11 keys on the numeric keypad (①, ②, ③, ... ⑨, ⑩, ⑪). For example, when you press the ① key, the first character of the serial number changes as follows: 0 → 1 → 2 → ... → 8 → 9 → A → B → ... → X → Y → Z. When the ② key is pressed, the second character changes likewise.

You can specify a digit ("0" to "9") or a capital letter ("A" to "Z") for the first four characters of a serial number, and specify a digit in the other seven characters (not capital letters).

Other Models (B130/B168/B169)

Use the numeric keypad to type numbers. In addition, use the multi-function panel to type other characters. When you press the "ABC" key, the letter changes as follows: A → B → C. To input the same letter two times, for example "AA," press the "ABC" key, the "Space" key, and the "ABC" key. To switch between uppercase letters and lowercase letters, press the "Shift" key.

Serial Number and NVRAM

Serial numbers are stored in the NVRAM before shipment and are not cleared by any program. You must specify a serial number after you replace the NVRAM.

5.1.10 NVRAM AND SDRAM DATA UPLOAD/DOWNLOAD (SP5-824/825) (B129 AND B044/B045/B046)

⚠ CAUTION

Ensure that you turn off the main power switch before inserting or removing a flash memory card. Data in the memory may be corrupted if you insert or remove the memory card with the main power switch on.

MODEL B129 ONLY:

This section (5.1.9) is for the basic model (B129) only. This section illustrates how to copy the data from the BICU NVRAM to a memory card (🔑 NVRAM Upload (SP5-824-001), or from a memory card to the BICU NVRAM (🔑 NVRAM Download (SP5-825-001). For the workflow to copy the data in the controller NVRAM (B130/B168/B169), see section 5.2.3.

Overview

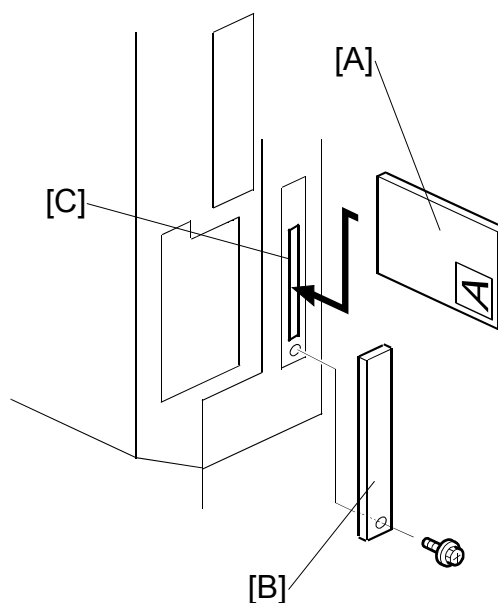
You can copy the data from the NVRAM to a flash memory card (NVRAM Upload), or from a flash memory card to the NVRAM (NVRAM download).

SP5-824-1 (NVRAM Upload)	From the BICU to a flash memory card
SP5-825-1 (NVRAM Download)	From a flash memory card to the BICU

Execute NVRAM Upload before replacing the NVRAM or before executing SP5-801-002 (Memory Clear > Engine 🔑 5.1.5). Data from the flash memory card can be copied back to the NVRAM as necessary.

NVRAM Upload (SP5-824-001)

1. Turn off the main switch.
2. Remove the memory card cover [B] (🔑 x 1).
3. Turn the face of the flash memory card [A] ("A" is printed on it) to the rear of the copier, and insert it into the card slot [C].
4. Turn on the main power switch.
5. Activate the SP mode and select SP5-824-001.
6. The copier overwrites the data in the memory card with the data in the NVRAM. This takes about 20 seconds. If uploading fails, an error message appears. If an error message appears, retry the upload procedure.
7. Turn off the main power switch.
8. Remove the memory card.

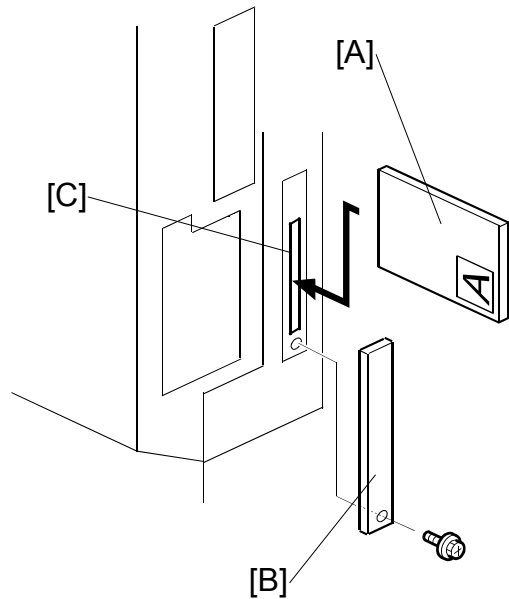


NVRAM Download (SP5-825-001)

SP5-825-001 copies the data from a flash memory card to the NVRAM. Most of the data in the NVRAM is overwritten. The following data in the NVRAM remains unchanged (these are not overwritten):

- SP8-221-001 (ADF Original Feed > Front)
- SP8-381-001 (Total: Total Printer Pages)
- SP8-382-001 (Copy Application: Total Print Pages)
- SP8-411-001 (Prints/Duplex)

1. Turn off the main power switch.
2. Remove the memory card cover [B] (⚙ x 1).
3. Turn the face of the flash memory card [A] ("A" is printed on it) to the rear of the copier, and insert it into the card slot [C].
4. Turn on the main switch.
5. Activate the SP mode and select SP5-825-001.
6. The copier overwrites the data in the NVRAM with the data in the memory card. This takes about one second. If downloading fails, an error message appears. If an error message appears, retry the download procedure.
7. Turn off the main power switch.
8. Remove the memory card.



SDRAM Data Upload/Download Model B044/B045/B046

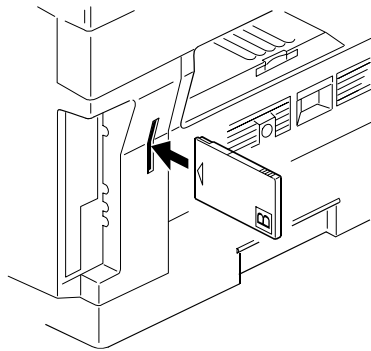
Before installing a new FCU, and before executing a "memory all clear," you should upload all current SRAM data into a flash memory card. You can then download the data back after completing the FCU replacement or memory clear.

- 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 **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.

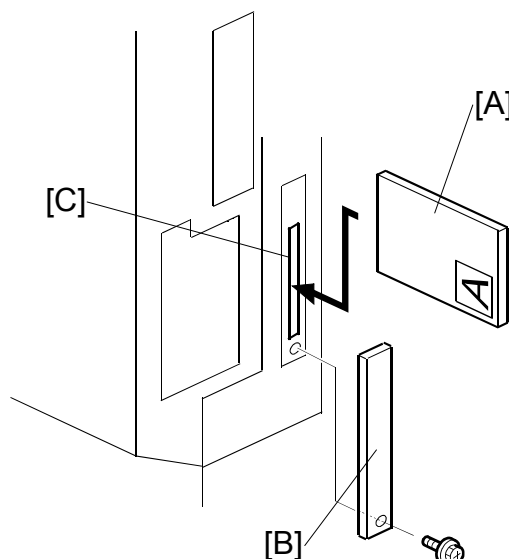
2) This operation will overwrite all of the machine's current SRAM data.

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.

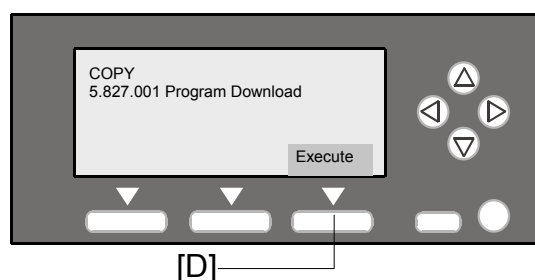
5.1.11 FIRMWARE UPDATE PROCEDURE FOR B129 BASIC MODEL

This section (5.1.10) illustrates how to update the firmware of the basic model (the machine without the controller box). To update the firmware of the B130/B168/B169 models (the machine with the controller box), see section 5.2.

1. Turn the main power switch off.
2. Remove the memory card cover [B] (⚙ x 1).
3. Turn the face of the flash memory card [A] ("A" is printed on it) to the rear of the copier, and insert it into the card slot [C].

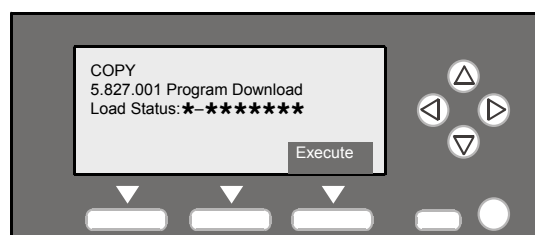


4. Press down the power switch on the operation panel and hold it, and turn on the main power switch.
5. Press the "Execute" key [D]. The program starts running.



Service
Tables

6. Do not touch any key while the message "Load Status..." is displayed. This message indicates that the program is running.
7. Check that the message "End Sum..." is displayed. This message indicates that the program has ended normally.
8. Turn off the main power switch.
9. Remove the flash memory card.
10. Attach the memory card cover.
11. Turn the main power switch on, and check the operation.



5.1.12 FIRMWARE (PROGRAM) UPLOAD/DOWNLOAD (B044/B045/B046)

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.

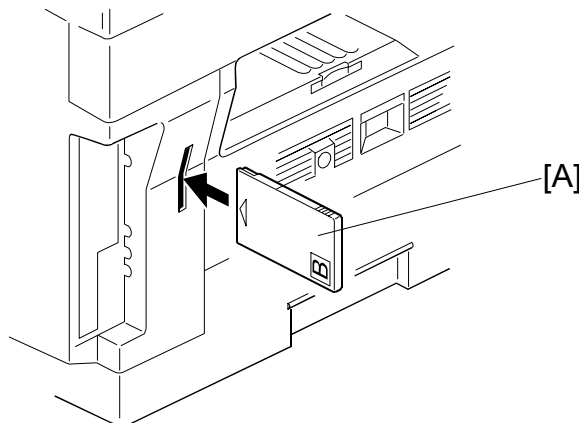
Since the program size is only 2MB, it is possible to carry two different program versions on a single card, and selectively download either one of these. If you wish to carry two different programs on the same card, write one of these programs into card address space 000000h to 1FFFFFFh, and write the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



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 1FFFFFFh), 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

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

[D]: 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:

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

Program Upload	
11	: 2086914

[A] [B]

5.1.13 TEST PATTERN PRINT (SP5-902-001)

B129/B130/B168/B169

Executing Test Pattern Printing

1. Specify the pattern number and press the OK key.
2. Press the copy start key. The copy mode is activated (☛ “Activating Copy Mode” in section 5.1.1).
3. Specify copy settings and press the Ⓢ key.
4. To return to the SP mode, press the Ⓢ key.

Test Patterns

Test Patterns Using VCU	
No.	Pattern
0	(No print)
1	Vertical Lines (Single Dot)
2	Horizontal Lines (Single Dot)
3	Vertical Lines (Double Dot)
4	Horizontal Lines (Double Dot)
5	Grid Pattern (Single Dot)
6	Grid Pattern (Double Dot)
7	Alternating Dot Pattern
8	Isolated One Dot
9	Black Band (Horizontal)
10	Trimming Area
11	Argyle Pattern (Single Dot)
12	Grayscale (Horizontal)
13	Grayscale (Vertical)
14	Grayscale (Vertical/Horizontal)
15	Grayscale (Vertical/Horizontal Overlay)
16	Grayscale With White Lines (Horizontal)
17	Grayscale with White Lines (Vertical)
18	Grayscale with White Lines (Vertical/Horizontal)

Test Patterns Using IPU	
No.	Pattern
30	Vertical Lines (Single Dot)
31	Horizontal Lines (Single Dot)
32	Vertical Lines (Double Dot)
33	Horizontal Lines (Double Dot)
34	Isolated Four Dots
35	Grid Pattern (Double Dot)
36	Black Band (Vertical, 1024 Dots)
37	Grayscale (Horizontal, 512 Dots)
38	Grayscale (Vertical, 256 Dots)
39	ID Patch
40	Cross
41	Argyle Pattern (128-Dot Pitch)
42	Square Gradation (64 Grades)
43	Square Gradation (256 Grades)
44	Grayscale (Horizontal, 32-Dot Width)
45	Grayscale (Vertical, 32-Dot Width)
47	A4 Gradation Patches 1 (128 Grades)
48	A4 Gradation Patches 2 (128 Grades)
49	Trimming Area (A4)

Test Patterns Using SBU	
No.	Pattern
51	Grid Pattern (double dot)
52	Gray Scale 1 (256 grades)
53	Gray Scale 2 (256 grades)

Test Patterns Using PCI* ¹	
No.	Pattern
61	S2M: Grid Pattern
62	S2M: Argyle Pattern
63	S2M: Argyle Pattern
64	S2M: Argyle Pattern + Image* ²
65	S2M: Grid Pattern
66	S2M: Grid Pattern + Image
67	S2M: Argyle Pattern
68	S2M: Argyle Pattern + Image
69	Engine: Grid Pattern
70	Engine: Argyle Pattern

*¹ The PCI is available to the models with the controller box.

*² The original image on the exposure glass is printed behind the test pattern.

B044/B045/B046

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)

5.1.14 SMC PRINT (SP5-990)

B129/B130/B168/B163:

SP5-990 outputs machine status lists.

1. Select SP5-990.
2. Select a menu:
 - Basic model: 001 All, 002 SP, 003 User Program, 004 Logging Data, or 005 Big Font
 - Other models: 001 All, 002 SP, 003 User Program, 004 Logging Data, 005 Diagnostic Report, 006 Non-Default, 007 NIB Summary, 021 Copier UP, 022 Scanner SP, 023 Scanner UP

NOTE: The output given by the menu "Big Font" is suitable for faxing.

3. Press the "Execute" key.
 - Basic model: The copy mode is activated (☛ "Activating Copy Mode" in section 5.1.1). Specify copy settings and press the Ⓢ key. The machine status lists is output.
 - Other models: The machine status list is output.
4. To return to the SP mode, press the Ⓢ key.

B044/B045/B046:

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.

5.1.15 SETTING DAYLIGHT SAVINGS TIME (SP5-307)

Digit Position		
7	Month: 01 through 12	Jan. = 01, Feb. =02, etc.
6		
5	Week of the Month: 1 through 5	1st week =1, 2nd week =2, 3rd week = 3, etc.
4	Day of the Week: 0 through 7	Sun.= 0, Mon. = 1, Tue. = 2, etc.
3	Hours:	00 = Midnight, 01 = 1 AM, 02 = 2 AM through
2		23 = 11 PM
1	Start and Stop 1hour 0 minutes	For SP5307-3, this must always be 10. For
0		SP5307-4, this value must always be 00.

Example- April 4, 2004 DST is turned ON and October 31, 2004 DST is turned OFF:

04/04 2:00 AM DST is turned ON- "4100210" (7digits) There is no leading 0. See 2-1 below.

1- SP5-307-001: Change 0(=OFF) to 1(=ON)

2- SP5-307-003(Summer time start):

2-1. Enter 04 as month of April. (4 will be displayed. The leading 0 will not be displayed.)

2-2. Enter 1 (=1st week) and 0 (=Sunday)

2-3. Enter 02 (=2:00 AM)

2-4. Enter 10 (=1 hour 0 minute)

3- SP5-307-004(Summer time end): 10/31 2:00 AM DST is turned OFF: "10500200" (8 digits)

3-1. Enter 10 as month of October. (10 will be entered.)

3-2. Enter 5 (=5th) and 0 (=Sunday)

3-3. Enter 02 (=2:00 AM)

3-4. Enter 00.

Remember to turn the main switch OFF and ON when the message is displayed.

5.1.16 MEMORY READ/WRITE (B044/B045/B046)

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 FIRMWARE UPDATE PROCEDURE (B130/B168/B169)

This section (5.2) illustrates how to update the firmware of the machines with the controller box. To update the firmware of the basic model (the machine without the controller box), see section 5.1.10.

To update the firmware, download the new version of the firmware to an SD Card (Secure Digital Card). Insert the SD Card into the lower slot on the side of the controller box.

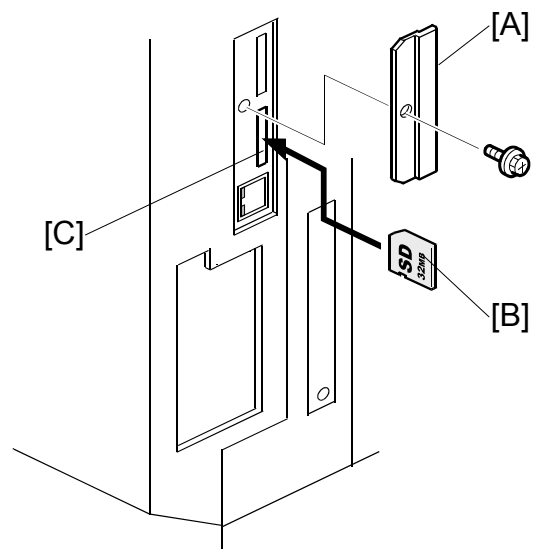
5.2.1 HANDLING SD CARD

An SD card is a precision device. Use extreme caution:

- Turn off the main power switch before inserting an SD card. Do not insert an SD card into the slot with the power on.
- After turning on the main power switch, do not remove the SD card from the slot.
- Do not turn off the power switch while the data is downloaded.
- Keep SD cards in a safe place. Do not expose SD cards to high temperature, high humidity, or direct sunlight.
- Do not bend or scratch an SD card. Do not drop an SD card or expose it to other shock or vibration.

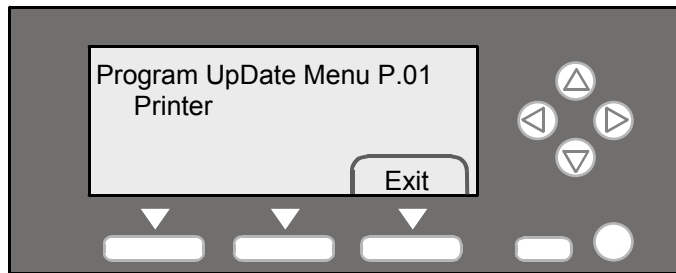
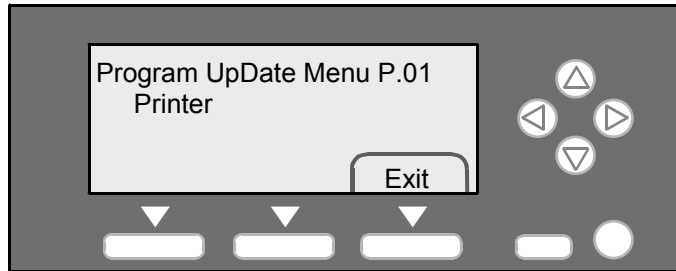
5.2.2 FIRMWARE UPDATE PROCEDURE

1. Turn off the main power switch.
2. **IMPORTANT:** Physically disconnect the copier from the network. This prevents jobs from coming into the copier during firmware update.
3. Remove the slot cover [A] (⌀ x 1)
4. Turn the label on the SD card [B] to the rear side of the copier, and insert the SD card into the lower slot [C]. Slowly push the SD card into the slot so it locks in place.
5. Make sure the SD card is locked in place.
NOTE: To remove the SD card, push it in to unlock it.
6. Turn the main power switch on. After about 10 seconds, the initial version update screen appears on the LCD.

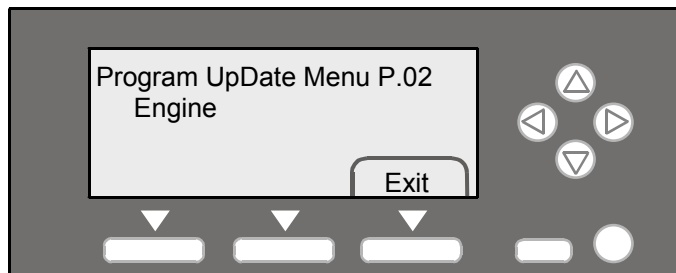


7. Select a module.

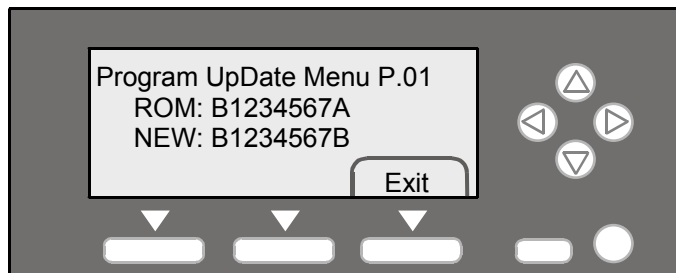
- To scroll through the menus, press the Δ or ∇ key.



- To view the firmware version, press the $\triangleright$ key. "ROM" is the information on the current firmware. "NEW" is the information on the firmware in the SD card.



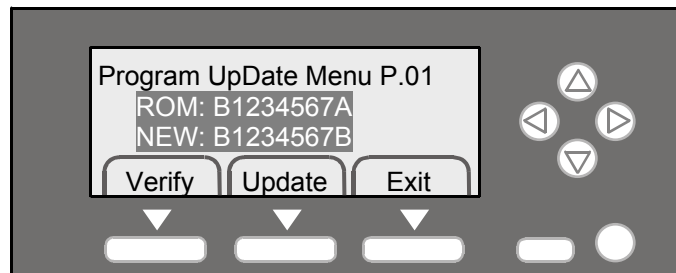
- To return to the menu, press the $\triangleleft$ key.



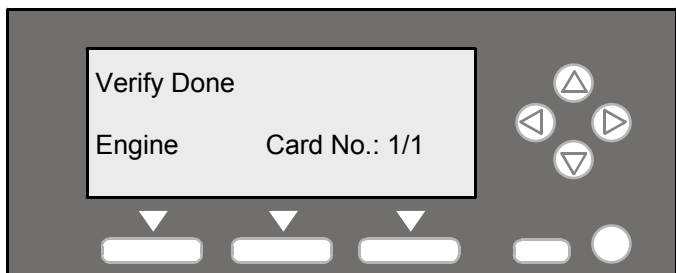
- To select the module, press the OK key.
- To quit the firmware-update program, press the F3 key.
- To select all modules, press the $\diamond$ key.
- To cancel the selection, press the $\odot$ key.
- To scroll through the module name, the serial number, and the version, press the $\triangleleft$ key or $\triangleright$ key.

FIRMWARE UPDATE PROCEDURE (B130/B168/B169)

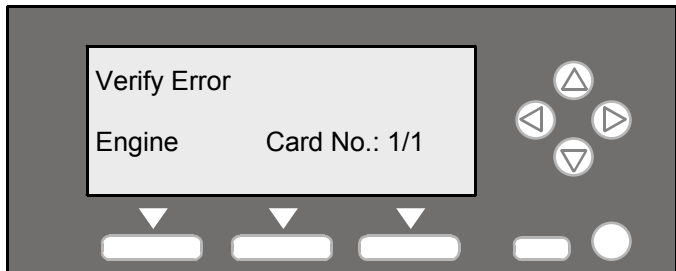
When you have selected a module, the text lines are highlighted, and the “Verify” key and the “Update” key are displayed.



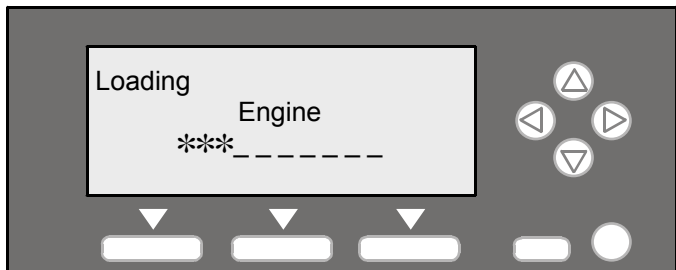
8. Press the “Verify” key.
9. Check that the message “Verify Done” is displayed. This indicates that the data is correct.



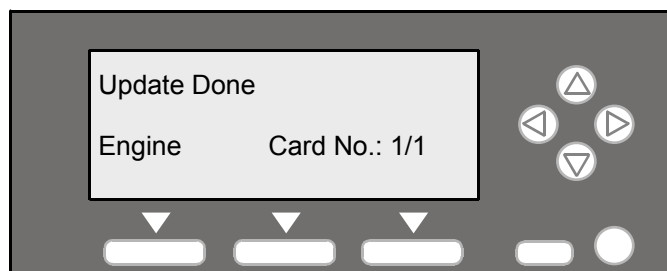
If the data is incorrect, the message “Verify Error” is displayed. Do not use incorrect data.



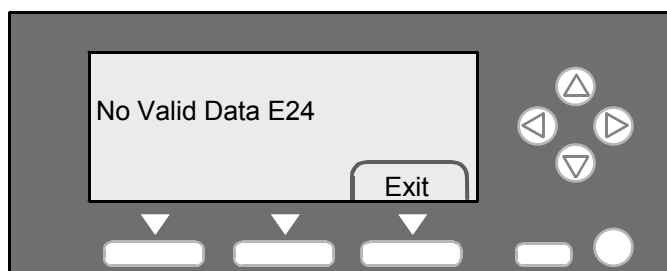
10. Turn the main switch off and on.
11. Select a module and press the “Update” key. The firmware update program starts and the message “Loading” is displayed.



12. Check that the message “Update Done” is displayed.



If an error occurs, the error code is displayed. For the information on the error codes, see the table.



Code	Cause	Necessary Action
E20	Physical address mapping error	• Insert the SD card correctly. • Use another SD card
E22	Decompression error	• Store correct data in the SD card.
E23	Update program error	• Update controller program. • Replace the controller.
E24	SD card access error	• Insert the SD card correctly. • Use another SD card.
E31	Download data inconsistency*	• Insert the SD card that is used when the previous update procedure is interrupted.
E32	Download data inconsistency*	• Insert the SD card that stores the correct data.
E33	Version data error	• Store the correct data in the SD card.
E34	Locale data error	• Store the correct data in the SD card.
E35	Machine model data error	• Store the correct data in the SD card.
E36	Module data error	• Store the correct data in the SD card.
E40	Engine program error**	• Store the correct data in the SD card. • Replace BICU.
E42	Operation panel program error*	• Store the correct data in the SD card. • Replace the operation panel board.
E44	Controller program error*	• Store the correct data in the SD card. • Replace the controller board.
E50	Authentication error	• Store the correct data in the SD card.

* You must reinstall the program.

If the firmware update program is interrupted, for example by power failure, keep the SD card inserted and turn the main switch off and on. The firmware update program restarts. If you do not do so, the message “Reboot after Card insert” is displayed when you turn the main switch on.

5.2.3 NVRAM DATA UPLOAD/DOWNLOAD (B130/B168/B169)

This section (5.2.3) is for the MFP model (B130), the copier/facsimile model (B168), and the copier/printer/scanner model (B169) **ONLY**. This section illustrates how to copy the data from the controller NVRAM to an SD card. (See “Uploading NVRAM Data” on this page.)

Data can also be copied from an SD card to the controller NVRAM (See “Downloading SD Card Data” on the following page). For the workflow to copy the data in the BICU NVRAM, see section 5.1.9.

NOTE: The procedure in this section does not upload or download the NVRAM data on the BICU. See section 5.1.9 for the procedure to upload or download the NVRAM data on the BICU.

Uploading NVRAM Data

NVRAM data can be copied to an SD card.

1. Activate the SP mode.
2. Select SP5-990-001, and output the SMC report. You may need this data if uploading fails.
3. Turn off the main power switch.
4. Insert the SD card into the lower slot.
5. Turn on the main power switch.
6. Activate the SP mode.
7. Select SP5-824-001 (NVRAM Upload).
8. Press the Execute key. The copier starts uploading and makes the following file in the following folder:

NVRAM\serial_number.NV

where “serial_number” is the serial number. If, for example, the serial number is “B0700017,” the folder name and the file name are as follows:

NVRAM\B0700017.NV

9. Make a label that indicates the contents of the SD card, and attach it to the SD card.

NOTE: An SD card can store the NVRAM data of two or more machines.

Downloading SD Card Data

Data can also be copied from an SD card to the NVRAM.

1. Turn off the main power switch of the copier.
2. Insert the SD card into the lower slot. Ensure that the SD card is correctly set.
3. Turn on the main power switch of the copier.
4. Activate the SP mode.
5. Select SP5-825-001 (NVRAM Download).
6. Press the Execute key. The copier starts downloading.

If an error occurs, perform the following:

1. Check the serial number of the data. You can find the serial number in the file name of the data. (See “Uploading NVRAM Data” procedure on previous page.)
2. Retry the download procedure.
3. If downloading does not normally end, manually specify settings. See the SMC report for the settings.

5.3 USER TOOLS

5.3.1 B129/B130/B168/B169

See Operating Instructions.

5.3.2 B044/B045/B046

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.

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.

User tools TABLE

System Settings Table

2. System Settings	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 (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

2. Copy Features	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

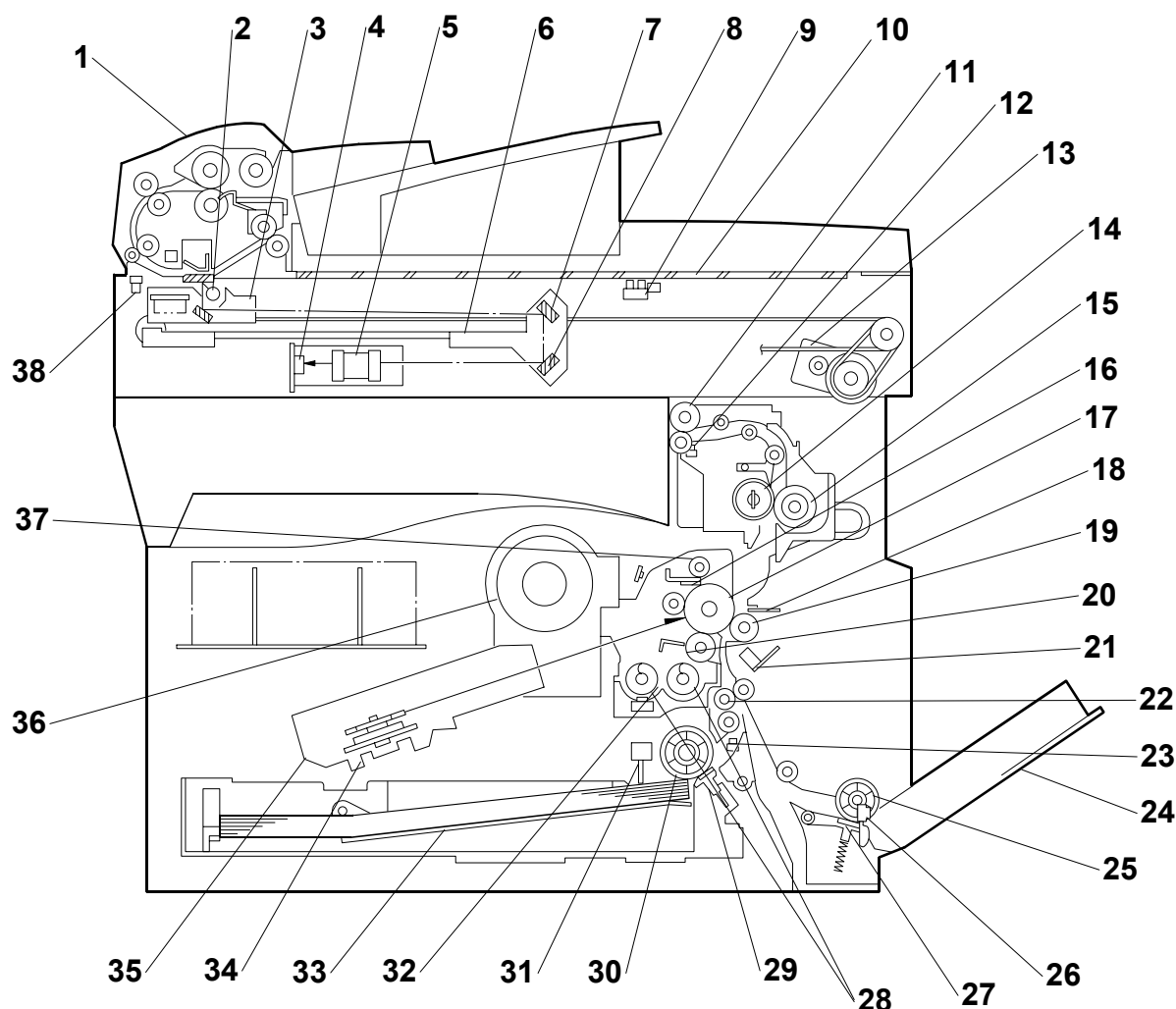
DETAILED DESCRIPTIONS

6. DETAILED SECTION DESCRIPTIONS

6.1 OVERVIEW

6.1.1 COMPONENT LAYOUT (B044/B045/B046)

Component Layout information for the B129/B130/B168/B169 is located in the B129/B130/B168/B169 Point-to-Point diagram package.



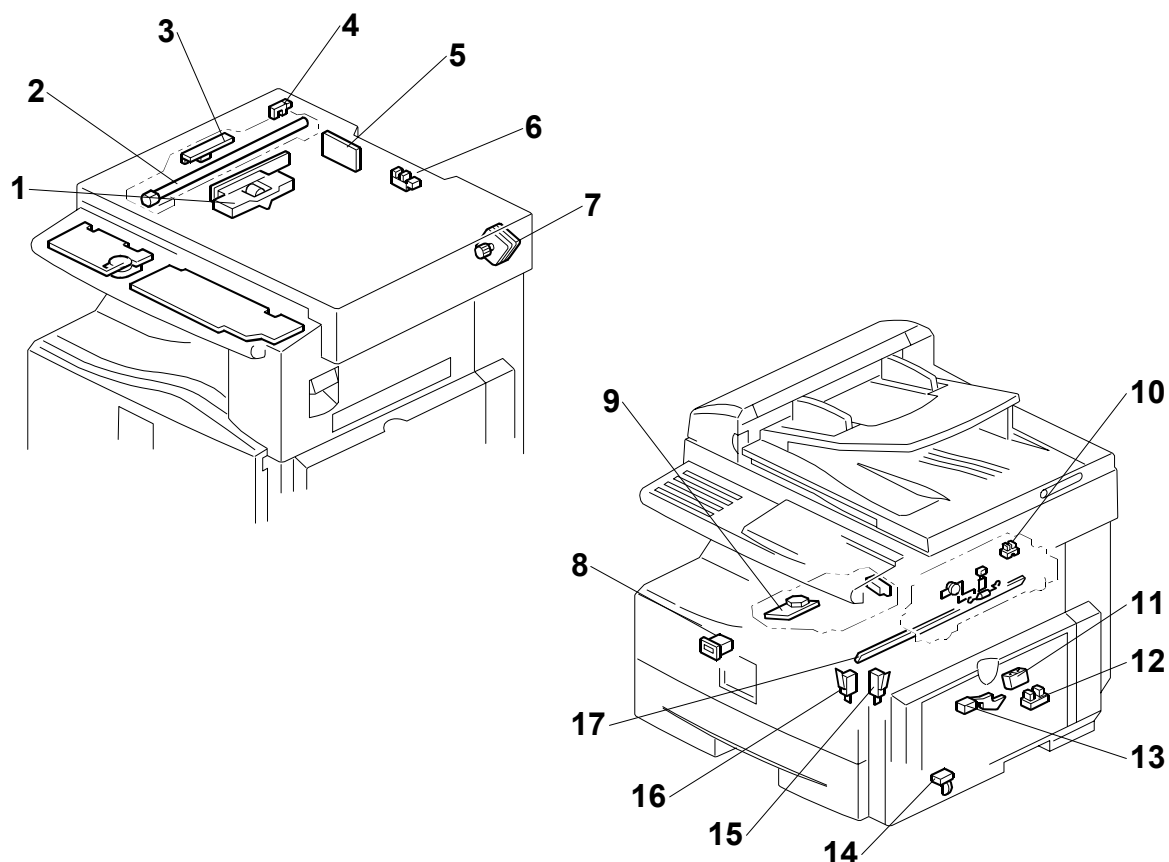
NOTE: The above illustration shows model B046. Model B045 has 1-sheet bypass only (no bypass paper feed roller and bypass friction pad). Models B044 and B045 do not include the ADF as standard.

(See next page for component names.)

OVERVIEW

(B044/B045/B046)

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



B044/B045/B046

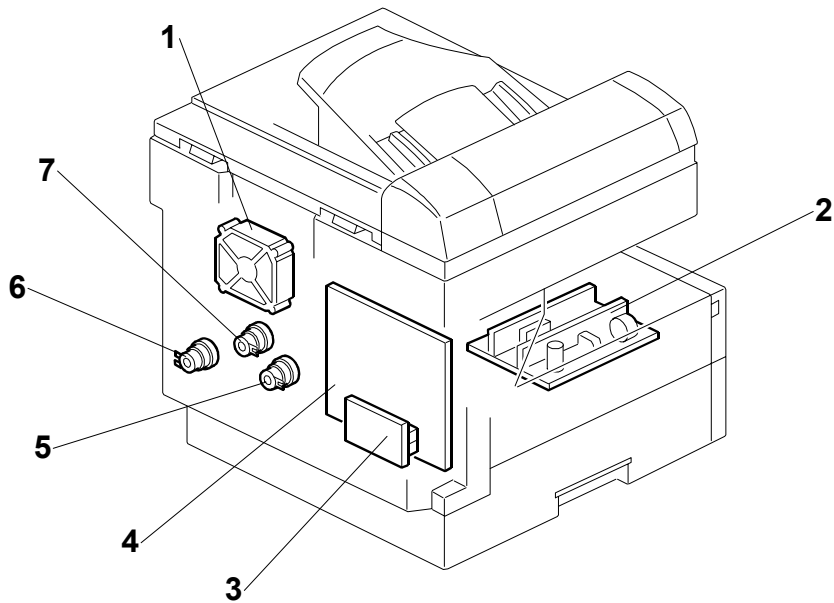
1. Lens Block	10. Exit Sensor
2. Exposure Lamp	11. ID (Image Density) Sensor
3. Lamp Stabilizer Board	12. Registration Sensor
4. Scanner HP Sensor	13. Paper End Sensor
5. DF Connection Board* ¹	14. Bypass Paper End Sensor* ³
6. Platen Cover Sensor	15. Right Door Safety Switch
7. Scanner Motor	16. Front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



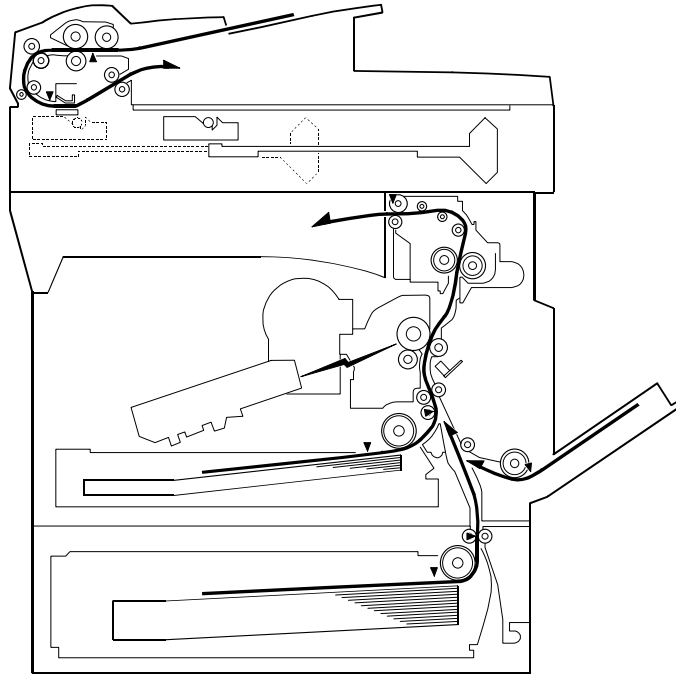
B044/B045/B046

1. Exhaust Fan	5. Paper Feed Clutch
2. PSU	6. Bypass Feed Clutch* ²
3. NCU* ¹	7. Registration Clutch
4. FCU	

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

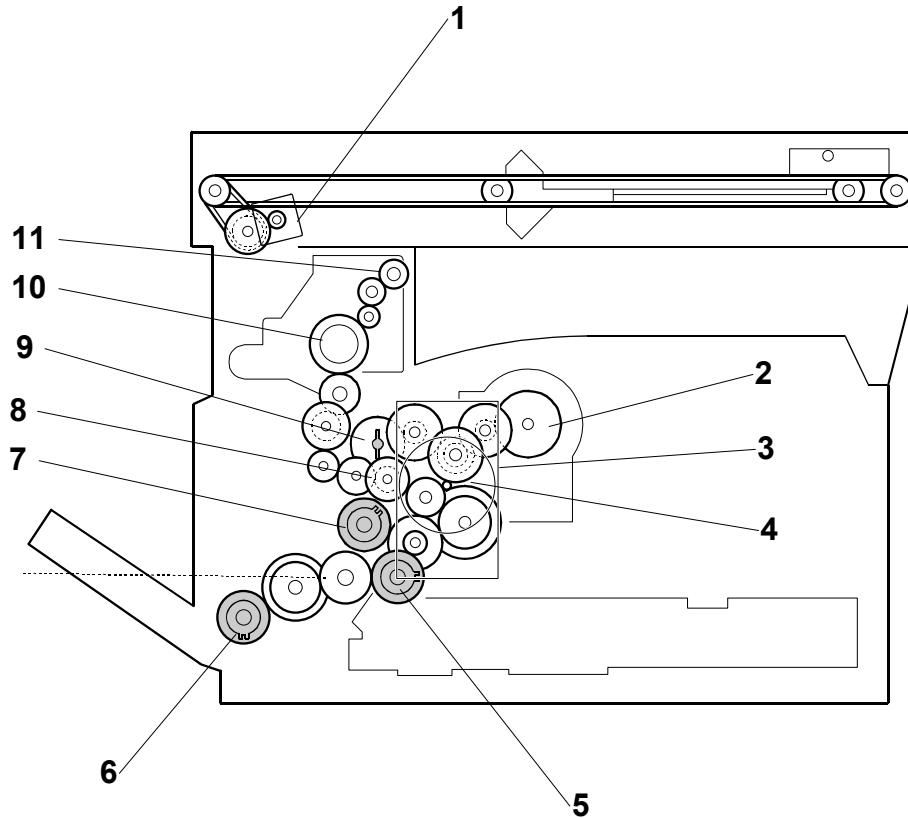
*2: Bypass feed clutch is included on 100-sheet bypass models only (B044 and B046).

6.2 PAPER PATH (B044/B045/B046)



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.

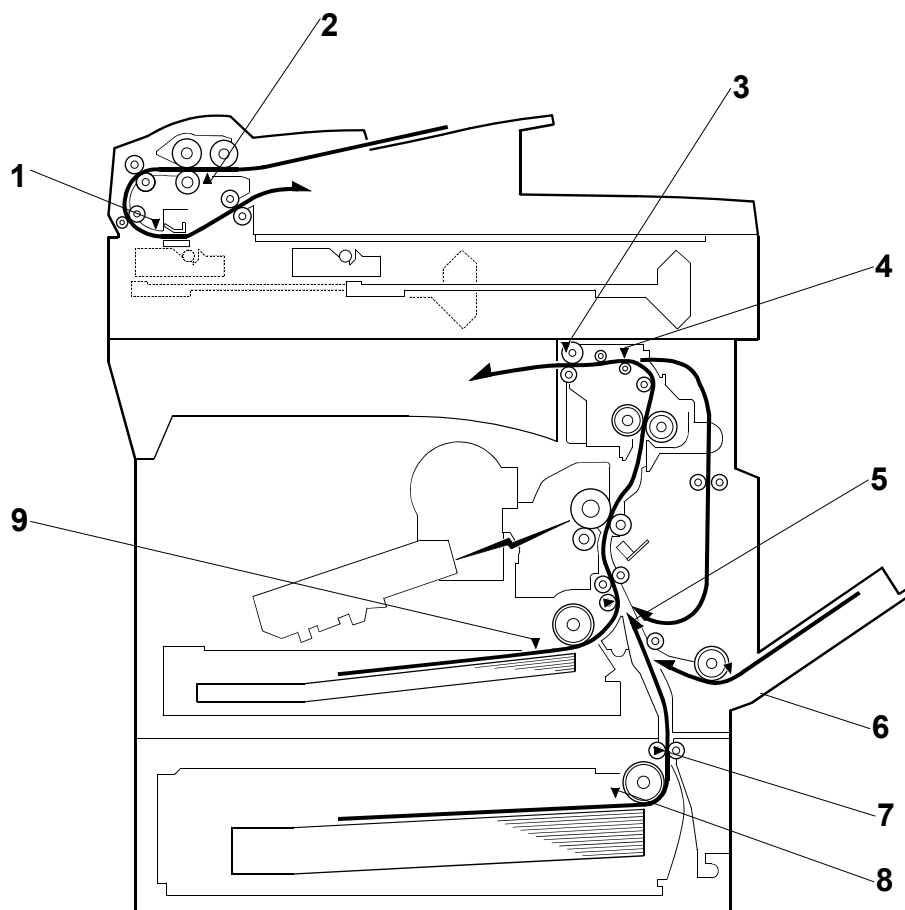
6.3 DRIVE LAYOUT (B044/B045/B046)



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* ¹	

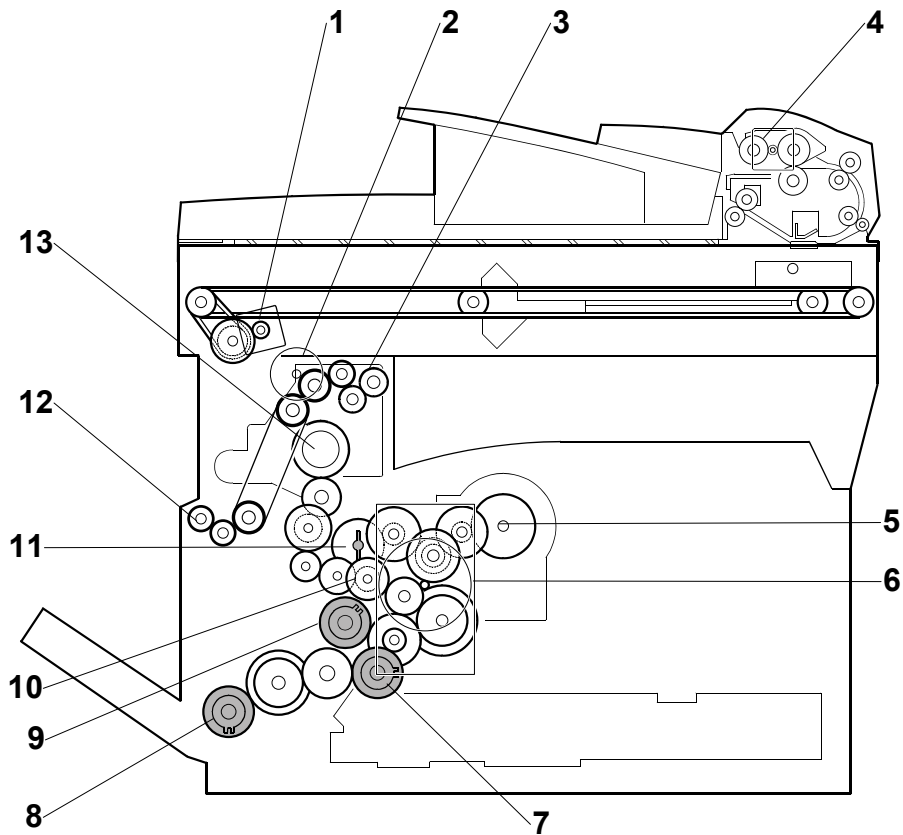
*1: Bypass feed clutch is included on 100-sheet bypass models only (B044 and B046).

6.4 PAPER PATH (B129/B130/B168/B169)



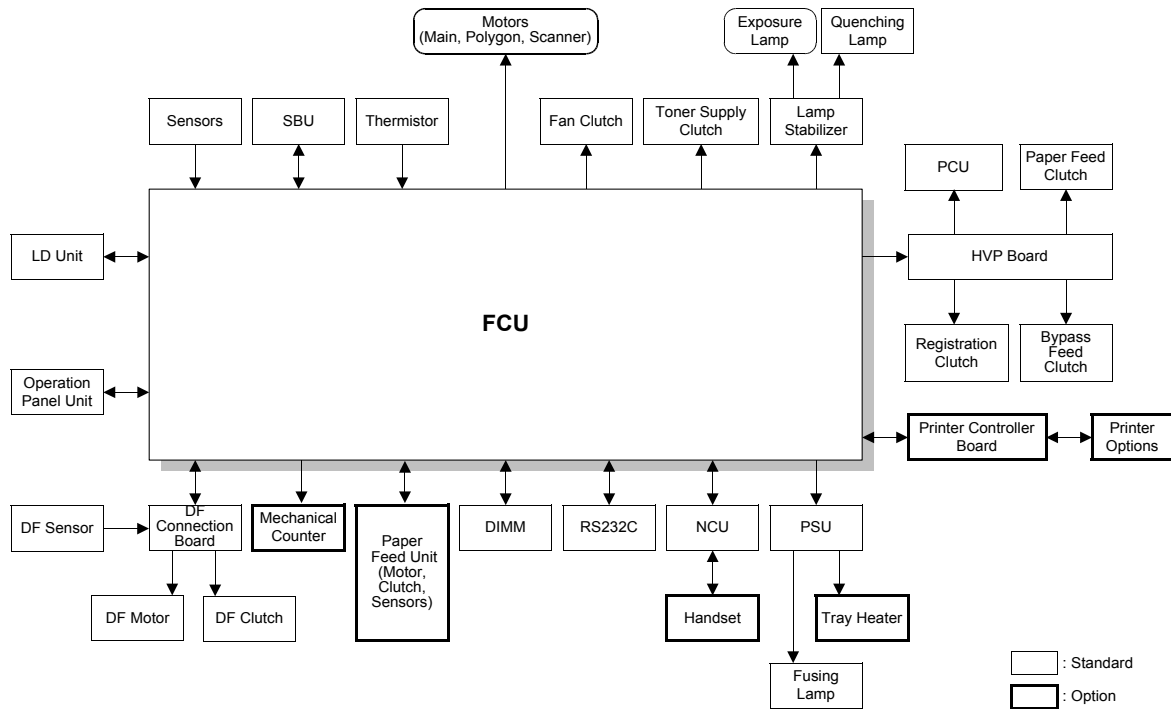
1. Original Registration Sensor (Document Feeder)	6. By-pass Paper End Sensor
2. Original Set Sensor (Document Feeder)	7. Paper Feed Sensor (Optional Tray)
3. Exit Sensor	8. Paper End Sensor (Optional Tray)
4. Paper Path Sensor	9. Paper End Sensor
5. Registration Sensor	

6.5 DRIVE LAYOUT (B129/B130/B168/B169)



1. Scanner Motor	8. Bypass Feed Clutch (By-pass Tray)
2. Duplex motor	9. Registration Clutch
3. Exit Roller	10. Developer Driver Gear
4. DF Motor (Document Feeder)	11. Drum Drive Gear
5. Toner Bottle Clutch	12. One-way Gear (Duplex Unit)
6. Main Motor	13. Fusing Drive Gear
7. Paper Feed Clutch	

6.6 BLOCK DIAGRAM: PCBs AND COMPONENTS (B044/B045/B046)



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

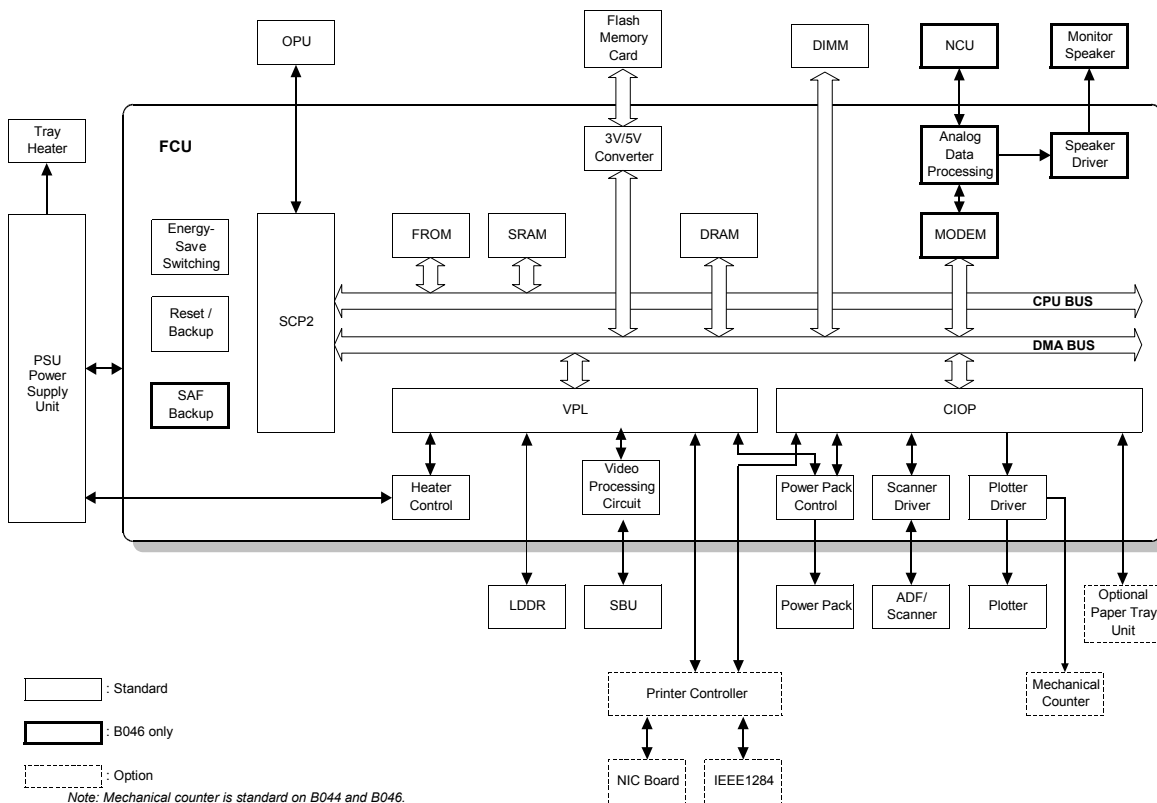
Plotter Driver

- Drives the main and polygon motors; the feed, bypass, registration, and toner-supply clutches; the quenching lamp; and the fan.

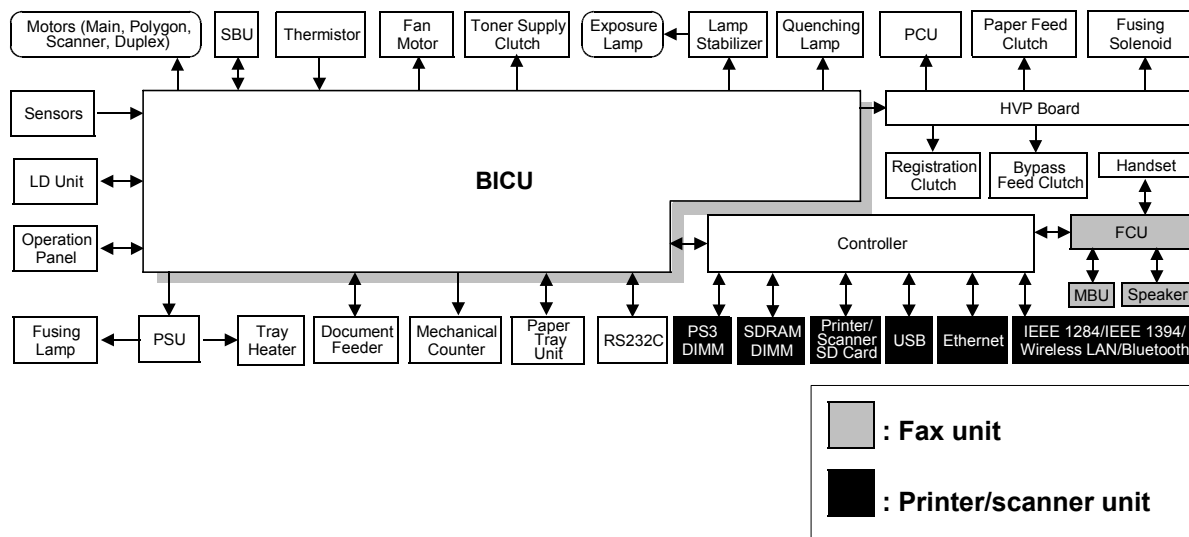
6.7 MAIN PCBs (B044/B045/B046)

6.7.1 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.



6.8 BLOCK DIAGRAM: PCBs AND COMPONENTS (B129/B130/B168/B169)



The table lists available units and components for each model.

Model	Document Feeder	Printer/Scanner	Fax*	Controller
Basic Model (B129) for North America	Standard	Optional	Not available	Distributed with the optional printer/scanner
Basic Model (B129) for Europe	Optional	Not available	Not available	Not available
Basic Model (B129) for China/Asia	Optional	Optional	Not available	Distributed with the optional printer/scanner
Printer/Scanner Model (B169)	Optional	Standard	Not available	Standard
Fax Model (B168)	Standard	Not available	Standard	Standard
MFP Model (B130)	Standard	Standard	Standard	Standard

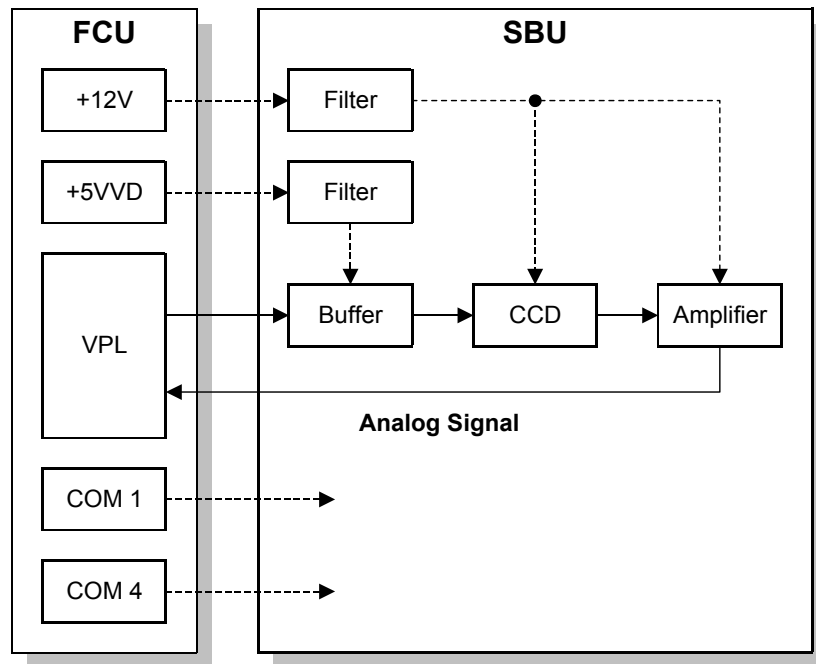
* An optional handset can be installed on the fax unit.

The table lists available interfaces for the printer/scanner unit.

Ethernet	USB 2.0	IEEE 1284	IEEE 1394	Wireless LAN	Bluetooth
Standard	Standard	Optional	Optional	Optional	Optional

NOTE: Only one of these options can be installed at a time.

6.8.1 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.

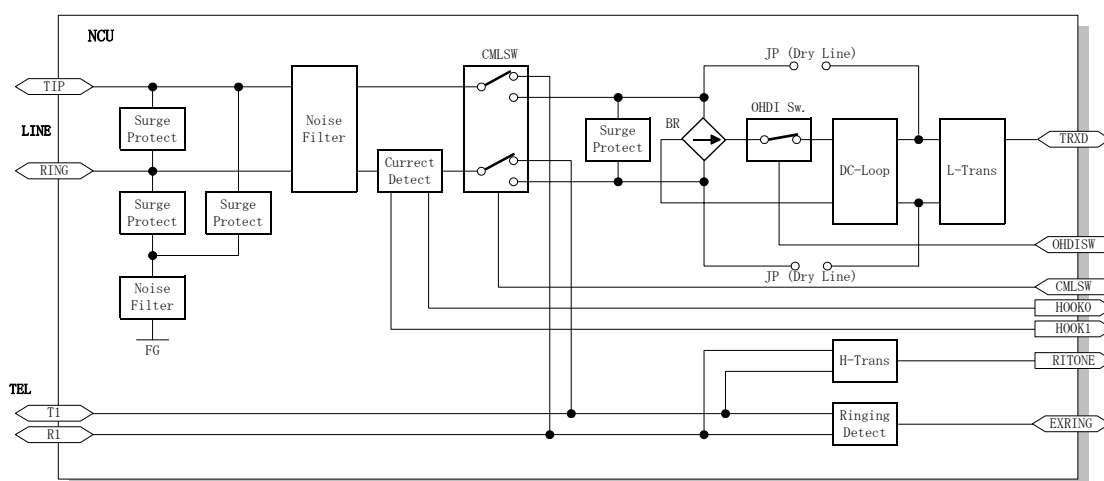
Amplifier

Inverts and amplifies the electrical signal from the CCD.

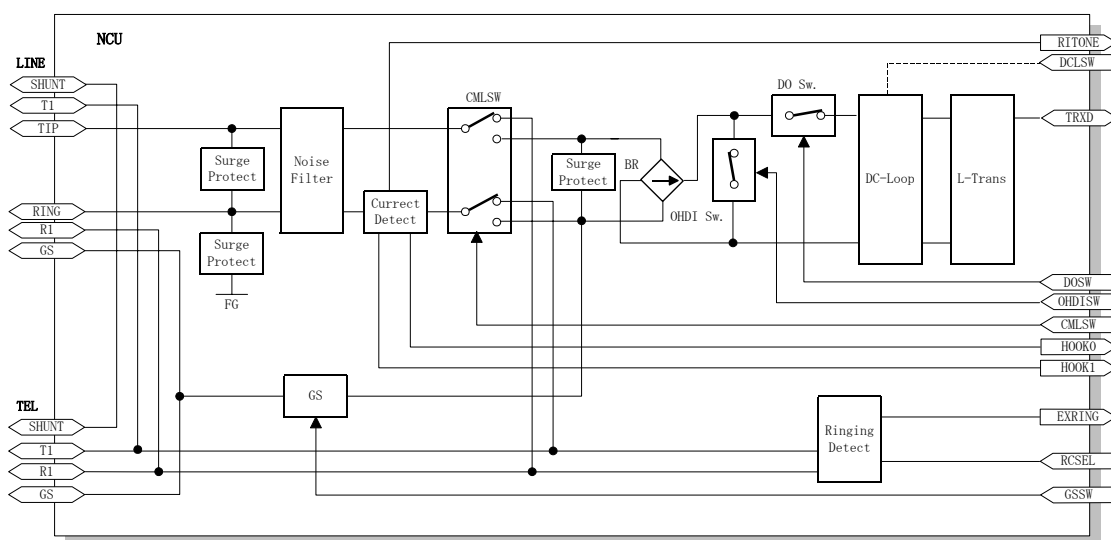
6.8.2 NCU (NETWORK CONTROL UNIT)

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



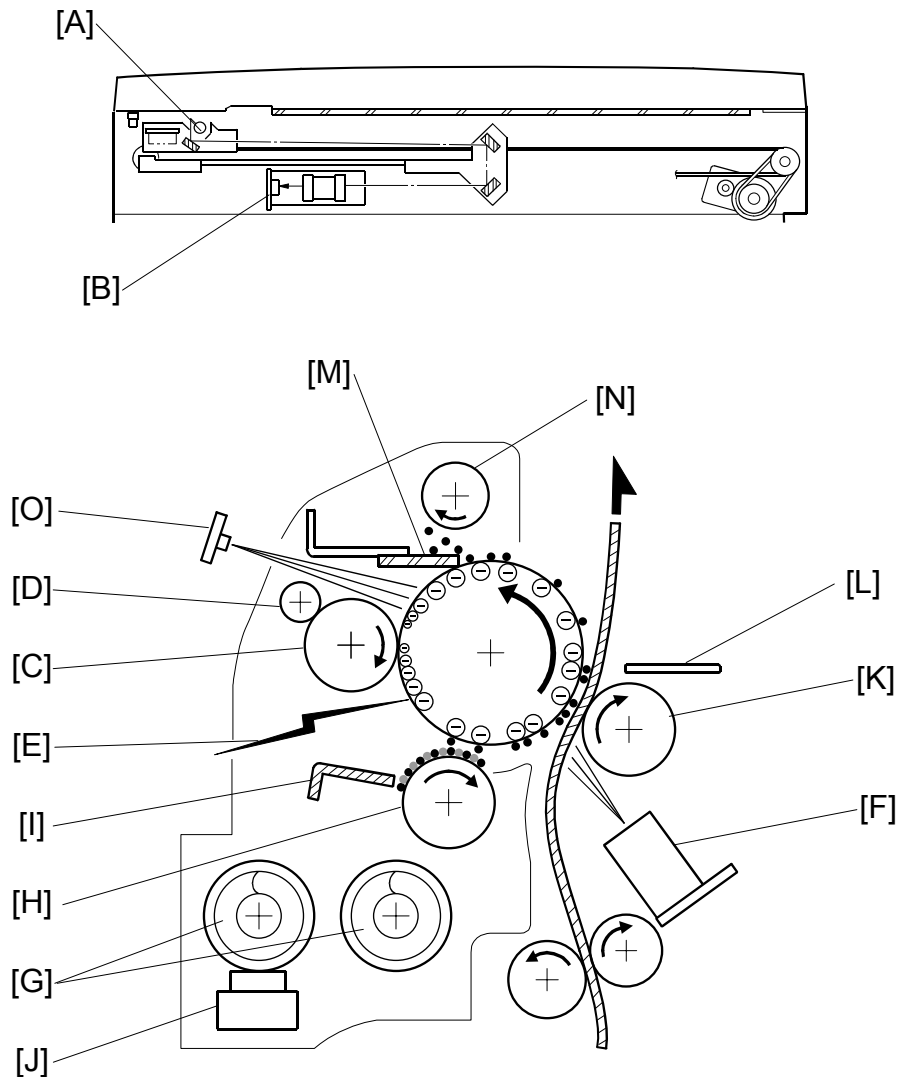
Europe/Asia version



Jumper on Europe/Asia version

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

6.9 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.)

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

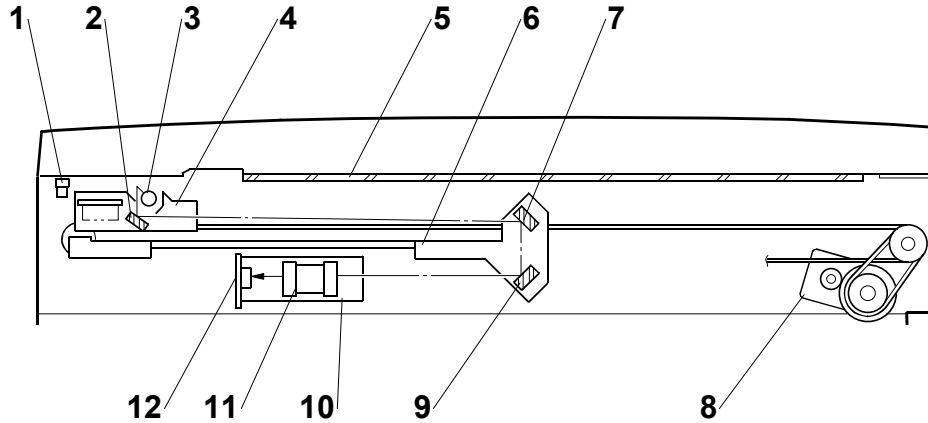
The cleaning blade [M] scrapes remaining toner from the drum, and the toner collection coil [N] retrieves this toner.

9. QUENCHING

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

6.10 SCANNING

6.10.1 OVERVIEW



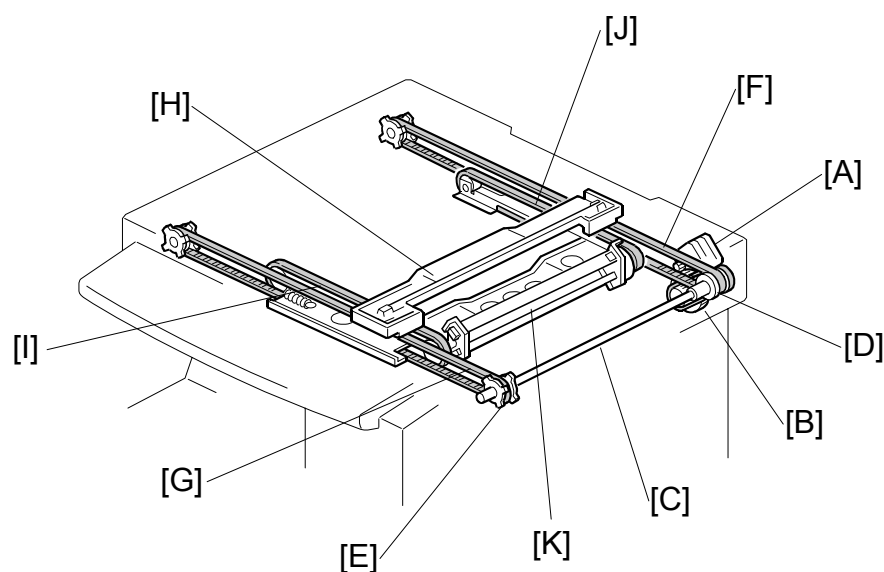
1. Scanner HP Sensor	7. 2nd Mirror
2. 1st Mirror	8. Scanner Motor
3. Exposure Lamp	9. 3rd Mirror
4. 1st Scanner	10. Lens Block
5. Exposure Glass	11. Lens
6. 2nd Scanner	12. CCD

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.

6.10.2 SCANNER DRIVE



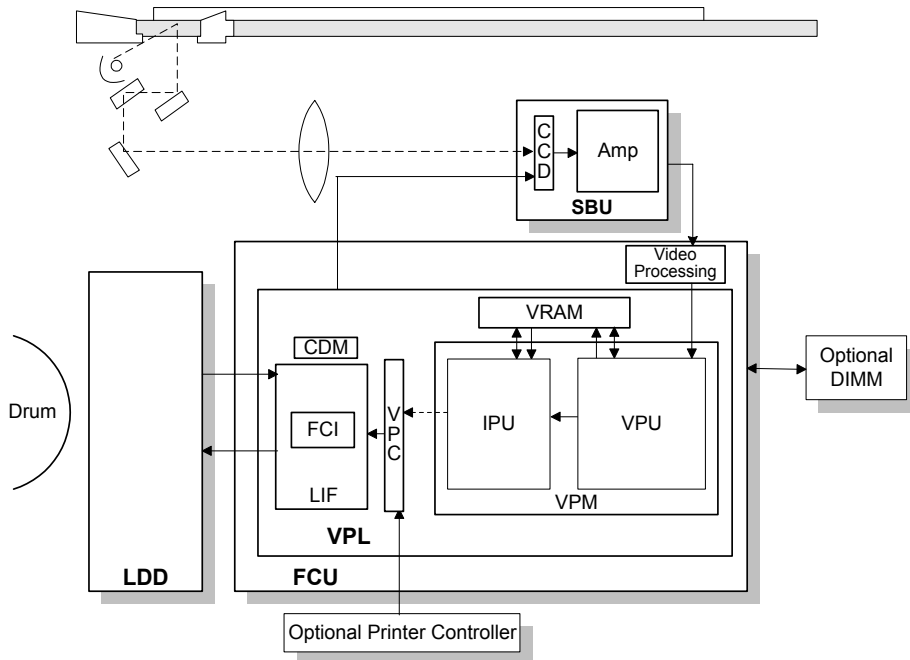
The scanner motor [A] (a stepper motor) drives a gear that turns a small drive belt [B], driving the scanner drive shaft [C]. Pulleys [D, E] on the ends of the shaft drive timing belts [F] and [G], driving the 1st scanner [H]. The first scanner is secured to timing belts [I] and [J], which drive the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

6.11 IMAGE PROCESSING

6.11.1 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)

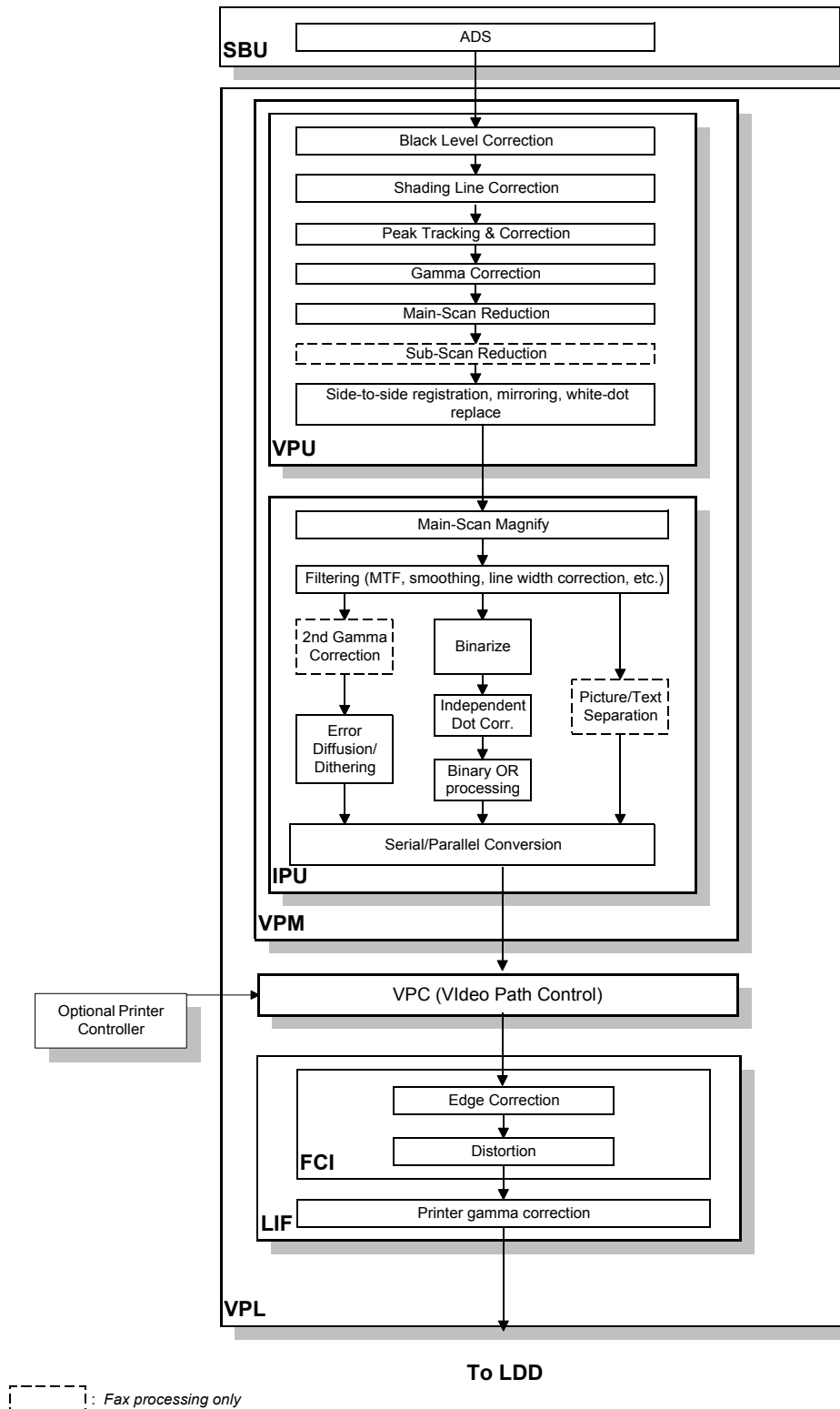
The data then moves to the LD drive board in accordance with timing controlled by the FCU.

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.

6.11.2 IMAGE PROCESSING PATH (B044/B045/B046)

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).



6.11.3 ORIGINAL MODES

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

Selection of Original Modes, for Copying

The user selects the mode using User Tools. The user can also assign any two of these modes to the "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

6.11.4 IMAGE PROCESSING STEPS FOR EACH MODE (B044/B045/B046)

Copier										Fax				Adjust With..	
	Text		Photo		Special			Text		Photo					
	Normal	Sharp	Photo Priority	Text / Photo	Colored Text	Pixel Photo	Preserved Background	Sharp	Dropout	Normal	Smooth				
SBU	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					
	On (DF only)		On		On										
	On		On		On			On		On					
Filtering	Normal	Strong	Weak	Normal	Normal		Normal	Normal		Normal	Strong		SP4-925		
								Normal				On			
	Off		Off		Thick			Off					SP4-927		
2nd Gamma Correction											Photo Normal				
Image Correction	Gradation	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					
LIF	FCI		On (Edge corr. only)					On (Edge Correct + Distortion Prevention)		Off					
	Printer Gamma Correction	On		On		On			On		On				
: Not used.															

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

6.11.5 IMAGE PROCESSING STEPS FOR EACH MODE (B129/B130/B168/B169)

NOTE: The gray area means the setting cannot be changed using SP mode.

		Text		Photo			Photographs	Special				Note
		Normal	Sharp	Photo Priority	Text Priority	Unneeded Background		Colored Text	Normal Pixel Photo	Coarse Pixel Photo	Preserved Background	
SBU	ADS	ADS			ADS			ADS				
Shading Correction												
	Shading Line Correction	Enabled			Enabled				Enabled			
	White Line Correction	Enabled			Enabled				Enabled			SP4-941
	Black Line Correction	Enabled (DF only)			Enabled (DF only)				Enabled (DF only)			SP4-942
-	Scanner g Correction	Text (Reflection Ratio ID Linear)	Photo (Density Linear)	Text (Refelction Ratio ID Linear)	Photo (Density Linear)	Text (Reflection Ratio ID Linear)		Photo (Density Linear)	Photo (Density Linear)	Text (Reflection Ratio ID Linear)		SP4-922
	Small Smoothing Filter	Weak		Normal		Normal		Normal	Strong	Weak		Connected with MTF filter (Edge)
Magnification	Main Scan Magnification	Enabled			Enabled				Enabled			
	Mirroring	Enabled (DF only)			Enabled (DF only)				Enabled (DF only)			
	Side-to-side Registration (Left Side)	Enabled			Enabled				Enabled			
-												
	Filtering	Normal	Strong	Weak (All Area)	Normal	Weak (All Area)	Strong	Normal		Normal		SP4-930
	MTF Filter (Solid)		Normal				Normal					SP4-931
	MTF Filter (Low ID)	Normal	Normal		Normal		Normal			Normal		SP4-932
	Smoothing Filter								Normal			
	Independent Dot Erase	Weak			Weak		Strong	Weak		Weak		SP4-928
-	Line Width Correction	Disabled			Disabled		Disabled	Thick		Disabled		SP4-927
	Graduation	ID g Correction	Normal	Sharp	Photo Priority	Text Priority	Photographs	Sharp	Normal	Normal	Coarse Pixel Photo	Preserved Background
Image Correction												
	Graduation	Error Diffusion	Binary	Error Diffusion			Binary	Error Diffusion	Dithering (105 Lines)	Dithering (53 Lines)	Error Diffusion	SP4-926 (Error diffusion only)
Path Control	Video Path Control	Enabled			Enabled				Enabled			
VCU	FCI		Enabled				Enabled					
	Edge Correction	Enabled			Enabled				Enabled			
	Printer g Correction	Enabled			Enabled				Enabled			

Detailed Descriptions

6.11.6 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 ²	Mask 1	OFF
	Text Sharp	FCI	OFF	Both ¹	None ²	Mask 1	OFF
	Photo Priority	No Correction	OFF	Normal	None ²	Mask 2	OFF
	Text/Photo	No Correction	OFF	Normal	None ²	Mask 2	OFF
	Colored Text	No Correction	OFF	Normal	None ²	Mask 1	OFF
	Pixel Photo	No Correction	OFF	Normal	None ²	Mask 2	OFF
	Preserved Background	No Correction	OFF	Normal	None ²	Mask 1	OFF
Fax	Text	FCI	OFF	Both ¹	Level 2 ³	Thin Lines	ON
	Photo	FCI	OFF	Light edge correction	Level 2 ³	Thin Lines	OFF
Printer	Text	FCI	OFF	Dense edge correction	Level 2 ³	Mask 3	ON
	Photo	FCI	OFF	Normal	Level 2 ³	Mask 3	OFF

¹Both = Distortion prevention + edge correction

²For copy-mode patterns, SP4-964 adjustments operate as follows.

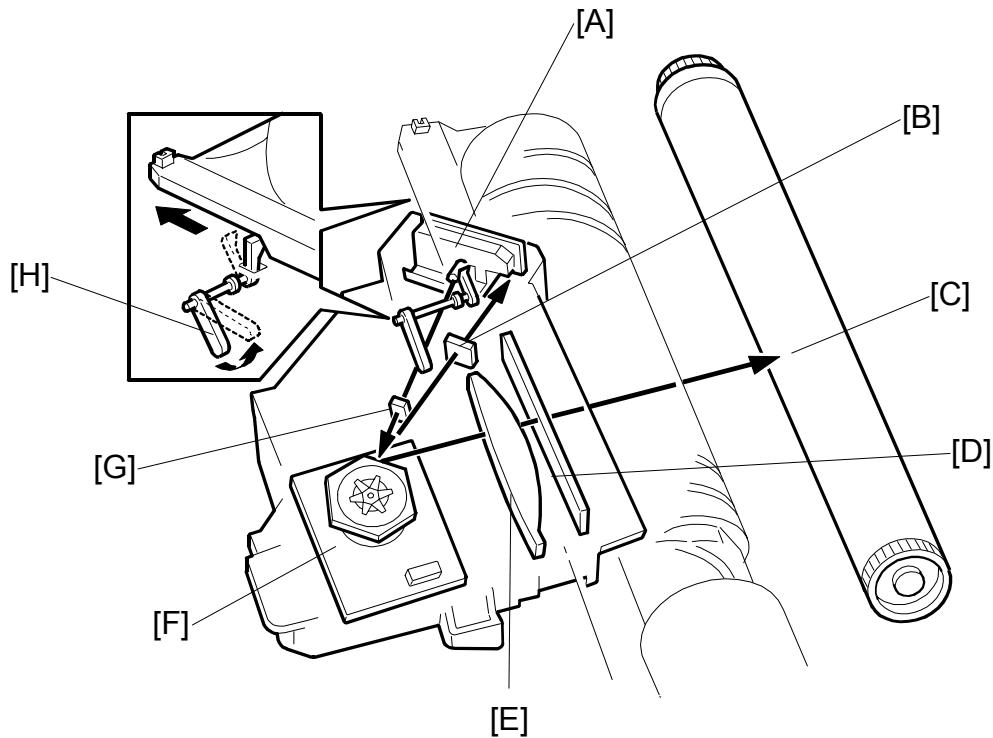
<u>SP4-964 setting</u>	<u>Applied enhancement</u>
-2	None
-1	None
0	None
+1	Level 1
+2	Level 2

³For printer and fax patterns, SP4-964 adjustments operate as follows.

<u>SP4-964 setting</u>	<u>Applied enhancement</u>
-2	None
-1	Level 1
0	Level 2
+1	Level 3
+2	Level 4

6.12 LASER EXPOSURE

6.12.1 OVERVIEW



[A]: LD Unit

[B]: Synchronization Detector Lens

[C]: OPC Drum

[D]: Shield Glass

[E]: Toroidal Lens

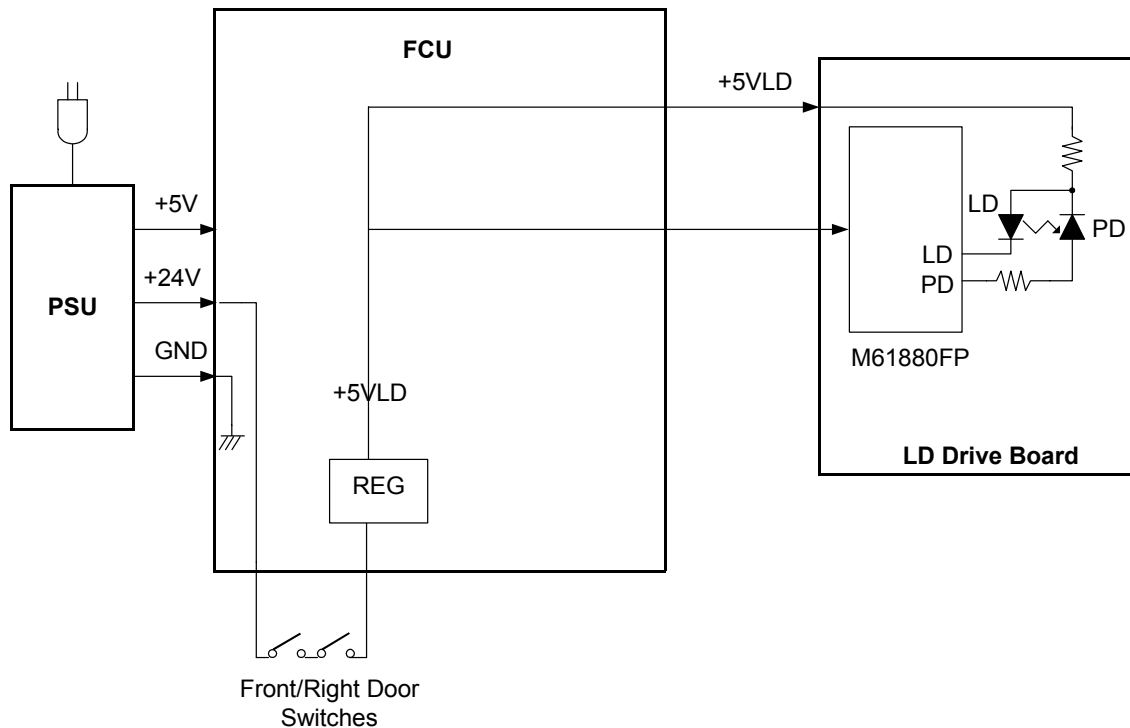
[F]: Polygon Mirror Motor

[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.

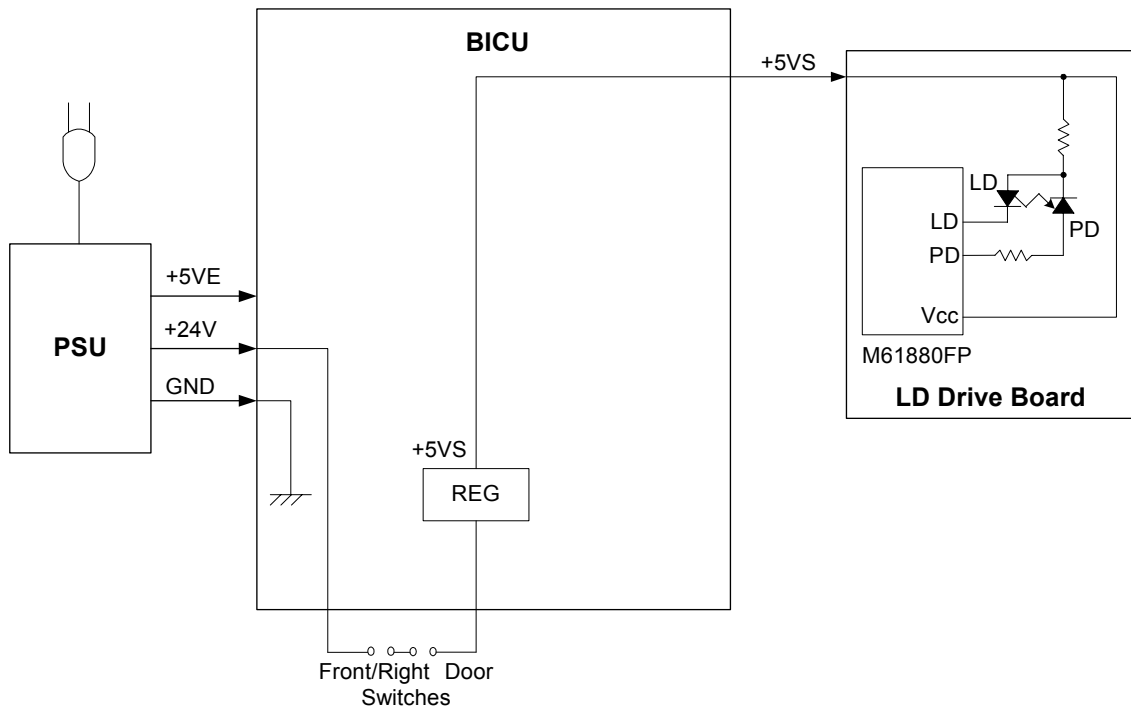
6.12.2 LD SAFETY SWITCHES (B044/B045/B046)



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.

6.13 LD SAFETY SWITCHES (B129/B130/B168/B169)

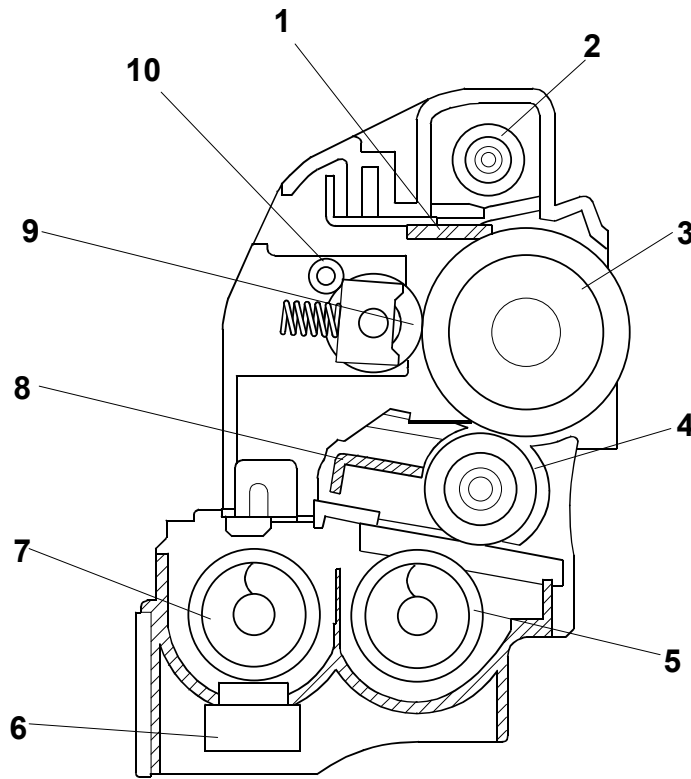


Safety switches are installed at the front and right doors to ensure technician and user safety, and to prevent the laser beam from accidentally switching on during servicing. Opening of the front or right door opens the corresponding switch, cutting the power supply (+5VS) to the laser diode.

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 +5VS power that drives the laser. This is why this voltage is referred to as a “switched” voltage.

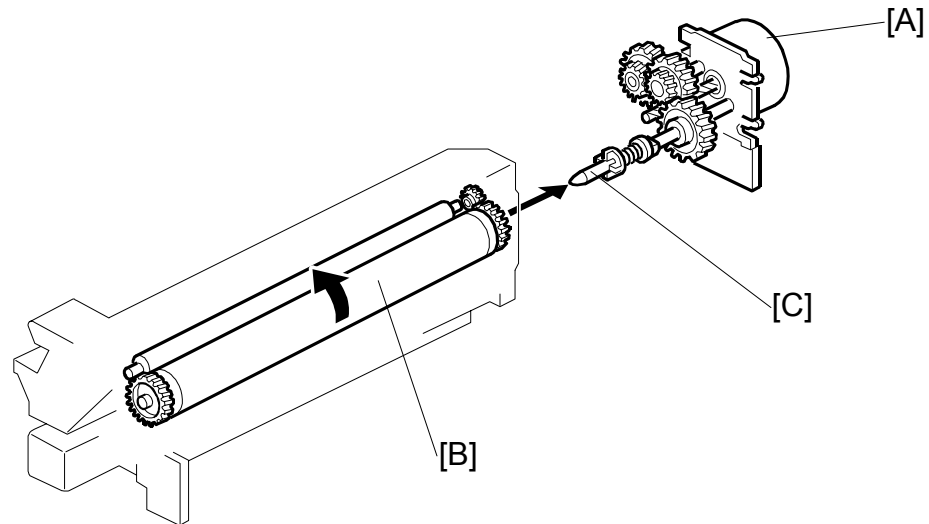
6.14 PHOTOCONDUCTOR UNIT (PCU)

6.14.1 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

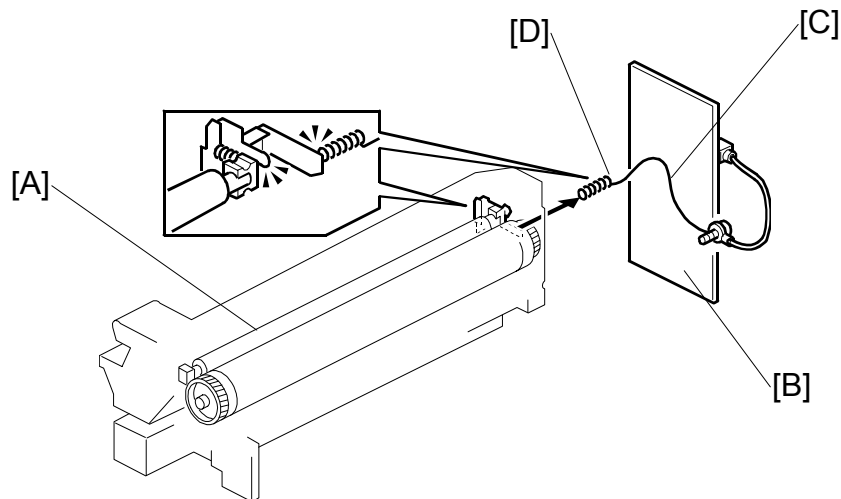
6.14.2 DRUM DRIVE



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

6.15 DRUM CHARGE

6.15.1 OVERVIEW

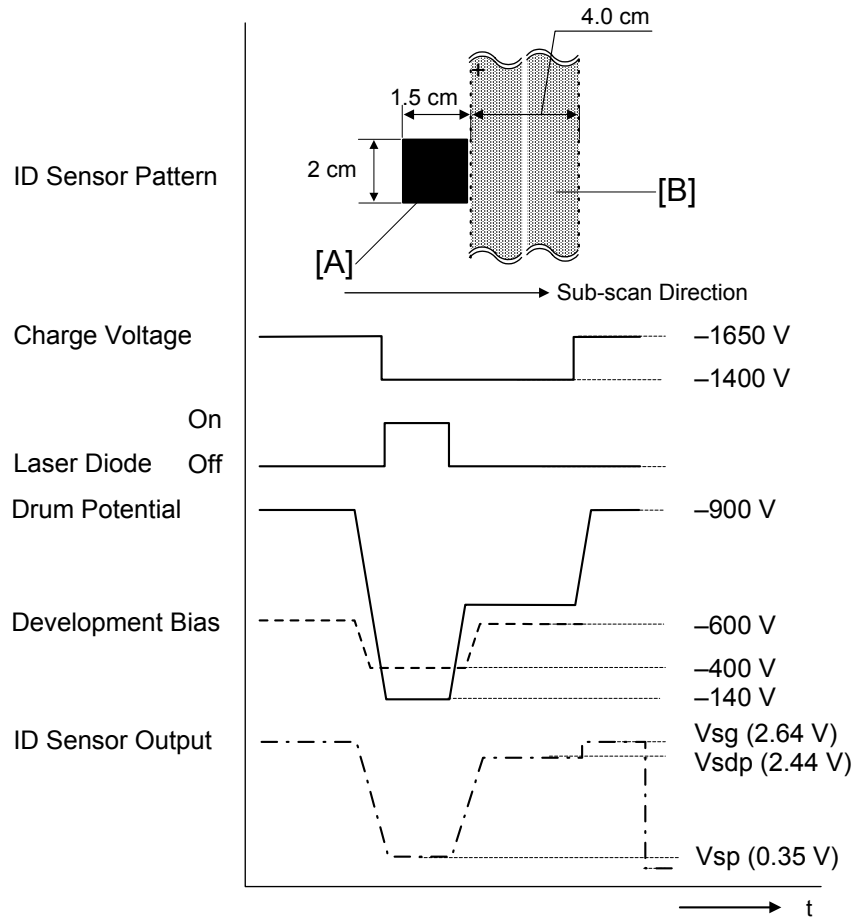


The drum charge roller [A] remains in contact with the drum, producing a charge of -900 V on the drum surface.

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 -1650V . 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.

6.15.2 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)

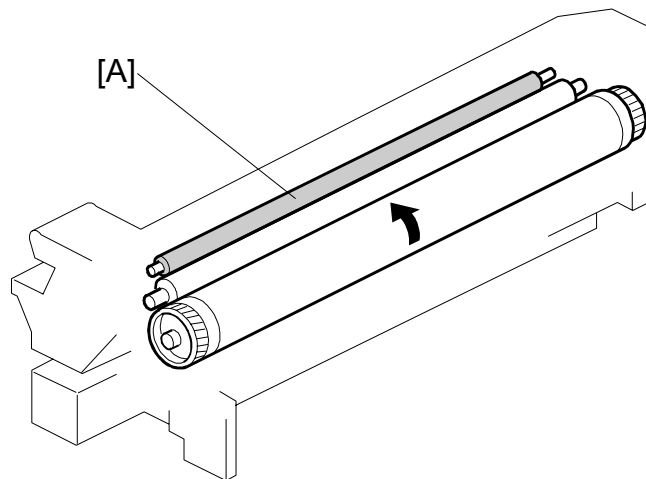
NOTE: Correction can be disabled with SP2-927.

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 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 V (more negative).

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

6.15.3 CHARGE ROLLER CLEANING

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

6.15.4 DETECTION OF A NEW PCU

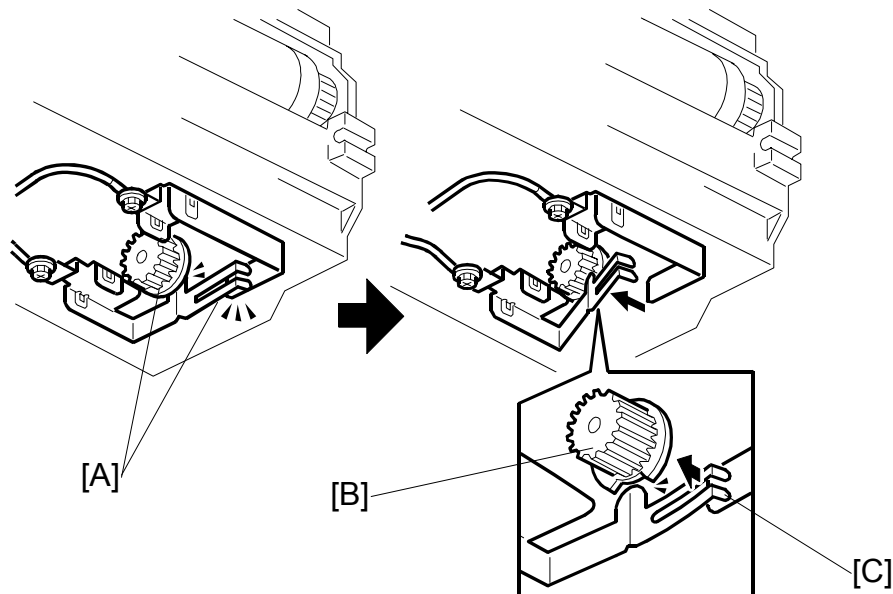
Before starting to use a new PCU, the machine must (a) agitate the toner/developer mix, (b) initialize the TD sensor, and (c) initialize the PCU counter. This machine automatically detects the presence of a new PCU and carries out these operations.

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

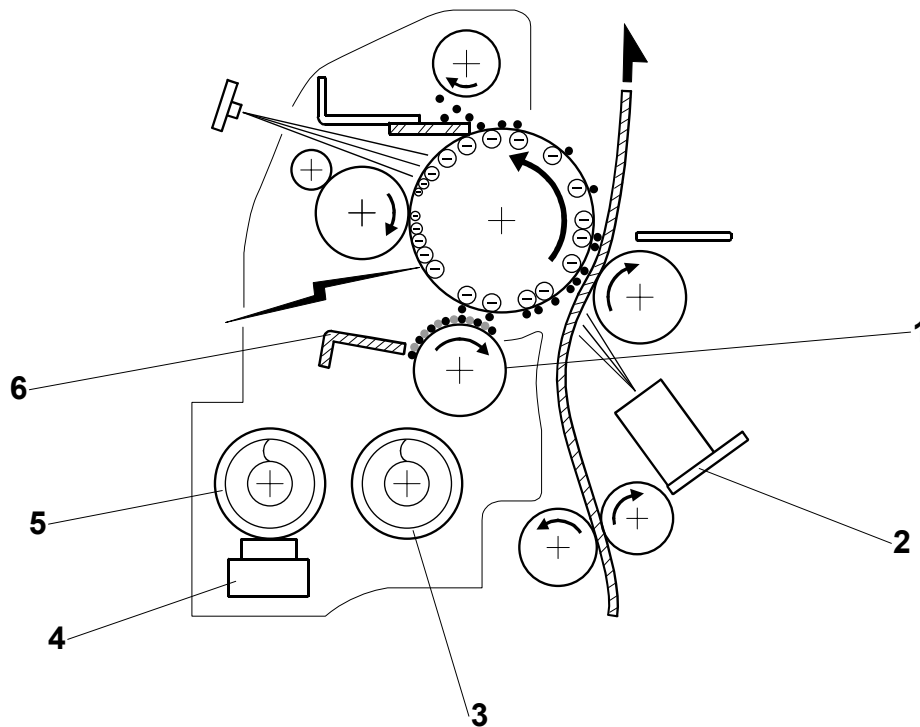
Replacement PCUs have a special mechanism that trips when they first start, informing the machine that a new PCU has been installed. (Preinstalled PCUs do not include this mechanism, and have two empty pins in their connector.)



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.

6.16 DEVELOPMENT

6.16.1 OVERVIEW



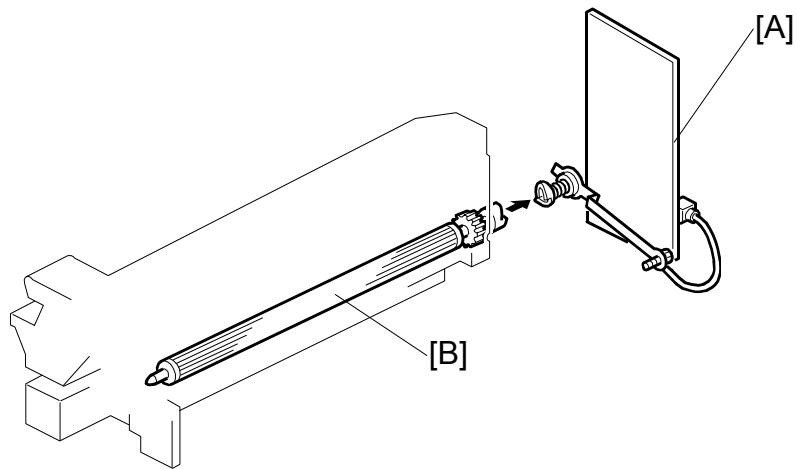
The development section consists of the following parts.

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.

DEVELOPMENT

6.16.2 DEVELOPMENT BIAS

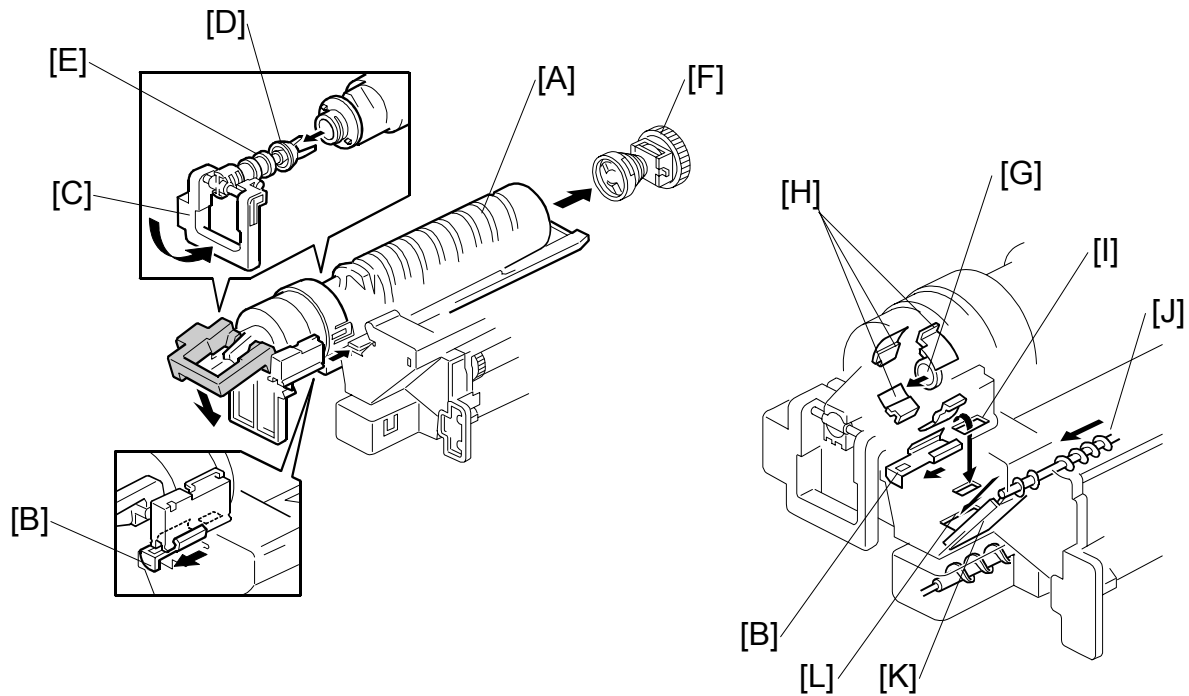


Black areas of the latent image on the drum are at low negative charge (about -140 ± 50 V), with white areas at high negative charge (about -900 V).

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.

6.16.3 TONER SUPPLY

Toner-Bottle Models



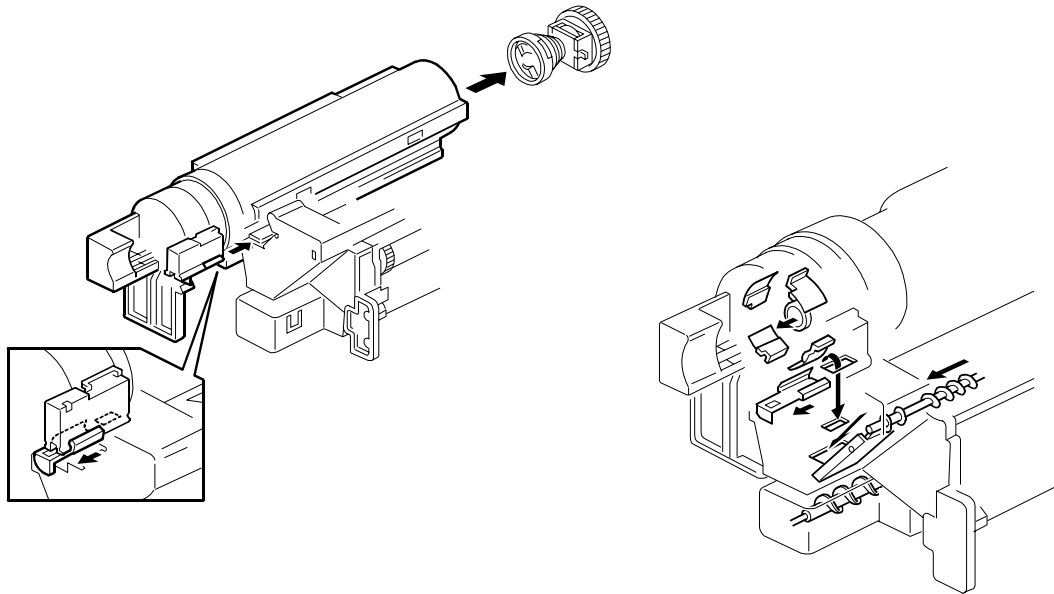
When toner bottle [A] is pushed in, shutter [B] is pushed open by the PCU body. Pressing in lever [C] pulls off toner bottle cap [D], which is held by chuck [E]. When clutch [F] turns the bottle, the spiral grooves push toner out at [G], and the turning Mylar blades [H] push this toner through slit [I] 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].

NOTE: The toner and developer used in the B129/B130/B168/B169 models are different than that used in the B044/B045/B046 models. (The B129/B130/B168/B169 toner has a lower melting point.) The toner and developer are not interchangeable between the B044/B045/B046 and the B129/B130/B168/B169.

DEVELOPMENT

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).

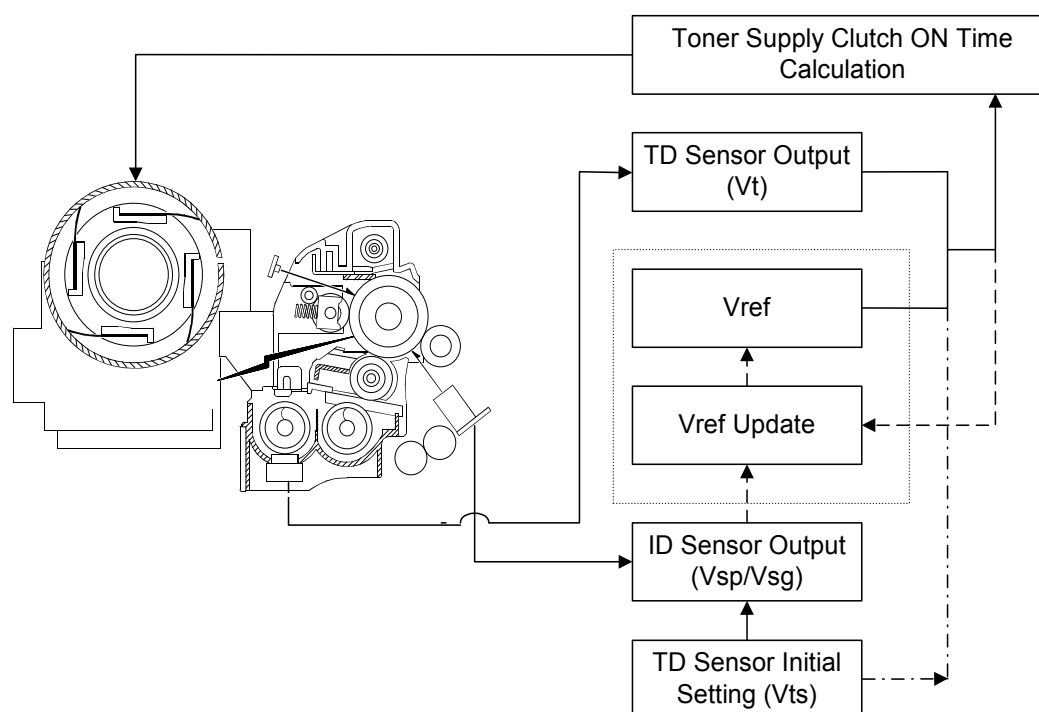


6.16.4 TONER DENSITY CONTROL

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	$RV + S < V_t \leq RV + 4S/5$	$5t$
7	$V_t \geq RV + S$	$6t$

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

6.16.5 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.

6.16.6 DETECTION OF TONER NEAR END AND TONER END

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

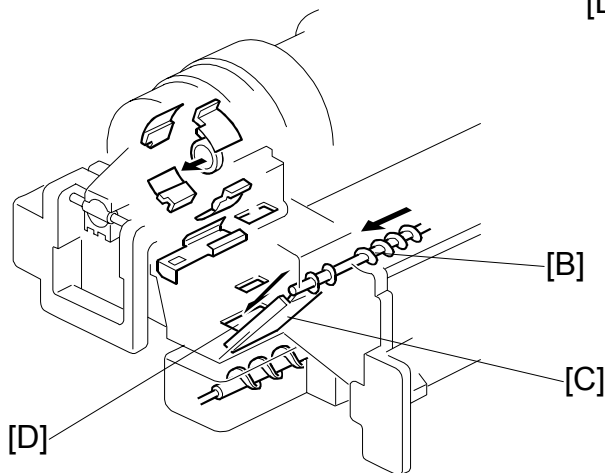
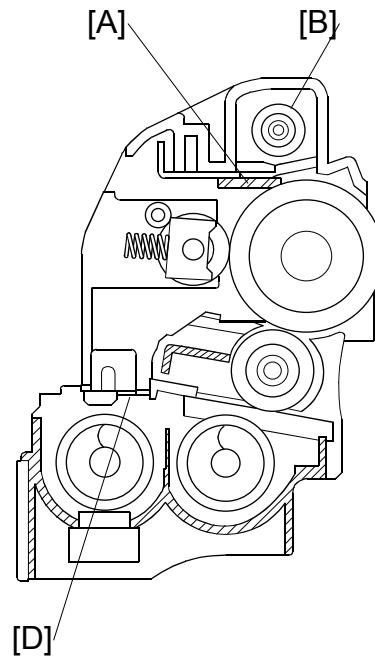
- V_t is at level 6 (see above table) five times in succession
- $V_t > 1.85$ five times in succession

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

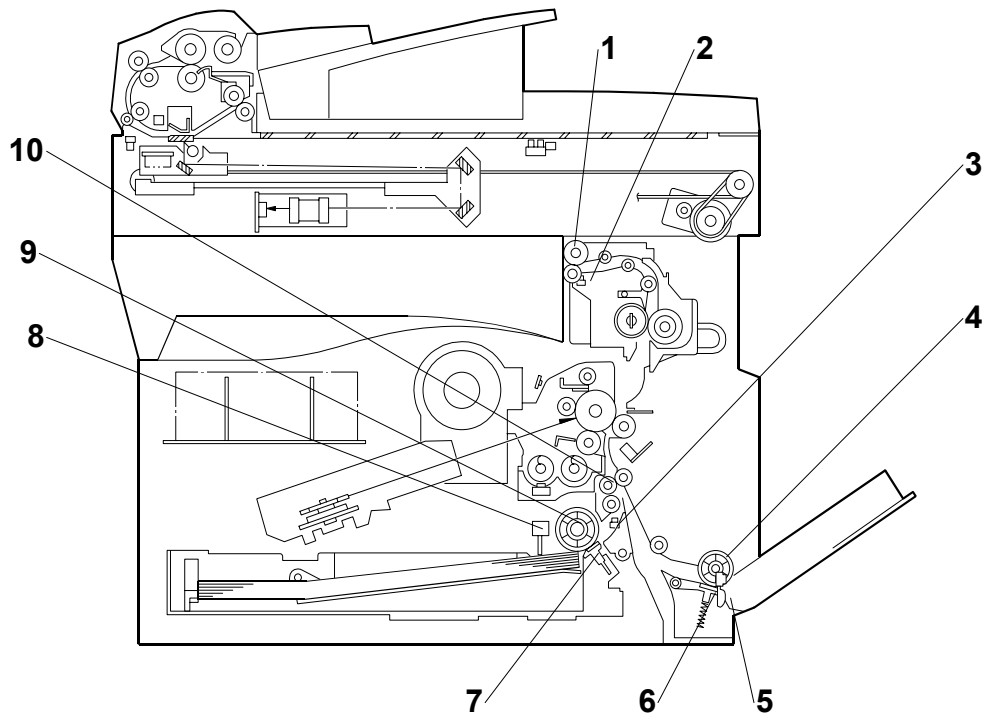
6.17 DRUM CLEANING AND TONER RECYCLING

- 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.



6.18 PAPER FEED

6.18.1 OVERVIEW



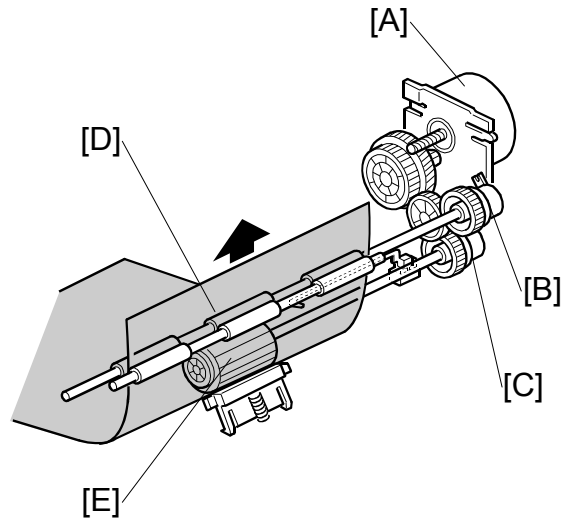
1. Exit Roller	6. Bypass Friction Pad* ¹
2. Exit Sensor	7. (Main) Friction Pad
3. Registration Sensor	8. (Main) Paper End Sensor
4. Bypass Feed Roller*	9. Paper Feed Roller
5. Bypass Paper End Sensor* ¹	10. Registration Roller

*1: Only on 100-sheet bypass machines.

6.18.2 PAPER FEED DRIVE MECHANISM

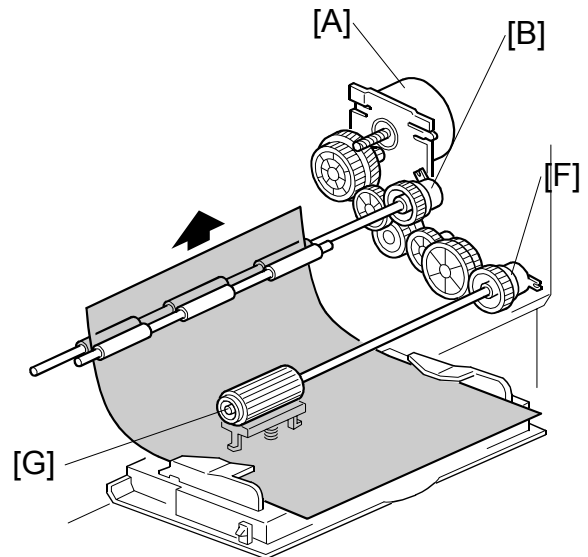
From Paper Tray

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

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)

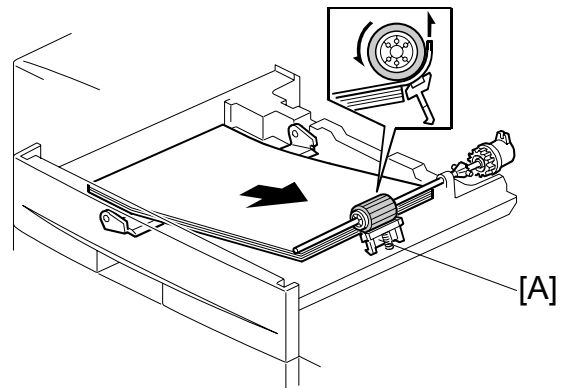
The user inserts the sheet directly up to the registration roller [D]. Main motor [A] drives the gear on registration clutch [B], causing the registration roller to turn and feed the sheet.

6.18.3 PAPER FEED AND SEPARATION

The machine uses a friction-pad feed system.

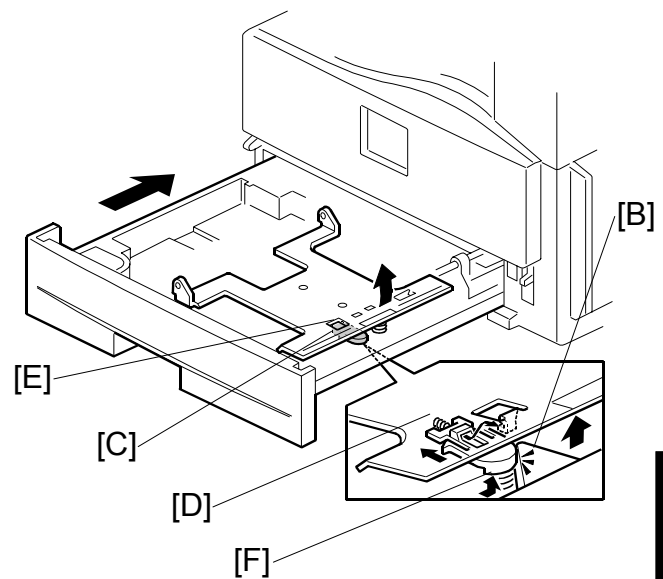
[A]: Friction pad (in paper tray)

NOTE: On 100-sheet bypass models, friction-pad separation is also provided for the bypass feed.



6.18.4 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.

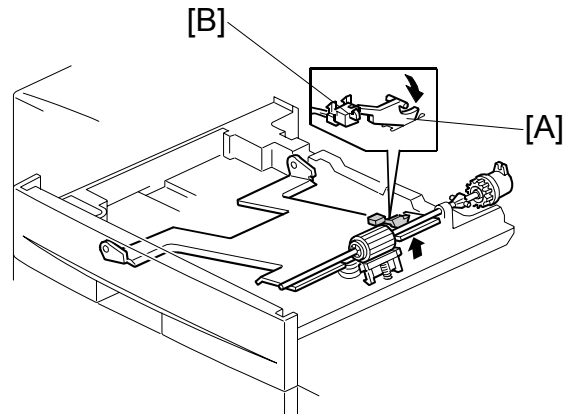


PAPER FEED

PAPER END DETECTION

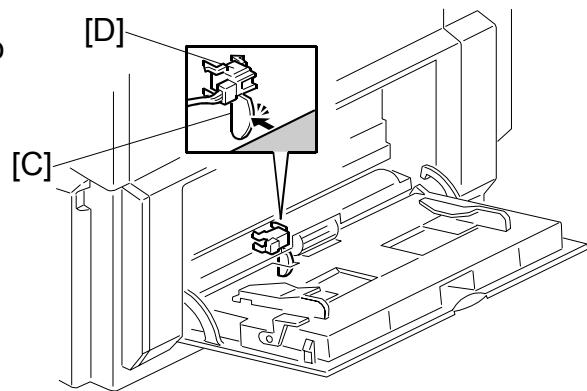
Main Tray

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



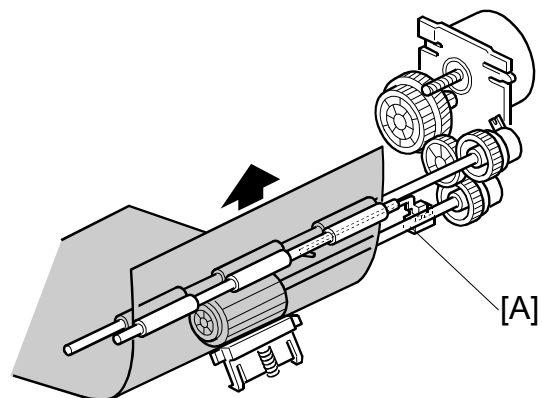
100-Sheet Bypass Tray

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



6.18.5 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.



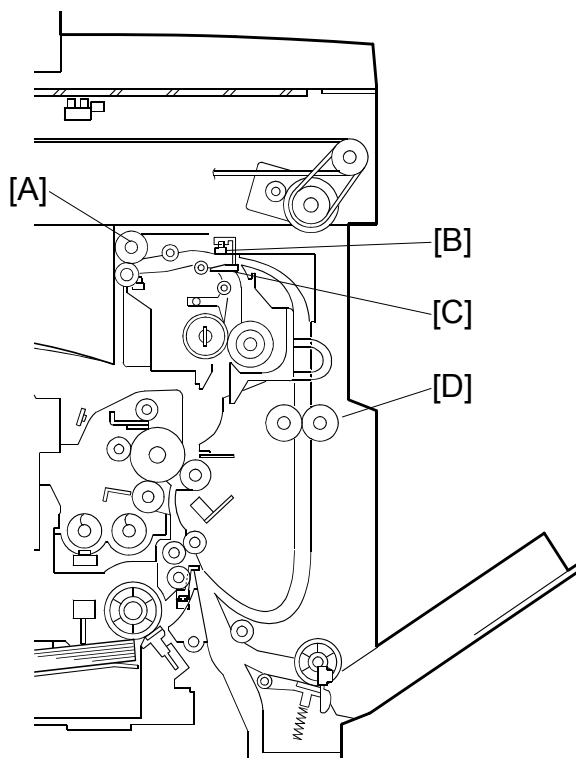
6.19 DUPLEX UNIT

6.19.1 IMPORTANT COMPONENTS

The following components play important roles in duplex printing:

- The duplex motor drives the exit roller [A] and duplex roller [D].
- One of the paper guides on the fusing unit [C] is linked to the paper path sensor [B].

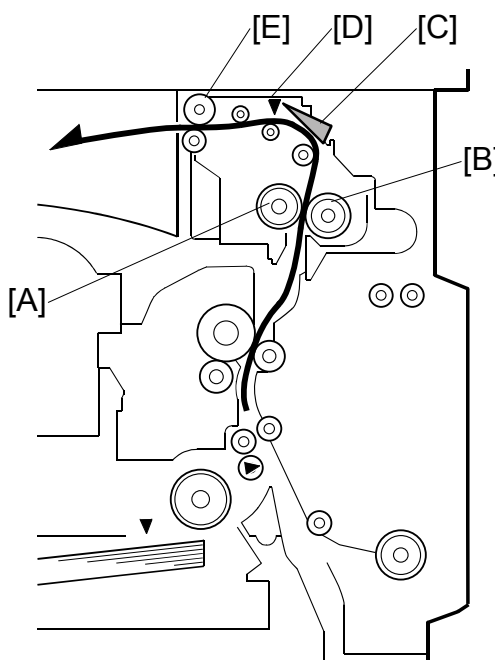
NOTE: You cannot use the by-pass tray for duplex printing.



6.19.2 DUPLEX PRINTING PROCESS

The copier processes duplex printing as follows:

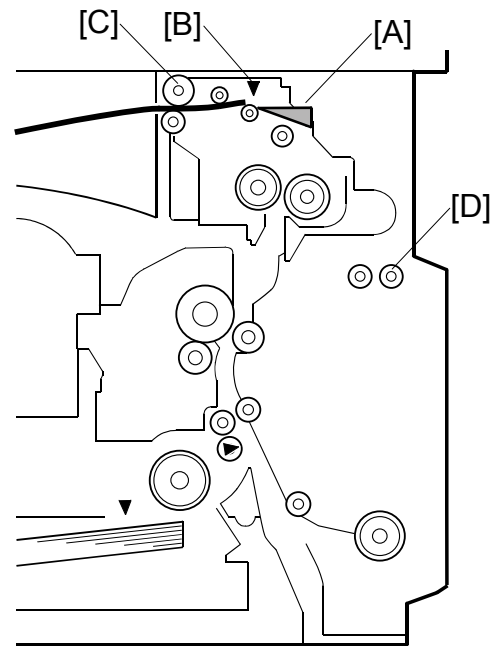
1. The controller starts to operate the main motor and duplex motor.
2. The hot roller [A] and pressure roller [B] transport the paper to the paper guide [C].
3. The leading edge of the paper pushes the paper guide. The paper guide turns the paper path sensor [D] on.
4. When the leading edge of the paper reaches the exit roller [E], the exit roller transports the paper.



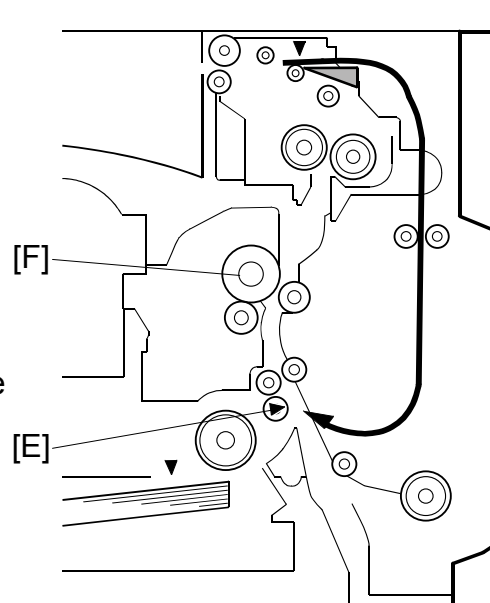
Detailed
Descriptions

DUPLEX UNIT

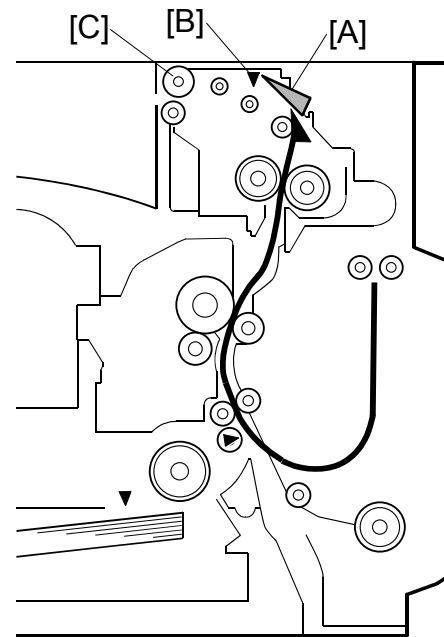
5. When the trailing edge of the paper exits from the paper guide, the paper guide drops to the original position [A] and turns the paper path sensor [B] off.
6. The controller starts to operate the duplex motor in reverse. The exit roller [C] turns in reverse, transporting the paper to the duplex roller.
7. The paper goes over the paper guide and reaches the duplex roller [D].
8. The duplex roller transports the paper into the duplex unit. The paper goes through the unit.



9. When the leading edge of the paper reaches the registration sensor [E], the controller stops the duplex motor. The duplex roller holds the paper in the duplex unit.
10. When the OPC drum [F] gets ready for printing, the controller restarts the duplex motor. The duplex roller transports the paper.
11. The duplex roller continues transporting the paper until the paper reaches the fusing unit.
12. The hot and pressure rollers transport the paper to the paper guide.

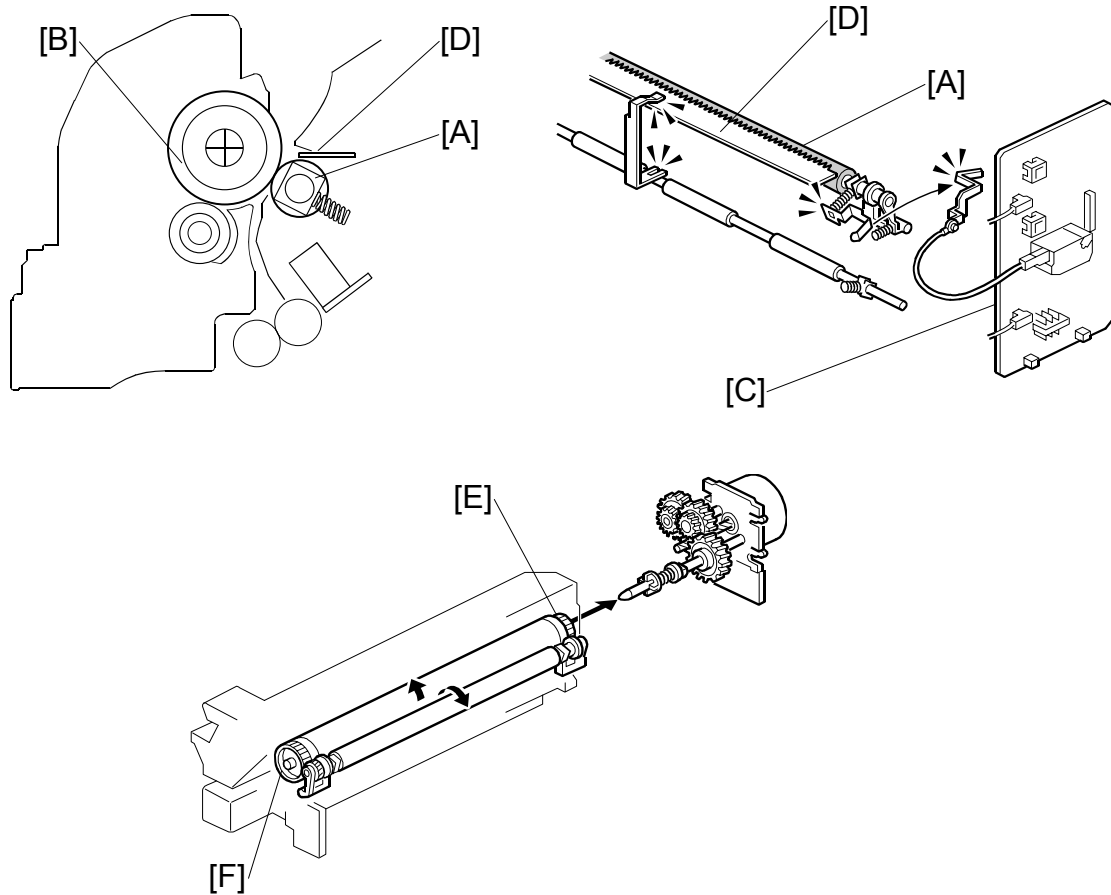


13. The leading edge of the paper pushes the paper guide [A]. The paper guide turns the paper path sensor [B] on.
14. The controller changes the direction of the duplex motor. The exit roller [C] changes the direction of its rotation, transporting the paper to the copy tray.



6.20 IMAGE TRANSFER AND PAPER SEPARATION

6.20.1 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].

6.20.2 IMAGE TRANSFER CURRENT TIMING (B044/B045/B046)

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 (μ A)

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

6.21 IMAGE TRANSFER CURRENT (B129/B130/B168/B169)

There are two transfer current levels: low and high.

4. Low level: Before image transfer starts, the high voltage supply board supplies +10 μ A to the transfer roller. This prevents the transfer roller from attracting any positively charged toner onto the drum surface.
5. High level: During image transfer, the high voltage supply board supplies a high level current (see the table) to the transfer roller. This enables the transfer roller to attract toner onto the paper.
6. When the trailing edge of the paper has passed the transfer roller, the high voltage supply board stops supplying the transfer current. If the copier is printing more pages, the high voltage supply board supplies the low level transfer current.

These levels can be adjusted (☛ SP2-301). When increasing a transfer current level, use caution:

- Increasing a transfer current level may produce ghost images (some part of image near the leading edge reappears in other part of the page).
- Increasing a transfer current level may damage the OPC drum.

The table lists the default settings and SPs.

Job type	amp	SP
Normal paper	0 μ A	SP2-301-001
Thick paper	0 μ A	SP2-301-002
Duplex copying	0 μ A	SP2-301-003

6.21.1 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 $-4 \mu\text{A}$) to the transfer roller, causing negatively charged toner on the roller to move back to the drum. It then applies a positive cleaning current ($+5 \mu\text{A}$) to the roller, causing any positively charged toner to migrate back to the drum.

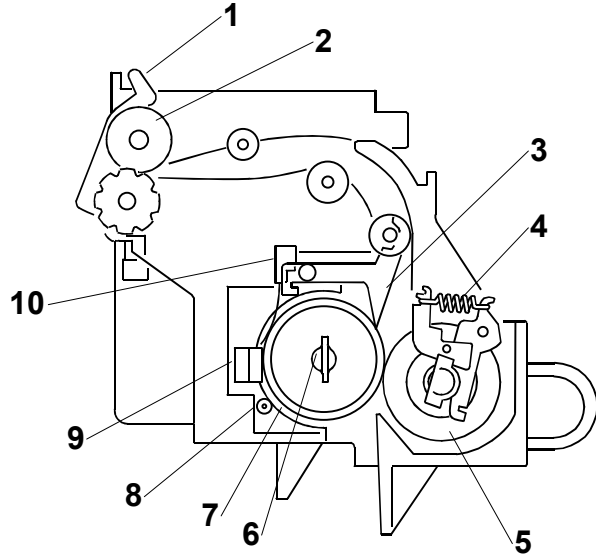
The cleaning current can be adjusted using SP2-301-4.

6.22 IMAGE FUSING AND PAPER EXIT

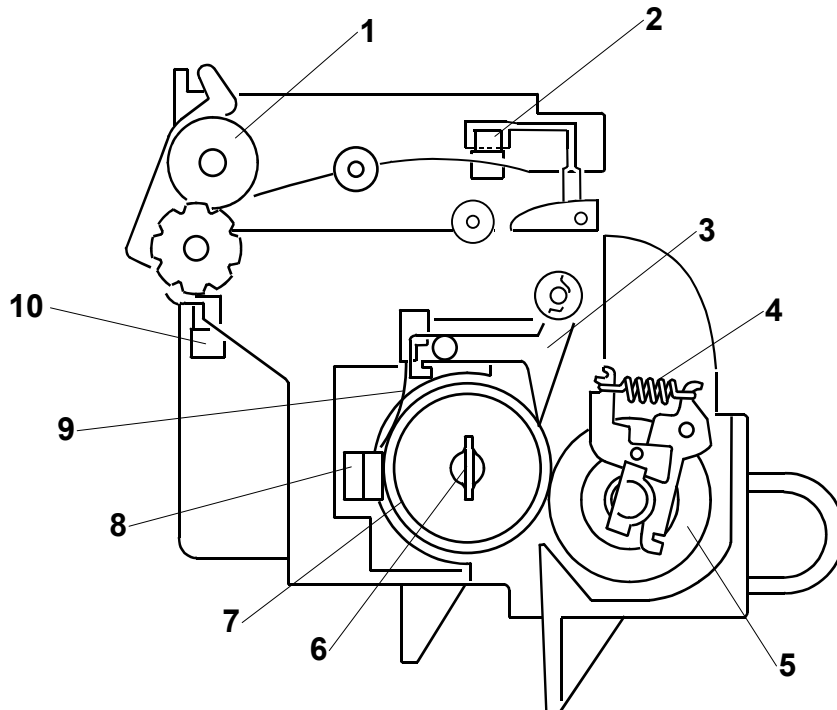
6.22.1 OVERVIEW (B044/B045/B046)

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



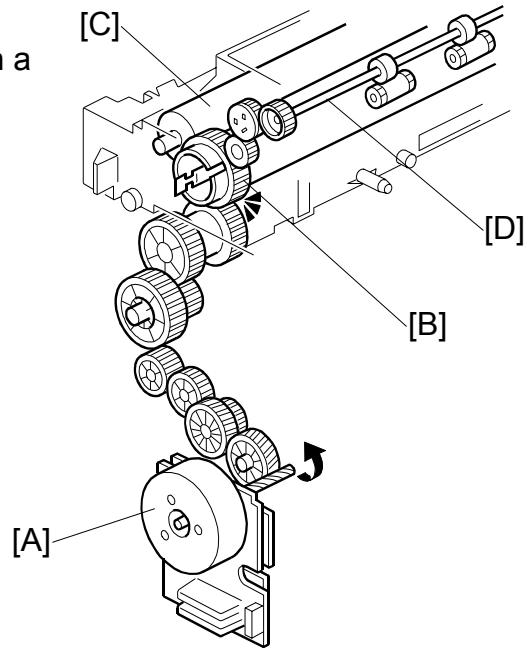
6.22.2 OVERVIEW (B129/B130/B168/B169)



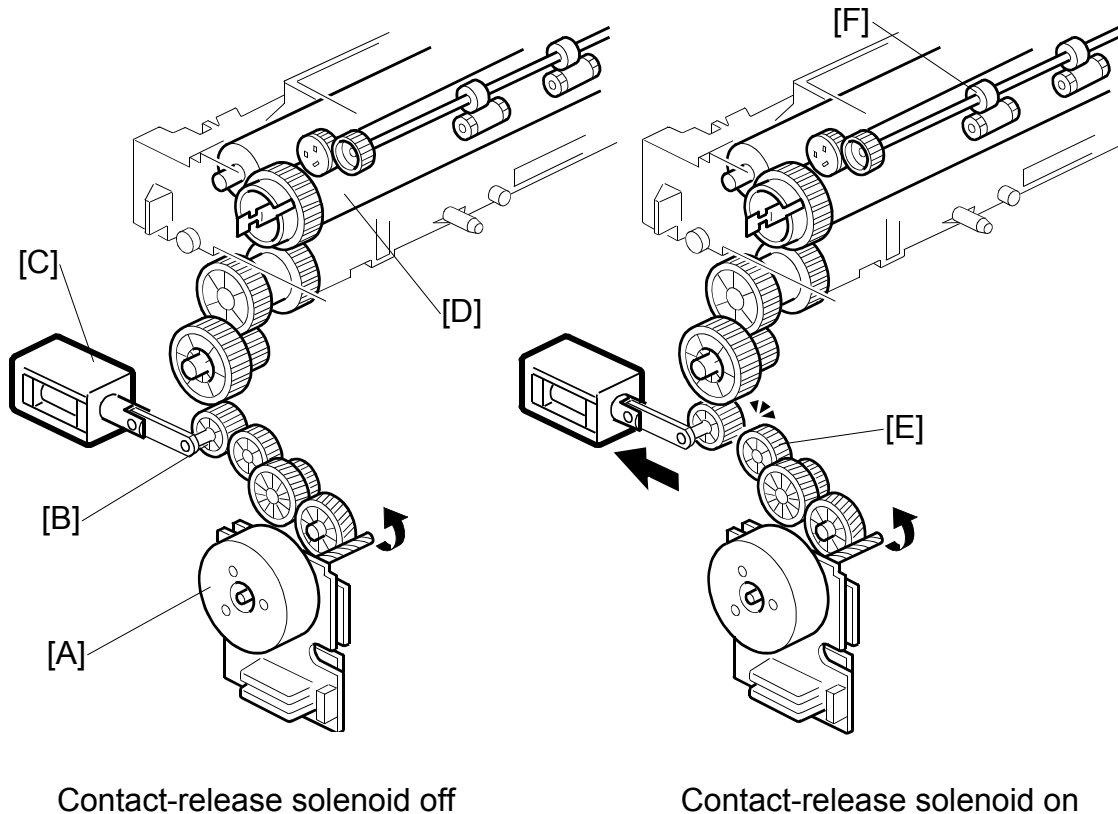
11. Exit Roller	16. Fusing Lamp
12. Paper Path Sensor	17. Hot Roller
13. Hot Roller Strippers	18. Thermoswitch
14. Pressure Spring	19. Thermistor
15. Pressure Roller	20. Exit Sensor

6.22.3 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.



6.22.4 HOT ROLLER DRIVE



Mechanism

The main motor [A] drives the hot roller [D] through a gear train. One of the gears in the gear train is the contact-release gear [B]. This gear is linked to the contact-release solenoid [C]. When the contact-release solenoid is on, it separates the contact-release gear from another gear [E] in the gear train. As a result, the drive power of the main motor is not transmitted to the hot roller.

NOTE: The drive power of the main motor is not transmitted to the paper exit roller [F]. This roller is driven by the duplex motor.

Contact/Release Control

The contact-release solenoid turns on when the following conditions are all met:

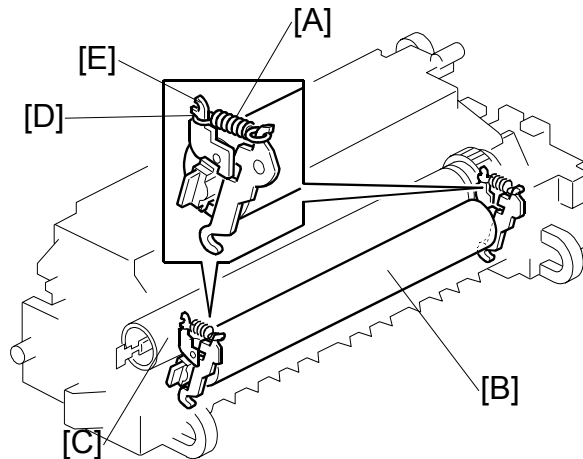
- The copier is warming up the hot roller.
- The hot roller temperature is 16°C or higher.
- The fusing idling (SP1-103-001) is "No."

This control is based upon the following facts:

- The copier takes a shorter time to heat the hot roller when the roller is not turning.
- The temperature of the hot roller surface may become uneven when the hot roller temperature is low and the roller is not turning.

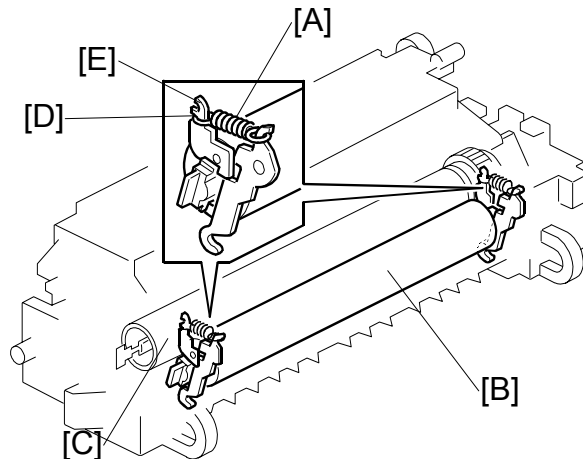
6.22.5 PRESSURE ROLLER (B044/B045/B046)

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].



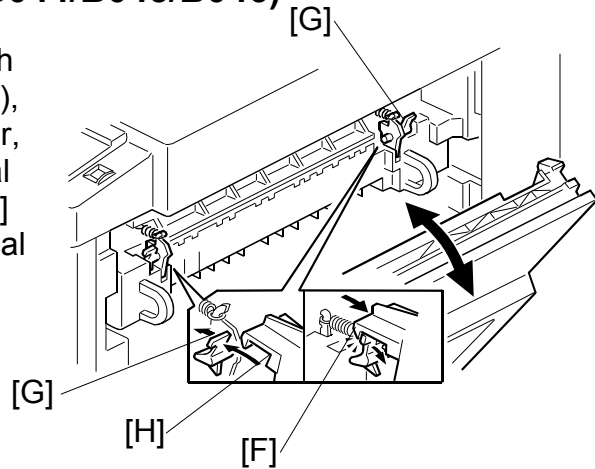
6.22.6 PRESSURE ROLLER (B129/B130/B168/B169)

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].



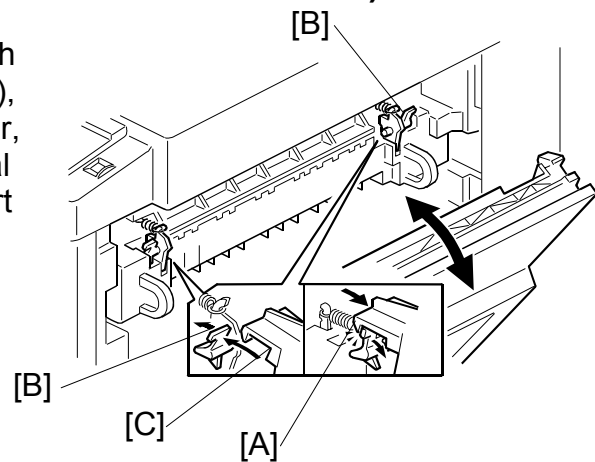
6.22.7 PRESSURE RELEASE (B044/B045/B046)

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.



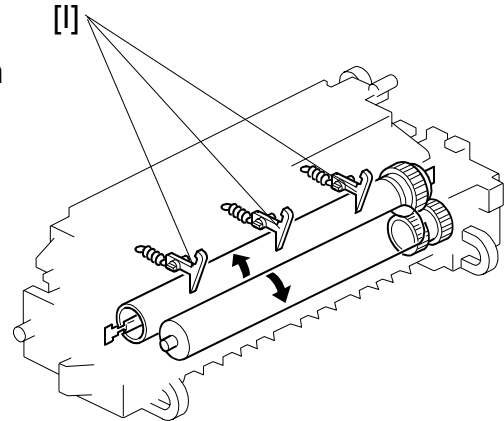
6.22.8 PRESSURE RELEASE (B129/B130/B168/B169)

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



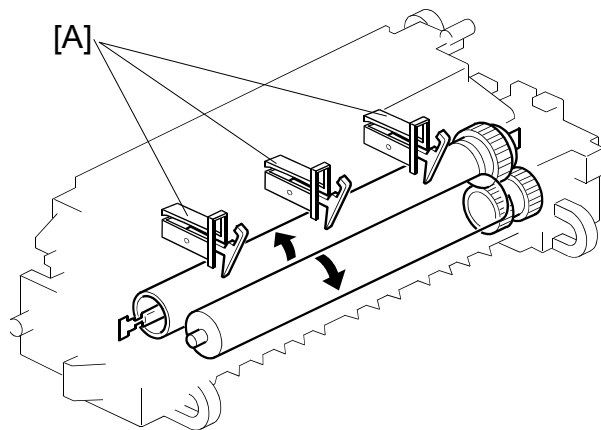
6.22.9 SEPARATION (B044/B045/B046)

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



6.22.10 SEPARATION (B129/B130/B168/B169)

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



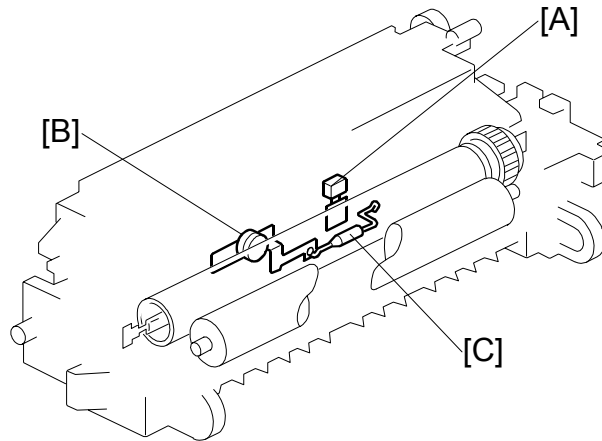
6.22.11 FUSING TEMPERATURE CONTROL (B044/B045/B046)

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

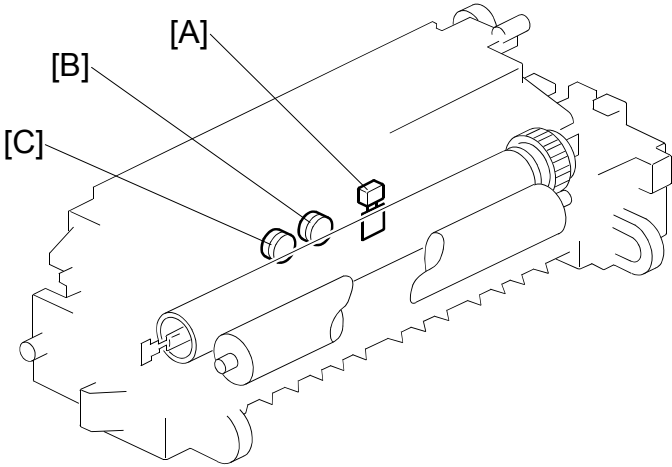
Target temperature goes up 10°C if the user selects thick-paper mode.

6.22.12 FUSING TEMPERATURE CONTROL (B129/B130/B168/B169)

Control Process

The BICU references the signal from the thermistor [A] every one second. The BICU turns the fusing lamp on and off, or keeps it on or off, depending upon the following factors:

- Current temperature
- Target fusing temperature



Target Temperature

The table lists the target temperatures. These targets can be changed via the listed programs.

NOTE: For the fusing temperature transition during copying, see Temperature Transition (below).

Status/Condition	Temperature	SP
Warming up	160°C	SP1-105-001
Ready	150°C	SP1-105-003
Copying	160°C	SP1-105-005
Low level	60°C	SP1-105-007
Thick paper	165°C	SP1-105-009

Temperature Transition

When the fusing unit is cool, the fusing temperature should be higher to improve the fusing quality. During copying, the fusing temperature is controlled as listed in the table below. “Default” is the target fusing temperature by default (SP1-105-005: 160°C). “Example” is the target fusing temperature when you have specified “165°C” in SP1-105-005.

	Start key pushed (①)	For one second (②)	30 seconds later (③)	60 seconds later (④)
Default	175°C	170°C	165°C	160°C
Example	180°C	175°C	170°C	165°C
Difference from SP1-105-005	+15°C	+10°C	+5°C	—

Copy SP1-105-005 adjusts the fusing temperature of the fourth phase (④). You cannot directly adjust the fusing temperature in the first three phases (① through ③). They are always higher than the fourth phase (④) by 15°C, 10°C, and 5°C respectively.

6.22.13 OVERHEAT PROTECTION (B044/B045/B046)

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.

6.22.14 OVERHEAT PROTECTION (B129/B130/B168/B169)

The BICU references the fusing temperature through the thermistor ([A] in the illustration for 6.7.6). The copier prevents overheating as listed below. Normally, Feature 1 is effective in preventing overheating. Features 2 through 3 are fail-safe features.

Feature 1:

The BICU turns off the fusing lamp when the fusing temperature is too high.

Feature 2:

The BICU disables the machine operation when the thermistor detects an abnormal temperature transition. In a case like this, the copier displays one of the following SC codes (☛ 4.1.2): SC543, SC544, SC545, SC546.

NOTE: If the fusing temperature is too low, SC542 is displayed.

Feature 3:

The BICU disables the machine operation when the thermistor does not operate properly. In a case like this, the copier displays SC541 (☛ 4.1.2).

Feature 4:

The thermoswitch near the center ([B] in the illustration for 6.7.6) cuts the power supply to the fusing lamp at 160°C. The thermoswitch near the end [C] cuts the power supply to the fusing lamp at 170°C. These thermoswitches and the fusing lamp are on the same circuit.

- NOTE:**
- 1) Thermoswitch temperature is somewhat lower than the fusing temperature.
 - 2) The thermoswitch near the center does not necessarily work earlier than the other thermoswitch. The ends of the hot roller can be much hotter than the center when, for example, paper of a small size is continuously going through the fusing unit.

Feature 5:

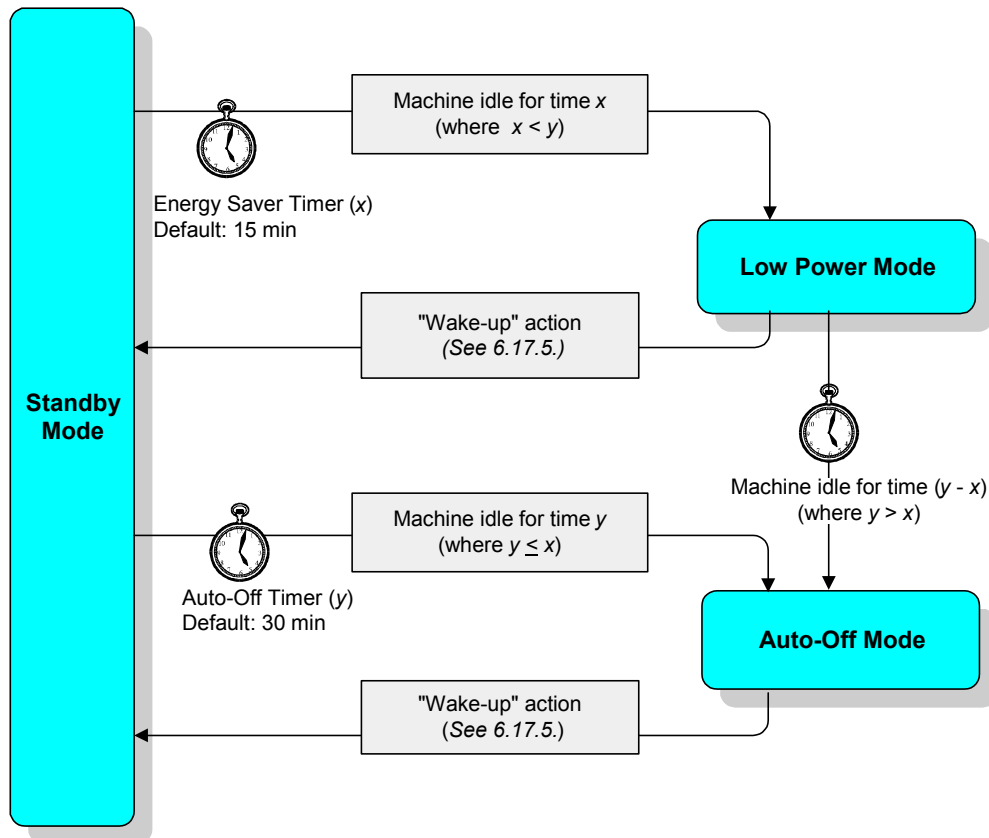
The BICU disables the machine operation when the exhaust fan does not operate properly. In a case like this, the copier displays SC590 (☛ 4.1.2).
Note that defective exhaust fans may cause overheating.

6.23 ENERGY SAVER MODES (B044/B045/B046)

6.23.1 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.

6.23.2 SYSTEM SETTINGS (B044/B045/B046)

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. • 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). See Note below.

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.

6.23.3 LOW POWER MODE LEVELS (B044/B045/B046)

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

6.23.4 AUTO-OFF LEVEL (B044/B045/B046)

Identical to low power mode level 3.

6.23.5 TRANSITION OPERATION (B044/B045/B046)

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.

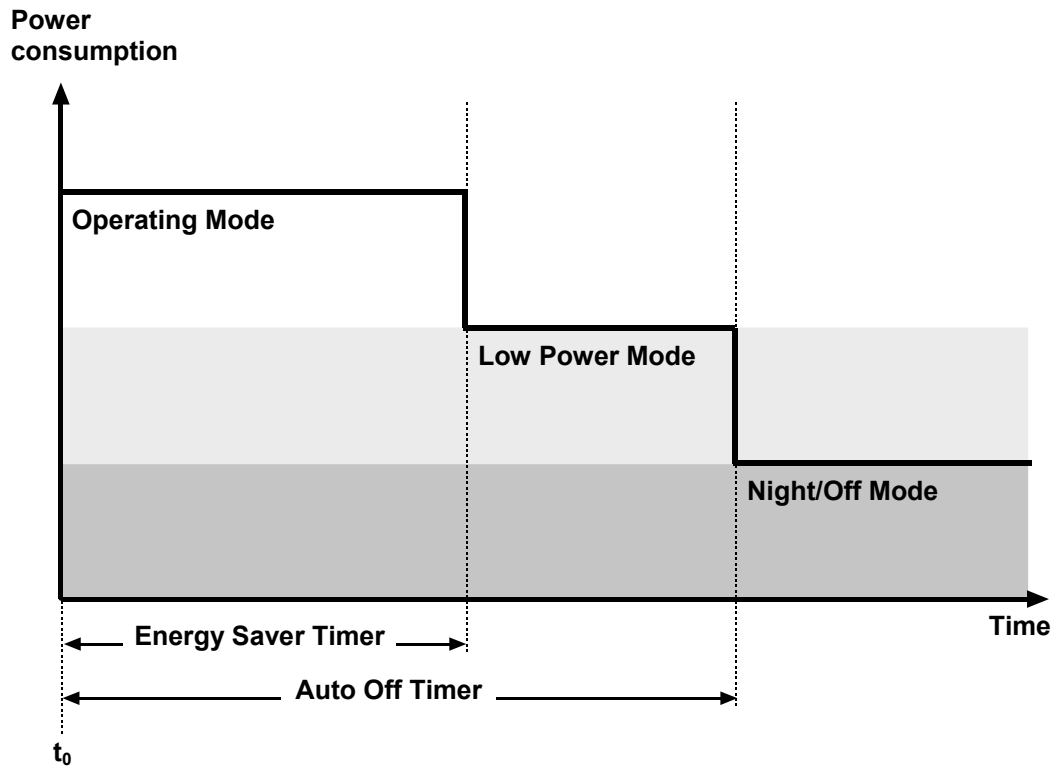
The machine returns to standby power mode when any of the following "wake-up" actions occurs:

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

6.24 ENERGY SAVER MODES OF B129 BASIC MACHINE

This section (6.9) illustrates the energy saver modes of the basic model (the machine without the controller box). For the energy saver modes of the other models (the machines with the controller box), see section 6.10.

Overview



The basic model has two energy-saver modes: the Low Power Mode and the Night/Off Mode. The table lists the status of several components.

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (and status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends upon job status and environmental conditions.

** The SRAM is live and backs up the engine controller.

AOF

When AOF is off, the engine controller is unable to start the Night/Off Mode. It is recommended that the user keep AOF on ( /T29 → System Settings → Key Operator Tools → AOF).

Timers

The engine controller references the Energy Saver Timer to start the Low Power Mode, and references the Auto Off Timer to start the Night/Off Mode. The user can set these timers ( /T29 → System Settings → Timer Settings).

The Energy Saver Timer and the Auto Off Timer start at the same time (t_0) when the machine ends all jobs, or when the user ends all manual operations. Note that the Auto Off Timer does not wait for the Energy Saver Timer. If the user specifies a larger value in the Energy Saver Timer, the Auto Off Timer expires earlier than the Energy Saver Timer. In a case like this, the Low Power Mode is not activated. Instead, the engine controller starts the Night/Off Mode when the Auto Off Timer expires.

Specified value	Low Power Mode	Night/Off Mode
Energy Saver Timer > Auto Off Timer	Cannot start	Can start
Energy Saver Timer = Auto Off Timer	Cannot start	Can start
Energy Saver Timer < Auto Off Timer	Can start	Can start

Recovery

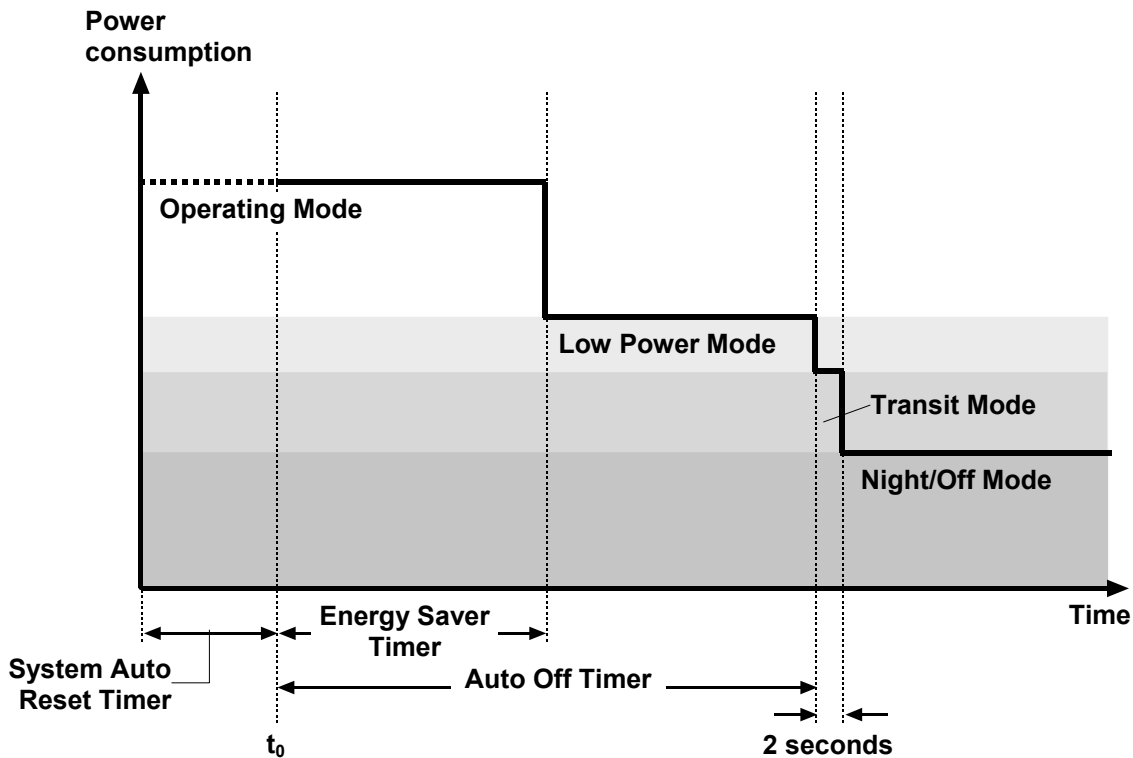
Any of the following operations bring the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover is opened.

6.25 ENERGY SAVER MODES OF MFP MACHINES (B130/B168/B169)

This section (6.10) illustrates the energy saver modes of the models with the controller box. For the energy saver modes of the basic model (the machine without the controller box), see section 6.9.

Overview



The machine has three energy-saver modes: the Low Power Mode, the Transit Mode, and the Night/Off Mode. The Transit Mode continues for about two seconds (most users will not recognize this mode when it occurs). The table lists the status of several components.

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Transit Mode	Off	On	Off
Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (or status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends upon job status and environmental conditions.

** The SRAM is live and backs up the engine controller.

AOF

See "AOF" in section 6.9.

Timers

The Energy Saver Timer and Auto Off Timer start at the same time (t_0) when the machine ends all jobs, when the user ends all manual operations, or when the controller starts the default application program (the program specified by the user [/123] → System Settings → General Features → Function Priority)). The default application program starts when the System Auto Reset Timer expires (/123) → System Settings → Timer Settings → System Auto Reset Timer).

For more information, see “Timers” in section 6.9.

Recovery

Any of the following operations bring the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover is opened.
- The controller receives a job over the network or the telephone line.
- An SC code is generated.

SPECIFICATIONS

SPECIFICATIONS (B129/B130/B168/B169)

GENERAL SPECIFICATIONS

COPIER

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book/Object
Original Size:	Maximum A4 / 8 1/2" x 11" A4 / 8 1/2" x 14" (ADF)
Copy Paper Size:	Maximum A4 SEF / 8 1/2" x 11" SEF (Copier's paper tray) A4 SEF / 8 1/2" x 14" SEF (Bypass) A4 SEF / 8 1/2" x 14" SEF (Optional paper tray) A4 SEF / 8 1/2" x 14" SEF (Duplex) Minimum A5 LEF / 8 1/2" x 5 1/2" LEF (Copier's paper tray) A6 SEF / 8 1/2" x 5 1/2" (Bypass) A4 SEF / 8 1/2" x 11" SEF (Optional paper tray unit) A4 SEF / 8 1/2" x 11" SEF (Duplex) Custom sizes in the bypass tray: Width: 90 – 216 mm (3.5" – 8.5") Length: 139 – 356 mm (5.48" – 14.0")
Copy Paper Weight:	Standard paper tray; optional paper tray: 60 – 90 g/m ² , 16 – 24 lb. Bypass: 60 – 157 g/m ² , 16 – 42 lb. Duplex: 64 – 90 g/m ² , 20 – 24 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:	120 V, 60 Hz or 220 – 240 V, 50/60 Hz

SPECIFICATIONS (B129/B130/B168/B169)

Power Consumption: Maximum: 1 kW or less
 Energy Saver: 10W or less
 Off Mode: 1 W or less

Noise Emission: Sound Power Level

Standby	40 dB(A) or less
Operating (copier only)	62 dB(A) or less
Operating (full-system)	66 dB(A) or less

Dimensions (W x D x H) Copier: 468 x 450 x 371 mm (18.4" x 17.7" x 14.6")
 With optional paper tray unit: 468 x 450 x 511 mm (18.4" x 17.7" x 20.1")

Weight: Basic: 22 kg (48.5 lb.) or less
 Basic with ADF: 24 kg (52.9 lb.) or less
 CPS model 23 kg (50.7 lb.) or less
 CF/MFP model: 25 kb (55.1 lb.) or less

Resolution: 600 dpi

Copying Speed in Multicopy Mode (copies/minute): 15 (A4 / 8 1/2" x 11"; 100%)

Warm-up Time: Basic: 15 seconds or less (at 20°C [68°F])
 Other: Approximately 30 seconds (at 20°C [68°F])

First Copy Time: 7.5 seconds or less
 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

Auto Off Timer Default: 1 minute
 Range: 1 to 240 minutes

Energy Saver Timer: Default: 1 minute
 Rage: 1 to 240 minutes

Copy Paper Capacity: Paper Tray:
 250 sheets
 Optional Paper Tray Unit:
 500 sheets x 1
 Bypass Tray:
 100 sheets

Copy-Tray Capacity	250 sheets
Toner Replenishment:	Cartridge replacement (230 g/cartridge)
Toner Yield	7k copies /toner bottle (A4, 6% full black)
Optional Equipment:	• Auto document feeder • Paper tray unit • Anti-condensation heater for paper tray unit

FAX

See the Fax Service Manual.

PRINTER AND SCANNER

See the Printer/Scanner Unit Service Manual.

ADF

Original Size:	Standard: A4 to A5; 8 1/2" x 14" to 8 1/2" x 5 1/2" Custom: Width: 139 mm to 216 mm Length: 139 mm to 356 mm
Original Weight:	52–105 g/m ² (14–28 lb.)
Table Capacity:	30 sheets (80 g/m ² , 21 lb.)
Original Standard Position:	Center
Separation:	FRR
Transport:	Roller transport
Feed Order:	Top first
Reproduction Range:	50–200%
Power Source:	24 and 5 Vdc from the copier
Power Consumption:	Operating: 50 W or less On standby: 1.2 W or less
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) (excluding the original table and platen cover)

SUPPORTED PAPER SIZE

ORIGINAL PAPER SIZE

The copier and ADF do not detect original paper sizes. The table lists the paper sizes that the ADF can transport.

Paper	Size (W x L)	
A3 SEF	297 x 420 mm	O
B4 SEF	257 x 364 mm	O
A4 SEF	210 x 297 mm	X
A4 LEF	297 x 210 mm	O
B5 SEF	182 x 257 mm	X
B5 LEF	257 x 182 mm	O
A5 SEF	148 x 210 mm	X
A5 LEF	210 x 148 mm	X
B6 SEF	128 x 182 mm	O
B6 LEF	182 x 128 mm	O
A6 SEF	105 x 148 mm	O
8K SEF	267 x 390 mm	O
16K SEF	195 x 267 mm	X
16K LEF	267 x 195 mm	O
DLT SEF	11.0" x 17.0"	O
LG SEF	8.5" x 14.0"	X*
LT SEF	8.5" x 11.0"	X
LT LEF	11.0" x 8.5"	O
Executive SEF	7.25" x 10.5"	O
HLT SEF	5.5" x 8.5"	X
HLT LEF	8.5" x 5.5"	X
F/GL (F4) SEF	8.0" x 13.0"	X*
Foolscap SEF	8.5" x 13.0"	X*
Folio SEF	8.25" x 13.0"	X*
Government	8.25" x 14"	X*
USB4 SEF	10.0" x 14.0"	O
Eng Quarto SEF	8.0" x 10.0"	O
Eng Quarto LEF	10.0" x 8.0"	O
Custom: Leading edge 139-216 mm Side edge 139-356 mm		O

SIGN:

X: Can use

O: Cannot use

*: Can use when the ADF is installed

PAPER FEED

The copier and optional paper feed unit do not detect paper sizes. The table lists the paper sizes that the copier and optional paper feed unit can transport.

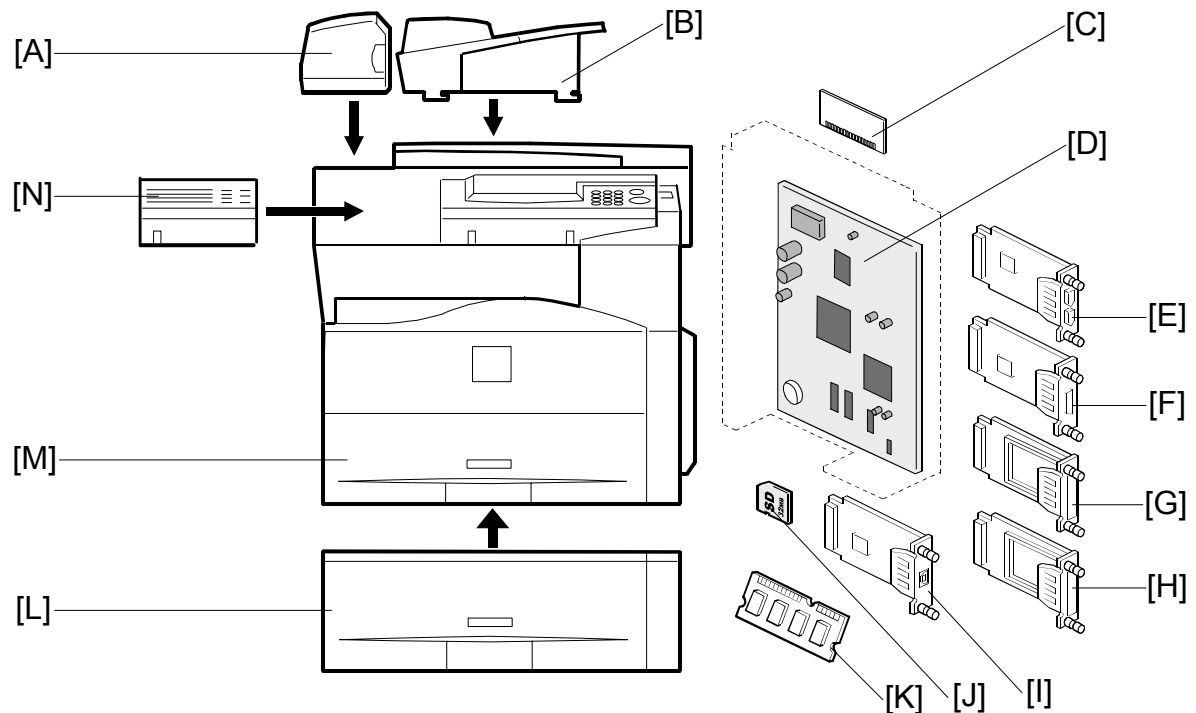
Paper	Size (W x L)	Regular	By-pass	Duplex	Optional PFU
A3 SEF	297 x 420 mm	O	O	O	O
B4 SEF	257 x 364 mm	O	O	O	O
A4 SEF	210 x 297 mm	X	X	X	X
A4 LEF	297 x 210 mm	O	O	O	O
B5 SEF	182 x 257 mm	X	X	X	O
B5 LEF	257 x 182 mm	O	O	O	O
A5 SEF	148 x 210 mm	O	X	O	O
A5 LEF	210 x 148 mm	X	X	O	O
B6 SEF	128 x 182 mm	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O
A6 SEF	105 x 148 mm	O	O	O	O
8K SEF	267 x 390 mm	O	O	O	O
16K SEF	195 x 267 mm	X	X	X	O
16K LEF	267 x 195 mm	O	O	O	O
DLT SEF	11.0" x 17.0"	O	O	O	O
LG SEF	8.5" x 14.0"	O	X	X	X
LT SEF	8.5" x 11.0"	X	X	X	X
LT LEF	11.0" x 8.5"	O	O	O	O
Executive SEF	7.25" x 10.5"	O	X	O	O
HLT SEF	5.5" x 8.5"	O	X	O	O
HLT LEF	8.5" x 5.5"	X	X	O	O
F/GL (F4) SEF	8.0" x 13.0"	O	X	O	O
Foolscap SEF	8.5" x 13.0"	O	X	X	X
Folio SEF	8.25" x 13.0"	O	X	X	X
Government	8.25" x 14"	O	X	X	X
USB4 SEF	10.0" x 14.0"	O	O	O	O
Eng Quarto SEF	8.0" x 10.0"	O	O	O	O
Eng Quarto LEF	10.0" x 8.0"	O	O	O	O
Custom: Leading edge 90–216 mm Side edge 139–356 mm		O	X	O	O

SIGN:

- X: Can transport
- O: Cannot transport

MACHINE CONFIGURATION

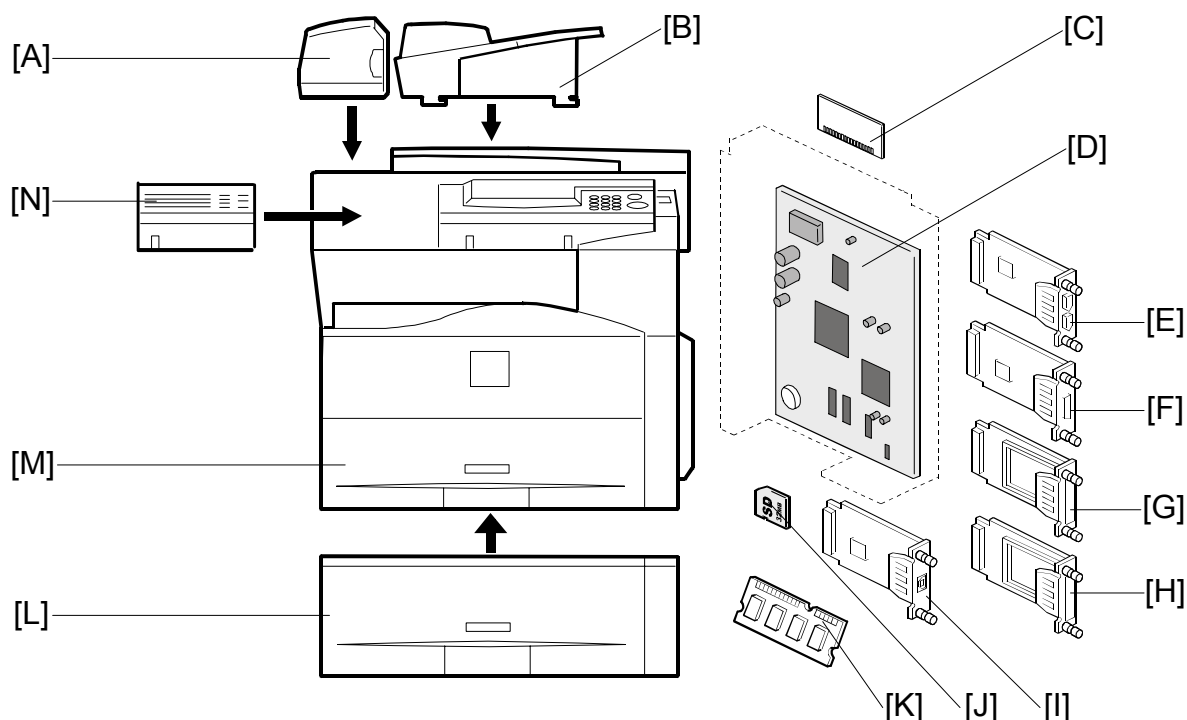
BASIC MODEL (B129)



	Standard Component	Machine Code	Remarks
1	Copier [M]	B129	

	Optional Component	Machine Code	Remarks
2	500-Sheet Paper Feed Unit [L]	B421	
3	Printer/Scanner Unit	B683	• Not available to Europe
	GW Controller Board [D]	—	
	SD Card [J]	—	• Application programs
	128-MB Memory [K]	—	
	USB Interface Board [I]	—	
	Multi-function Panel [N]	—	
4	PostScript 3 [C]	B681	• Requires 3 • Not available to Europe
5	IEEE 1394 Interface Board [E]	B581	
6	IEEE 1284 Interface Board [F]	B679	
7	Wireless LAN Interface Board [G]	B682	
8	Bluetooth Interface Board [H]	G377	

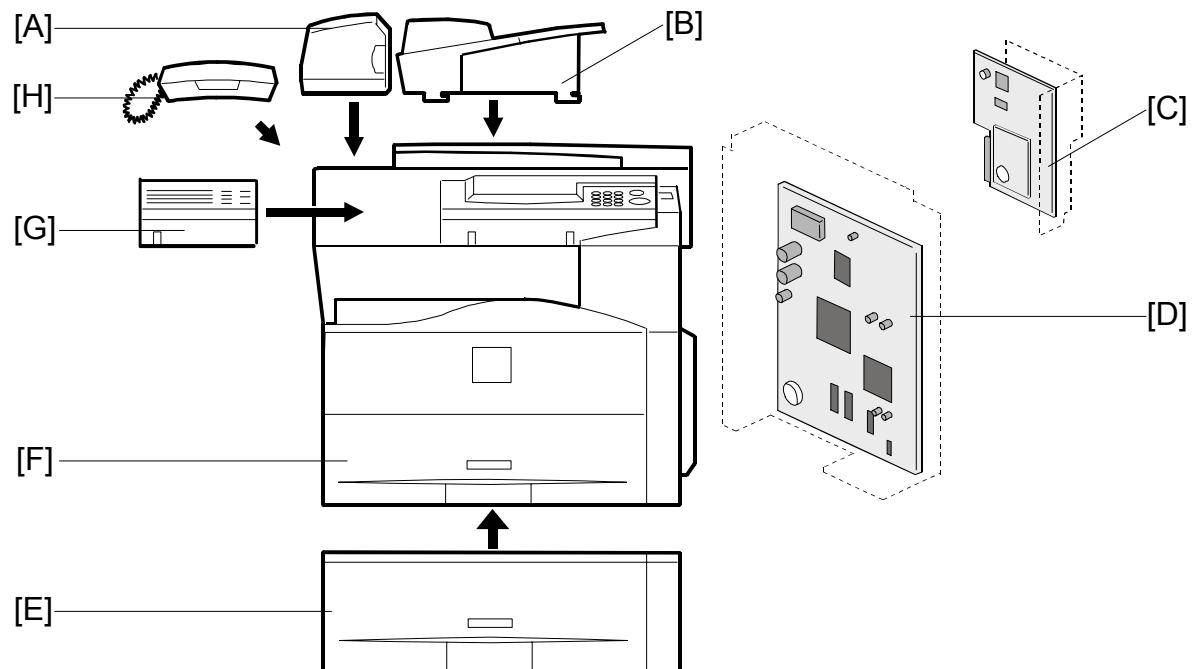
	Standard/Optional Component	Machine Code	Remarks
9	ADF	B696	• Standard for North America • Optional for others
	Feeder [A]	—	
	Original Table [B]	—	

COPIER/PRINTER/SCANNER MODEL (B169)

	Standard Component	Machine Code	Remarks
1	Copier [M]	B169	
	Printer/Scanner Unit	—	
	GW Controller Board [D]	—	
	SD Card [J]	—	• Application programs
	128-MB Memory [K]	—	
	USB Interface Board [I]	—	
	Multi-function Panel [N]	—	

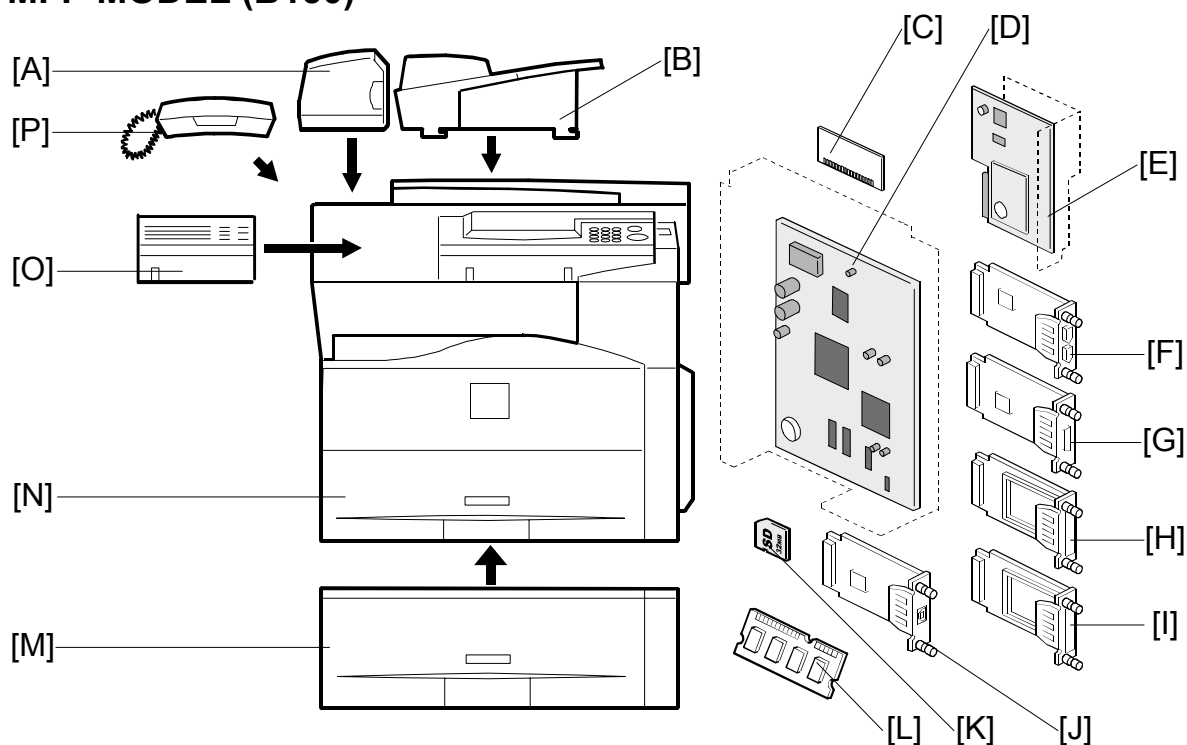
	Optional Component	Machine Code	Remarks
2	ADF	B696	
	Feeder [A]	—	
	Original Table [B]	—	
3	500-Sheet Paper Feed Unit [L]	B421	
4	PostScript 3 [C]	B681	
5	IEEE 1394 Interface Board [E]	B581	
6	IEEE 1284 Interface Board [F]	B679	
7	Wireless LAN Interface Board [G]	B682	
8	Bluetooth Interface Board [H]	G377	

COPIER/FAX MODEL (B168)



	Standard Component	Machine Code	Remarks
1	Copier [F]	B168	
	ADF	—	
	Feeder [A]	—	
	Original Table [B]	—	
	Fax Unit	—	
	GW Controller Board [D]	—	
	Fax Controller Unit [C]	—	
	Multi-function Panel [G]	—	

	Optional Component	Machine Code	Remarks
2	500-Sheet Paper Feed Unit [E]	B421	
3	Handset [H]	B433	• For North America only

MFP MODEL (B130)

	Standard Component	Machine Code	Remarks
1	Copier [N]	B130	
	ADF	—	
	Feeder [A]	—	
	Original Table [B]	—	
	Fax/Printer/Scanner Unit	—	
	GW Controller Board [D]	—	
	Fax Controller Unit [E]	—	
	SD Card [K]	—	• Application programs
	128-MB Memory [L]	—	
	USB Interface Board [J]	—	
	Multi-function Panel [O]	—	

	Optional Component	Machine Code	Remarks
2	500-Sheet Paper Feed Unit [M]	B421	
3	PostScript 3 [C]	B681	
4	IEEE 1394 Interface Board [F]	B581	
5	IEEE 1284 Interface Board [G]	B679	
6	Wireless LAN Interface Board [H]	B682	
7	Bluetooth Interface Board [I]	G377	
8	Handset [P]	B433	• For North America only

OPTION

PRINTER/SCANNER UNIT

See the Printer/Scanner Unit Service Manual.

ADF

Same as the standard ADF (☛ 1.4)

PAPER FEED UNIT

Paper Sizes:	A4 SEF, 8 1/2" x 11" SEF, 8 1/2" x 13" SEF, 8 1/2" x 14" SEF
Paper Weight:	60–90 g/m ² , 16–24 lb.
Tray Capacity:	500 sheets (80 g/m ² , 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) 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")

SPECIFICATIONS (B044/B045/B046)

GENERAL SPECIFICATIONS

Configuration:	Desktop
Copy Process:	Dry electrostatic transfer system
Originals:	Sheet/Book
Original Size:	Maximum A4 / 8 1/2" x 11" A4 / 8 1/2" x 14" (ADF)
Copy Paper Size:	Maximum A4 SEF / 8 1/2" x 11" SEF (Copier's paper tray) A4 SEF / 8 1/2" x 14" SEF (Bypass) A4 SEF / 8 1/2" x 14" SEF (Optional paper tray) Minimum A5 LEF / 8 1/2" x 5 1/2" LEF (Copier's paper tray) A6 SEF / 8 1/2" x 5 1/2" (Bypass) A4 SEF / 8 1/2" x 11" SEF (Optional paper tray unit) Custom sizes in the bypass tray: Width: 90 – 216 mm (3.5" – 8.5") Length: 140 – 356 mm (5.5" – 14.0")
Copy Paper Weight:	Copier's paper tray; optional paper tray: 60 – 90 g/m ² , 16 – 24 lb. Bypass: 60 – 157 g/m ² , 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 or 220 – 240 V, 50/60 Hz

SPECIFICATIONS (B044/B045/B046)

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 / 8¹/₂" 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

Measurement Conditions

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

6) A4/LT copying

7) From copier's paper tray

8) 100% size

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

Manual Image Density: 5 steps

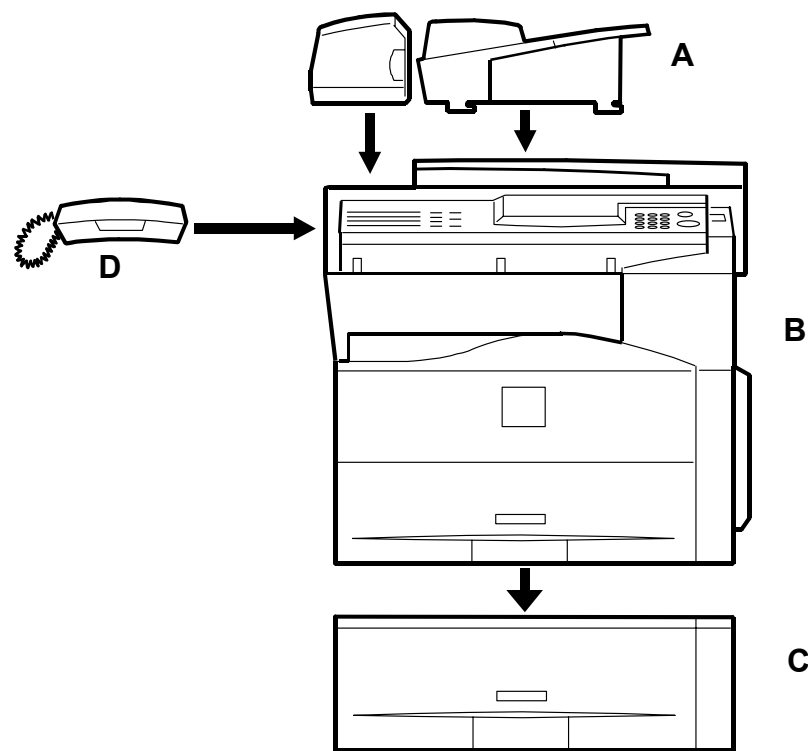
Automatic Reset: Default is 60 seconds. Can be set from 10 to 999 seconds with user tools.

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

SPECIFICATIONS (B044/B045/B046)

Copy Paper Capacity:	Paper Tray: 250 sheets Optional Paper Tray Unit (B044/B046): 500 sheets x 1 Bypass Tray: 100 sheets (B044/B046) 1 sheet (B045)
Copy-Tray Capacity	250 sheets
Toner Replenishment:	
• B045/B049:	THM (Toner Hopper Magazine) replacement (260 g/ 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:	• Auto document feeder • Paper tray unit (available for B044, B046 only) • Anti-condensation heater for paper tray unit
Memory Capacity	8MB standard; 32MB DIMM as option

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

OPTIONAL EQUIPMENT

ADF

Original Size:	Standard sizes: A4 to A5; 8 1/2" x 14" to 8 1/2" x 5 1/2" Non-standard sizes: Max. width: 216 mm Min. width: 140 mm Max. length: 356 mm Min. length: 140 mm
Original Weight:	52 – 105 g/m ² (14 – 28 lb.)
Table Capacity:	30 sheets (80 g/m ² , 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 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, 8 1/2" x 14" SEF
Paper Weight:	60 – 90 g/m ² , 16 – 24 lb.
Tray Capacity:	500 sheets (80 g/m ² , 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) 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")

B696

**DOCUMENT FEEDER
(B129/B130/B168/B169)**

DOCUMENT FEEDER B696

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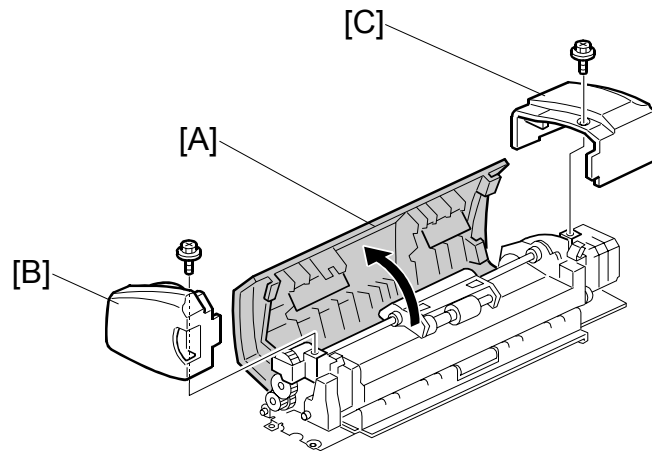
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NOTE: Since the B696 Document Feeder is a standard component on the B129/B130/B168/B169 models, see Section 1 “Installation” of the main B129/B130/B168/B169 Service Manual for installation instructions.

1. REPLACEMENT AND ADJUSTMENT

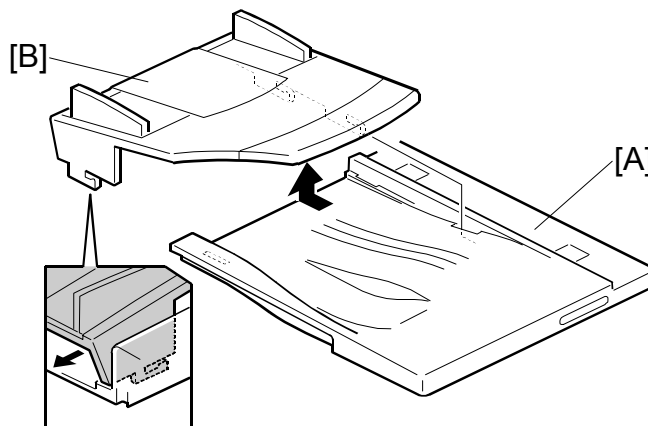
1.1 EXTERIOR COVER

1. Open the upper cover [A].
2. Front cover [B] (⚙ x 1)
3. Rear cover [C] (⚙ x 1)



1.2 ORIGINAL TABLE

CAUTION: Do not damage the latches on the bottom.



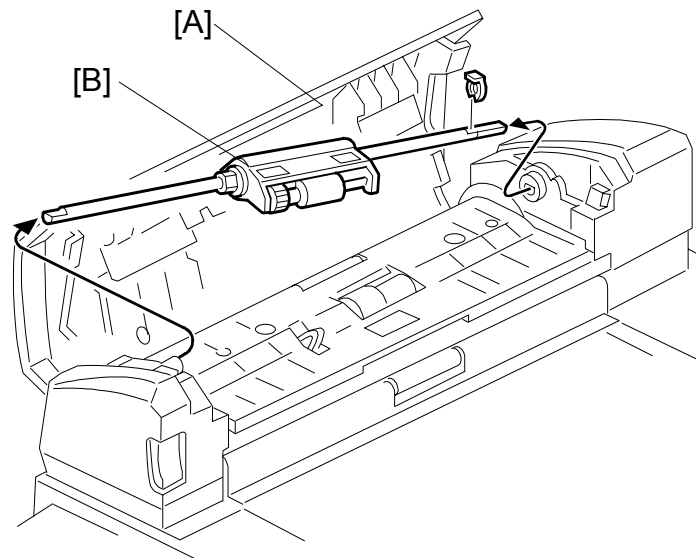
1. Open the platen cover [A] (when the ADF main body is kept installed).
2. Slowly push the original table [B] to the left, and release the three latches on the bottom.

Reinstalling

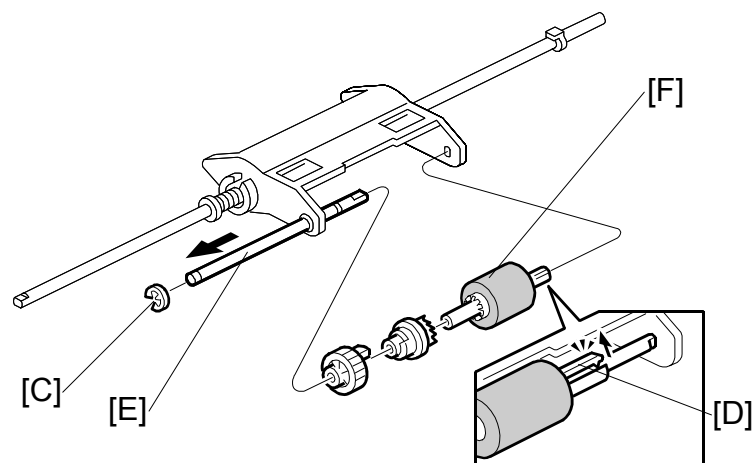
Use caution not to damage the three latches on the bottom. Make sure that the contact area around each latch is flush against the cover (➡ 1.5.2).

1.3 ROLLER

1.3.1 PICKUP ROLLER



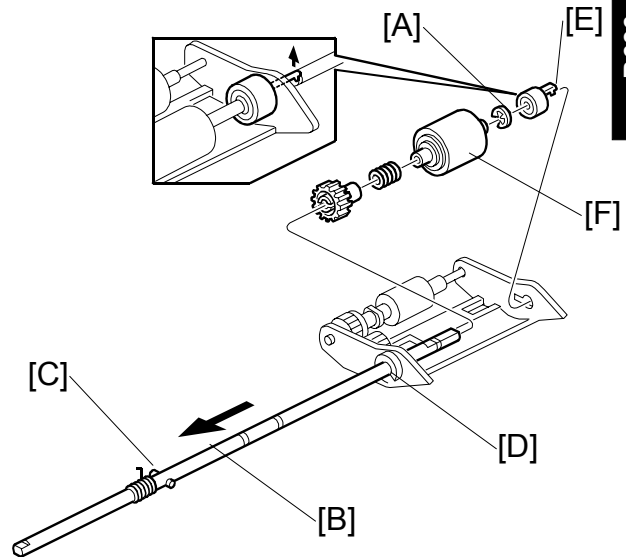
1. Open the upper cover [A].
2. Feed unit [B] (☞ x 1)



3. E-ring [C]
4. Release the hook [D].
5. Shaft [E]
6. Pickup roller [F]

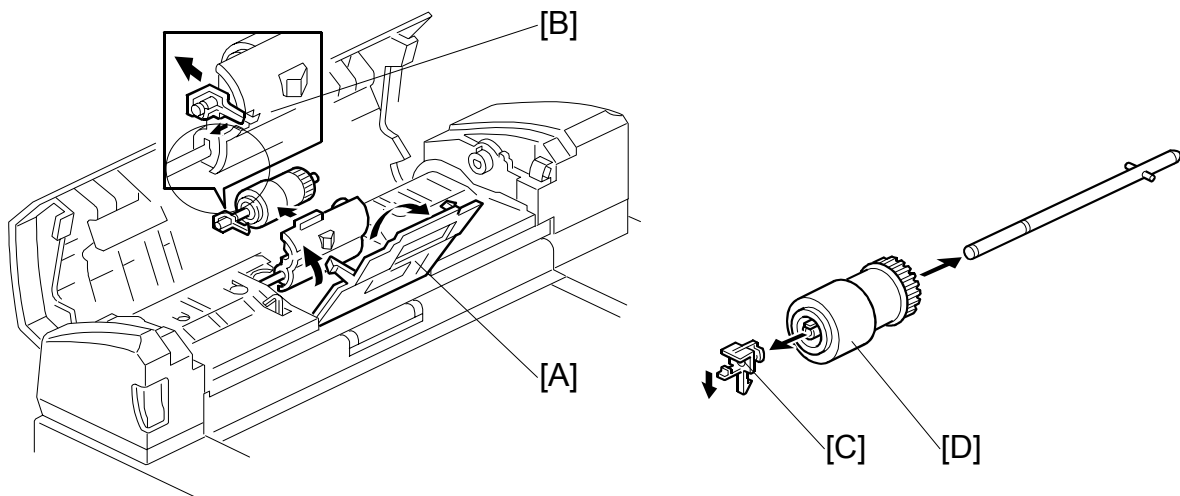
1.3.2 FEED ROLLER

1. Feed unit (☛ 1.3.1)
2. E-ring [A]
3. While pushing the shaft [B] to the left, slowly turn the shaft. The pin [C] comes off the opening of the holder [D].
4. Release the hook [E], and pull the shaft to the left.
5. Feed roller [F]



B696
Document
Feeder

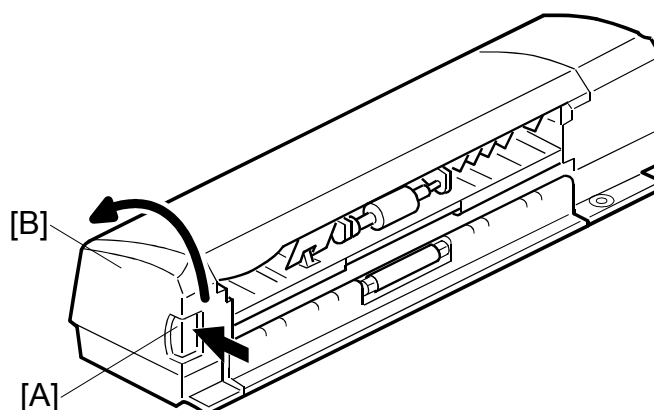
1.3.3 SEPARATION ROLLER



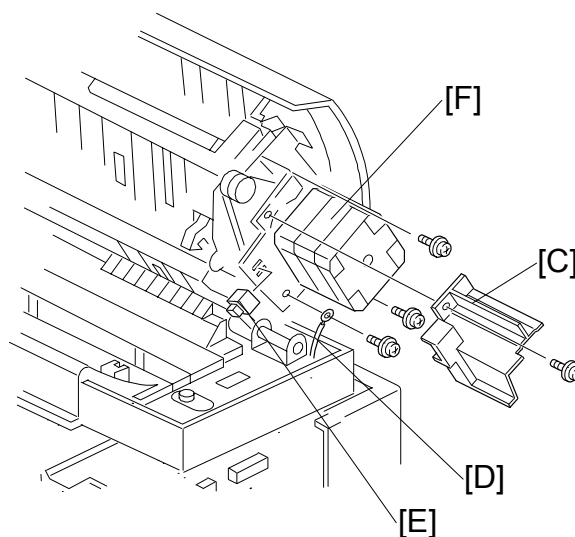
1. Feed unit (☛ 1.3.1)
2. Open the center lid [A].
3. Separation roller assembly [B] (1 hook)
4. Hook [C]
5. Separation roller [D]

1.4 ADF MOTOR

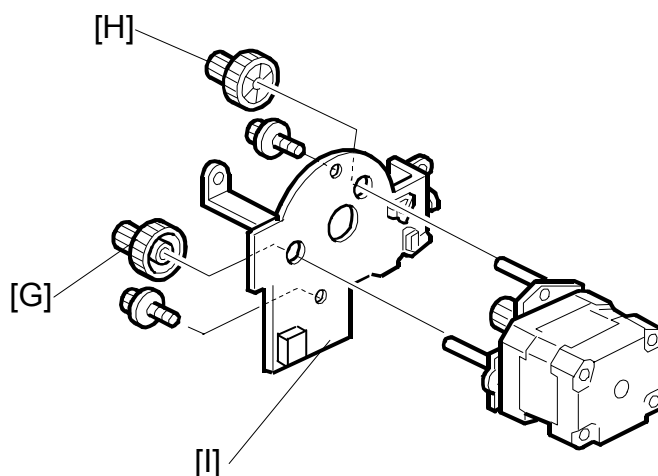
1. Rear cover (☞ 1.1)
2. Push the lever [A] and raise the ADF [B].



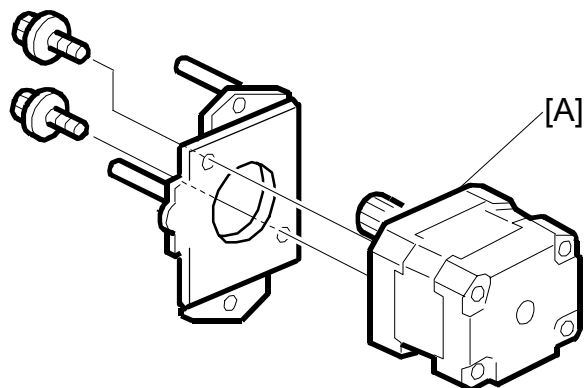
3. Motor cover [C] (⚙️ x 1)
4. Ground cable [D] (⚙️ x 1)
5. Unit open switch [E]
6. ADF motor (with the bracket) [F]
(🔌 x 1, ⚙️ x 2)



7. Gears [G][H]
8. Motor bracket [I] (⚙️ x 2)

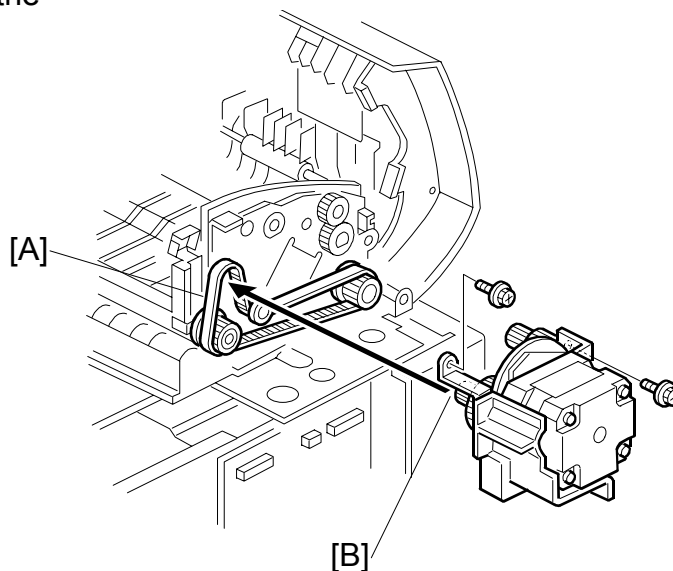


9. ADF motor [A] (⌘ x 2)

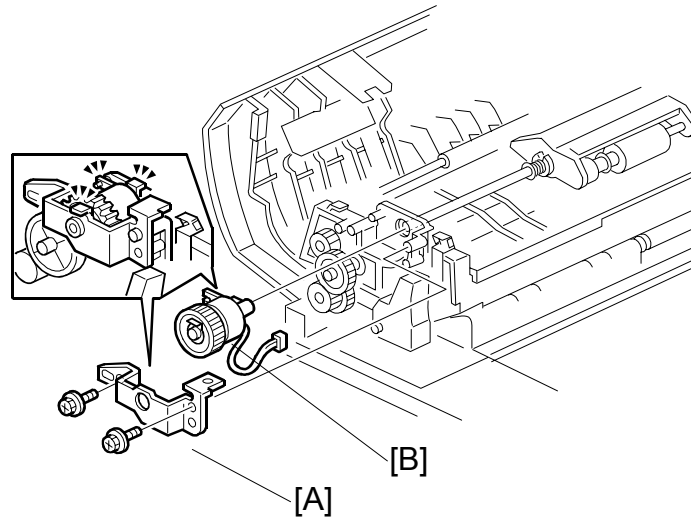


Reassembling

Check that the timing belt [A] is on the drive gear [B].

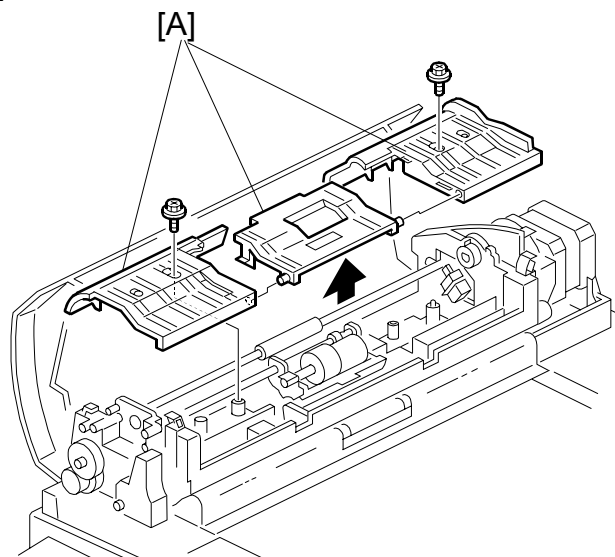


1.5 FEED CLUTCH

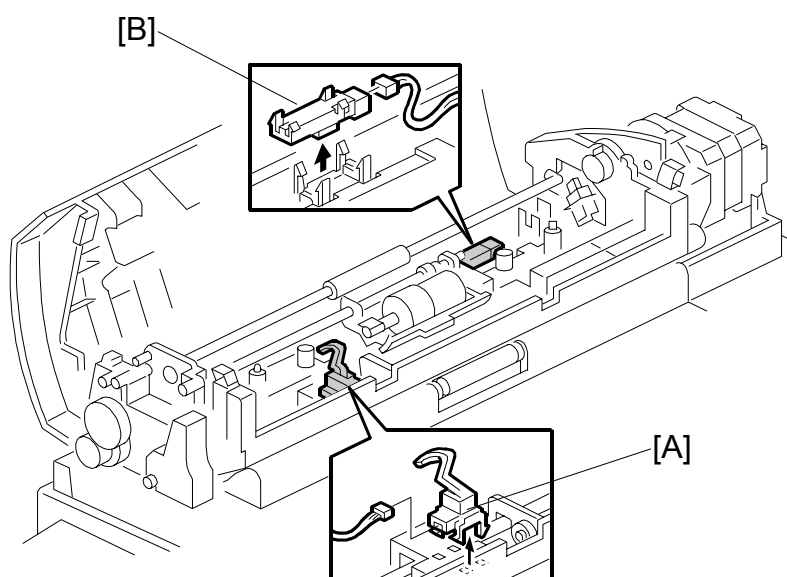


1. Front cover (☛ 1.1)
2. Retainer [A] (🔩 × 2)
3. Feed clutch [B] (🔌 × 1)

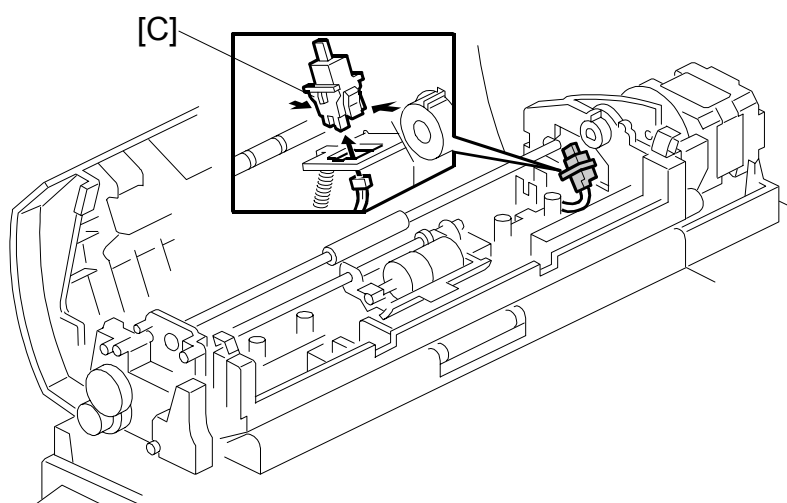
1.6 SENSOR



1. Feed unit (☛ 1.3.1)
2. Three lids [A] (🔩 × 2)



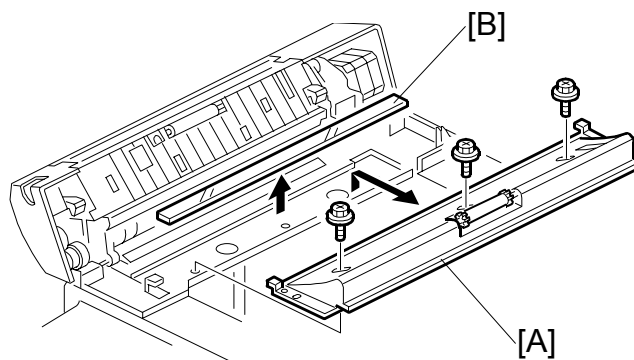
3. Original set sensor [A] (☞ × 1)
4. Original registration sensor [B] (☞ × 1)



5. Guide open sensor [C] (☞ × 1)

1.7 ADF EXPOSURE GLASS

1. Push the lever and raise the ADF (☛ 1.4).
2. Original exit guide [A] (☛ × 3)
3. ADF exposure glass [B]

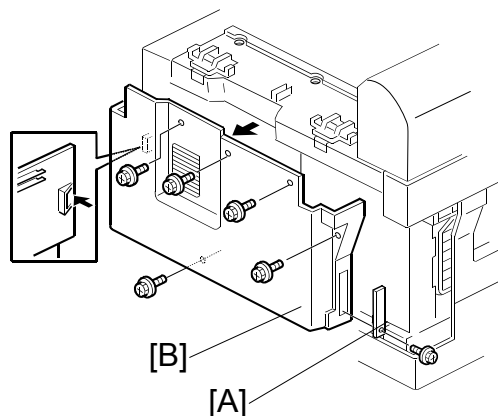


Reassembling

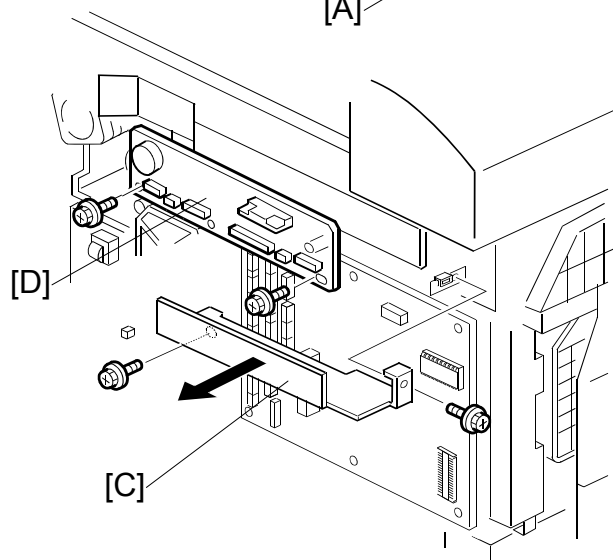
The pads on both ends indicate the upper side. Place the ADF exposure glass so that you see these pads on the top of the ADF exposure glass.

1.8 ADF CONNECTION BOARD

1. Memory card cover [A] (☛ × 1)
2. Rear cover of the copier [B] (☛ × 5)



3. ADF connection board guard [C] (☛ × 2)
4. ADF connection board [D] (All ☛'s, ☛ × 2)

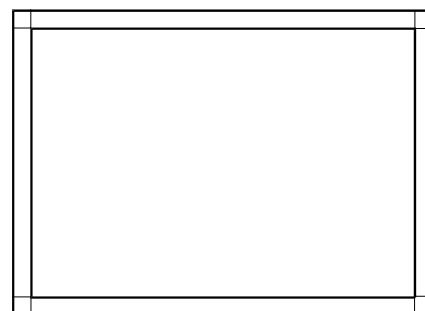


1.9 ADF IMAGE ADJUSTMENT

NOTE: This information is also located in section 3.14.3 of the main Service Manual.

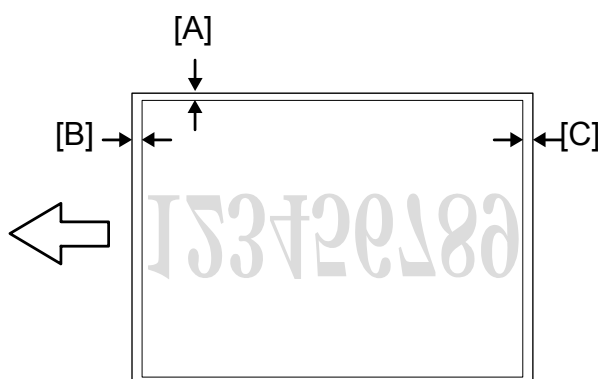
Perform the adjustment procedure in this section ONLY when the ADF is installed to the copier.

1. Make a temporary test chart [A] as shown in the diagram. Use the A4/8.5 x 11" paper to make it.
2. Place the temporary test chart on the ADF.
3. Make a copy.
4. Measure the distance between the side edge of the image area and the side edge of the paper [A].



NOTE: The diagram shows the paper on the copy tray. Note that the paper is output face down.

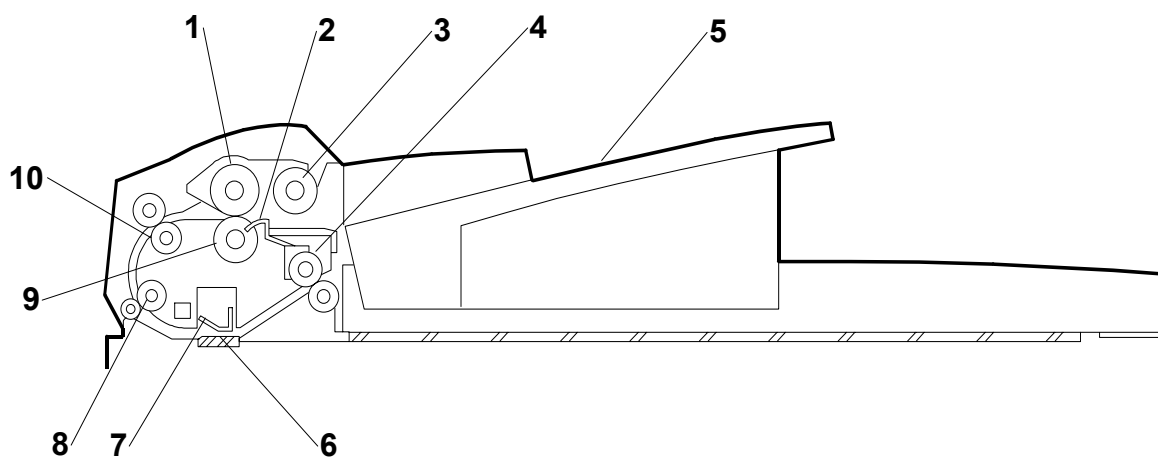
5. Adjust the side-to-side registration (S to S/Front Regist: SP6-006-001). The image area moves to the rear side of the copier when you specify a larger value.
6. Measure the distance between the leading of the image area and the leading edge of the paper [B].
7. Adjust the leading edge registration (Leading Regist: SP6-006-002). The image area moves to the right side of the copier when you specify a larger value.
8. Measure the distance between the trailing edge of the image area and the trailing edge of the paper [C].
9. Adjust the erased area on the trailing edge (Trailing Erase: SP6-006-003).
10. Compare the copy with the original.
11. Adjust the sub-scan magnification (SP6-006-005). The specification is $\pm 1.0\%$.



2. DETAILED DESCRIPTIONS

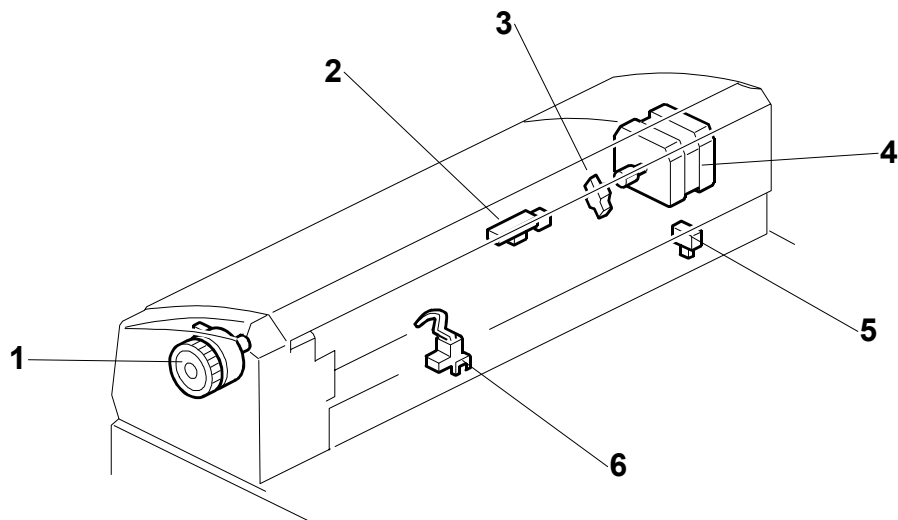
2.1 OVERVIEW

2.1.1 MECHANICAL COMPONENT



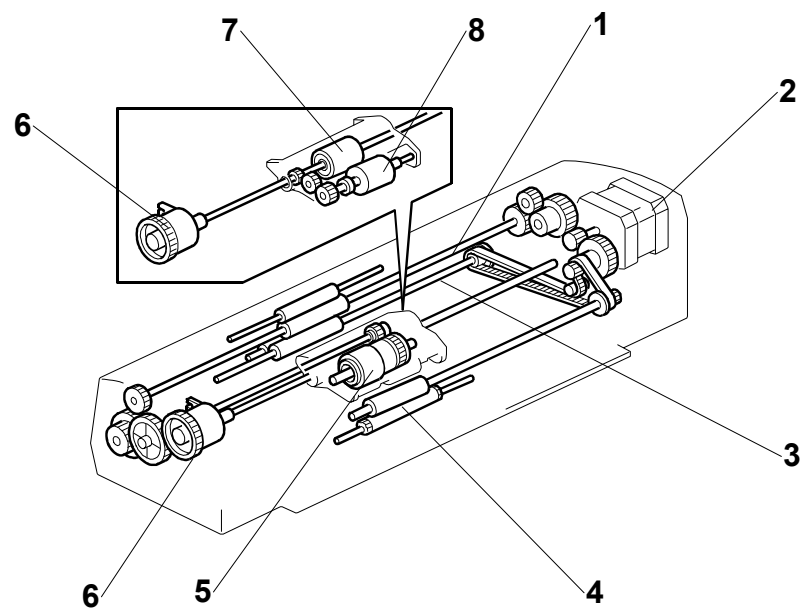
1. Feed roller	6. ADF exposure glass
2. Feeler of the original set sensor	7. White plate
3. Pickup roller	8. 2nd transport roller
4. Original exit roller	9. Separation roller
5. Original table	10. 1st transport roller

2.1.2 ELECTRICAL COMPONENT



1. Feed clutch	4. ADF motor
2. Original registration sensor	5. Unit open switch
3. Guide open sensor	6. Original set sensor

2.1.3 DRIVE LAYOUT



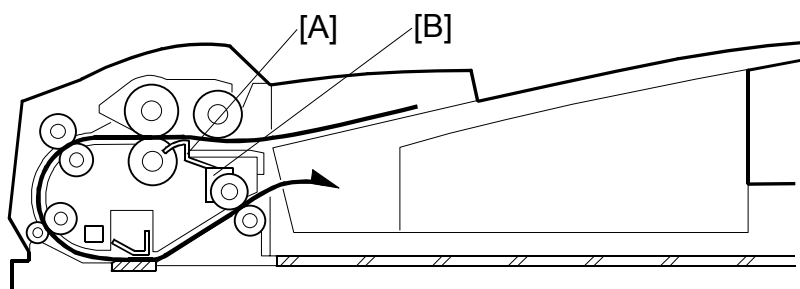
1. 1st transport roller	5. Separation roller
2. ADF motor	6. Feed clutch
3. 2nd transport roller	7. Feed roller
4. Exit roller	8. Pickup roller

2.2 CIRCUIT CONNECTION

The table lists the connectors that link each component to the BICU. The connectors CN303 through CN307 link each component to the ADF connection board. The connectors CN302 and CN301 link the ADF connection board to the BICU.

ADF			BICU
Component	Connection board		
ADF motor	CN303	CN302	CN109
Original set sensor	CN305	CN301	CN110
Original registration sensor			
Guide open sensor			
ADF clutch	CN306		
Unit open switch	CN307		

2.3 ORIGINAL DETECTION



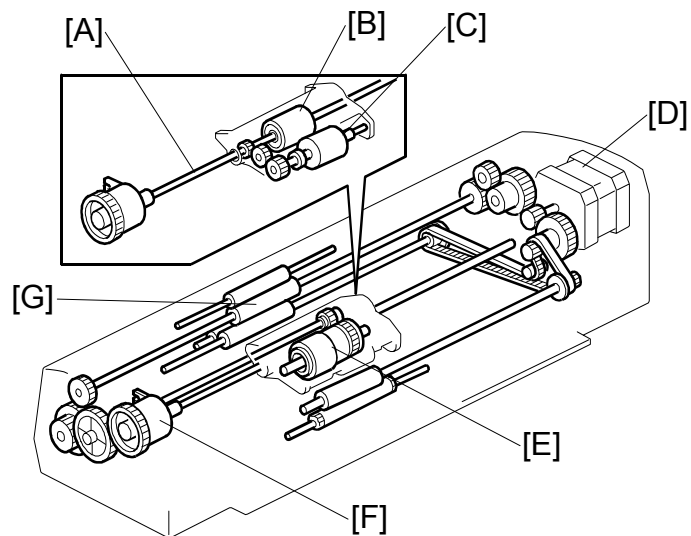
When you set an original on the original table, the original pushes down the feeler [A] of the original set sensor [B]. (If the copier is in Energy Saver mode, it will automatically recover at this time.)

NOTE: The ADF does not scan the reverse side of the original. The ADF does not detect paper sizes.

2.4 PAPER TRANSPORT

2.4.1 PICK-UP AND FEED

The ADF motor [D] drives the feed clutch [F]. The clutch transmits the drive power to the feed-roller shaft [A] when it is on, and does not transmit the drive power when it is off. The pick-up roller [C] remains away from the original when not transporting the original. When the start key is pressed, the ADF motor begins turning clockwise (viewed from the machine front). The feed clutch turns on. The feed-roller shaft begins to turn clockwise. As it is linked to the feed-roller shaft, the pick-up roller comes down to the original, and picks up the original. The feed roller [B] transports the original to the 1st transport roller [G].



2.4.2 SEPARATION

The ADF motor drives the separation roller [E]. The separation roller turns counterclockwise while the ADF motor operates.

2.4.3 REGISTRATION

The following rollers transport originals to the original registration sensor:

1. Pick-up roller
2. Feed roller
3. 1st transport roller
4. 2nd transport roller

When an original reaches the original registration sensor, the ADF motor stops operation and the feed clutch turns off. No roller turns until the scanner reaches a "ready" state. When the scanner becomes ready, the ADF motor begins turning. The 1st and 2nd transport rollers (and separation roller) begin to turn, to transport the original. The feed clutch does not turn on. Drive power is not transmitted to the pick-up and feed rollers.

NOTE: Though drive power is not transmitted to the pick-up and feed rollers, these rollers are still turning. They are moving with the originals as they are transported.

2.5 CORRECTION

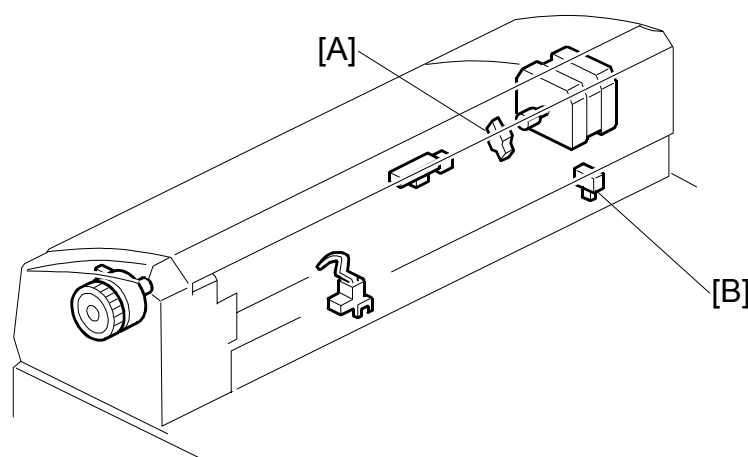
2.5.1 WHITE LEVEL CORRECTION

While the ADF is operating, the scanner conducts white level correction. When an original reaches the original registration sensor, the ADF motor stops briefly. The scanner checks the white peak every time the ADF transports an original.

2.5.2 SHADING CORRECTION

The scanner conducts the shading correction every 10 originals. The ADF motor stops and waits for the scanner to conduct shading correction.

2.6 UNIT OPEN SWITCH AND GUIDE OPEN SENSOR



The guide open sensor [A] is on while the ADF guide is open. The unit open switch [B] is on when the ADF unit is raised. The scanner does not operate when either of these is on, and will display a message.

FAX UNIT
(B130/B168/B169)

Fax Unit

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1. INSTALLATION

1.1 INITIALIZING FACSIMILE

Initializing Application Program

When you press the Fax key for the first time after installation, an error occurs. This is not a functional problem. Press OK. The fax starts its initialization program.

NOTE: If another error occurs after initialization, this can be a functional problem.

Initializing Address Book

After you change the setting *extension/outside*, turn the main power switch off and on (➡ 2.3).

OPTIONAL HANDSET

1.2 OPTIONAL HANDSET

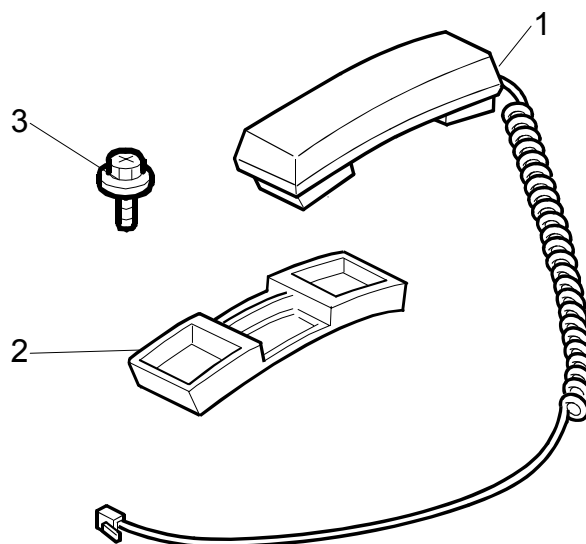
The optional handset is for the North America model only.

1.2.1 ACCESSORY CHECK

Check that you have the components and accessories.

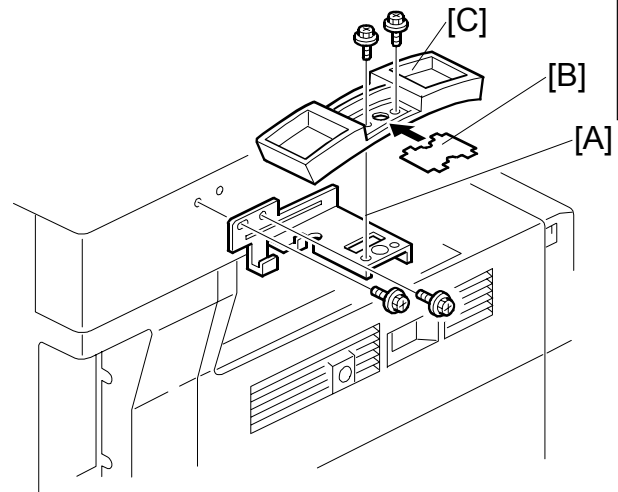
No.	Description	Q'ty
1	Handset	1
2	Handset cradle	1
3	Screws	2
4	Handset manual	1

NOTE: The handset bracket is not included in the optional handset kit. The bracket is provided as an accessory of the copier.

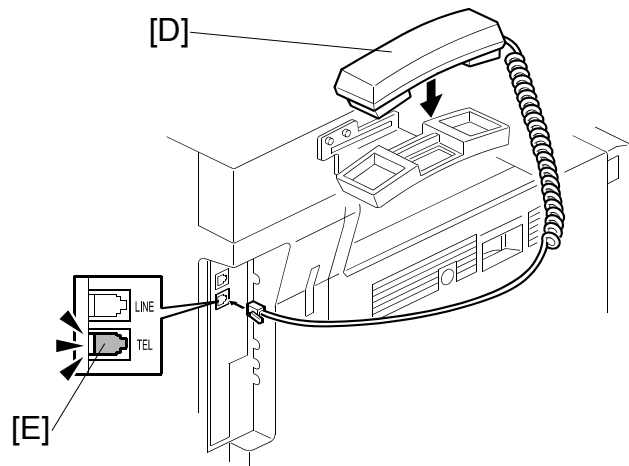


1.2.2 INSTALLATION PROCEDURE

1. Attach the handset bracket [A]
( x 2).
NOTE: The bracket is an accessory of the copier.
2. Remove the label [B] from the handset cradle [C].
3. Attach the cradle to the bracket ( x 2).
4. Reattach the label.



5. Set the handset [D] on the cradle.
6. Connect the cable [E] to the TEL jack at the left side of the copier.



2. TROUBLESHOOTING

2.1 ERROR CODES

When a communication error occurs, retry to establish the communication. If the error recurs, see the tables below and solve the problem. Note that some error codes are seen only in the printed reports.

Code	Meaning	Suggested Cause/Action
0-00	DIS/NSF not detected within 40 s of Start being pressed	• Check the line connection. • The machine at the other end may be incompatible. • Replace the FCU. • Check for DIS/NSF with an oscilloscope. • If the rx signal is weak, there may be a bad line.
0-01	DCN received unexpectedly	• The other party is out of paper or has a jammed printer. • The other party pressed Stop during communication.
0-03	Incompatible modem at the other end	• The other terminal is incompatible.
0-04	CFR or FTT not received after modem training	• Check the line connection. • Try changing the tx level and/or cable equalizer settings. • Replace the FCU. • The other terminal may be faulty; try sending to another machine. • If the rx signal is weak or defective, there may be a bad line. Cross reference • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-05	Unsuccessful after modem training at 2400 bps	• Check the line connection. • Try adjusting the tx level and/or cable equalizer. • Replace the FCU. • Check for line problems. Cross reference • See error code 0-04.
0-06	The other terminal did not reply to DCS	• Check the line connection. • Try adjusting the tx level and/or cable equalizer settings. • Replace the FCU. • The other end may be defective or incompatible; try sending to another machine. • Check for line problems. Cross reference • See error code 0-04.

Code	Meaning	Suggested Cause/Action
0-07	No post-message response from the other end after a page was sent	• Check the line connection. • Replace the FCU. • The other end may have jammed or run out of paper. • The other end user may have disconnected the call. • Check for a bad line. • The other end may be defective; try sending to another machine.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors	• Check the line connection. • Replace the FCU. • The other end may have jammed, or run out of paper or memory space. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have a defective modem/NCU/FCU; try sending to another machine. • Check for line problems and noise. Cross reference • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters - Section 4
0-14	Non-standard post message response code received	• Incompatible or defective remote terminal; try sending to another machine. • Noisy line: resend. • Try adjusting the tx level and/or cable equalizer settings. • Replace the FCU. Cross reference • See error code 0-08.
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. • Confidential rx • Transfer function • SEP/SUB/PWD/SID
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	• Check the line connection. • Replace the FCU. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have disconnected, or it may be defective; try calling another machine. • If the rx signal level is too low, there may be a line problem. Cross reference • See error code 0-08.

ERROR CODES

Code	Meaning	Suggested Cause/Action
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	• Check the line connection. • Replace the FCU. • Check for line problems. • Try calling another fax machine. • Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. Cross reference • Reconstruction time - G3 Switch 0A, bit 6 • Rx cable equalizer - G3 Switch 07 (PSTN)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	• Check the connections between the FCU & line. • Check for line noise or other line problems. • Replace the FCU. • The remote machine may be defective or may have disconnected. Cross reference • Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms)	• Check the line connection. • Replace the FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try adjusting the acceptable modem carrier drop time. Cross reference • Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1
0-23	Too many errors during reception	• Check the line connection. • Replace the FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try asking the other end to adjust their tx level. • Try adjusting the rx cable equalizer setting and/or rx error criteria. Cross reference • Rx cable equalizer - G3 Switch 07 (PSTN) • Rx error criteria - Communication Switch 02, bits 0 and 1
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	• Check the line connection. • Try adjusting the tx level and/or cable equalizer settings. • The other terminal may not be compatible. Cross reference • Dedicated tx parameters - Section 4

Code	Meaning	Suggested Cause/Action
0-32	The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.	- Check the protocol dump list. - Ask the other party to contact the manufacturer.
0-52	Polarity changed during communication	- Check the line connection. - Retry communication.
0-70	The communication mode specified in CM/JM was not available (V.8 calling and called terminal)	- 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.) - A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.
0-74	The calling terminal fell back to T.30 mode, because it could not detect ANSam after sending CI.	- The calling terminal could not detect ANSam due to noise, etc. - ANSam was too short to detect. - Check the line connection and condition. - Try making a call to another V.8/V.34 fax.
0-75	The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout).	- The terminal could not detect ANSam. - Check the line connection and condition. - Try receiving a call from another V.8/V.34 fax.
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).	- The called terminal could not detect a CM due to noise, etc. - Check the line connection and condition. - Try making a call to another V.8/V.34 fax.
0-77	The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM (JM timeout).	- The calling terminal could not detect a JM due to noise, etc. - A network that has narrow bandwidth cannot pass JM to the other end. - Check the line connection and condition. - Try receiving a call from another V.8/V.34 fax.
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.	- The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. If these errors happen at the transmitting terminal: - Try making a call at a later time. - Try using V.17 or a slower modem using dedicated tx parameters. - Try increasing the tx level. - Try adjusting the tx cable equalizer setting.
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.	

ERROR CODES

Code	Meaning	Suggested Cause/Action
0-83	The line was disconnected due to a timeout in the V.34 control channel restart sequence.	If these errors happen at the receiving terminal: - Try adjusting the rx cable equalizer setting. - Try increasing the tx level. - Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
0-84	The line was disconnected due to abnormal signaling in V.34 phase 4 – control channel start-up.	- The signal did not stop within 10 s. - Turn off the machine, then turn it back on. - If the same error is frequent, replace the FCU.
0-85	The line was disconnected due to abnormal signaling in V.34 control channel restart.	- The signal did not stop within 10 s. - Turn off the machine, then turn it back on. - If the same error is frequent, replace the FCU.
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.	- The other terminal was incompatible. - Ask the other party to contact the manufacturer.
0-87	The control channel started after an unsuccessful primary channel.	- The receiving terminal restarted the control channel because data reception in the primary channel was not successful. - This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	- Try using a lower data rate at the start. - Try adjusting the cable equalizer setting.
2-10	The modem cannot enter tx mode	Replace the FCU.
2-11	Only one V.21 connection flag was received	Replace the FCU.
2-12	Modem clock irregularity	Replace the FCU.
2-13	Modem initialization error	- Turn off the machine, then turn it back on. - Replace the FCU.
2-23	JBIG compression or reconstruction error	Turn off the machine, then turn it back on.
2-24	JBIG ASIC error	Turn off the machine, then turn it back on.
2-25	JBIG data reconstruction error (BIH error)	- JBIG data error - Check the sender's JBIG function. - Update the MBU ROM.
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)	
2-50	The machine resets itself for a fatal FCU system error	If this is frequent, update the ROM, or replace the FCU.

Code	Meaning	Suggested Cause/Action
2-51	The machine resets itself because of a fatal communication error	If this is frequent, update the ROM, or replace the FCU.
4-01	Line current was cut	- Check the line connector. - Check for line problems. - Replace the FCU.
4-10	Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	- Get the ID Codes the same and/or the CSIs programmed correctly, then resend. - The machine at the other end may be defective.
5-00	Data construction not possible	Replace the FCU.
5-10	DCR timer expired	
5-20	Storage impossible because of a lack of memory	- Temporary memory shortage. - Test the SAF memory. - Replace the FCU or optional EXMEM board
5-21	Memory overflow	
5-23	Print data error when printing a substitute rx or confidential rx message	- Test the SAF memory. - Ask the other end to resend the message. - Replace the FCU.
5-25	SAF file access error	Replace the FCU.
6-00	G3 ECM - T1 time out during reception of facsimile data	- Try adjusting the rx cable equalizer. - Replace the FCU.
6-01	G3 ECM - no V.21 signal was received	
6-02	G3 ECM - EOR was received	
6-04	G3 ECM - RTC not detected	- Check the line connection. - Check connections from the NCU to the FCU. - Check for a bad line or defective remote terminal. - Replace the FCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	- Check the line connection. - Check for a bad line or defective remote terminal. - Replace the FCU. - Try adjusting the rx cable equalizer Cross reference - Rx cable equalizer - G3 Switch 07 (PSTN)
6-06	G3 ECM - coding/decoding error	- Defective FCU. - The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	- The other end pressed Stop during communication. - The other terminal may be defective.
6-09	G3 ECM - ERR received	- Check for a noisy line. - Adjust the tx levels of the communicating machines. - See code 6-05.

ERROR CODES

Code	Meaning	Suggested Cause/Action
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	• Check for line noise. • Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address). • Check the line connection. • Defective remote terminal.
6-21	V.21 flag detected during high speed modem communication	• The other terminal may be defective or incompatible.
6-22	The machine resets the sequence because of an abnormal handshake in the V.34 control channel	• Check for line noise. • If the same error occurs frequently, replace the FCU. • Defective remote terminal.
6-99	V.21 signal not stopped within 6 s	• Replace the FCU.
22-00	Original length exceeded the maximum scan length	• Divide the original into more than one page. • Check the resolution used for scanning. Lower the scan resolution if possible. • Add optional page memory.
22-01	Memory overflow while receiving	• Wait for the files in the queue to be sent. • Delete unnecessary files from memory. • Transfer the substitute reception files to an another fax machine, if the machine's printer is busy or out of order. • Add an optional SAF memory card or hard disk.
22-02	Tx or rx job stalled due to line disconnection at the other end	• The job started normally but did not finish normally; data may or may not have been received fully. • Restart the machine.
22-04	The machine cannot store received data in the SAF	• Update the ROM • Replace the FCU.
23-00	Data read timeout during construction	• Restart the machine. • Replace the FCU
25-00	The machine software resets itself after a fatal transmission error occurred	• Update the ROM • Replace the FCU.
F0-xx	V.34 modem error	• Replace the FCU.

2.2 FAX SC CODES

2.2.1 SC1201

SC1201 indicates an unrecoverable error. The fax unit does not operate until you initialize the SRAM. When you initialize it, all user-specified data and SP settings are lost. There is no way to recover these data. SC1201 can be generated under any of the following conditions:

- The SRAM backup battery is dead.
- The switch of the SRAM backup battery is open.
- The SRAM on the MBU is physically defective.

2.2.2 OTHER SC CODES

The FCU resets itself automatically by default. The data in the SAF memory is retained. When you want to prevent this automatic resetting, change Bit 7 of the System Switch 1F (☛ 3.2.1). The FCU displays an SC code and does not operate until you reset it. To reset it, perform as follows (either of them):

- Hold down the ⑦ and ⑨ keys until the FCU is reset (for about 10 seconds).
- Turn the main power switch off and on.

2.2.3 FAX SC CODE TABLE

The table lists the SC codes generated in the fax unit.

Code	Description	Countermeasure	System Switch 1F and Display	
			Bit 7 = 0	Bit 7 = 1
1101	FCU error	Reset the FCU (☛ 2.2.2).	(None*)	SC code
1201	Unrecoverable error	Initialize the SRAM (☛ 2.2.1).	Service Call	
1299	Software error	Reset the FCU (☛ 2.2.2).	(None*)	
1305				
1310				
1311				
1312				
1401				
1405				

* Automatically reset

The table lists the SC code generated in the controller of the copier.

Code	Description	Countermeasure	Detailed Code
820	MBU error (The jumper is loose.)	Set the jumper (on the MBU) correctly.	The following codes are displayed: • SC: 820 • code: 612 • detail: 40000000

2.3 INCORRECT ADDRESS BOOK

Symptom

The setting *extension/outside* is incorrectly listed in the Address Book list.

Condition

The symptom is caused by the following manual operation:

1. The setting *extension/outside* is changed (☎/123 → Fax Features → Key Operator Tools → G3 Analog Line).
2. One or some entries are added to the G3 address book (☎/123 → System Settings → Key Operator Tools → Address Book Management).
3. The Address Book is printed out. The Address Book incorrectly lists the setting *extension/outside*.

NOTE: For more information on the Address Book, see the Operating Instruction.

Troubleshooting

1. Turn the main power switch off and on.
2. Register the entries to the address book once again.
3. Print out the Address Book. The Address Book correctly lists the setting *extension/outside*.

Cause

This symptom is based on the specifications of the B129/B130/B168/B169 facsimile. The information on the setting *extension/outside* is written in the Address Book when you turn on the main power switch. On the other hand, the fax application program references this information when you send a fax message. Therefore, the fax message is sent to the correct destination (regardless of the incorrect Address Book).

Necessary Action

After you change the setting *extension/outside*, turn the main power switch off and on. For the Address Book to correctly list the setting *extension/outside*, you must turn the main power switch off and on before you register entries. If you register some entries before turning off and on the main power switch, the setting *extension/outside* of these entries are incorrectly listed in the Address Book. If you register more entries after turning off and on the main power switch, the settings of these entries are correctly listed (see table).

Entry	Address Book
Registered before off and on	Incorrectly listed
Registered after off and on	Correctly listed

3. SERVICE TABLES

CAUTION

Do not turn off the main power switch while the power LED is on or blinking; otherwise, the memory may be damaged. Before turning off the main power switch, press the power key on the operation panel and wait until the power LED turns off.

NOTE: The main power LED is on or blinks under any of the following conditions:

- The platen cover is open.
- The copier is communicating with a network device.
- The copier is accessing the memory.

3.1 SERVICE PROGRAM MODE

3.1.1 SERVICE PROGRAM MODE OPERATION

IMPORTANT

Do not let the user have an access to the service program mode (SP mode). Only service representatives are allowed to use the SP mode. Should the user have an access to the SP mode, the normal operation of the machine is NOT guaranteed any more.

Activating Fax SP Mode

1. Press the  key.
2. Press the following keys in the following order: ①⑦②
3. Press the  key and hold it down until the SP mode menus are displayed (for about three seconds).
4. Press the ② key.

Quitting Fax SP mode

Press the  key several times until you quit the fax SP mode.

SERVICE PROGRAM MODE

SP1-XXX (BIT SW)

(☛ 3.2)

1	Mode No.		Function
101	System Switch		
	001 – 032	00 – 1F	Change the bit switches for system settings for the fax option.
102	Ifax Switch		
	001 – 016	00 – 0F	Change the bit switches for IFAX settings.
103	Printer Switch		
	001 – 016	00 – 0F	Change the bit switches for printer settings for the fax option.
104	Communication Switch		
	001 – 032	00 – 1F	Change the bit switches for communication settings for the fax option.
105	G3-1 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the standard G3 board.

SP2-XXX (RAM)

2	Mode No.		Function
101	RAM Read/Write		
	001		Change RAM data for the fax board directly (☛ 3.5).
102	Memory Dump		
	001	G3-1 Memory Dump	Print out RAM data for the fax board (☛ 3.5).
103	G3-1 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the standard G3 board (☛ 3.3).

SP3-XXX (Machine Set)

3	Mode No.		Function
101	Service Station		Enter the fax number of the service station.
	001	Fax Number	
102	Serial Number		Enter the fax unit's serial number.
	001		
103	PSTN-1 Port Settings		Select the line type setting for the G3-1 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)".
	001	Select Line	
	002	PSTN Access Number	
	003	Memory Lock Disabled	
201	FAX Switches		Change the bit switches for scanner settings for the fax option (☛ 3.2).
	001 – 032	00 – 1F	

SP4-XXX (ROM Versions)

4	Mode No.		Function
101	002	FCU ROM Version P/N	Displays the FCU ROM version.
	003	FCU ROM Version Ver.	
	004	FCU ROM Version Area	
	005	FCU ROM Version Date	
	006	FCU ROM Version Dver.	
	007	FCU ROM Version sum.	
102	002 : 065	Error Codes	Displays the latest 64 fax error codes.
103	002	G3-1 ROM Version Parts No.	Displays the G3-1 modem version.
	003	G3-1 ROM Version Control	
	004	G3-1 ROM Version DSP	

SERVICE PROGRAM MODE

SP5-XXX (RAM Clear)

5	Mode No.		Function
101	Initialize SRAM		
	001		Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock.
102	Erase All Files		
	001		Erases all files stored in the SAF memory.
103	Reset Bit Switches		
	001		Resets the bit switches and user parameters.
104	Factory setting		
	001		Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory.

SP6-XXX (Reports)

6	Mode No.		Function
101	System Parameter List		
	001		Press the "ON" button to print the system parameter list.
102	Service Monitor Report		
	001		Press the "ON" button to print the service monitor report.
103	G3 Protocol Dump List		
	001	G3-1 (All Communications)	Prints the protocol dump list of all communications for the G3-1 line.
	002	G3-1 (1 Communication)	Prints the protocol dump list of the last communication for the G3-1 line.
105	All Files print out		
	001		Prints out all the user files in the SAF memory, including confidential messages. NOTE: Do not use this function, unless the customer is having trouble printing confidential messages or recovering files stored using the memory lock feature.
106	Journal Print out		
	001	All Journals	The machine prints all the communication records on the report.
	002	Specified Date	The machine prints all communication records after the specified date.

6	Mode No.	Function
107	Log List Print out	
	001	All log files
	002	Printer
	003	SC/TRAP Stored
	004	Decompression
	005	Scanner
	006	JOB/SAF
	007	Reconstruction
	008	JBIG
	009	G3 CCU
	010	Fax Job
	011	CCU
	012	Scanner Condition
These log print out functions are for designer use only.		

SP7-XXX (Tests)

These are the test modes for PTT approval.

7	Function
101	G3-1 Modem Tests
102	G3-1 DTMF Tests
103	Ringer
104	G3-1 V34 (S2400baud)
105	G3-1 V34 (S2800baud)
106	G3-1 V34 (S3000baud)
107	G3-1 V34 (S3200baud)
108	G3-1 V34 (S3429baud)
109	Message Test

3.2 BIT SWITCHES

CAUTION

Do not change the settings marked with the key "Not used." Changing these settings may cause malfunctions and/or may violate local regulations.

NOTE: For the default settings of the bit switches, see the System Parameter List (☞ SP6-101-001).

3.2.1 SYSTEM SWITCHES

System Switch 00		SP No. 1-101-001
No	FUNCTION	COMMENTS
0	Dedicated transmission parameter programming 0: Disabled 1: Enabled	Set this bit to 1 before changing any dedicated transmission parameters. Reset this bit to 0 after programming dedicated transmission parameters.
1	Not used	Do not change the setting.
2	Technical data printout on the Journal 0: Disabled 1: Enabled	1: Instead of the personal name, the following data are listed on the Journal for each G3 communication. e.g. 0000 32V34 288/264 L0100 03 04 (1) (2)(3) (4) (5) (6) (7) (8) (1): EQM value (Line quality data). A larger number means more errors. (2): Symbol rate (V.34 only) (3): Final modem type used (4): Starting data rate (for example, 288 means 28.8 kbps) (5): Final data rate (6): Rx revel (refer to the note after this table for how to read the rx level) (7): Total number of error lines that occurred during non-ECM reception. (8): Total number of burst error lines that occurred during non-ECM reception. Note: EQM and rx level are fixed at "FFFF" in tx mode. The seventh and eighth numbers are fixed at "00" for transmission records and ECM reception records.

System Switch 00		SP No. 1-101-001
No	FUNCTION	COMMENTS
2	Rx level calculation Example: 0000 32 V34 288/264 L <u>01</u> <u>00</u> 03 04 The four-digit hexadecimal value (N) after “L” indicates the rx level. The <u>high</u> byte is given first, followed by the <u>low</u> byte. Divide the decimal value of N by -16 to get the rx level. In the above example, the decimal value of N (= 0100 [H]) is 256. So, the actual rx level is 256/-16 = -16 dB	
3	Not used	Do not change the setting.
4	Line error mark on the received page 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. Such errors are caused by a noisy line for example.
5	G3 communication parameter display 0: Disabled 1: Enabled	This is a fault-finding aid. The LCD shows the key parameters (see below). This is normally disabled because it cancels the CSI display for the user. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output after each communication 0: Off 1: On	This is only used for communication troubleshooting. It shows the content of the transmitted facsimile protocol signals. Always reset this bit to 0 after finishing testing. If system switch 09 bit 6 is at “1”, the list is only printed if there was an error during the communication.
7	Not used	Do not change the setting.

BIT SWITCHES

G3 Communication Parameters

Modem rate	336: 33600 bps 168: 16800 bps 312: 31200 bps 144: 14400 bps 288: 28800 bps 120: 12000 bps 264: 26400 bps 96: 9600 bps 240: 24000 bps 72: 7200 bps 216: 21600 bps 48: 4800 bps 192: 19200 bps 24: 2400 bps
Resolution	S: Standard (8 x 3.85 dots/mm) D: Detail (8 x 7.7 dots/mm) F: Fine (8 x 15.4 dots/mm) SF: Superfine (16 x 15.4 dots/mm) 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi)
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG compression (Optional mode) JBB: JBIG compression (Basic mode)
Communication mode	ECM: With ECM NML: With no ECM
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction
I/O rate	0: 0 ms/line 10: 10 ms/line 25: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line Note: "40" is displayed while receiving a fax message using AI short protocol.

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02			SP No. 1-101-003
No	FUNCTION	COMMENTS	
0-1	Not used	Do not change the settings.	
2	Communication stall fail safe. 0: Disabled 1: Enabled	If enabled, the machine cuts communication within one hour of a communication error but the connection remains established.	
3-4	Not used.	Do not change the settings.	
5	Not used	Do not change the setting.	
6 to 7	Memory read/write by RDS Bit 7 6 Setting 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	(0,0): All RDS systems are always locked out. (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. Note that if an RDS operation takes place, RDS will not switch off until this time limit has expired. (1,1): At any time, an RDS system can access the machine.	

System Switch 03			SP No. 1-101-004
No	FUNCTION	COMMENTS	
0 to 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). This setting is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable". The default setting is 24 hours.	

System Switch 04			SP No. 1-101-005
No	FUNCTION	COMMENTS	
0-2	Not used	Do not change the settings.	
3	Printing dedicated tx parameters on Quick Dial Lists 0: Disabled 1: Enabled	1: Each Quick dial number on the list is printed with the dedicated tx parameters (10 bytes each). The first 10 bytes of data are the programmed dedicated tx parameters; 34 bytes of data are printed (the other 24 bytes have no use for service technicians).	
4-7	Not used	Do not change the settings.	

System Switch 05 - Not used (Do not change the factory settings.)			
System Switch 06 - Not used (Do not change the factory settings.)			
System Switch 07 - Not used (Do not change the factory settings.)			
System Switch 08 - Not used (Do not change the factory settings.)			

BIT SWITCHES

System Switch 09		SP No. 1-101-010
No	FUNCTION	COMMENTS
0	Not used	Do not change the setting.
1	Inclusion of communications on the Journal when no image data was exchanged. 0: Disabled 1: Enabled	0: Communications that reached phase C (message tx/rx) of the T.30 protocol are listed on the Journal. 1: Communications that reached phase A (call setup) of T.30 protocol are listed on the Journal. This will include telephone calls.
2	Automatic error report printout 0: Disabled 1: Enabled	0: Error reports will not be printed. 1: Error reports will be printed automatically after failed communications.
3	Printing of the error code on the error report 0: No 1: Yes	1: Error codes are printed on the error reports.
4	Not used	Do not change the setting.
5	Power failure report 0: Disabled 1: Enabled	1: A power failure report will be automatically printed after the power is switched on if a fax message disappeared from the memory when the power was turned off last.
6	Conditions for printing the protocol dump list 0: Print for all communications 1: Print only when there is a communication error	This switch becomes effective only when system switch 00 bit 6 is set to 1. 1: Set this bit to 1 when you wish to print a protocol dump list only for communications with errors.
7	Priority given to various types of remote terminal ID when printing reports 0: RTI > CSI > Dial label > Tel. number 1: Dial label > Tel. number > RTI > CSI	This bit determines which set of priorities the machine uses when listing remote terminal names on reports. Dial Label: The name stored, by the user, for the Quick/Speed Dial number.

System Switch 0A		SP No. 1-101-011
No	FUNCTION	COMMENTS
0-3	Not used	Do not change the settings.
4	Dialing on the ten-key pad when the external telephone is off-hook 0: Disabled 1: Enabled	0: Prevents dialing from the ten-key pad while the external telephone is off-hook. Use this setting when the external telephone is not by the machine, or if a wireless telephone is connected as an external telephone. 1: The user can dial on the machine's ten-key pad when the handset is off-hook.
5	On hook dial 0: Disabled 1: Enabled	0: On hook dial is disabled.
6-7	Not used	Do not change the settings.

System Switch 0B - Not used (Do not change the factory settings.)
System Switch 0C - Not used (Do not change the factory settings.)
System Switch 0D - Not used (Do not change the factory settings.)

System Switch 0E		SP No. 1-101-015
No	FUNCTION	COMMENTS
0-2	Not used	Do not change the settings.
3	Action when the external handset goes off-hook 0: Manual tx and rx operation 1: Memory tx and rx operation (the display remains the same)	0: Manual tx and rx are possible while the external handset is off-hook. However, memory tx is not possible. 1: The display stays in standby mode even when the external handset is used, so that other people can use the machine for memory tx operation. Note that manual tx and rx are not possible with this setting.
4-7	Not used	Do not change the settings.

System Switch 0F		SP No. 1-101-016
No	FUNCTION	COMMENTS
0 to 7	Country/area code for functional settings (Hex) 00: France 11: USA 01: Germany 12: Asia 02: UK 13: Japan 03: Italy 14: Hong Kong 04: Austria 15: South Africa 05: Belgium 16: Australia 06: Denmark 17: New Zealand 07: Finland 18: Singapore 08: Ireland 19: Malaysia 09: Norway 1A: China 0A: Sweden 1B: Taiwan 0B: Switz. 1C: Korea 0C: Portugal 20: Turkey 0D: Holland 21: Greece 0E: Spain 22: Hungary 0F: Israel 23: Czech 10: Canada 24: Poland	This country/area 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. Cross reference NCU country code: SP2-103 parameter C.C.

BIT SWITCHES

System Switch 10		
No	FUNCTION	COMMENTS
0 to 7	Threshold memory level for parallel memory transmission	Threshold = is $N \times 128 \text{ kbytes} + 256 \text{ kbytes}$ N can be between 00 - FF(H) Default setting: 02(H) = 512 kbytes

System Switch 11		SP No. 1-101-018
No	FUNCTION	COMMENTS
0	TTI printing position 0: Superimposed on the page data 1: Printed before the data leading edge	Change this bit to 1 if the TTI overprints information that the customer considers to be important (G3 transmissions).
1-7	Not used	Do not change the factory settings.

System Switch 12		SP No. 1-101-019
No	FUNCTION	COMMENTS
0 to 7	TTI printing position in the main scan direction	TTI: 08 to 92 (BCD) mm Input even numbers only. This setting determines the print start position for the TTI and CIL from the left edge of the paper. If the TTI is moved too far to the right, it may overwrite the file number which is on the top right of the page.

System Switch 13 - Not used (Do not change the settings.)
System Switch 14 - Not used (Do not change the settings.)

System Switch 15		SP No. 1-101-022
No	FUNCTION	COMMENTS
0	Not used	Do not change the setting.
1	Going into the Energy Saver mode automatically 0: Enabled 1: Disabled	1: The machine will restart from the Energy Saver mode quickly, because the +5V power supply is active even in the Energy Saver mode.
2-3	Not used	Do not change the settings.
4-5	Wait time for post message 00: 1 minute 01: 30 minutes 10: 1 hour 11: 24 hours	The machine stays in the standby mode for the specified time if it reserves a post message in memory.
6	Shows user codes on reports and lists 0: Disabled 1: Enabled	The user codes are printed on reports and lists. The default setting is "Disabled" since the user codes used for authentication should not be seen.
7	Not used	Do not change the settings.

System Switch 16 - Not used (Do not change the settings.)

System Switch 17 - Not used (Do not change the settings.)

System Switch 18 - Not used (Do not change the settings.)

System Switch 19		SP No. 1-101-026
No	FUNCTION	COMMENTS
0-2	Not used	Do not change the settings.
3	Selects a temporary address for the number PC-FAX #.	0: When prefixed by #, handled only as a stored address. 1: When prefixed by #, when a digit exists that prevents handling the transaction as a Quick, Speed, or Group dialing, handles temporarily.
4	Number of jobs controlled for PC-FAX TX 0: 64 Jobs 1: No limitations (but conforms to device limitations)	Sets the number of jobs controlled for PC-FAX transactions. If "1" is selected (no limitations), control is relinquished to the device (standard 400, expandable to 800).
5-6	Not used	Do not change the settings.
7	Special original mode 0: Disabled 1: Enabled	Enables the user to select the special original mode from the operation panel. When the user selects this mode, the text-mode LED and the photo-mode LED light at the same time.

BIT SWITCHES

System Switch 1A - Not used (Do not change the settings.)

System Switch 1B		SP No. 1-101-030
No	FUNCTION	COMMENTS
0-1	Image mode when Text is selected 00 : Text 1 01 : Text 2	00 : Text 1 is the regular mode. 01 : Text 2 is the sharp mode.
2-3	Image mode when Photo is selected 00 : Photo 1 01 : Photo 2	00 : Photo 1 is the error diffusion mode. 01 : Photo 2 is the dithering mode.
4-6	Image mode when Special original is selected 000 : Text 1 001 : Text 2 010 : Photo 1 011 : Photo 2 100 : Special	000 : Text 1 is the regular mode. 001 : Text 2 is the sharp mode. 010 : Photo 1 is the error diffusion mode. 011 : Photo 2 is the dithering mode. 100 : Special is the dropout color mode.
7	Not used	Do not change the setting.

System Switch 1C - Not used (Do not change the settings.)

System Switch 1D		SP No. 1-101-030
No	FUNCTION	COMMENTS
0	RTI/CSI display 0 : Disabled 1 : Enabled	1 : RTI/CSI is displayed on the top line of the LCD panel during communication.
1-7	Not used	Do not change the settings.

System Switch 1E		SP No. 1-101-031
No	FUNCTION	COMMENTS
0	Communication after the Journal data storage area has become full 0: Impossible 1: Possible	This setting is effective only when Automatic Journal printout is enabled but the machine cannot print the report (e.g., no paper). 0: If the buffer memory of the communication records for the Journal has become full, fax communications will become impossible, to prevent overwriting the communication records before the machine prints them out. 1: If the buffer memory of the communication records for the Journal is full, fax communications are still possible. But the machine will overwrite the oldest communication records. Cross Reference • Automatic Journal output - User switch 03 bit 7 • Number of communication records for the Journal: 200 records (standard) 1000 records (with the Function Upgrade unit installed)
1	Action when the SAF memory has become full during scanning 0: The current page is erased. 1: The entire file is erased.	0: If the SAF memory becomes full during scanning, the successfully scanned pages are transmitted. 1: If the SAF memory becomes full during scanning, the file is erased and no pages are transmitted. This bit switch is ignored for parallel memory transmission.
2	RTI/CSI display priority 0: RTI 1: CSI	This bit determines which identifier, RTI or CSI, is displayed on the LCD while the machine is communicating in G3 non-standard mode.
3	File No. printing 0: Enabled 1: Disabled	1: File numbers are not printed on any reports.
4	Action when authorized reception is enabled but authorized RTIs/CSIs are not yet programmed 0: All fax reception is disabled 1: Faxes can be received if the sender has an RTI or CSI	If authorized reception is enabled but the user has stored no acceptable sender RTIs or CSIs, the machine will not be able to receive any fax messages. If the customer wishes to receive messages from any sender that includes an RTI or CSI, and to block messages from senders that do not include an RTI or CSI, change this bit to "1", then enable Authorized Reception. Otherwise, keep this bit at "0 (default setting)".
5-7	Not used	Do not change the setting.

BIT SWITCHES

System Switch 1F		SP No. 1-101-032
No	FUNCTION	COMMENTS
0	Not used	Do not change the setting.
1	Report printout after an original jam during SAF storage or if the SAF memory fills up 0: Enabled 1: Disabled	0: When an original jams, or the SAF memory overflows during scanning, a report will be printed. Change this bit to "1" if the customer does not want to have a report in these cases. Memory tx – Memory storage report Parallel memory tx – Transmission result report
2	Not used	Do not change the setting.
3	Received fax print start timing (G3 reception) 0: After receiving each page 1: After receiving all pages	0: The machine prints each page immediately after the machine receives it. 1: The machine prints the complete message after the machine receives all the pages in the memory.
4-6	Not used	Do not change the factory settings.
7	Action when a fax SC has occurred 0: Automatic reset 1: Fax unit stops	0: When the fax unit detects a fax SC code other than SC1201, the fax unit automatically resets itself. 1: When the fax unit detects any fax SC code, the fax unit stops. Cross Reference Fax SC codes - See "Troubleshooting"

3.2.2 IFAX SWITCHES

See the IFAX Service Manual.

3.2.3 PRINTER SWITCHES

Printer Switch 00		SP No. 1-103-001
No	FUNCTION	COMMENTS
0	Page separation mark 0: Disabled 1: Enabled	0: No marks are printed. 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 0: Disabled 1: Enabled	0: The next page continues from where the previous page left off. 1: The final few mm of the previous page are repeated at the top of the next page. The amount of repeated data depends on printer switch 04, bits 5 and 6.
2	Prints the date and time on received fax messages 0: Disabled 1: Enabled	This switch is only effective when user parameter 02 - bit 2 (printing the received date and time on received fax messages) is enabled. 1: The machine prints the received and printed date and time at the bottom of each received page.
3-7	Not used	Do not change the settings.

Printer Switch 01 - Not used (Do not change the settings.)

The table lists the paper sizes and print widths used in the setup protocol.

Available Paper Size	Print width used in the Protocol (NSF/DIS)
A4 or 8.5" x 11"	297 mm width
B5	256 mm width
A5 or 8.5" x 5.5"	216 mm width
No paper available (Paper end)	216 mm width

BIT SWITCHES

Printer Switch 02		SP No. 1-103-003
No	FUNCTION	COMMENTS
0	1st paper feed station usage for fax printing 0: Enabled 1: Disabled	0: The paper feed station can be used to print fax messages and reports. 1: The specified paper feed station will not be used for printing fax messages and reports.
1	2nd paper feed station usage for fax printing 0: Enabled 1: Disabled	Note: Do not disable usage for a paper feed station which has been specified by User Parameter Switch 0F (15), or which is used for the Specified Cassette Selection feature.
2-7	Not used	Do not change the settings.

Printer Switch 03		SP No. 1-103-004						
No	FUNCTION	COMMENTS						
0	Length reduction of received data 0: Disabled 1: Enabled	0: Incoming pages are printed without length reduction. (Page separation threshold: Printer Switch 03, bits 4 to 7) 1: Incoming page length is reduced when printing. (Maximum reducible length: Printer Switches 04, bits 0 to 4)						
1-3	Not used	Do not change the settings						
4 to 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) <table><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td></tr></table> and so on until <table><tr><td>F</td><td>15</td></tr></table> Default setting: 6 mm Cross reference Length reduction On/Off: Printer Switch 03, Bit 0		0	0	1	1	F	15
0	0							
1	1							
F	15							

Printer Switch 04		SP No. 1-103-005
No	FUNCTION	COMMENTS
0 to 4	Maximum reducible length when length reduction is enabled with switch 03-0 above. $\text{<Maximum reducible length> = <Paper length> + (N \times 5\text{mm})}$ "N" is the decimal value of the binary setting of bits 0 to 4. Bit 4 3 2 1 0 Setting 0 0 0 0 0 0 mm 0 0 0 0 1 5 mm 0 0 1 0 0 20 mm (default setting) 1 1 1 1 1 155 mm For A5 sideways and B5 sideways paper $\text{<Maximum reducible length> = <Paper length> + 0.75 \times (N \times 5\text{mm})}$	
5 to 6	Length of the duplicated image on the next page, when page separation has taken place. $\left(\frac{0}{0}\right) = 4\text{ mm}, \left(\frac{1}{0}\right) = 10\text{ mm}, \left(\frac{0}{1}\right) = 15\text{ mm}, \left(\frac{1}{1}\right) = \text{Not used}$	
7	Not used.	Do not change the setting.

Printer Switch 05 - Not used (Do not change the settings.)

Printer Switch 06		SP No. 1-103-007
No	FUNCTION	COMMENTS
0	Printing while a paper cassette is pulled out, when the Just Size Printing feature is enabled. 0: Printing will not start 1: Printing will start if another cassette has a suitable size of paper, based on the paper size selection priority tables.	Cross reference Just size printing on/off – User switch 05, bit 5
1-7	Not used.	Do not change the settings.

Printer Switch 07		SP No. 1-103-008
No	FUNCTION	COMMENTS
0-3	Not used.	Do not change the settings.
4	List of destinations in the Communication Failure Report for broadcasting 0: All destinations 1: Only destinations where communication failure occurred	1: Only destinations where communication failure occurred are printed on the Communication Failure Report.
5-7	Not used.	Do not change the settings.

BIT SWITCHES

Printer Switch 08 - Not used (Do not change the settings.)
Printer Switch 09 - Not used (Do not change the settings.)
Printer Switch 0A - Not used (Do not change the settings.)
Printer Switch 0B - Not used (Do not change the settings.)
Printer Switch 0C - Not used (Do not change the settings.)
Printer Switch 0D - Not used (Do not change the settings.)

Printer Switch 0E		SP No. 1-103-015												
No	FUNCTION	COMMENTS												
0	Paper size selection priority 0: Width 1: Length	0: A paper size that has the same width as the received data is selected first. 1: A paper size which has enough length to print all the received lines without reduction is selected first.												
1	Paper size selected for printing A4 width fax data 0: 8.5" x 11" size 1: A4 size	This switch determines which paper size is selected for printing A4 width fax data, when the machine has both A4 and 8.5" x 11" size paper.												
2	Page separation 0: Enabled 1: Disabled	1: If all paper sizes in the machine require page separation to print a received fax message, the machine does not print the message (Substitute Reception is used). After a larger size of paper is set in a cassette, the machine automatically prints the fax message.												
3 to 4	Printing the sample image on reports Bit 4 Bit 3 Setting <table border="1"> <tr> <td>0</td><td>0</td><td>The upper half only</td></tr> <tr> <td>0</td><td>1</td><td>50% reduction in sub-scan only</td></tr> <tr> <td>1</td><td>0</td><td>Same size</td></tr> <tr> <td>1</td><td>1</td><td>Not used</td></tr> </table>	0	0	The upper half only	0	1	50% reduction in sub-scan only	1	0	Same size	1	1	Not used	"Same size" means the sample image is printed at 100%, even if page separation occurs. User Parameter Switch 19 (13H) bit 4 must be set to "0" to enable this switch. Refer to Detailed Section Descriptions for more on this feature.
0	0	The upper half only												
0	1	50% reduction in sub-scan only												
1	0	Same size												
1	1	Not used												
5-6	Not used	Do not change the settings.												
7	Equalizing the reduction ratio among separated pages (Page Separation) 0: Enabled 1: Disabled	0: When page separation has taken place, all the pages are reduced with the same reduction ratio. 1: Only the last page is reduced to fit the selected paper size when page separation has taken place. Other pages are printed without reduction.												

Printer Switch 0F			SP No. 1-103-016
No	FUNCTION		COMMENTS
0 to 1	Smoothing feature		(0, 0) (0, 1): Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
	Bit 1 Bit 0 Setting		
	0 0 Disabled		
	0 1 Disabled		
	1 0 Enabled		
	1 1 Not used		
2-3	Not used		Do not change the settings.
4	Printing fax messages in user code mode 0: Enabled 1: Disabled		1: The machine holds the received fax messages until the machine exits the restricted access mode (user code or key counter). If the machine enters the restricted access mode again while printing fax messages, the machine stops printing the machine exits the mode again.
5-7	Not used		Do not change the settings.

3.2.4 COMMUNICATION SWITCHES

Communication Switch 00			SP No. 1-104-001
No	FUNCTION	COMMENTS	
0 to 1	Compression modes available in receive mode Bit 1 0 Modes 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/JBIG	These bits determine the compression capabilities to be declared in phase B (handshaking) of the T.30 protocol.	
2 to 3	Compression modes available in transmit mode Bit 3 2 Modes 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 1 1 MH/MR/MMR/JBIG	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	Not used	Do not change the setting.	
5	JBIG compression method: Reception 0: Only basic supported 1: Basic and optional both supported	Change the setting when communication problems occur using JBIG compression.	
6	JBIG compression method: Transmission 0: Basic mode priority 1: Optional mode priority	Change the setting when communication problems occur using JBIG compression.	
7	Not used	Do not change the settings.	

Communication Switch 01			SP No. 1-104-002
No	FUNCTION	COMMENTS	
0	ECM 0: Off 1: On	If this bit is set to 0, ECM is switched off for all communications. In addition, V.8 protocol and JBIG compression are switched off automatically.	
1-5	Not used	Do not change the settings.	
6 to 7	Maximum printable page length available Bit 7 6 Setting 0 0 No limit 0 1 B4 (364 mm) 1 0 A4 (297 mm) 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		SP No. 1-104-003																
No	FUNCTION	COMMENTS																
0	Burst error threshold 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. The Low and High threshold values depend on the sub-scan resolution, and are as follows. <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>	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 0: 5% 1: 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end.																
2	Treatment of pages received with errors during G3 reception 0: Deleted from memory without printing 1: Printed	0: Pages received with errors are not printed.																
3	Hang-up decision when a negative code (RTN or PIN) is received during G3 immediate transmission 0: No hang-up, 1: Hang-up	0: The next page will be sent even if RTN or PIN is received. 1: The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.																
4-7	Not used	Do not change the settings.																

Communication Switch 03		SP No. 1-104-004
No	FUNCTION	COMMENTS
0 to 7	Maximum number of page retransmissions in a G3 memory transmission	00 - FF (Hex) times. This setting is not used if ECM is switched on. Default setting - 03(H)

Communication Switch 04 - Not used (Do not change the settings.)
Communication Switch 05 - Not used (Do not change the settings.)
Communication Switch 06 - Not used (Do not change the settings.)
Communication Switch 07 - Not used (Do not change the settings.)
Communication Switch 08 - Not used (Do not change the settings.)
Communication Switch 09 - Not used (Do not change the settings.)

Communication Switch 0A		SP No. 1-104-011
No	FUNCTION	COMMENTS
0	Point of resumption of memory transmission upon redialing 0: From the error page 1: From page 1	0: The transmission begins from the page where transmission failed the previous time. 1: Transmission begins from the first page, using normal memory transmission.
1-7	Not used	Do not change the settings.

BIT SWITCHES

Communication Switch 0B - Not used (Do not change the settings.)

Communication Switch 0C - Not used (Do not change the settings.)

Communication Switch 0D		SP No. 1-104-014
No	FUNCTION	COMMENTS
0 to 7	The available memory threshold, below which ringing detection (and therefore reception into memory) is disabled	00 to FF (Hex), unit = 4 kbytes (e.g., 06(H) = 24 kbytes) One page is about 24 kbytes. The machine refers to this setting before each fax reception. If the amount of remaining memory is below this threshold, the machine cannot receive any fax messages. If this setting is kept at 0, the machine will detect ringing signals and go into receive mode even if there is no memory available. This will result in communication failure.

Communication Switch 0E		SP No. 1-104-015
No	FUNCTION	COMMENTS
0 to 7	Minimum interval between automatic dialing attempts	06 to FF (Hex), unit = 2 s (e.g., 06(H) = 12 s) This value is the minimum time that the machine waits before it dials the next destination.

Communication Switch 0F - Not used (Do not change the settings.)

Communication Switch 10		SP No. 1-104-017
No	FUNCTION	COMMENTS
0 to 7	Memory transmission: Maximum number of dialing attempts to the same destination	01 - FE (Hex) times

Communication Switch 11 - Not used (Do not change the settings.)

Communication Switch 12		SP No. 1-104-019
No	FUNCTION	COMMENTS
0 to 7	Memory transmission: Interval between dialing attempts to the same destination	01 - FF (Hex) minutes

Communication Switch 13 - Not used (Do not change the settings.)

Communication Switch 14				SP No. 1-104-021															
No	FUNCTION			COMMENTS															
0	Inch-to-mm conversion during transmission 0: Disabled 1: Enabled			0: In immediate transmission, data scanned in inch format are transmitted without conversion. In memory transmission, data stored in the SAF memory in mm format are transmitted without conversion. Note: When storing the scanned data into SAF memory, the fax unit always converts the data into mm format. 1: The machine converts the scanned data or stored data in the SAF memory to the format which was specified in the set-up protocol (DIS/NSF) before transmission.															
1-5	Not used			Do not change the factory settings.															
6 to 7	Available unit of resolution in which fax messages are received <table><tr><td>Bit 7</td><td>Bit 6</td><td>Unit</td></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 (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. 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 - Not used (Do not change the settings.)
Communication Switch 16 - Not used (Do not change the settings.)
Communication Switch 17 - Not used (Do not change the settings.)
Communication Switch 18 - Not used (Do not change the settings.)
Communication Switch 19 - Not used (Do not change the settings.)
Communication Switch 1A - Not used (Do not change the settings.)

Communication Switch 1B			SP No. 1-104-028
No	FUNCTION	COMMENTS	
0 to 7	Extension access code (0 to 7) to turn V.8 protocol On/Off 0: On 1: Off	If the PABX does not support V.8/V.34 protocol procedure, set this bit to "1" to disable V.8. Example: 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.)	

BIT SWITCHES

Communication Switch 1C		SP No. 1-104-029
No	FUNCTION	COMMENTS
0 to 1	Extension access code (8 and 9) to turn V.8 protocol On/Off 0: On 1: Off	Refer to communication switch 1E. Example: 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.)
2-7	Not used	Do not change the settings.

Communication Switch 1D - Not used (Do not change the settings.)
Communication Switch 1E - Not used (Do not change the settings.)
Communication Switch 1F - Not used (Do not change the settings.)

3.2.5 G3-1 SWITCHES

G3-1 Switch 00			SP No. 1-105-001
No	FUNCTION	COMMENTS	
0 to 1	Monitor speaker during communication (tx and rx) Bit 1 Bit 0 Setting 0 0 Disabled 0 1 Up to Phase B 1 0 All the time 1 1 Not used	(0, 0): The monitor speaker is disabled all through the communication. (0, 1): The monitor speaker is on up to phase B in the T.30 protocol. (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 0: Disabled 1: Enabled	1: The monitor speaker is enabled during memory transmission.	
3-7	Not used	Do not change the settings.	

G3-1 Switch 01			SP No. 1-105-002
No	FUNCTION	COMMENTS	
0-3	Not used	Do not change the settings.	
4	DIS frame length 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 0: Disabled 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.	

G3-1 Switch 02			SP No. 1-105-003
No	FUNCTION	COMMENTS	
0	G3 protocol mode used 0: Standard and non-standard 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. 1: Disables NSF/NSS signals (these are used in non-standard mode communication)	
1-4	Not used	Do not change the settings.	
5	Use of modem rate history for transmission using Quick/Speed Dials 0: Disabled 1: Enabled	0: Communications using Quick/Speed Dials always start from the highest modem rate. 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) 0: Disabled 1: Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol.	
7	Short preamble 0: Disabled 1: Enabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about Short Preamble.	

BIT SWITCHES

G3-1 Switch 03		SP No. 1-105-004
No	FUNCTION	COMMENTS
0	DIS detection number (Echo countermeasure) 0: 1 1: 2	0: The machine will hang up if it receives the same DIS frame twice. 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	Not used	Do not change the setting.
2	V.8 protocol 0: Disabled 1: Enabled	0: V.8/V.34 communications will not be possible. Note: 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.
3	ECM frame size 0: 256 bytes 1: 64 bytes	Keep this bit at "0" in most cases.
4	CTC transmission conditions 0: After one PPR signal received 1: After four PPR signals received (ITU-T standard)	0: When using ECM in non-standard (NSF/NSS) mode, the machine sends a CTC to drop back the modem rate after receiving a PPR, if the following condition is met in communications at 14.4, 12.0, 9.6, and 7.2 kbps. $\sqrt{N_{\text{Transmit}} \leq N_{\text{Resend}}}$ N _{Transmit} - Number of transmitted frames N _{Resend} - Number of frames to be retransmitted 1: When using ECM, the machine sends a CTC to drop back the modem rate after receiving four PPRs. PPR, CTC: These are ECM protocol signals. This bit is not effective in V.34 communications.
5	Modem rate used for the next page after receiving a negative code (RTN or PIN) 0: No change 1: Fallback	1: The machine's tx modem rate will fall back before sending the next page if a negative code is received. This bit is ignored if ECM is being used.
6	Not used	Do not change the setting.
7	Polarity detection switch 1: On (Default for Japan model) 0: Off (Default for other models)	The facsimile may incorrectly detect the polarity in some environments. In such environments, the facsimile mistakenly closes an established communication. To prevent this problem, you can turn off the polarity detection switch. When this switch is off, the Communicating LED or an accounting-management program takes time to turn on.

G3-1 Switch 04		SP No. 1-105-005
No	FUNCTION	COMMENTS
0 to 3	Training error detection threshold	0 - F (Hex); 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that training has succeeded.
4-7	Not used	Do not change the settings.

G3-1 Switch 05		SP No. 1-105-006
No	FUNCTION	COMMENTS
0 to 3	Initial Tx modem rate Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. Cross reference V.8 protocol on/off - G3 switch 03, bit2
4 to 5	Initial modem type for 9.6 k or 7.2 kbps. Bit 5 Bit 4 Setting 0 0 V.29 0 1 V.17 1 0 V.34 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 the settings.

BIT SWITCHES

G3-1 Switch 06		SP No. 1-105-007
No	FUNCTION	COMMENTS
0 to 3	Initial Rx modem rate Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for reception. Use a lower setting if high speeds pose problems during reception. If a modem rate 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. Cross reference V.8 protocol on/off - G3 switch 03, bit2
4 to 7	Modem types available for reception 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.27ter, V.29 V.33 0 1 0 0 V.27ter, V.29, V.17/V.33 0 1 0 1 V.27ter, V.29, V.17/V33, V.34 Other settings - Not used	The setting of these bits is used to inform the transmitting terminal of the available modem type for the machine in receive mode. If V.34 is not selected, V.8 protocol must be disabled manually. Cross reference V.8 protocol on/off - G3 switch 03, bit2

G3-1 Switch 07			SP No. 1-105-008
No	FUNCTION	COMMENTS	
0 to 1	PSTN cable equalizer (tx mode: Internal) Bit 1 Bit 0 Setting 0 0 None 0 1 Low 1 0 Medium 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. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.	
2 to 3	PSTN cable equalizer (rx mode: Internal) Bit 3 Bit 2 Setting 0 0 None 0 1 Low 1 0 Medium 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. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.	
4-7	Not used	Do not change the settings.	

G3-1 Switch 08 - Not used (Do not change the settings.)

G3-1 Switch 09 - Not used (Do not change the settings.)

BIT SWITCHES

G3-1 Switch 0A			SP No. 1-105-011
No	FUNCTION	COMMENTS	
0 to 1	Maximum allowable carrier drop during image data reception Bit 1 Bit 0 Value (ms) 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.	
2	Non-ECM Carrier Drop 0: Maintain connection 1: Disconnect	Determines how the machine will respond when it detects a drop in the carrier signal during non-ECM communication.	
3	Not used	Do not change the settings.	
4	Maximum allowable frame interval during image data reception. 0: 5 s 1: 13 s	This bit set the maximum interval between EOL (end-of-line) signals and the maximum interval between ECM frames from the other end. Try using a longer setting if error code 0-21 is frequent.	
5	Not used	Do not change the setting.	
6	Reconstruction time for the first line in receive mode 0: 6 s 1: 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. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.	
7	Not used	Do not change the setting.	

G3-1 Switch 0B		SP No. 1-105-012
No	FUNCTION	COMMENTS
0	Protocol requirements: Europe 0: Disabled 1: Enabled	The machine does not automatically reset these bits for each country after a country code (System Switch 0F) is programmed. Change the required bits manually at installation.
1	Protocol requirements: Spain 0: Disabled 1: Enabled	
2	Not used	Do not change the setting.
3	Protocol requirements: France 0: Disabled 1: Enabled	The machine does not automatically reset these bits for each country after a country code (System Switch 0F) is programmed. Change the required bits manually at installation.
4	PTT requirements: Germany 0: Disabled 1: Enabled	
5-7	Not used	Do not change the settings.

G3-1 Switch 0C		SP No. 1-105-013
No	FUNCTION	COMMENTS
0 to 1	Pulse dialing method Bit 1 Bit 0 Setting 0 0 Normal (P=N) 0 1 Oslo (P=10 - N) 1 0 Sweden (N + 1) 1 1 Not used	P = Number of pulses sent out, N = Number dialed.
2-7	Not used	
2-7	Not used	Do not change the settings.

G3-1 Switch 0D - Not used (Do not change the settings.)

G3-1 Switch 0E		SP No. 1-105-015
No	FUNCTION	COMMENTS
0 to 7	CNG transmission OFF interval. To input a value more than 3 s, use bits 3 to 0, and keep bits 4 to 7 at 0. 3000 + 50 x N ms To input a value less than 3 s, use bits 4 to 7, and keep bits 0 to 3 at 1. 3000 - 50 x N ms	Examples: 3100 ms: 50 x 2 = 100 Bits 4 to 7 must be 0 Bits 0 to 3 must be 2(H) So, enter 02H. 2800 ms: 50 x 4 = 200 Bits 0 to 3 must be F(H) Bits 4 to 7 must be 4(H) So, enter 4FH

BIT SWITCHES

G3-1 Switch 0F		SP No. 1-105-016
No	FUNCTION	COMMENTS
0	Alarm when an error occurred in Phase C or later 0 : Disabled 1 : Enabled	If the customer wants to hear an alarm after each error communication, change this bit to "1".
1	Alarm when the handset is off-hook at the end of communication 0 : Disabled 1 : Enabled	If the customer wants to hear an alarm if the handset is off-hook at the end of fax communication, change this bit to "1".
2-7	Not used	Do not change the settings.

3.2.6 FAX SWITCHES

FAX Switch 00 - Not used (Do not change the settings.)
:
:
FAX Switch 0A - Not used (Do not change the settings.)

FAX Switch 0B		SP No. 3-201-012
No	FUNCTION	COMMENTS
0 to 3	Scan margin setting (right and left margin in book scan ADF mode) The setting can be between 0 and F (H) (unit 0.5 mm). Default setting: 2 mm	
4 to 7	Scan margin setting (top and bottom margin in book scan and ADF mode) The setting can be between 0 and 7 (H) (unit 0.5 mm). Default setting: 3 mm	

FAX Switch 0C		SP No. 3-201-013
No	FUNCTION	COMMENTS
0	Action when an original jam has occurred while scanning the original into memory for memory tx 0: Continues scanning after recovery 1: Stops scanning and erases all scanned pages for that job	This bit is only effective when parallel memory tx is disabled (user parameter 07 - bit 2). If parallel memory tx is enabled, the machine always erases the scanned pages when an original jam occurs. The machine then asks the user to retry from the first page, even if the parallel memory tx is not actually used. 0: The machine displays a message asking the user to put the jammed page back into the original stack, and continues scanning. The message is displayed for the time period specified by scanner switch 0E, bit 2. 1: The machine erases all the scanned pages and asks the user to retry from the first page.
1-7	Not used	Do not change the settings.

FAX Switch 0D - Not used (Do not change the settings.)

FAX Switch 0E		SP No. 3-201-015
No	FUNCTION	COMMENTS
0	Not used	Do not change the settings.
1	Scan resolution unit 0: mm 1: inches	This bit determines which resolution unit will be used for scanning a fax message. Default setting: mm
2-7	Not used	Do not change the settings.

FAX Switch 0F - Not used (Do not change the settings.)

3.3 NCU PARAMETERS

The following table lists the RAM addresses and the parameter calculation units used for the ringing signal detection and automatic dialing. The factory settings for each country are also listed. You can change most of them by RAM Read/Write (SP2-101); you can change some of them by G3-1 NCU Parameters (SP2-103) as indicated in "Remarks." The RAM is programmed in hexadecimal numbers unless the unit is marked with "BCD."

Address	Function	Unit	Remarks		
680500	Country/Area code for NCU parameters	Use the Hex value to program the country/area code directly into this address, or use the decimal value to program it using SP2-103-001			
		Country/Area	Decimal	Hex	
		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	
		Japan	19	13	
		Hong Kong	20	14	
		South Africa	21	15	
		Australia	22	16	
		New Zealand	23	17	
		Singapore	24	18	
		Malaysia	25	19	
		China	26	1A	
		Taiwan	27	1B	
		Korea	28	1C	
		Turkey	32	20	
		Greece	33	21	
		Hungary	34	22	
		Czech	35	23	
		Poland	36	24	
		680501	Line current detection time	20 ms	Line current detection is disabled.
		680502	Line current wait time		

NCU PARAMETERS

Fax Unit

Address	Function	Unit	Remarks
680503	Line current drop detect time		Line current is not detected if 680501 contains FF.
680504	PSTN dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680505	PSTN dial tone frequency upper limit (low byte)		
680506	PSTN dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680507	PSTN dial tone frequency lower limit (low byte)		
680508	PSTN dial tone detection time	20 ms	If 680508 contains FF(H), the machine pauses for the pause time (address 68050D / 68050E). Italy 🇮🇹 Note 2
680509	PSTN dial tone reset time (LOW)		
68050A	PSTN dial tone reset time (HIGH)		
68050B	PSTN dial tone continuous tone time		
68050C	PSTN dial tone permissible drop time		
68050D	PSTN wait interval (LOW)		
68050E	PSTN wait interval (HIGH)	20 ms	Detection is disabled if this contains FF.
68050F	PSTN ring-back tone detection time		
680510	PSTN ring-back tone off detection time	20 ms	
680511	PSTN detection time for silent period after ring-back tone detected (LOW)	20 ms	
680512	PSTN detection time for silent period after ring-back tone detected (HIGH)	20 ms	
680513	PSTN busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680514	PSTN busy tone frequency upper limit (low byte)		
680515	PSTN busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680516	PSTN busy tone frequency lower limit (low byte)		
680517	PABX dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680518	PABX dial tone frequency upper limit (low byte)		
680519	PABX dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
68051A	PABX dial tone frequency lower limit (low byte)		
68051B	PABX dial tone detection time	20 ms	If 68051B contains FF, the machine pauses for the pause time (680520 / 680521).
68051C	PABX dial tone reset time (LOW)		
68051D	PABX dial tone reset time (HIGH)		
68051E	PABX dial tone continuous tone time		
68051F	PABX dial tone permissible drop time		
680520	PABX wait interval (LOW)		
680521	PABX wait interval (HIGH)	20 ms	If both addresses contain
680522	PABX ringback tone detection time		

NCU PARAMETERS

Address	Function	Unit	Remarks																				
680523	PABX ringback tone off detection time	20 ms	FF(H), tone detection is disabled.																				
680524	PABX detection time for silent period after ringback tone detected (LOW)	20 ms	If both addresses contain FF(H), tone detection is disabled.																				
680525	PABX detection time for silent period after ringback tone detected (HIGH)	20 ms																					
680526	PABX busy tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.																				
680527	PABX busy tone frequency upper limit (low byte)																						
680528	PABX busy tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.																				
680529	PABX busy tone frequency lower limit (low byte)																						
68052A	Busy tone ON time: range 1	20 ms																					
68052B	Busy tone OFF time: range 1																						
68052C	Busy tone ON time: range 2																						
68052D	Busy tone OFF time: range 2																						
68052E	Busy tone ON time: range 3																						
68052F	Busy tone OFF time: range 3																						
680530	Busy tone ON time: range 4																						
680531	Busy tone OFF time: range 4																						
680532	Busy tone continuous tone detection time																						
680533	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 (±) <table><tr><td>Bit</td><td>1</td><td>0</td><td></td></tr><tr><td>0</td><td>0</td><td>75%</td><td>Bits 2 and 3 must always</td></tr><tr><td>0</td><td>1</td><td>50%</td><td>be kept at 0.</td></tr><tr><td>1</td><td>0</td><td>25%</td><td></td></tr><tr><td>1</td><td>1</td><td>12.5%</td><td></td></tr></table> Bits 7, 6, 5, 4 - number of cycles required for cadence detection			Bit	1	0		0	0	75%	Bits 2 and 3 must always	0	1	50%	be kept at 0.	1	0	25%		1	1	12.5%	
Bit	1	0																					
0	0	75%	Bits 2 and 3 must always																				
0	1	50%	be kept at 0.																				
1	0	25%																					
1	1	12.5%																					
680534	International dial tone frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.																				
680535	International dial tone frequency upper limit (low byte)																						
680536	International dial tone frequency lower limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.																				
680537	International dial tone frequency lower limit (low byte)																						
680538	International dial tone detection time	20 ms	If 680538 contains FF, the machine pauses for the pause time (68053D / 68053E).																				
680539	International dial tone reset time (LOW)																						
68053A	International dial tone reset time (HIGH)																						

Address	Function	Unit	Remarks
68053B	International dial tone continuous tone time	20 ms	Belgium 📞 Note 2
68053C	International dial tone permissible drop time		
68053D	International dial wait interval (LOW)		
68053E	International dial wait interval (HIGH)		
68053F	Country dial tone upper frequency limit (HIGH)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
680540	Country dial tone upper frequency limit (LOW)		
680541	Country dial tone lower frequency limit (HIGH)		If both addresses contain FF(H), tone detection is disabled.
680542	Country dial tone lower frequency limit (LOW)		
680543	Country dial tone detection time	20 ms	If 680543 contains FF, the machine pauses for the pause time (680548 / 680549).
680544	Country dial tone reset time (LOW)		
680545	Country dial tone reset time (HIGH)		
680546	Country dial tone continuous tone time		
680547	Country dial tone permissible drop time		
680548	Country dial wait interval (LOW)		
680549	Country dial wait interval (HIGH)		
68054A	Time between opening or closing the DO relay and opening the OHDI relay	1 ms	📞 Notes 3, 6 and 8 SP2-103-11
68054B	Break time for pulse dialing	1 ms	📞 Note 3 SP2-103-12
68054C	Make time for pulse dialing	1 ms	📞 Note 3 SP2-103-13
68054D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	📞 Notes 3, 6 and 8 SP2-103-14 This parameter is only valid in Europe.
68054E	Minimum pause between dialed digits (pulse dial mode)	20 ms	📞 Note 3 and 8 SP2-103-15
68054F	Time waited when a pause is entered at the operation panel		SP2-103-16 📞 Note 3
680550	DTMF tone on time	1 ms	SP2-103-17
680551	DTMF tone off time		SP2-103-18
680552	Tone attenuation level of DTMF signals while dialing	-N x 0.5 -3.5 dBm	SP2-103-19 📞 Note 5
680553	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	SP2-103-20 The setting must be less than -5dBm, and should not exceed the setting at 680552h above. 📞 Note 5

NCU PARAMETERS

Address	Function	Unit	Remarks
680554	PSTN: DTMF tone attenuation level after dialling	-N x 0.5 -3.5 dBm	SP2-103-21 ☛ Note 5
680555	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	☛ Note 5
680556	Not used		Do not change the settings.
680557	Time between 68054Dh (NCU parameter 14) and 68054Eh (NCU parameter 15)	1 ms	This parameter takes effect when the country code is set to France.
680558	Not used		Do not change the setting.
680559	Grounding time (ground start mode)	20 ms	The Gs relay is closed for this interval.
68055A	Break time (flash start mode)	1 ms	The OHDI relay is open for this interval.
68055B	International dial access code (High)	BCD	For a code of 100: 68055B - F1 68055C - 00
68055C	International dial access code (Low)		
68055D	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 68054F is used. Do not set a number more than 7 in the UK.
68055E	Progress tone detection level, and cadence detection enable flags	Bit 7 Bit 6 Bit 5 dBm 0 0 0 -25.0 0 0 1 -35.0 0 1 0 -30.0 1 0 0 -40.0 1 1 0 -49.0 Bits 2, 0 - See Note 2.	
68055F to 680564	Not used		Do not change the settings.
680565	Long distance call prefix (HIGH)	BCD	For a code of 0: 680565 - FF 680566 - F0
680566	Long distance call prefix (LOW)	BCD	
680567 to 680571	Not used		Do not change the settings.
680572	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz).	SP2-103-2
680573	Acceptable ringing signal frequency: range 1, lower limit		SP2-103-3
680574	Acceptable ringing signal frequency: range 2, upper limit		SP2-103-4
680575	Acceptable ringing signal frequency: range 2, lower limit		SP2-103-5

Address	Function	Unit	Remarks
680576	Number of rings until a call is detected	1	SP2-103-6 The setting must not be zero.
680577	Minimum required length of the first ring	20 ms	See Note 4. SP2-103-7
680578	Minimum required length of the second and subsequent rings	20 ms	SP2-103-8
680579	Ringing signal detection reset time (LOW)	20 ms	SP2-103-9
68057A	Ringing signal detection reset time (HIGH)		SP2-103-10
68057B to 680580	Not used		Do not change the settings.
680581	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
680582	Bits 0 and 1 - Handset off-hook detection time Bit 1 0 Setting 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time Bit 3 2 Setting 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		
680583 to 6805A0	Not used		Do not change the settings.
6805A1	Acceptable CED detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A2	Acceptable CED detection frequency upper limit (low byte)		
6805A3	Acceptable CED detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A4	Acceptable CED detection frequency lower limit (low byte)		
6805A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
6805A6	Acceptable CNG detection frequency upper limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is disabled.
6805A7	Acceptable CNG detection frequency upper limit (low byte)		
6805A8	Acceptable CNG detection frequency lower limit (high byte)	BCD (Hz)	If both addresses contain FF(H), tone detection is

NCU PARAMETERS

Address	Function	Unit	Remarks
6805A9	Acceptable CNG detection frequency lower limit (low byte)		disabled.
6805AA	Not used		Do not change the setting.
6805AB	CNG on time	20 ms	Factory setting: 500 ms
6805AC	CNG off time	20 ms	Factory setting: 200 ms
6805AD	Number of CNG cycles required for detection		The data is coded in the same way as address 680533.
6805AE	Not used		Do not change the settings.
6805AF	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (high byte)	Hz (BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B0	Acceptable AI short protocol tone (800Hz) detection frequency upper limit (low byte)		
6805B1	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (high byte)	Hz(BCD)	If both addresses contain FF(H), tone detection is disabled.
6805B2	Acceptable AI short protocol tone (800Hz) detection frequency lower limit (low byte)		
6805B3	Detection time for 800 Hz AI short protocol tone	20 ms	Factory setting: 360 ms
6805B4	PSTN: Tx level from the modem	-N – 3 dBm	SP2-103-1
6805B5	PSTN: 1100 Hz tone transmission level	- N 6805B4 - 0.5N 6805B5 –3.5 (dB) ☛ Note 7	
6805B6	PSTN: 2100 Hz tone transmission level	- N6805B4 - 0.5N 6805B6 –3 (dB) ☛ Note 7	
6805B7	PABX: Tx level from the modem	- dBm	
6805B8	PABX: 1100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B8 (dB)	
6805B9	PABX: 2100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B9 (dB)	
6805BA	ISDN: Tx level from the modem	- dBm	The setting must be between -12dBm and -15dBm.
6805BB	ISDN: 1100 Hz tone transmission level	- N 6805BA - 0.5N 6805BB (dB)	
6805BC	ISDN: 2100 Hz tone transmission level	- N 6805BA - 0.5N 6805BC (dB)	
6805BD	Modem turn-on level (incoming signal detection level)	-37-0.5N (dBm)	
6805BE to 6805C6	Not used		Do not change the settings.
6805C7	Bits 0 to 3 – Not used. Bit 4 – V.34 protocol dump 0: Simple, 1: Detailed (default) Bits 5 to 7 – Not used.		

Address	Function	Unit	Remarks
6805C8 to 6805D9	Not used		Do not change the settings.
6805DA	T.30 T1 timer	1 s	
6805E0 bit 3	Maximum wait time for post message	0: 12 s 1: 30 s	1: Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. Change this bit to "1" if communication errors occur frequently during V.17 reception.

NOTE:

1. If a setting is not required, store FF in the address.
2. Italy and Belgium only

RAM address 68055E: 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.

680508 (if bit 0 = 1) or 680538 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 680533.

68050B (if bit 0 = 1) or 68053B (if bit 2 = 1): on time, hex code (unit = 20 ms)

68050C (if bit 0 = 1) or 68053C (if bit 2 = 1): off time, hex code (unit = 20 ms)

3. Pulse dial parameters (addresses 68054A to 68054F) 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 calculated level must be between 0 and 10.
The attenuation levels calculated from RAM data are:
High frequency tone: $-0.5 \times N_{680552/680554} - 3.5 \text{ dBm}$
 $-0.5 \times N_{680555} \text{ dBm}$
Low frequency tone: $-0.5 \times (N_{680552/680554} + N_{680553}) - 3.5 \text{ dBm}$
 $-0.5 \times (N_{680555} + N_{680553}) \text{ dBm}$
NOTE: N_{680552} , for example, means the value stored in address 680552(H)
6. 68054A: Europe - Between Ds opening and Di opening, France - Between Ds closing and Di opening
68054D: Europe - Between Ds closing and Di closing, France - Between Ds opening and Di closing

NCU PARAMETERS

7. Tone signals which frequency is lower than 1500Hz (e.g., 800Hz tone for AI short protocol) refer to the setting at 6805B5h. Tones which frequency is higher than 1500Hz refer to the setting at 6805B6h.
8. 68054A, 68054D, 68054E: The actual inter-digit pause (pulse dial mode) is the sum of the period specified by the RAM addresses 68054A, 68054D, and 68054E.

3.4 DEDICATED TRANSMISSION PARAMETERS

You might see the transmission to a particular destination often fail. In a case like this, register the destination to the Quick Dial and try changing parameters. This may solve the problem.

3.4.1 PROGRAMMING PROCEDURE

For the details of the parameters, see the next section.

1. Access the System Switch 00 (SP1-101-001).
2. Change Bit 0 from "0" to "1."
3. Quit the SP mode.
4. Press the  key.
5. Select the menus as follows: System Settings → Key Operator Tools → Address Book Management → Program/Change
6. Select the Quick Dial number.
7. Press the OK key two times.
8. Press the "Dest." key.
9. Select "Fax Settings."
10. When the programmed dial number is displayed, press the start key. Make sure that the LED of the start key is lit as green.
11. The parameter numbers are displayed (00 ~ 09). Select the parameter number.
12. Press the OK key.
13. The settings are displayed. Change the setting as necessary.
14. Press the OK key.
15. Press the  key several times until you quit the User Tools.
16. Access the System Switch 00 (SP1-101-001).
17. Change Bit 0 from "1" to "0."
18. Quit the SP mode.

DEDICATED TRANSMISSION PARAMETERS

3.4.2 PARAMETERS

The initial settings of these parameters are all FF(H) (all parameters are disabled).

Switch 00
FUNCTION AND COMMENTS
ITU-T T1 time (for PSTN G3 mode) 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. Range: 0 to 120 s (00h to 78h) FFh - The local NCU parameter factory setting is used. Do not program a value between 79h and FEh.

Switch 01	
No	FUNCTION COMMENTS
0 to 4 Tx level Bit 4 3 2 1 0 Setting 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	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. If the setting is "Disabled", the NCU parameter 01 setting is used. Note: Do not use settings other than listed on the left.
5 to 7 Cable equalizer Bit 7 6 5 Setting 0 0 0 None 0 0 1 Low 0 1 0 Medium 0 1 1 High 1 1 1 Disabled	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. Also, try using the cable equalizer if one or more of the following symptoms occurs. - Communication error with error codes such as 0-20, 0-23, etc. - Modem rate fallback occurs frequently. Note: Do not use settings other than listed on the left. If the setting is "Disabled", the bit switch setting is used.

DEDICATED TRANSMISSION PARAMETERS

Switch 02		
No	FUNCTION	COMMENTS
0 to 3	Initial Tx modem rate Bit3 2 1 0 Setting (bps) 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	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. For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0. Note: Do not use settings other than listed on the left. If the setting is "Disabled", the bit switch setting is used.
4-5	Not used	Do not change the settings.
6	AI short protocol 0: Off 1: Disabled	Refer to Appendix B in the Group 3 Facsimile Manual for details about AI Short Protocol. If the setting is "Disabled", the bit switch setting is used.
7	Not used	Do not change the settings.

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DEDICATED TRANSMISSION PARAMETERS

Switch 03				
No	FUNCTION			COMMENTS
0 to 1	Bit 1	Bit 0	Setting	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. If the setting is “Disabled”, the bit switch setting is used.
			Inch-mm conversion before tx	
			0 0 Inch-mm conversion available	
			0 1 Inch only	
			1 0 Not used	
1 1 Disabled				
2 to 3	Bit 3	Bit 2	Setting	(0, 1): Use this setting if echoes on the line are interfering with the set-up protocol at the start of transmission. The machine will then wait for the second DIS or NSF before sending DCS or NSS. If the setting is “Disabled”, the bit switch setting is used.
			DIS/NSF detection method	
			0 0 First DIS or NSF	
			0 1 Second DIS or NSF	
			1 0 Not used	
1 1 Disabled				
4	V.8 protocol 0: Off 1: 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. 0: V.34 communication will not be possible. If the setting is “Disabled”, the bit switch setting is used.
5	Compression modes available in transmit mode 0: MH only 1: Disabled			This bit determines the capabilities that are informed to the other terminal during transmission. If the setting is “Disabled”, the bit switch setting is used.
6 to 7	Bit 7	Bit 6	Setting	For example, if ECM is switched on but is not wanted when sending to a particular terminal, use the (0, 0) setting. Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled. If the setting is “Disabled”, the bit switch setting is used.
			ECM during transmission	
			0 0 Off	
			0 1 On	
			1 0 Not used	
1 1 Disabled				

Switch 04 - Not used (Do not change the settings.)
Switch 05 - Not used (Do not change the settings.)
Switch 06 - Not used (Do not change the settings.)
Switch 07 - Not used (Do not change the settings.)
Switch 08 - Not used (Do not change the settings.)
Switch 09 - Not used (Do not change the settings.)

3.5 SERVICE RAM ADDRESSES

CAUTION

Do not change the settings marked with the key "Not used" or "Read only."

Fax Unit

680001 to 680004(H) - ROM version (Read only)

680001(H) - Revision number (BCD)

680002(H) - Year (BCD)

680003(H) - Month (BCD)

680004(H) - Day (BCD)

680006 to 680015(H) - Machine's serial number (16 digits - ASCII)

680018(H) - Total program checksum (low)

680019(H) - Total program checksum (high)

680020 to 68003F(H) - System bit switches

680050 to 68005F(H) - Printer bit switches

680060 to 68007F(H) - Communication bit switches

680080 to 68008F(H) - G3 bit switches

6800D0(H) - User parameter switch 00 (SWUER_00) : Not used

6800D1(H) - User parameter switch 01 (SWUSR_01) : Not used

6800D2(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. (This switch is not printed on the user parameter list.) 0: Disabled 1: Enabled
Bit 2:	Reception time printing. (This switch is not printed on the user parameter list.) 0: Disabled 1: Enabled
Bit 3:	TSI print on received messages 0: Disabled 1: Enabled
Bit 4:	Checkered mark printing. (This switch is not printed on the user parameter list.) 0: Disabled 1: Enabled
Bit 5 to 7:	Not used.

SERVICE RAM ADDRESSES

6800D3(H) - User parameter switch 03 (SWUSR_03: Automatic report printout)

Bit 0: Transmission result report (memory transmissions) 0: Off, 1: On

Bit 1: Not used

Bit 2: Memory storage report 0: Off, 1: On

Bit 3: Not used

Bit 4: Not used

Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On

Bit 6: Not used

Bit 7: Journal 0: Off, 1: On

6800D4(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

6800D5(H) - User parameter switch 05 (SWUSR_05)

Bit 0: Substitute reception when the base copier is in an SC condition

0: Enabled, 1: Disabled

Bits 1 and 2: Condition for substitute rx when the machine cannot print messages (Paper end, toner end, jam, and during night mode)

Bit 2 1 Setting

0 0 The machine receives all the fax messages.

0 1 The machine receives the fax messages with RTI or CSI.

1 0 The machine receives the fax messages with the same ID code.

1 1 The machine does not receive anything.

Bit 3 and 4: Not used

Bit 5: Just size printing 0: Off, 1: On

Bit 6: Not used

Bit 7: Add paper display when a cassette is empty 0: Off, 1: On

6800D6(H) - User parameter switch 06 (SWUSR_06): Not used

6800D7(H) - User parameter switch 07 (SWUSR_07)

Bits 0 and 1: Not used

Bit 2: Parallel memory transmission 0: Off, 1: On

Bits 3 to 7: Not used

6800D8(H) - User parameter switch 08 (SWUSR_08)

Bits 0 and 1: Not used.

Bit 2: Authorized reception

0: Only faxes from senders whose RTIs/CSIs are specified for this feature are accepted.

1: Only faxes from senders whose RTIs/CSIs are not specified for this feature are accepted.

Bits 3 to 7: Not used.

6800D9(H) - User parameter switch 09 (SWUSR_09) : Not used**6800DA(H) - User parameter switch 10 (SWUSR_0A)**

Bit 0: Not used

Bit 1: 2 into 1 0: Off, 1: On

Bit 2: Not used

Bit 3: Page reduction 0: Off, 1: On

Bits 4 to 7: Not used

6800DB(H) - User parameter switch 11 (SWUSR_0B)

Bit 0: Not used

Bit 1: Not used

Bit 2: Blank sheet detection

0: On (Blank sheets are not detected.)

1: Off (The LCD indication alarms the user when a blank sheet is detected.)

Bit 3 to 5: Not used

Bit 6: Printout of messages received while acting as a forwarding station

0: Off, 1: On

Bit 7: Not used

6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used**6800DD(H) - User parameter switch 13 (SWUSR_0D): Not used****6800DE(H) - User parameter switch 14 (SWUSR_0E)**

Bit 0: Message printout while the machine is in Night Printing mode 0: On, 1: Off

Bit 1: Maximum document length detection

0: Double letter, 1: Longer than double-letter (well log) – up to 1,200 mm

Bit 2: Batch transmission 0: Off, 1: On

Bit 3: Fax mode settings, such as resolution, before a mode key (Copy/Fax/Printer/Scanner) is pressed

0: Not cleared, 1: Cleared

Bits 4 to 6: Not used

Bit 7: Manual service call (sends the system parameter list to the service station)

0: Off, 1: On

SERVICE RAM ADDRESSES

6800DF(H) - User parameter switch 15 (SWUSR_0F)

Bits 0, 1 and 2: Cassette for fax printout

Bit	2	1	0	Setting
	0	0	1	1st paper feed station
	0	1	0	2nd paper feed station
	0	1	1	3rd paper feed station
	1	0	0	4th paper feed station
	1	0	1	5th paper feed station

Other settings Not used

Bits 3 and 4: Not used

Bit 5: Using the cassette specified by bits 0, 1 and 2 above only 0: On, 1: Off

Bits 6 and 7: Not used

6800E0(H) – User parameter switch 16 (SWUSR_10)

(This switch is not printed on the user parameter list.)

Bits 0 and 1: Not used

Bit 2: Paper size selection priority for an A4 size fax message when A4/LT size paper is not available.

0: A3 has priority, 1: B4 has priority

Bits 3 to 7: Not used

6800E1(H) – User parameter switch 17 (SWUSR_11)

Bit 0: Specifies the mode to select the group address for the IFAX function.

0: Priority Select Mode

1: All Select Mode

Bit 1: Not used

Bit 2: Inclusion of the “Add” button when a sequence of Quick/Speed dials is selected for broadcasting

0: Not needed, 1: Needed

Bits 3 to 6: Not used

Bit 7: Press “Start” key without an original when using the on hook dial or the external telephone,

0: displays “Cannot detect original size”.

1: Receives fax messages.

6800E2(H) - User parameter switch 18 (SWUSR_12)

Bit 0: TTI date 0: Off, 1: On

Bit 1: TTI sender 0: Off, 1: On

Bit 2: TTI file number 0: Off, 1: On

Bit 3: TTI page number 0: Off, 1: On

Bits 4 and 5: TTI selection

Bit	5	4	
	0	0	TTI 1
	0	1	TTI 2
	1	0	TTI off
	1	1	Not used

Bit 6 to 7: Not used

6800E3(H) - User parameter switch 19 (SWUSR_13)

Bits 0 - 2: Not used

Bit 3: 90° image rotation during B5 portrait Tx

(This switch is not printed on the user parameter list.)

0: Off, 1: On

Bit 4: Reduction of sample images on reports to 50% in the main scan and sub-scan directions. (This switch is not printed on the user parameter list.)

0: Technician adjustment (printer switch 0E bits 3 and 4), 1: 50% reduction

Bit 5: Use of A5 size paper for reports

(This switch is not printed on the user parameter list.)

0: Off, 1: On

Bits 6 and 7: Not used

6800E4(H) - User parameter switch 20 (SWUSR_14)

Bit 0: Automatic printing of the PC FAX error report

0: Off, 1: On

Bit 1: Reprint the documents fail to print from PC Fax driver

0: Off, 1: On

Bits 2 to 5: Store documents in memory which could not be printed from PC Fax driver

Bit	5	4	3	2	Setting
	0	0	0	0	0 min.
	0	0	0	1	1 min.
			↓		↓
	1	1	1	0	14 min.
	1	1	1	1	15 min.

Bits 6: Not used.

Bit 7: PC fax result notification mail, 0: Off, 1: On

6800E5(H) - User parameter switch 21 (SWUSR_15)

Bit 0: Print E-mail Reception Notice, 0: Off, 1: On

Bit 1: Respond to E-mail Reception Acknowledgement Request, 0: Off, 1: On

Bit 2 and 3: Not used.

Bit 4: Transmit Journal by E-Mail, 0: Off, 1: On

Bit 5: Not used.

Bit 6: Network error display, 0: On (Displayed), 1: Off (Not displayed)

Bit 7: Transmit Error Mail Notification, 0: Off, 1: On

SERVICE RAM ADDRESSES

6800E6(H) - User parameter switch 22 (SWUSR_16): Not used

6800E7(H) - User Parameter switch 23 (SWUSR_17) : Not used

6800E8(H) - User parameter switch 24 (SWUSR_18)

Bits 0 and 1: File retention time (Cross reference: System switch 02 bit 4)

Bit	1	0	Setting
	0	0	File retention impossible
	0	1	24 hours
	1	0	File retention impossible
	1	1	72 hours

Bits 2 to 7: Not used

6800E9(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 (see system switch 02).

Bits 5 to 7: Not used

6800EA to 6800EF(H) - User parameter switch 26 to 31 (SWUSR_1A to 1F),
Not used

6800F0 - User Parameter Switch 32 (SWUSR_20)

Bit 0: Priority destination for transfer, 0: Fax number, 1: E-mail address

Bits 2 to 7: Not used

680180 to 68019F(H) - Service station's fax number (SP3-101)

See 68036C(H) for the type of network used for this number.

6801A0 to 6801A3(H) - Own fax PABX extension number

6801AA to 6801B3(H) - Own fax number (PSTN)

6801F8 to 68020B(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.

680237 to 680276(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.

680277 to 6802B6(H) - TTI 2 (Max. 64 characters - ASCII) - See the following note.

6802F7 to 68030A(H) - PSTN-1 CSI (Max. 20 characters - ASCII)

680333(H) - Number of PSTN-1 CSI characters (Hex)

If the number of characters is less than the maximum (20 for RTI, 64 for TTI), add a stop code (FF[H]) after the last character.

680340 to 680342(H) - PSTN-1 line settings

680340

Bits 0 and 1: PSTN access method from behind a PABX.

Bit	1	0	Setting
	0	0	Loop start
	0	1	Ground start
	1	0	Flash start
	1	1	Not used

Bit 2: Telephone line type.

0: PSTN, 1: PABX

Bits 3 and 4: Dialing type.

Bit	4	3	Setting
	0	0	Pulse dialing
	0	1	Not used
	1	0	Tone dialing
	1	1	Not used

Bits 4 to 7: Not used

680341: PSTN access number for loop start

Access number Hex value to program (BCD)

0	F0
↓	↓
9	F9
00	00
↓	↓
99	99

680342

Bit 0: Transmission disabled

0: Tx and Rx, 1: Rx only

Bit 1: Memory Lock reception

0: Enabled, 1: Disabled

Bits 2 to 7: Not used

680360(H) – Polling ID Code (Low – Hex)**680361(H)** – Polling ID Code (High – Hex)**680362(H)** - Confidential ID (low - BCD)**680363(H)** - Confidential ID (high - BCD)**680364(H)** - Memory Lock ID (low - BCD)**680365(H)** - Memory Lock ID (high - BCD)

SERVICE RAM ADDRESSES

680370 to 680377(H) - Last power off time (Read only)

680370(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM),
02(H) - 12-hour clock (PM)

680371(H) - Year (BCD)

680372(H) - Month (BCD)

680373(H) - Day (BCD)

680374(H) - Hour

680375(H) - Minute

680376(H) - Second

680377(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

680384(H) - Optional equipment (Read only – Do not change the settings)

Bit 0 to 3: Not used

Bit 4: Function Upgrade unit 0: Not installed, 1: Installed

Bit 5 to 7: Not used

680385(H) - Optional equipment (Read only – Do not change the settings)

Bit 0: Function Upgrade unit 0: Not installed, 1: Installed

Bit 1 to 3: Not used

Bit 4: G3-2 0: Not installed, 1: Installed

680406 to 68040B(H) - Modem ROM version (Read only)

680406(H) - Part number (low)

680407(H) - Part number (high)

680408(H) - Control (low)

680409(H) - Control (high)

68040A(H) - DSP (low)

68040B(H) - DSP (high)

680466(H) - Time for economy transmission (hour in 24h clock format - BCD)

680467(H) - Time for economy transmission (minute - BCD)

680482(H) - Transmission monitor volume 00 - 07(H)

680483(H) - Reception monitor volume 00 - 07(H)

680484(H) - On-hook monitor volume 00 - 07(H)

680485(H) - Dialing monitor volume 00 - 07(H)

680486(H) - Buzzer volume 00 - 07(H)

69B000 – 6BA1FF(H) – Latest 64 error codes (Read only)

69EEFC – 69FEA3(H) – Latest 20 error communication records

3.6 BACKUP OF DIRECTORY INFORMATION

- CAUTION:**
- 1) Do not show the user how to copy the directory information. The normal machine operations are not guaranteed if the user has an access to the SP mode.
 - 2) Use the SD card provided by a proper supplier. The normal machine operations are not guaranteed if you use the SD card provided by a third party.
 - 3) Turn off the main power switch before inserting an SD card into an SD card slot or removing an SD card from an SD card slot. The data in the SD card and/or in the machine memory may be corrupted if the main power switch is on.
 - 4) Use extreme caution when handling the directory information. The directory information can include confidential data.

3.6.1 OVERVIEW

SP Mode

The machine can store directory information. You can copy the directory information from machine memory to an SD card; and you can copy the information from the SD card to machine memory. For this maintenance work, you use SP5-846-050 through 052. The table illustrates an overview of the functions of these SPs.

SP	Function	Remarks
SP5-846-050 (Clear Directory Information)	Initializes the directory information in the machine memory.	Use this SP before copying the information from the SD card to the machine memory.
SP5-846-051 (Upload Directory Information)	Copies the directory information from machine memory to the SD card.	☛ 3.6.3
SP5-846-052 (Download Directory Information)	Copies the directory information from the SD card to machine memory.	☛ 3.6.3
SP5-846-053 (Clear Upload Information)	Initializes the directory information in the SD card.	Use this SP to delete the information from your SD card.

NOTE: The SP name displayed on the operation panel may be abbreviated.

Folder and File Format

SP5-846-051 makes the folder "usrdb" in the SD card. The SP saves the directory information in this folder. This folder contains another folder that saves the directory information. The directory information is converted into the CSV format. This machine needs 150-KB free space in an SD card.

NOTE: For initializing SD cards, see 3.6.2.

3.6.2 REQUIREMENTS

1. SD card: You need an SD card provided by a proper supplier.
2. SD card drive: You need a computer with an SD card drive.
3. Windows: You need a computer running Windows to see the free space of your SD card or to copy the data from your SD card to the hard disk of a computer.
4. Application program supporting the CSV format: You need an application program that supports the CSV format to view the directory information on a computer.
5. SD Formatter: You need the following application program to initialize an SD card:

SD Formatter Ver. 1.1

You can download this application program from the following Web site:

http://panasonic.jp/support/audio/sd/download/sd_formatter.html.

NOTE: You do not have to initialize your SD card as long as the format of the SD card is not corrupted (➡ 3.6.7). Your SD card is already formatted when you get it from a proper supplier.

3.6.3 LIMITATION

Overview

SP5-846-051 and 052 may not be able to copy some or all of the directory information. This limitation is brought by the following settings:

- SP5-846-003 (Maximum Entries): This is one of the SPs related to the management of the directory information. This SP increases the maximum entry number of the information.
- Group: This is supplemental information on recipients. The user can register this information to simplify their manual operation (☛ Operating Instructions).

SP5-846-003 (Maximum Entries)

The table below illustrates how SP5-846-003 affects SP5-846-051 and 052.

SP5-846-003 (Maximum Entries)	Smaller than default	Default (150)	Greater than default
SP5-846-051 (Upload Directory Information)	Can copy all	Can copy all	Can copy none*
SP5-846-052 (Download Directory Information)	Can copy all	Can copy all	Can copy all

* An error message is displayed when you try to copy the directory information from machine memory to an SD card.

Group

The table below illustrates how Group affects SP5-846-051 and 052. Note that SP5-846-051 cannot copy any data when SP5-846-003 has increased the maximum number of entries (see the table above).

	Group not registered	Group registered
SP5-846-051 (Upload Directory Information)	Can copy 150 entries	Can copy 149 entries
SP5-846-052 (Download Directory Information)	Can copy 150 entries	Can copy 149 entries

3.6.4 UPLOADING DIRECTORY INFORMATION

1. Check that the SD card has enough free space. The SD card needs to have 150-KB free space to store the directory information of this machine.
2. Inform the user that:
You are going to copy the directory information to the SD card.
You delete those data from the SD card after the maintenance work.
3. Start the SP mode.
4. Select SP5-846-003 (Maximum Entries).
5. Check that the maximum entries are not increased (☛ 3.6.3). If the maximum number of entries is increased, return it to the default.
6. Quit the SP mode.
7. Press the power key on the operation panel.
8. Wait until the power LED turns off.
9. Turn off the main power switch.
10. Insert the SD card in the service slot.
11. Turn on the main power switch.
12. Start the SP mode.
13. Select SP5-846-051 (Upload Directory Information).
14. Follow the instructions on the operation panel.
15. Quit the SP mode.
16. Press the power key on the operation panel.
17. Wait until the power LED turns off.
18. Turn off the main power switch.
19. Remove the SD card.

3.6.5 COPYING DIRECTORY INFORMATION TO COMPUTER

CAUTION: Use extreme caution when handling the directory information. The directory information can include confidential data.

You can copy the directory information from the SD card to a computer hard disk. You need a computer that runs Windows to copy the information. You need an application program that supports the CSV format to view the information on a computer.

1. Load the SD card into the SD card drive.
2. Start Explorer on Windows.
3. Navigate to the SD card.
4. Find the directory information file. The directory information file is in the folder "usrdb" (➡ 3.6.1).
5. Drag the directory information file to a folder. Or use the Copy command and the Paste command in the Edit menu of Explorer.
6. Open the copied file by an application program that supports the CSV format.
7. Check that the data is not corrupted.
8. Remove the SD card from the SD card drive.
9. Delete the directory information from the SD card (➡ 3.6.6).

3.6.6 DOWNLOADING DIRECTORY INFORMATION

When the user is going to keep the SD card, you do not need to delete the directory information from the SD card (SP5-846-053). When you are going to copy the directory information to the hard disk of the user's computer, see 3.6.5.

1. Start the SP mode.
2. Select SP5-846-050 (Clear Directory Information).
NOTE: SP5-846-050 initializes the directory information in machine memory. Normal operations are not guaranteed if you copy the directory information from the SD card to machine memory without initializing the directory information in machine memory.
3. Follow the instructions on the operation panel.
4. Quit the SP mode.
5. View the address book to check that the directory information is normally initialized.
NOTE: You can view the address book by the following menu:  > System Settings > Key Operator Tools > Address Book: Print List. For details, see Operating Instructions.
6. Press the power key on the operation panel.
7. Wait until the power LED turns off.
8. Turn off the main power switch.
9. Insert the SD card in to service slot.
10. Turn on the main power switch.
11. Start the SP mode.
12. Select SP5-846-052 (Download Directory Information).
13. Follow the instructions on the operation panel.
14. Quit the SP mode.
15. View the address book to check that the directory information is normally copied.
16. Start the SP mode.
17. Select SP5-846-053 (Clear Upload Information).
18. Follow the instructions on the operation panel.
19. Quit the SP mode.
20. Press the power key on the operation panel.
21. Turn off the main power switch.
22. Remove the SD card.

3.6.7 POSSIBLE ERROR

Some Examples

An error message is displayed under any of the following conditions:

- SP5-846-003 has increased the maximum entry number of the directory information (☛ 3.6.3).
- The SD card has insufficient free space (☛ 3.6.4).
- The directory information contains extraordinarily long data such as extraordinarily long mail addresses and fax numbers.
- The SD card is write-protected.
- Correct data is not found in the SD card.

Incomplete Download

An error message is displayed when SP5-846-052 (Download Directory Information) fails to copy some of the entries from the SD card to machine memory. In a case like this, other entries may be successfully copied to machine memory. The data of such entries can make machine operations unstable. Use SP5-846-050 (Clear Directory Information) to initialize machine memory, and copy the directory information from the SD card to machine memory once again.

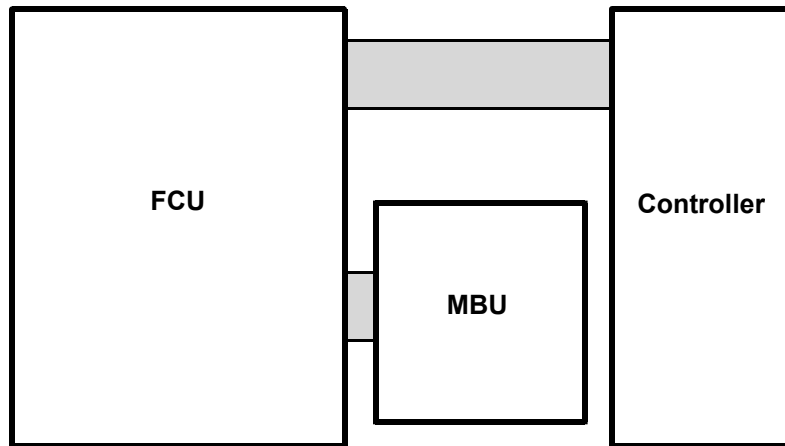
SC Code

The table lists the SC codes related to this maintenance work.

	Possible Cause	Remarks
SC866	The format in the SD card is corrupted.	Use SD Formatter (☛ 3.6.2) to initialize the SD card.
SC867	The SD card is removed from the card slot, or the card is not correctly inserted.	Before inserting the SD card, ① press the power key, ② wait until the power LED turns off, and ③ turn off the main power switch.
SC868	The format in the SD card is corrupted.	Use SD Formatter (☛ 3.6.2) to initialize the SD card.
SC870	SP5-846-052 has copied too many entries to machine memory.	This SC code is displayed when the user tries to register a new destination.
SC991	SP5-846-052 has copied too many entries to machine memory.	This SC code is displayed when the user tries to register a new destination.

4. DETAILED SECTION DESCRIPTIONS

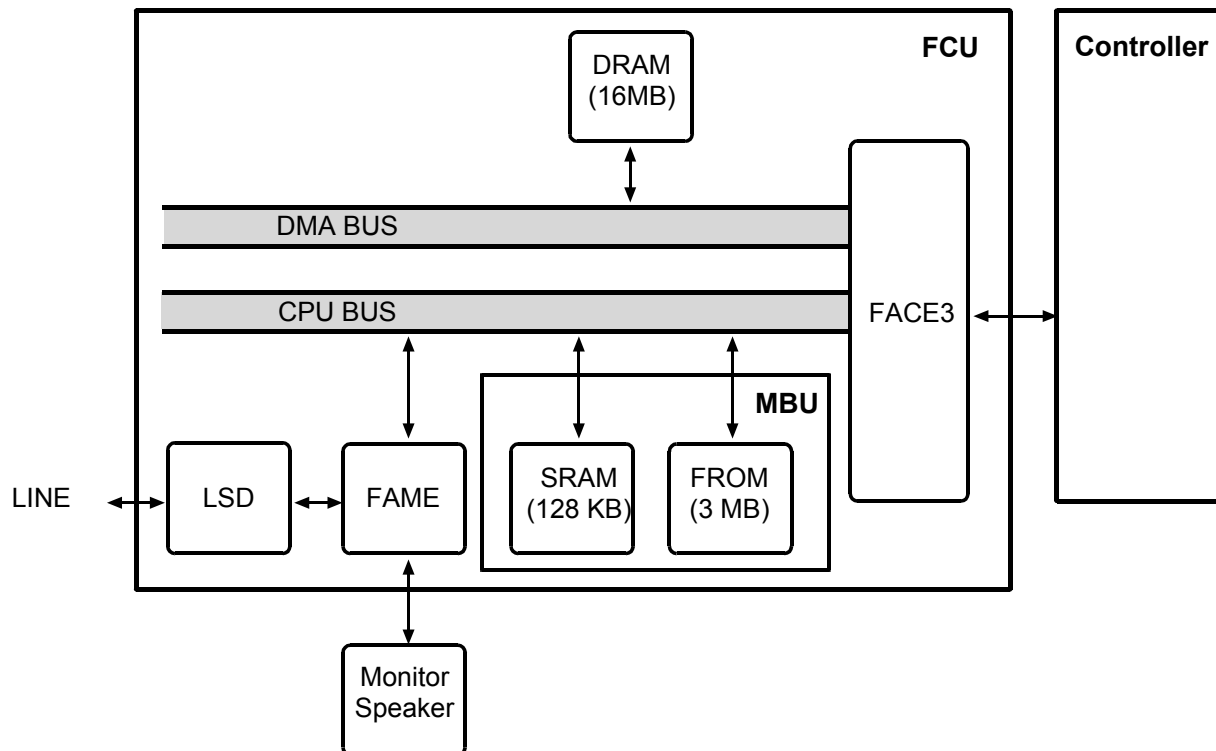
4.1 OVERVIEW



The fax unit consists of two PCBs: the FCU and the MBU. The FCU controls all the fax communications and fax features in cooperation with the controller. The MBU contains the ROM and SRAM.

4.2 BOARDS

4.2.1 FCU



The FCU (Fax Control Unit) controls the fax communications, the video interface (with the copier BICU), and the fax option.

FACE3 (Fax Application Control Engine):

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection

FAME (Ricoh Modem):

- V.34, V.33, V.17, V.29, V.27ter, V.21, and V.8

LSD (Line Side Device):

- Data transfer
- Line control

BOARDS

DRAM:

- The 8 MB of DRAM is shared as follows.
SAF memory : 2 MB
Working memory : 3 MB
Page memory : 3 MB

Memory back-up:

- A rechargeable battery backs up the SAF memory (DRAM) for one hour.

4.2.2 MBU

The flash ROM stores FCU firmware; the SRAM stores the system data and user parameters. Since the system data and user parameters are stored on the MBU, they are not changed if you replace the FCU.

ROM:

- 3MB flash ROMs for system software storage
2MB (16bit x 1MB) + 1MB (16bit x 512K)

SRAM:

- The 128 KB SRAM for system and user parameter storage is backed up by a lithium battery.

Memory back-up:

- A lithium battery backs up the system parameters and programmed items in the SRAM, in case the base copier's main switch is turned off.

Switches:

Item	Description
CN1	Switches the SRAM backup battery on or off.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Type:	Desktop type transceiver
Circuit:	PSTN PBX
Connection:	Direct couple
Original Size:	Book (Face down) Maximum Length: 297 mm [11.7 inch] Maximum Width: 216 mm [8.5 inch] ADF (Face up) Length: 128 - 1200 mm [5.0 - 47.2 inch] Width: 105 - 297 mm [4.1 - 11.7 inch]
Scanning Method:	Flat bed, with CCD
Resolution:	G3 8 x 3.85 lines/mm (Standard) 8 x 7.7 lines/mm (Detail) 8 x 15.4 line/mm (Fine) 200 x 100 dpi (Standard) 200 x 200 dpi (Detail) 200 x 400 dpi (Fine)
Transmission Time:	G3: 3 s at 28,800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution
Data Compression:	MH, MR, MMR, JBIG
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:	G3: 33600/31200/28800/26400/24000/21600/ 19200/16800/14400/12000/9600/7200/4800/2400 bps Automatic fallback
I/O Rate:	With ECM: 0 ms/line Without ECM: 2.5, 5, 10, 20, or 40 ms/line
Memory Capacity:	ECM: 128 KB SAF: 2 MB Page Memory: 3 MB (Print: 2 MB + Scanner: 1 MB)

SPECIFICATIONS

2. CAPABILITIES OF PROGRAMMABLE ITEMS

The following table shows how the capabilities of each programmable item will change after the optional Fax Function Upgrade Unit is installed.

Item	
Quick Dial	16
Groups	10
Destination per Group	150
Destinations dialed from the ten-key pad overall	100
Communication records for Journal stored in the memory	200

3. MACHINE CONFIGURATION

Item	Machine Code	Remarks
Fax	—	
Handset	B433	U.S. only

IFAX
(B130 ONLY)

IFAX

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1. INSTALLATION

1.1 REQUIREMENT

IFAX requires both of the following units:

- Fax unit
- Printer/Scanner unit

You cannot use the IFAX on the basic model (B129). When you use the IFAX on the copier/fax model (B168), install the optional printer/scanner unit (B683). For the installation procedure, see the B129/B130/B168/B169 service manual.

1.2 INITIAL SETTINGS

Specifying Information

For the initial settings, see the Operating Instructions. Make sure that the following information is registered on the mail server:

- IP address
- Host name
- Mail account and the password

The initial settings include confidential information such as login passwords and IP addresses. You should ask the user to input such confidential information. If the user wants you to input such information, keep the information secret.

Enabling IFAX

To enable the IFAX, select "On" in the Internet Fax menu:  > Fax Features > E-Mail Settings > Internet Fax Settings > Internet Fax

2. TROUBLESHOOTING

2.1 ERROR CODES FOR LAN COMMUNICATION

When a communication error occurs, retry to establish the communication. If the error recurs, see the table below and solve the problem.

Code	Meaning	Cause	Action
14-00	SMTP Send Error	Error occurred during sending to the SMTP server. Occurs for any error other than 14-01 to 16. For example, the mail address of the system administrator is not registered.	- Register the address of the system administrator. - Set the User Parameter Switch 21 (15[H]) Bit 4 to "Off".
14-01	SMTP Connection Failed	Failed to connect to the SMTP server (timeout) because the server could not be found. - The IP address for the SMTP server is not stored in the machine. - The DNS IP address is not registered. - Network not operating correctly.	- Check the IP address of the SMTP/DNS server. - Check the traffic on the LAN. - Check the machine settings such as the SMTP port setting, DNS server setting, and so on.
14-02	No Service by SMTP Service (421)	SMTP server operating incorrectly.	Contact the network administrator. Confirm correct SMTP server settings and operation.
14-03	Access to SMTP Server Denied (450)	SMTP server operating incorrectly	Contact the network administrator. Confirm correct SMTP server settings and operation.
14-04	Access to SMTP Server Denied (550)	SMTP server operating incorrectly	Contact the network administrator. Confirm correct SMTP server settings and operation.
14-05	SMTP Server HDD Full (452)	SMTP Server hard disk full.	Contact the network administrator. Free space on the HDD of the SMTP server.
14-06	User Not Found on SMTP Server (551)	The user does not exist locally.	- Check that the mail address is correct. - Contact the network administrator. Check that the e-mail the user intended to send exists on the SMTP server.
14-07	Data Send to SMTP Server Failed (4XX)	SMTP server operating incorrectly	Contact the network administrator. Confirm correct SMTP server settings and operation.
14-08	Data Send to SMTP Server Failed (5XX)	SMTP server operating incorrectly	Contact the network administrator. Confirm correct SMTP server settings and operation.

ERROR CODES FOR LAN COMMUNICATION

Code	Meaning	Cause	Action
14-09	Authorization Failed for Sending to SMTP Server	POP-Before-SMTP or SMTP authorization failed.	POP-Before-SMTP: • Check the IFAX user name and password. • Check that POP server is set correctly. • Check the SMTP server settings. SMTP Authorization: • Check the SMTP server user name and password. • Check the encryption settings. • Check the SMTP server settings.
14-10	Addresses Exceeded	Number of broadcast addresses exceeded the limit for the SMTP server.	The maximum number of addresses depends on the SMTP server.
14-11	Buffer Full	The send buffer is full so the transmission could not be completed. Buffer is full due to using Scan-to-Email while the buffer is being used send mail at the same time.	No action required. The transmission will be recalled and sent as soon as buffer space is available.
14-12	Data Size Too Large	Transmission was cancelled because the detected size of the file was too large.	• Divide the original into sections and send as separate files. • Use G3 to send the original. • Reduce the TX mail size.
14-13	Send Cancelled	Processing is interrupted because the user pressed Stop.	No action required.
14-30	MCS File Creation Failed	Failed to create the MCS file because: • The number of files created with other applications on the Document Server has exceeded the limit. • HDD is full or not operating correctly. • Software error.	• Delete unneeded files from the Document Server. • Initialize the HDD. • If initialization fails to correct the problem, replace the HDD. • Update the software.
14-31	UFS File Creation Failed	UFS file could not be created: • Not enough space in UFS area to handle both Scan-to-Email and IFAX transmission. • HDD full or not operating correctly. • Software error.	No action required. Once the job currently using the UFS area is finished sufficient space will become available. If this does not solve the problem: • Initialize the HDD. • If initialization fails to correct the problem, replace the HDD. • Update the software.
14-32	Cancelled the Mail Due to Error Detected by NFAX	Error detected with NFAX and send was cancelled due to a software error.	Update the software.
14-33	No Mail Address For the Machine	Neither the mail address of the machine nor the mail address of the network administrator is registered.	Contact the network administrator. Check that these e-mail addresses are registered correctly.
14-50	Mail Job Task Error	Due to an FCU mail job task error, the send was cancelled: • Address book was being edited during creation of the notification mail. • Software error.	No action required. If the problem persists, update the firmware.

ERROR CODES FOR LAN COMMUNICATION

Code	Meaning	Cause	Action
14-51	UCS Destination Download Error	Not even one return notification can be downloaded: - The address book was being edited. - The number for the specified destination does not exist (it was deleted or edited after the job was created).	Check the address in the address book.
14-60	Send Cancel Failed	The cancel operation by the user failed to cancel the send operation.	No action required.
14-61	Notification Mail Send Failed for All Destinations	All addresses for return notification mail failed.	- Correct the mail address for the PC. - Contact the network administrator. Check the other error codes to determine if other errors occur at the same time.
15-01	POP3/IMAP4 Server Not Registered	At startup, the system detected that the IP address of the POP3/IMAP4 server has not been registered in the machine.	Register the name of the POP3/IMAP4 server.
15-02	POP3/IMAP4 Mail Account Information Not Registered	The POP3/IMAP4 mail account has not been registered.	Register the e-mail account, user name, and password.
15-03	Mail Address Not Registered	The mail address has not been registered.	Register the e-mail account and e-mail address.
15-10	DCS Mail Receive Error	Error other than 15-11 to 15-18.	Update the firmware, update the server software.
15-11	Connection Error	The DNS or POP3/IMAP4 server could not be found: - The IP address for DNS or POP3/IMAP4 server is not stored in the machine. - The DNS IP address is not registered. - Network not operating correctly.	Contact the network administrator. - Check that the DNS address is correct. - Check that the POP3/IMAP4 IP addresses are correct. - Confirm correct operation of the network.
15-12	Authorization Error	POP3/IMAP4 send authorization failed: - Incorrect IFAX user name or password. - Access was attempted by another device, such as the PC. - POP3/IMAP4 settings incorrect.	Contact the network administrator: - Check that the IFAX user name and password are correct. - Determine whether another device of the same account attempted access at same time. - Check that the POP/IMAP4 settings are correct.
15-13	Receive Buffer Full	Occurs only during manual reception. Transmission cannot be received due to insufficient buffer space. The buffer is being used for mail send or Scan-to-Email.	No action required. The next transmission can be received as soon as the other application releases the buffer area.
15-14	Mail Header Format Error	The mail header is not standard format. For example, the Date line description is incorrect.	Advise the sender to send e-mails in the standard format.
15-15	Mail Divide Error	The e-mail is not in standard format. There is no boundary between parts of the e-mail, including the header.	Advise the sender to send e-mails in the standard format.

ERROR CODES FOR LAN COMMUNICATION

Code	Meaning	Cause	Action
15-16	Mail Size Receive Error	The mail cannot be received because it is too large.	• Increase the setting that limits the size of e-mail that can be received (in the User Tools> System Settings> File Transfer menu). • Ask the sender to break the e-mail into smaller parts and send them separately.
15-17	Receive Timeout	May occur during manual receiving only because the network is not operating correctly.	Contact the network administrator and check that the network is operating correctly.
15-18	Incomplete Mail Received	Only one portion of the mail was received.	Ask the sender to send as one transmission.
15-31	Final Destination for Transfer Request Reception Format Error	The format of the final destination for the transfer request was incorrect.	Ask the sender to check the final destination.
15-39	Send/Delivery Destination Error	The transmission cannot be delivered to the final destination: • Destination file format is incorrect. • Could not create the destination for the file transmission.	• Delete the destination file to enable receiving. • Ask the sender to check the transfer destination and final destination.
15-41	SMTP Receive Error	Reception rejected because the transaction exceeded the limit for the "Auth. E-mail RX" setting.	• Check the content of the "From" entry in the mail header. • Check the "Auth. E-mail RX" setting.
15-42	Off Ramp Gateway Error	The delivery destination address was specified with Off Ramp Gateway OFF.	• Enable the Off Ramp Gateway function. • Ask the sender not to specify the Off Ramp Gateway address.
15-43	Address Format Error	Format error in the address of the Off Ramp Gateway.	Ask the sender to check the mail destination.
15-44	Addresses Over	The number of addresses for the Off Ramp Gateway exceeded the limit of 30.	Ask the sender to check the mail destination.
15-61	Attachment File Format Error	The attached file is not TIFF format.	Try to check the format of the sent mail, then ask the user to use TIFF format.
15-62	TIFF File Compatibility Error	Could not receive transmission due to: - Resolution error • Image of resolution greater than 200 dpi without extended memory. • Resolution is not supported. - Page size error • The page size was larger than A3. - Compression error • File was compressed with other than MH, MR, or MMR.	Ask the sender to check the following: • File was sent in TIFF format. • Compatibility of the resolution setting. • Size of the page. • Method used to compress the file.
15-63	TIFF Parameter Error	The TIFF file sent as the attachment could not be received because the TIFF header is incorrect: • The TIFF file attachment is a type not supported. • The TIFF file attachment is corrupted. • Software error.	• Ask the sender to check that the attachment was sent in correct TIFF format. • If the problem persists, update the software.

ERROR CODES FOR LAN COMMUNICATION

Code	Meaning	Cause	Action
15-64	TIFF Decompression Error	The file received as an attachment caused the TIFF decompression error: - The TIFF format of the attachment is corrupted. - Software error.	- Ask the sender to check that the attachment was sent in correct TIFF format. - If the problem persists, update the software.
15-71	Not Binary Image Data	The file could not be received because the attachment was not binary image data.	Ask the sender to check the content of the attachment.
15-73	MDN Status Error	Could not find the Disposition line in the header of the Return Receipt, or there is a problem with the firmware.	Ask the sender to resend the mail. If the problem persists, update the firmware.
15-74	MDN Message ID Error	Could not find the Original Message ID line in the header of the Return Receipt, or there is a problem with the firmware.	Ask the sender to resend the mail. If the problem persists, update the firmware.
15-80	Mail Job Task Read Error	Could not receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).	No action required. When destinations are used and a space opens in the buffer, the transmission will be received.
15-81	Repeated Destination Registration Error	Could not repeat receive the transmission because the destination buffer is full and the destination could not be created (this error may occur when receiving a transfer request or a request for notification of reception).	No action required. When destinations are used and a space opens in the buffer, the transmission will be received.
15-91	Send Registration Error	Could not receive the file for transfer to the final destination: - The format of the final destination or the transfer destination is incorrect. - Destinations are full so the final and transfer destinations could not be created.	- As the send to check both the transfer destination and the final destination. - When destinations open, the transmission will be received.
15-92	Memory Overflow	Transmission could not be received because memory overflowed during the transaction.	- Expand SAF memory. - Ask the sender to break up the file and send the parts separately.
15-93	Memory Access Error	Transaction could not complete due to a malfunction of SAF memory.	Initialize memory. If the problem persists, replace the MBU.
15-94	Incorrect ID Code	The machine rejected an incoming e-mail for transfer request, because the ID code in the incoming e-mail did not match the ID code registered in the machine.	Ask the sender to correct the ID code.
15-95	Transfer Station Function	The machine rejected an incoming e-mail for transfer because the transfer function was unavailable.	Inform the transfer requester that this machine does not support the transfer station function.

2.2 TROUBLESHOOTING PROCEDURES

The table lists the procedures for isolating the cause.

Communication Route	Item	Action	Remarks
General LAN	1. Connection with the LAN	- Check that the LAN cable is connected to the machine. - Check that the LEDs on the hub are lit.	
	2. LAN activity	Check that other devices connected to the LAN can communicate through the LAN.	
Between IFAX and PC	1. Network settings on the PC	Check the network settings on the PC.	Is the IP address registered in the TCP/IP properties in the network setup correct? Check the IP address with the administrator of the network.
	2. Check that PC can connect with the machine	Use the "ping" command on the PC to contact the machine.	At the MS-DOS prompt, type ping then the IP address of the machine, then press Enter.
	3. LAN settings in the machine	- Check the LAN parameters - Check if there is an IP address conflict with other PCs.	- Use the "Network" function in the User Tools. - If there is an IP address conflict, inform the administrator.
Between machine and e-mail server	1. LAN settings in the machine	- Check the LAN parameters - Check if there is an IP address conflict with other PCs.	- Use the "Network" function in the User Tools. - If there is an IP address conflict, inform the administrator.
	2. E-mail account on the server	- Make sure that the machine can log into the e-mail server. - Check that the account and password stored in the server are the same as in the machine.	Ask the administrator to check.
Between machine and e-mail server	3. E-mail server	Make sure that the client devices which have an account in the server can send/receive e-mail.	- Ask the administrator to check. - Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.

TROUBLESHOOTING PROCEDURES

Communication Route	Item	Action	Remarks
Between e-mail server and internet	4. E-mail account on the Server	• Make sure that the PC can log into the e-mail server. • Check that the account and password stored in the server are the same as in the machine.	• Ask the administrator to check.
	5. E-mail server	• Make sure that the client devices which have an account in the server can send/receive e-mail.	• Ask the administrator to check. • Send a test e-mail with the machine's own number as the destination. The machine receives the returned e-mail if the communication is performed successfully.
	6. Destination e-mail address	Make sure that the e-mail address is actually used. Check that the e-mail address contains no incorrect characters such as spaces.	
	7. Router settings	Use the "ping" command to contact the router. Check that other devices connected to the router can send data over the router.	• Ask the administrator of the server to check.
Between e-mail server and internet	1. Error message by e-mail from the network of the destination.	• Check whether e-mail can be sent to another address on the same network, using the application e-mail software. • Check the error e-mail message.	• Inform the administrator of the LAN.

3. SERVICE TABLES AND PROCEDURES

3.1 ACCESSING IFAX SWITCH

 **IMPORTANT**

Do not let the user have an access to the service program mode (SP mode). Only service representatives are allowed to use the SP mode. Should the user have an access to the SP mode, the normal operation of the machine is NOT guaranteed any more.

- 1. Press the  key.
- 2. Press the following keys in the following order: ①⑦②
- 3. Press the  key and hold it down until the SP mode menu is displayed (for about 3 seconds).
- 4. Press the ② key.
- 5. Select an IFAX switch (SP1-102-001 ~16).

3.2 IFAX SWITCH

 **CAUTION**

Do not change the settings marked with the key "Not used," "DFU," or "Japan Only." Changing these settings may cause malfunctions and/or may violate local regulations.

NOTE: For the default settings of the bit switches, see the System Parameter List (➡ SP6-101-001).

SP	IFAX SW 00 - Not used (Do not change the settings.)

IFAX SWITCH

SP	IFAX SW														
1102 2	01														
	Bits 0~ 6: Original Line Resolution of TX Attachment File														
	This setting sets the maximum resolution of the original that the destination can receive. 0: Not selected 1: Selected Note: If more than one of these three bits is set to “1”, the higher resolution has priority. For example, if both Bit 3 and Bit 2 are set to “1” then the resolution is set for “300 x 300” (Bit 3).														
	<table><tr><th>Bit 6</th><th>Bit 5</th><th>Bit 4</th><th>Bit 3</th><th>Bit 2</th><th>Bit 1</th><th>Bit 0</th></tr><tr><td>Reserved</td><td>Reserved</td><td>400 x 400 Super Fine</td><td>Reserved</td><td>200x400 Fine</td><td>200x200 Detail</td><td>200x100 Standard</td></tr></table>	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Reserved	Reserved	400 x 400 Super Fine	Reserved	200x400 Fine	200x200 Detail	200x100 Standard
	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0								
	Reserved	Reserved	400 x 400 Super Fine	Reserved	200x400 Fine	200x200 Detail	200x100 Standard								
	When mail is sent, there is no negotiation with the receiving machine at the destination, so the sending machine cannot make a selection for the receiving capabilities (resolution setting) of the receiving machine. The resolution selected with this switch is used as the RX machine’s resolution setting, and the original resolution is converted before sending. The default is both 200 x 100 and 200 x 200 are selected. If the resolution set with this switch is higher than the receiving fax can accept, the machine detects this and this causes an error.														
	Bit 7: mm/inch														
	This setting selects mm/inch conversion for mail transmission. 0: Off (No conversion) 1: On (Conversion) When on (set to “1”), the machine converts millimeters to inches for sending mail. There is no switch for converting inches to millimeters. Note: Unlike G3 fax transmissions which can negotiate between sender and receiver to determine the setting, mail cannot negotiate between terminals; the mm/inch selection is determined by the sender fax. Only two choices are available for transmission: inch statements and inch images, or inch statements and mm images. When this switch is Off (0): • Images scanned in inches are sent in inches. • Images scanned in mm are sent in mm. • Images received in inches are transmitted in inches. • Images received in mm are transmitted in mm. When this switch is On (1): • Images scanned in inches are sent in inches. • <i>Images scanned in mm are converted to inches.</i> • <i>Images received in inches are transmitted in inches.</i> • <i>Images received in mm are converted to inches.</i>														

SP	IFAX SW
1102 3	02
	Bit 0: RX Text Mail Header Processing
	This setting determines whether the header information is printed with text e-mails when they are received. 0: Prints only text mail. 1: Prints mail header information attached to text mail. - When a text mail is received with this switch On (1), the "From" address and "Subject" address are printed as header information. - When a mail with only binary data is received (a TIFF-F file, for example), this setting is ignored and no header is printed.
	Bit 1: Output from Attached Document at E-mail TX Error
	This setting determines whether only the first page or all pages of an e-mail attachment are printed at the sending station when a transmission error occurs. This allows the customer to see which documents have not reached their intended destinations if sent to the wrong e-mail addresses, for example. 0: Prints 1st page only. 1: Prints all pages.
	Bits 2~3: Text String for Return Receipt
	This setting determines the text string output for the Return Receipt that confirms the transmission was received normally at the destination. 00: "Dispatched" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "dispatched" in the 2nd part: Disposition: Automatic-action/MDN-send automatically; <u>dispatched</u> The "dispatched" string is included in the Subject string. 01: "Displayed" Sends from PC mail a request for a Return Receipt. Receives the Return Receipt with "displayed" in the 2nd part: Disposition: Automatic-action/MDN-send automatically; <u>displayed</u> The "displayed" string is included in the Subject string. 10: Reserved 11: Reserved Note: A mail requesting a Return Receipt sent from an IFAX with this switch set to "00" (for "dispatched") received by Microsoft Outlook 2000 may cause an error. If any setting other than "displayed" (01) causes a problem, change the setting to "01" to enable normal sending of the Return Receipt.
	Bits 4: Media Accept Feature
	The switch determines whether the Media Accept Features field is added to the receipt notification (● 4.5.4). 0: Does not add the field 1: Adds the field Do not add this field to the receipt notification if the remote machine causes an error when receiving the Media Accept Features field.
	Bits 5~6: Not used
	Bit 7: Image Resolution of RX Text Mail
	This setting determines the image resolution of the received mail. 0: 200 x 200 1: 400 x 400 Note: The "1" setting requires installation of the Function Upgrade Card in order to have enough SAF (Store and Forward) memory to receive images at 400 x 400 resolution.

IFAX SWITCH

SP	IFAX SW
1102 4	03
	Not used

SP	IFAX SW
1102 5	04
	Bit 0: Subject for Delivery TX/Memory Transfer This setting determines whether the RTI/CSI registered on this machine or the RTI/CSI of the originator is used in the subject lines of transferred documents. 0: Puts the RTI/CSI of the originator in the Subject line. If this is used, either the RTI or CSI is used. Only one of these can be received for use in the subject line. 1: Puts the RTI/CSI registered on this machine in the Subject line. When this switch is used to transfer and deliver mail to a PC, the information in the Subject line that indicates where the transmission originated can be used to determine automatically the destination folder for each e-mail.
	Bits 1: Subject for main-post DB Japan Only 0: Ordinary subject 1: Subject for mail-post DB The IFAX machine attaches the subject for mail-post DB to the facsimile message under some conditions.
	Bits 2~7: Not used

SP	IFAX SW
1102 6	05
	Bit 0: Mail Addresses of SMTP Broadcast Recipients Determines whether the e-mail addresses of the destinations that receive transmissions broadcasted using SMTP protocol are recorded in the Journal. For example: '1st destination + Total number of destinations: 9' in the Journal indicates a broadcast to 9 destinations. 0: Not recorded 1: Recorded
	Bits 1~7: Not used

SP	IFAX SW
1102 7	06
	Not used

SP	IFAX SW
1102 8	07
	Not used

SP	IFAX SW
1102 9	08
	Bits 0~7: Memory Threshold for POP Mail Reception
	This setting determines the amount of SAF (Store and Forward) memory. (SAF stores fax messages to send later for transmission to more than one location, and also holds incoming messages if they cannot be printed.) When the amount of SAF memory available falls below this setting, mail can no longer be received; received mail is then stored on the mail server. 00-FF (0 to 1024 KB: HEX) Note: The hexadecimal number you enter is multiplied by 4 KB to determine the amount of memory.

SP	IFAX SW
1102 10	09
	Bits 0~3: Not used
	Bits 4~7: Restrict TX Retries
	This setting determines the number of retries when connection and transmission fails due to errors. 01-F (1-15 Hex)

SP	IFAX SW
1102 11	0A
	Not used.

SP	IFAX SW
1102 12	0B
	Not used.

SP	IFAX SW
1102 13	0C
	Not used.

SP	IFAX SW
1102 14	0D
	Not used

SP	IFAX SW
1102 15	0E
	Not used

FIRMWARE UPDATE PROCEDURE

SP	IFAX SW
1102 16	0F
	Bit 0: Delivery Method for SMTP RX Files
	This setting determines whether files received with SMTP protocol are delivered or output immediately. 0: Off. Files received via SMTP are output immediately without delivery. 1: On. Files received via SMTP are delivered immediately to their destinations.
	Bits 1~7: Not used

3.3 FIRMWARE UPDATE PROCEDURE

See the copier service manual.

3.4 IFAX RAM ADDRESS

Parameter	Function	Data Format	Address	Comments
Mail Address	Mail address of the fax account.	ASC: 128 bytes	69FEAE	128 x 3 area provided, but only the first is used.
User Name	User name of the fax account.	ASC: 64 bytes	6A002E	64 x 3 area provided, but only the first is used.
Password	Password of the fax account.	ASC: 64 bytes	6A00EE	64 x 3 area provided, but only the first is used.
RX Mail Capacity	---	4 Bytes	6A01AE	64-1024 Kbytes
SMTP RX Permission Address	Address or partial address that is used to limit access to mail delivery (see pg. 4-11, "Auth E-Mail Rx").	ASC: 128 bytes	6A01B2	
Doc. Svr. RX Notification No	Number of RX Notification Mails that have been sent in order to notify receipt of a fax message on the document server.	2 bytes	6A0232	

4. DETAILED SECTION DESCRIPTIONS

4.1 IFAX

Overview

The Internet fax implemented by Ricoh is called the IFAX. The IFAX enables you to send or receive faxed data over the Internet. The facsimile on the destination must support the Internet fax to receive IFAX data. PCs can also receive IFAX data. When sending IFAX data, you specify the e-mail address of the destination instead of the telephone number. The IFAX facsimile needs to be on the LAN. The Internet fax does not support vocal communication.

Communication Path

The IFAX supports the TCP/IP. The IFAX facsimiles send data based on this protocol on a LAN. The LAN processes the data as e-mail messages. The IFAX facsimile communicates with the mail server on the LAN; it does not directly communicate with the facsimile or PC at the destination.

DNS Service

The IFAX supports the Domain Name System (DNS). The IFAX can use domain names for the SMTP and POP3/IMAP4 servers instead of the IP addresses when the following servers and machines are on the same LAN:

- DNS server
- SMTP server
- POP3/IMAP4 server
- IFAX facsimile

When this condition is not satisfied, the IFAX uses IP addresses recognized by the SMTP server and the POP3/IMAP4 server.

User Interface

Besides the operation panel, the user can use a Web browser to view the information such as settings and status of the IFAX. The IFAX supports the Web Status Monitor.

Scanned images are converted into the TIFF-F images and sent as attachments of an e-mail message. To receive such e-mail messages, PCs require software program that handles a MIME-compliant e-mails. To view the images, PCs require a software program to handle TIFF-F images.

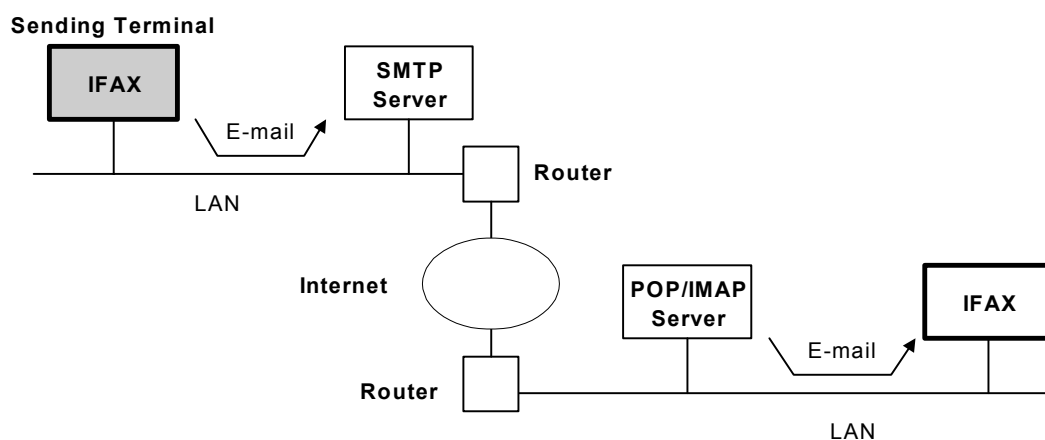
Restriction

The table lists the functions that the IFAX does not support as of present.

Outgoing	Incoming
• Immediate Transmission • JBIG Transmission • Batch Transmission • ECM (Error Correction Mode) • Chain Dial • On Hook Dial • Manual Dial	• Memory Lock Reception • Preventing nuisance fax messages

4.2 MAIL TRANSMISSION

4.2.1 OVERVIEW



Process

The IFAX sends scanned images as e-mails, using the memory transmission. The transmission is based on the Simple Mail Transfer Protocol (SMTP). The IFAX requires an SMTP server on the LAN.

Data Formats

The IFAX convert scanned images into the TIFF-F format (only the MH compression can be used). The table lists the contents of the IFAX data.

Field	Content
From	Mail address of the sender
Reply To	Destination requested for reply
To	Mail address of the destination
Bcc	Backup mail address
Subject	From CSI or RTI (Fax Message No. xxxx)
Content Type	Multipart/mixed Attached files: image/tiff
Content Transfer Encoding	Base 64, 7-bit, 8-bit, Quoted Printable
Message Body	MIME-converted TIFF-F (MIME standards specify how files are attached to e-mail messages)

4.2.2 ERROR HANDLING

When a communication error occurs during communication between the IFAX facsimile and the SMTP server, an error report is sent to the IFAX facsimile. If an error occurs somewhere between the SMTP server and the destination such as on the Internet, no error report may be sent to the IFAX facsimile.

When the IFAX recognizes a communication error, it retries to send data at regular intervals (same as the G3 fax).

NOTE: For errors during reception, see the next section (4.3).

4.2.3 LOGS

The transmission logs are listed in the journal (same as the G3 memory transmissions). The TTI for the mail message includes the key "Mail" at the beginning of a log in the TTI column.

4.2.4 OPTIONAL SETTING

You can specify the following settings:

- Scan resolution: IFAX Switch 01 > Bits 0 through 6
NOTE: You cannot select "Super Fine" (Bit 4). If you set "1" in Bit 4, the IFAX assumes that you have selected "Detail" (Bit 1). If you set "1" both in Bit 4 (Super Fine) and Bit 2 (Fine), the IFAX gives priority to Bit 2 (Fine) (☛ SP1-102-002).
- Unit conversion (mm/inch) for transmission: IFAX Switch 01 > Bit 7
- Original document size, scan width, and memory capacity: Same as the G3 fax memory TX
- Original width: IFAX Switch 00
- Maximum repetition of retrying: IFAX Switch 09

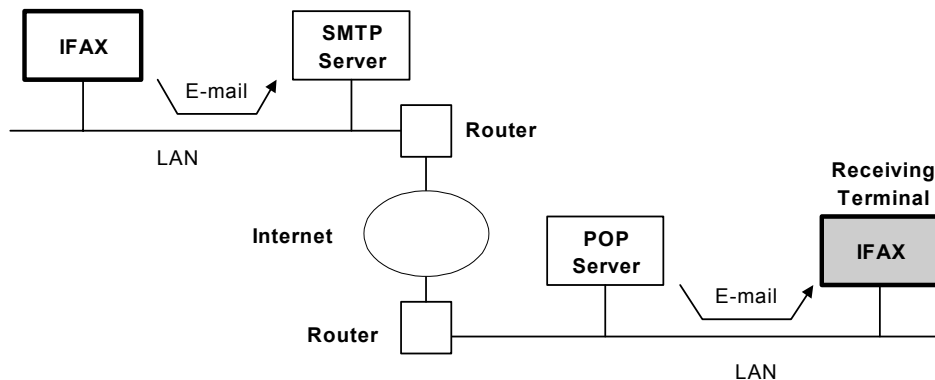
4.2.5 SECURITY

The "SMTP Authentication" and "POP before SMTP" make transmission more secure.

- SMTP Authentication: The user requires proper authentication to access the server. The SMTP Authentication requires the server to support CRAM-MD5, PLAIN, or LOGIN. The SMTP Authentication checks the user name and password registered beforehand. To specify settings, select the following menu:
☛☛ > System Settings > File Transfer > SMTP Authentication
- POP before SMTP: The user must log on to the POP3 sever to send e-mail. Unauthorized users cannot access to the SMTP server. To specify settings, select the following menu:
☛☛ > System Settings > File Transfer > POP before SMTP

4.3 MAIL RECEPTION

4.3.1 OVERVIEW



The IFAX supports the following protocols:

- POP3 (Post Office Protocol Ver. 3.)
- IMAP4 (Internet Messaging Access Protocol)
- SMTP (Simple Mail Transfer Protocol)

4.3.2 POP3/IMAP4

To receive e-mailed data, the IFAX facsimile must satisfy both of the following conditions:

- The POP3/IMAP4 server is on the same LAN.
- The facsimile has a mail account.

The IFAX facsimile fetches e-mailed data from the server at regular intervals specified with the following menu:  > System Settings > File Transfer > E-mail Reception Interval. You can specify an interval from two to 1440 minutes.

If the POP3/IMAP4 server stores several e-mailed data, the IFAX facsimile fetches one e-mailed data at a time in the order of arrival. After fetching e-mailed data, the IFAX facsimile deletes the original data from the POP3 server. As for the IMAP4 server, the IFAX facsimile does not delete the original data from the server after fetching e-mailed data. Note that, however, the server settings can override the IFAX settings.

NOTE: The POP3/IMAP4 servers save the e-mails on their hard disks. These e-mails are not lost when the server is unexpectedly shut down, for example, for power failure. As for the SMTP servers, the e-mails are lost when the server is unexpectedly shut down. In a case like this, the SMTP server sends an error report to the sender, but does not recover e-mails.

4.3.3 SMTP

Overview

When you register the IFAX as an SMTP server in the MX record of the DNS server, e-mailed data is automatically transferred to the IFAX facsimile. The IFAX facsimile does not need to fetch the data. In addition, the SMTP can forward e-mails to specified recipient—this function is known as "delivery".

To use the SMTP, satisfy both of the following conditions:

- The IFAX facsimile is registered with its mail address as an SMTP server in the MX record of the DNS server.
- "SMTP" is selected as the reception protocol:

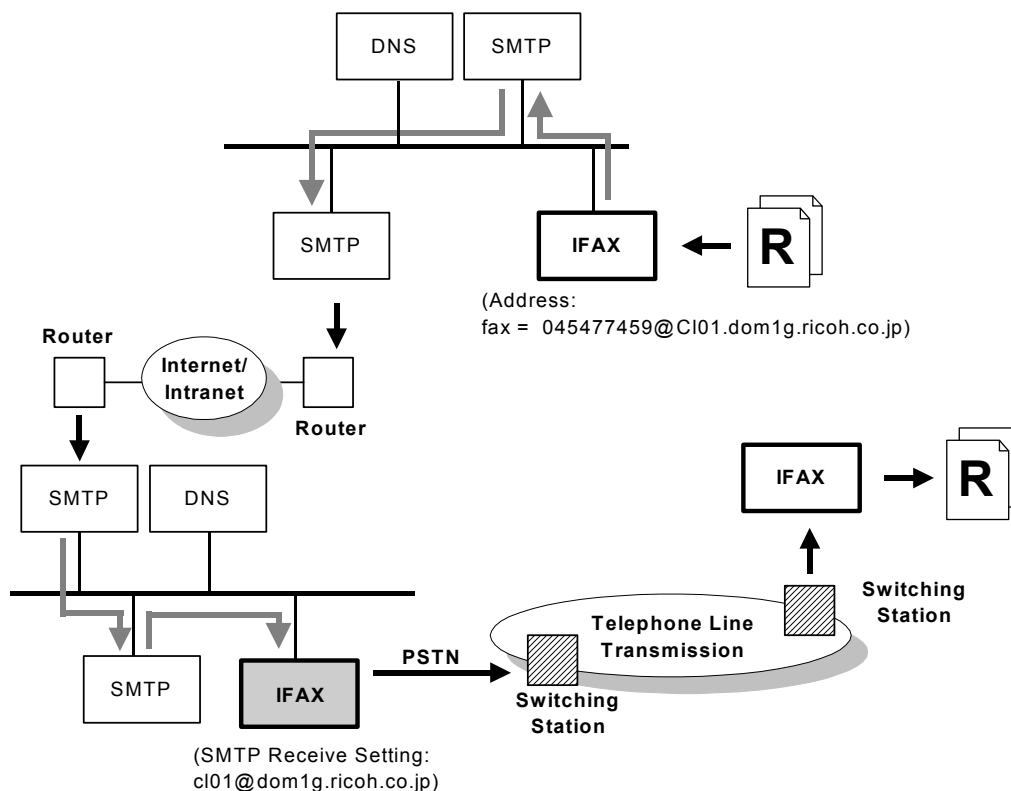
 > System Settings > File Transfer > Reception Protocol

The SMTP gateway handles incoming e-mails, for example, in either of the following environments:

- Only a UNIX server is on the network.
- Lotus Notes is handling e-mails.

Off Ramp Gateway

The Off Ram Gateway is the feature to forward the E-mail received by the SMTP. E-mail is delivered to a G3 facsimile if it contains the following information: fax=delivery_number@ifax_host_name.domain. For example, actual information should be something like: fax=0454778907@cl01.dom1.ricoh.co.jp.



The user specify the mail address in the following format:

1) When dialing using a fax number

fax=<Delivery Destination Fax Number>@<IFAX Host Name>.<Domain Name>

Example:

fax=0454771459@cl01.dom1g.ricoh.co.jp → Delivers to fax number 0454771459

2) When dialing using a Quick dial destination

fax=<# Quick Dial Number>@<IFAX Host Name>.<Domain Name>

Example:

fax=#001@cl01.dom1g.ricoh.co.jp → Delivers to the number registered for Quick Dial key 001.

3) When dialing using a Group destination

fax=<#Group Dial Number>@<IFAX Host Name>.<Domain Name>**

Example:

fax=#**05@cl01.dom1g.ricoh.co.jp → Delivers to numbers registered for Group dial key 05.

NOTE: The "fax=" setting does not distinguish between uppercase and lowercase letters.

IFAX facsimiles must satisfy the following conditions:

1) The IFAX facsimile is set for the SMTP mail delivery:

 > Fax Features > E-mail Settings > SMTP RX File Delivery

2) If the user wants the IFAX facsimile to deliver the mails from designated senders only, specify the "Auth. E-mail Address":

 > Fax Features > E-mail Settings > SMTP RX File Delivery > On.

The IFAX returns an error message under the following conditions:

- The "SMTP RX File Delivery" is "Off."
- There is an e-mail designated for delivery.

You can specify only one destination as a mail address. A Group is taken as one destination. If you incorrectly register the destination as the Quick Dial, Speed Dial, or Group Dial, the e-mail is lost; the IFAX returns an error message to the SMTP server and outputs an error report.

Auth. E-mail RX

To limit the IFAX mail delivery, you can specify a site address (Access Limit Entry). For example, if you specify "@IFAX.ricoh.co.jp", the IFAX delivers an E-mail message only when it has the same address as you specified. You can register one address. The table lists some examples. The table assumes that you have specified "@IFAX.ricoh.co.jp".

Mail Address	Handling
gts@IFAX.ricoh.co.jp	Delivered
gts@IFAX.abcdco.jp	Not delivered
IFAX@ricoh.co.jp	Not delivered

When specifying the Access Limit Entry, the address has 127 characters or less.

If an incoming E-mail message does not have the same address as the Access Limit Entry, the E-mail is discarded and not delivered. The SMTP server returns an error message. In this case, however, no error report is output. When no Access Limit Entry is specified, incoming E-mail is delivered unconditionally.

4.3.4 ERROR HANDLING***SMTP***

With SMTP, in almost all cases the SMTP server sends an error message via E-mail to the sender. When an error occurs with POP3/IMAP4, the receiving terminal sends an error message back to the sender to report the error.

POP3/IMAP4

Errors are handled as follows:

1. The IFAX stops receiving e-mailed data.
2. The message is kept on the server.
3. The error report is output.
4. After a prescribed interval, the IFAX calls the server and retries to receive the data.
5. The incomplete data in the memory of the IFAX facsimile is deleted (if any).

Abnormal files

Abnormal data is handled as follows:

1. The IFAX stops receiving data.
 2. The IFAX requests the server to delete the data.
 3. The IFAX facsimile outputs an error report.
 4. The IFAX sends an error message via e-mail to the sender.
 5. The incomplete data in the memory of the IFAX facsimile is deleted (if any).
- The IFAX facsimile outputs an error report when it fails to send the error message after a certain number of attempts.

The IFAX finds data abnormal, if it detects any of the following:

- Unsupported MIME headers

The table lists supported types.

Header	Supported Types
Content-Type	Multipart/mixed, text/plain, message/rfc822 Image/tiff
Charset	US-ASCII, ISO 8859 X. Other types cannot be handled, and some garbage may appear in the data.
Content-Transfer-Encoding	Base 64, 7-bit, 8-bit, Quoted Printable

- MIME decoding errors
- Any file format other than the TIFF-F format
- Unsupported resolution, document size, or compression type

SAF Capacity Error

The IFAX calls the server but does not fetch e-mailed data if the SAF capacity is insufficient (☛ IFAX Switch 08). The IFAX fetches the data when the SAF capacity becomes sufficient (for example, after substitute reception files are printed). The error handling process is the same as Abnormal Files.

If the SAF memory is exhausted while the IFAX is fetching e-mailed data, this is also handled in the same way as Abnormal File.

4.3.5 PRINTING RECEIVED MAIL

The IFAX facsimile prints e-mailed data as follows:

- The IFAX checks that the data is of the TIFF-F format, and IFAX facsimile prints it out.
- The IFAX checks that there is any text data of the US ASCII code or ISO 8859 X code. If there are any, the IFAX facsimile prints it out. When a text line is longer than the paper width, the excess data is truncated and lost.

4.3.6 MULTI-PART MESSAGES

When a multi-part e-mail message contains several text parts and binary files, the messages are divided and each portion is printed separately. If the IFAX cannot divide them, the IFAX facsimile outputs an error report and sends an error message via e-mail back to the sender.

4.3.7 MANUAL E-MAIL RECEPTION

You can assign the manual e-mail reception function to a Quick Operation Key. When you press the key, the IFAX calls the POP3/IMAP4 server. The timer for the automatic e-mail reception function is not reset when the IFAX calls the POP3/IMAP4 server by manual operation.

Here is an example of the processing on the assumption that the automatic e-mail reception interval is set to 30 minutes:

1. The IFAX calls the POP3 server (automatic e-mail reception).
2. Ten minutes later, the user calls the POP3 server (manual e-mail reception).
3. The IFAX calls the POP3 server automatically after 20 minutes (30 minutes in total).

4.3.8 SECURE INTERNET RECEPTION

APOP

The password is encrypted when an e-mail message is received. APOP gives a better security than the POP3 authentication (clear text), which is not encrypted. APOP requires a POP server that supports APOP.

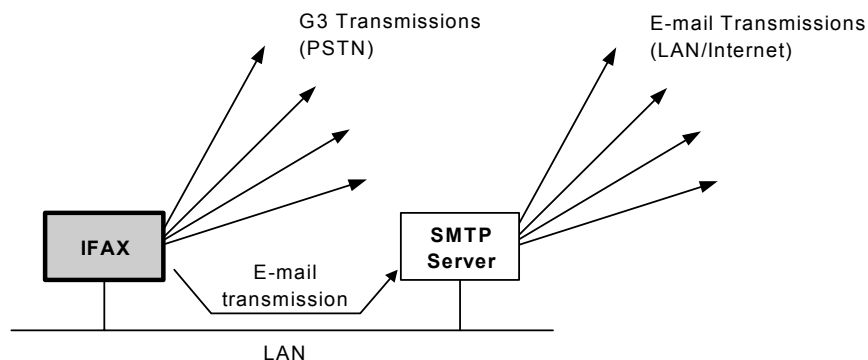
IMAP-AUTH (Mail Reception)

If the IMAP server supports the AUTHENTICATE command (CRAM-MD5, PLAIN, or LOGIN confirmation), this gives a high-level security against unauthorized access. To enable the password encryption and higher level security, select "On" in the following menu:

 > System Settings > File Transfer > POP3/IMAP4 Settings > Encrypt

4.3.9 MAIL BROADCASTING

Overview



The IFAX can send the scanned image to several destinations—this is called broadcasting. The destinations can be G3 facsimiles, or e-mail addresses, or both. The IFAX sends data as follows:

- To G3 facsimiles: The IFAX calls G3 facsimiles one by one.
- To e-mail addresses: The IFAX sends the data with the destination addresses to the SMTP server. The SMTP server forwards the data to each destination.

MAIL RECEPTION

Processing Order

The IFAX sends data as follows:

1. The IFAX sends the data in the order manually specified by the user.
2. When sending data to the SMTP server, the IFAX sends the data with all e-mail addresses.

In other words, the IFAX processes all e-mail addresses at the same time when it first finds an e-mail address in the specified destinations. See the following example. This example assumes that the user specifies the following destinations in the following order:

1) G3 facsimile A,	2) E-mail address X,	3) G3 facsimile B,
4) E-mail address Y,	5) E-mail address Z,	6) G3 facsimile C

The IFAX processes these destinations as follows:

1. Calls G3 facsimile A.
2. Sends the data with E-mail addresses X, Y, and Z to the SMTP server.
3. Calls G3 facsimile B.
4. Calls G3 facsimile C.

Restriction

SMTP servers cannot broadcast data if the data contains some destination-specific information such as a label insertion. When such information is included, the IFAX sends data to the SMTP server one by one.

The IFAX can broadcast data to 500 destinations or less (including both e-mail and G3 fax). If, however, the SMTP server has its own limitation, the IFAX cannot override the limitation in the server.

4.4 SUB TX MODE

4.4.1 SUBJECT AND IMPORTANCE LEVEL

Overview

You can specify a subject and importance level (☛ 4.4.2). The recipient can view the subject preceded by the importance level. The following diagram illustrates an example where the importance level is "Urgent" and the subject is "Memo 2041."

Sender	Date	Size	Subject
Substation 2	04/25/2002	1,513	Parts List
Substation 2	04/26/2002	1,147	Specifications
Main Station	05/09/2002	33,551	[Urgent] Memo 2041
		21,624,288	

How the Subject Differs According to Mail Type

Mail Type	①	②		③
Subject Entry	---	Entry Condition		Fax Message No. + File No.
No Subject Entry		1. "CSI" ("RTI")		
		2. "RTI"	CSI not registered	
		3. "CSI"	RTI not registered	
		4. None	CSI, RTI not registered	
Confirmation of Reception	From	1. "CSI" ("RTI")		Normal: Return Receipt (dispatched). You can select "displayed" with IFAX SW02 Bits 2 and 3.
		2. "RTI"	CSI not registered	
		3. "CSI"	RTI not registered	Error: Return Receipt (processed/error)
		4. None	CSI, RTI not registered	
Mail delivery, memory transfer, SMTP receiving and delivery	From	RTI or CSI of the station designated for delivery	Mail delivery	Fax Message No. + File Number
		RTI or CSI of sender	Mail sending from G3 memory	
		Mail address of sender	Memory sending	
		Mail address of sender	SMTP receiving and delivery (Off Ramp Gateway)	
Mail error notification	---	Error Message No. xxxx From CSI (RTI)		

Items ① ② ③ of the table above are in the Subject.

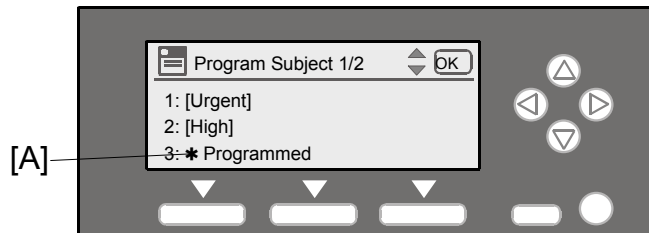
4.4.2 SPECIFYING SUBJECT AND IMPORTANCE LEVEL

Program/Change

You can register subjects and importance levels. You can select one of them when sending scanned data via e-mail (☛ Attach Subject).

1. Select the following menu:  > System Settings > File Transfer > Prog./Change/Del. Subject > Program/Change.

2. Select an importance level or a subject by up-arrow and down-arrow keys. The asterisk (*) [A] indicates that the subject is not registered.



3. Press the OK key.
4. Type an importance level or subject.
 - Use the numeric keypad to type numbers.
 - Use the multi-function panel to type other characters.
 - Use the  key to delete a character.
 - Use the left-arrow and right-arrow keys to move the cursor.
5. Press the OK key. The message "Programmed" is displayed.
6. Press the  key several times until you quit the User Tools.

Attach Subject

You can specify a subject when you sending scanned data via e-mail.

1. Press the fax key if the fax application program is not activated.

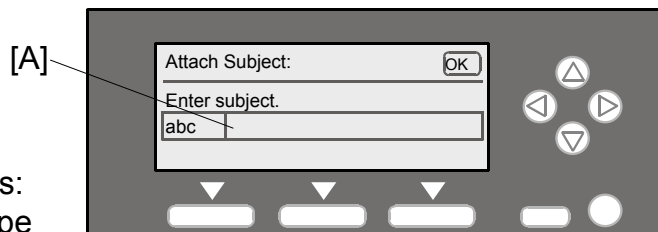
2. Press the TX Mode key.

3. Select E-mail Options.

4. Select Attach Subject.

5. Select one of the following menus:

- Manual Input: You manually type a subject in the text box [A].
- Select Programmed Subject: You select a registered subject or importance level (☛ Program/Change).



6. Press the OK key. The message "Programmed" is displayed.
7. Press the  key several times until you see returns to the display where you have started.

4.4.3 RETURN RECEIPT (MDN)

Sending Request

When sending scanned data via e-mail, the user can request a receipt notification.

1. The user select "On" in the following menu: TX Mode > E-mail Options > Return Receipt.
2. The IFAX attaches the request to the data and send them.
3. The machine at the destination receives the data with the request.
4. The machine at the destination sends a receipt notification.
5. The IFAX receives the receipt notification.

The machine on the destination must satisfy the following conditions:

- The machine supports MDN (Message Disposition Notification).
- The machine is set to send receipt notifications.

Responding to Request

The IFAX responds to the request for a receipt notification if the following conditions are satisfied:

1. The header of the e-mailed data includes the field "Disposition-Notification-To" (☛ Header).
2. You have specified "1" in Bit 1 of the User Parameter Switch 21 (SWUSR_15) (☛ Section 2.5 in B129/B130/B168/B169 Fax Service Manual).

When the IFAX sends a receipt notification, its subject of the e-mail message is specified according to Bit 2 and Bit 3 of the IFAX Switch 02 (☛ SP1-102-003). The table lists the possible subjects.

Reception	IFAX Switch 02 Bit 2 and Bit 3	Subject
Normal	00	Return Receipt (dispatched)
	01	Return Receipt (displayed)
Not normal	00	Return Receipt (processed/error)
	01	

SUB TX MODE

Header

The following example illustrates the information in the header when the user specifies "On" in "Return Receipt." Note that the field "Disposition-Notification-To" is added.

```
X-Mozilla Status      : 0001
X-Mozilla Status2     : 00000000
Message-ID            : <3A23379A.81BE0ABD@domlg.ricoh.co.jp>
Disposition-Notification-To : T.Suzuki <s_tadashi@domlg.ricoh.co.jp>
Date                  : Tue, 28 Nov 2000 13:4203 +0900
From                  : T.Suzuki <s_tadashi@domlg.ricoh.co.jp>
X-Mailer              : Mozilla 4.73 [ja]C-CCK-MCD BDP jm-Sony 3
                        (Win95: U)
X-Accept-Language     : ja
MIME-Version          : 1.0
To                    : fuser_01@domlg.ricoh.co.jp
Subject               : Mail Request for Reception Confirmation
Content-Type          : text/plain: charset=iso-2022-jp
Content-Transfer-Encoding : 7bit
```

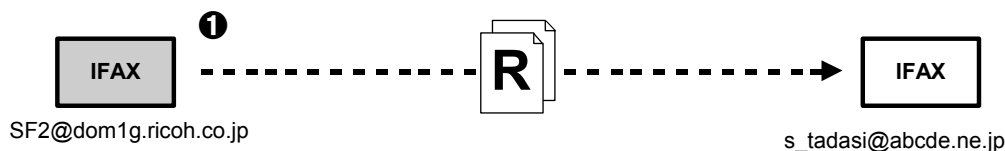
The following example illustrates the information in the header when the machine at the destination sends a receipt notification.

```
Return Path: <>
Received      : From fuser_01 ([133.139.157.20]) by domlg.ricoh.co.jp (post
                office MTA V1.9.3 ID# 0100110-37392) with SMTP id AAA163
                for<S_tadasi@domlg.ricoh.co.jp>
Date          : 28 Nov 2000 13:4236 +0900
X-Mailer      : ICFAX Version 1.0
MIME-Version   : 1.0
Content-Type   : multipart/report: report-type=disposition-notification:
                boundary="--ICFAX_000000EF48--"
To            : T.Suzuki <s_tadashi@domlg.ricoh.co.jp>
Message-ID     : <20001128133423664.ICFAX-XFC9BE-X26986@133.139.157.20>
From          : fuser_01@domlg.ricoh.co.jp
Subject        : From @81454771459" ("RICOH GTS) (Return Receipt) (dispatched)
X-Mozilla-status : 8001
X-Mozilla-Status2 : 00000000
X-UIDL        : 20001128044713447.AAA163@fuser_01

This is a Return Receipt for the mail that you sent to "fuser_01@domlg.ricoh.co.jp"
Final Receipt: rfc822:fuser_01#domlg.ricoh.co.jp
Original Message ID: <3A23379A.81BE0ABD@domlg.ricoh.co.jp>
Disposition: automatic action/MDN-send-automatically: dispatched      Respond Mail Text
```

History

The history of receipt notification is listed in the logs. The diagram illustrates an example of the processing and logs. The histories (Journals) ❶ and ❸ are the logs of the sender. The history (Journal) ❷ is the log of the recipient.



❶

*** Journal ***									
Date	Time	Destination	Mode	TXtime	Page	Result	User Name	File No.	
Jan. 16	10:17AM	s_tadasi@abcde.ne.jp	MailSMQ	0'09"	P. 2	--		0101	



❷

*** Journal ***									
Date	Time	Destination	Mode	TXtime	Page	Result	User Name	File No.	
Jan. 16	10:18AM	SF2@dom1g.ricoh	MailSMA	0'09"	P. 2	--		0179	

❸

*** Journal ***									
Date	Time	Sender	Mode	RXtime	Page	Result	User Name	File No.	
Jan. 16	10:17AM	s_tadasi@abcde.ne.jp	MailSMQ	0'09"	P. 2	OK		0189	

1. The sender transmits scanned data via e-mail with the request for a receipt notification. At this point, a "Q" is written in the "Mode" and two hyphens (- -) are written in "Result."
2. The recipient receives the data with the request. At this point, an "A" is written in "Mode" and two hyphens (- -) are written in "Result."
3. The recipient sends the receipt notification; the sender receives it. At this point, "OK" is written in "Result" if the receipt notification reports on a normal reception; "E" is written in "Result" if the receipt notification reports on an abnormal reception.

NOTE: Technically, the receipt notification is another communication between the two correspondents. However, the sender does not take this communication as a new communication in the history (JOURNAL). This communication is represented only by the key "OK" or "E."

SUB TX MODE

When the sender sends data to multiple recipients such as Group, the history of the sender is updated as follows:

1. Two hyphens (- -) are written in "Result" when the sender sends data via e-mail.
2. When the sender receives a receipt notification from a recipient,
 - An "OK" is written in "Result" if the receipt notification reports on a normal reception.
 - An "E" is written in "Result" if the receipt notification reports on an abnormal reception. After this, the sender does not update the history (JOURNAL) any more. (The subsequent receipt notifications are all ignored.)
3. When the sender receives a second notification reports from another recipient,
 - The "OK" in "Result" is kept unchanged if the receipt notification reports on a normal reception.
 - An "E" is written in "Result" if the receipt notification reports on an abnormal reception (the "OK" is overwritten). After this, the sender does not update the history (JOURNAL) any more. (The subsequent receipt notifications are all ignored.)
4. After this, the sender repeats the same processing as described above.

As a result, you see an "OK" in "Result" only when all receipt notifications have reported on a normal reception. If you see an "E," this is the information on the first receipt notification that reports on an abnormal receipt.

4.5 T.37 FULL MODE

4.5.1 OVERVIEW

B129/B130/B168/B169 supports the T.37 Full Mode. The T.37 Full Mode provides the following functions:

- The local IFAX registers the features of remote machines to the address book (☛ 4.5.2).
- The local IFAX, referencing the registered features, sends appropriate data (including a request for receipt notification [☛ 4.5.3]) to remote machines.
- The local machine sends the receipt notification that includes the feature report of the local machine (☛ 4.5.4).
- The local IFAX receives receipt notifications (from remote machines) that include the feature reports of the remote machines. The local machine interprets the feature reports and registers the features to the address book (☛ 4.5.5).

4.5.2 REGISTERING REMOTE MACHINE FEATURE

The IFAX can store the following information on remote machines:

- Paper width: A4/B4/A3
- Resolution: 200 x 100/200 x 200/200 x 400
- Data compression: MH/MR/MMR

By default, the features of remote machines are registered as follows: A4, 200 x 100/200 x 200, MH. You cannot manually register any feature that is inconsistent with the default (☛ "Error Handling" in section 4.5.5).

4.5.3 SENDING DATA AND REQUEST

The local IFAX, before sending data, references the registered feature of the remote machine and converts the data into an appropriate format. The local IFAX sends the request for receipt notification with the data.

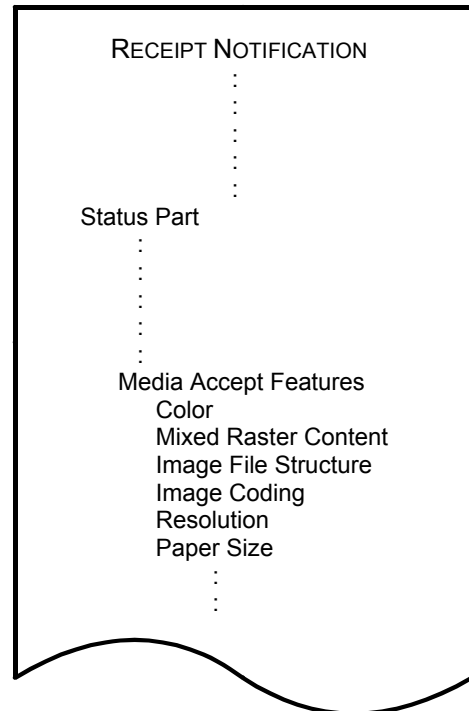
4.5.4 SENDING RECEIPT NOTIFICATION AND FEATURE REPORT

Remote machines can send (to the local IFAX) data with the request for receipt notification. When receiving a request, the local IFAX sends receipt notification. The receipt notification includes the Status Part that contains the Media Accept Features field. The Media Accept Features field describes the feature of the local IFAX as follows:

1. Color: Black-and-white data is supported. Color data is not supported.
2. Mixed Raster Content (MRC): MRC is not supported.
3. Image File Structure: TIFF-minimal data is supported. Other structures are not supported.
4. Image Coding: The MH (Modified Huffman), MR (Modified Read), and MMR (Modified MR) methods are supported. The JBIG (Joint Bi-Level Image Expert Group) method is not supported.
5. Resolution: 200 x 100, 200, 200 x 400, and 400 dpi are supported. (200 x 400 and 400 dpi can be restricted by environment.)
6. Paper Size: A4, B4, A3, Letter, and Legal are supported. (Paper size can be affected by status of paper trays.)
7. User Agent Media: Availability of cut paper is indicated.

Shown below is an example of the Media Accept Features field.

```
(&(image-file-structure=TIFF-minimal)
(MRC-mode=0)
(color=Binary)
(image-coding=[MH,MR,MMR])
(| (& (dpi=200) (dpi-xratio=[200/100,1,200/400]) )
(& (dpi=400) (dpi-xratio=1) ) )
(size-x<=2970/254)
(paper-size=[A4,B4,A3,letter,legal])
(ua-media=stationery)
)
```



4.5.5 INTERPRETING FEATURE REPORT

Error Handling

When receiving a feature report, the local IFAX interprets the seven entries of the Media Accept Features field (➤4.5.4). The local IFAX, if having detected an error in an entry, registers the error code. The data in this entry is ignored. Some examples of errors are as follows:

- A syntax error is detected.
- An unknown parameter (including typographic errors) is detected.
- Image Coding, Resolution, and Paper Size are not defined.
- The entries inconsistent with the default (➤ 4.5.2) are regarded as errors.

Exception Handling

If one or two of Image Coding, Resolution, and Paper Size are not defined (if only one or two of them are defined), the local IFAX registers the defined parameters. Undefined parameters are set to the default (➤ 4.5.2).

If multiple combinations are defined for Image Coding, Resolution, and Paper Size (for example, "200/400 dpi for A4" and "200 dpi for A3"), the local IFAX interprets them in the following order:

- 1) Paper Size: The local machine regards all paper sizes as supported.
- 2) Resolution: The local machine regards the common parameters as supported. In the case of the above example ("200/400 dpi for A4" and "200 dpi for A3"), "200 dpi" is regarded as supported.
- 3) Image Coding: The local machine regards the common parameters as supported.

4.6 LAN-FAX ADDRESS BOOK/COVER SHEET SUPPORT TOOL

4.6.1 OVERVIEW

NOTE: For details on LAN-Fax Address Book/Cover Sheet Support Tool, see the Operating Instructions.

LAN-Fax Address Book/Cover Sheet Support Tool (after here, referred to as "the Support Tool") enables the user to specify which folder to save the following files:

- Fax address books
- Fax cover sheets

These files are referenced by the LAN Fax Driver. When sending a fax message, the user can choose a fax address book and a fax cover sheet from the dialog box of the LAN Fax Driver.

The user can specify a local folder or a remote folder to save fax address books and fax cover sheets. For example, multiple users can share the same information in the fax address book on a file server.

4.6.2 HOW THE SUPPORT TOOL WORKS

For the LAN Fax Driver to reference fax address books and fax cover sheets, the user edits the files lfxShLnk.ini and INF. The Support Tool is the application program that helps the user edit these files.

- lfxShLnk.ini: Includes the information on the path to fax address books and fax cover sheets.
- INF: Includes other information necessary for installing the LAN Fax Driver such as file names.

The user edits these files before installing the LAN Fax Driver. The installer of the LAN Fax Driver references these files during installation and copies the address books and the fax cover sheets to a necessary folder.

When the user starts the LAN Fax Driver, the user finds the address books and the coversheets in the dialog box.

4.6.3 WORKFLOW

Illustrated below is an example of the workflow that uses the Support Tool.

1. The user downloads the LAN Fax Driver. The Support Tool is bundled with the driver.
2. The user uses the LAN Fax Cover Sheet Editor to edit and save fax cover sheets.
3. The user uses the Address Book Editor to edit and save fax address books.
4. The user uses the Support Tool to edit lfxShLnk.ini and INF.
5. The user installs the LAN Fax Driver. The installer copies the address books and the fax cover sheets to a necessary folder.
6. The user starts the LAN Fax Driver. The user finds the address books and the coversheets in the dialog box.

SPECIFICATIONS

1. IFAX SPECIFICATIONS

Type

Fax Unit and Printer/Scanner Unit

Connectivity

Local area network

Ethernet 100base-Tx/10base-T

Connection

100base-Tx/10base-T direct
connection

Resolution

Main scan: 200 dpi

Sub scan: 400 dpi, 200 dpi, 100 dpi

NOTE: To use 200 x 400 dpi, IFAX
SW01 Bit 2 must be set to "1."

Transmission Time

1 s (through a LAN to the server)

Condition: ITU-T #1 test document
(Selerexe Letter)

MTF correction: OFF

TTI: None

Resolution: 200 x 100 dpi

Communication speed: 10 Mbps

Correspondent device: E-mail server

Line conditions: No terminal access

Document Size

Maximum message width is A4/LT.

Note: To use B4 and A3 width, IFAX
SW00 Bit 1 (B4) and/or Bit 2 (A3)
must be set to "1".

E-mail File Format

Single/multi-part

MIME conversion

Image: TIFF-F (MH) format only

Protocol

(Supported by TCP/IP protocol)

Transmission:

IETF RFC821 SMTP procedure

Reception:

IETF RFC1725 POP3 procedure

IETF RFC2026 IMAP4 procedure

Data rate

100 Mbps(100base-Tx)

10 Mbps (10base-T)

B683

**PRINTER/SCANNER
(B129/B130)**

PRINTER/SCANNER B683

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1. INSTALLATION

See B129/B130/B168/B169 Service Manual.

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2. TROUBLESHOOTING

See Model B129/B130/B168/B169 Service Manual.

3. SERVICE TABLES

3.1 SERVICE PROGRAM MODE

CAUTION

Before activating the service program mode, check that the Data-In LED is off. The LED indicates that the machine is processing some data.

CAUTION

Do not turn off the main power switch while the Power LED is on or blinking; otherwise, the memory may be damaged. Before turning off the main power switch, press the power key on the operation panel and wait until the Power LED turns off.

NOTE: The main power LED is on or blinks under any of the following conditions:

- The platen cover is open.
- The copier is communicating with a network device.
- The copier is accessing the memory.

3.1.1 ACTIVATING AND QUITTING SP MODE

IMPORTANT

Do not let the user have an access to the service program mode (SP mode). Only service representatives are allowed to use the SP mode. Should the user have an access to the SP mode, the normal operation of the machine is NOT guaranteed any more.

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Activating Printer/Scanner SP Mode

1. Press the  key.
2. Press the following keys in the following order: ①⑦①
3. Press the  key and hold it down until the SP mode menus are displayed (for about three seconds).
4. Press the ③ key (Printer SP) or the ④ key (Scanner SP).

Quitting Printer/Scanner SP Mode

Press the  (cancel) key several times until you quit the printer/scanner SP mode.

3.2 PRINTER SERVICE MODE

3.2.1 SERVICE MODE TABLE

SP No.	Description	Function and Setting
1001	BitSw#1 Set	Adjusts bit switch settings. Note: Currently the bit switches are not used.
1003	Clear Setting	Not used
1004	Print Summary	Prints the service summary sheet (The printer log is printed in the configuration page).
1005	Display Version	Displays the version of the controller firmware.

3.2.2 COPIER SERVICE PROGRAMS

The table lists the copy SPs that are closed related to the printer application program. For details, see B129/B130/B168/B169 Service Manual.

SP No.	Description	Summary
5801	Memory Clear	Resets the process-control data and counters. All settings return to their default values.
5907	Plug & Play	Specifies the plug-and-play settings.
7832	Display Self Diag	Displays the self-diagnostic result.

3.3 SCANNER SERVICE MODE

3.3.1 SCANNER PROGRAM MODE TABLE

Service Table Key

Notation	What it means
[range / default / step]	Example: [-9 ~ +9 / +3.0 / 0.1 mm step]. The setting can be adjusted in the range ± 9 , value reset to +3.0 after an NVRAM reset, and the value can be changed in 0.1 mm steps with each key press.
<i>italics</i>	Comments added for your reference.
*	This value is stored in NVRAM. After a RAM reset, the default value (factory setting) is restored.
DFU	Denotes "Design or Factory Use". Do not change this value.

SP1	Mode Number		Function and [Setting]
1004*	1	Compression Type	Selects the compression type for binary picture processing. <u>[1: MH, 2: MR, 3: MMR]</u>
1005*	1	Erase Margin	Creates an erase margin for all edges of the scanned image. <i>If the machine has scanned the edge of the original, create a margin.</i> <u>[0 ~ 5 / 0mm / 1mm step]</u>

For the settings of the image quality, see the B129/B130/B168/B169 Service Manual.

3.4 FIRMWARE UPDATE PROCEDURE

See B129/B130/B168/B169 Service Manual.

3.5 POWER-ON SELF TEST

When you turn on the main power switch, the GW controller conducts the Self Test. The controller stores the error code if it detects an error. The controller checks the following hardware and software:

- CPU, ASIC, and clock
- Flash ROM
- Resident and optional SDRAM (if installed)
- IEEE1394 interface (if installed)
- NVRAM
- PS fonts (if installed)

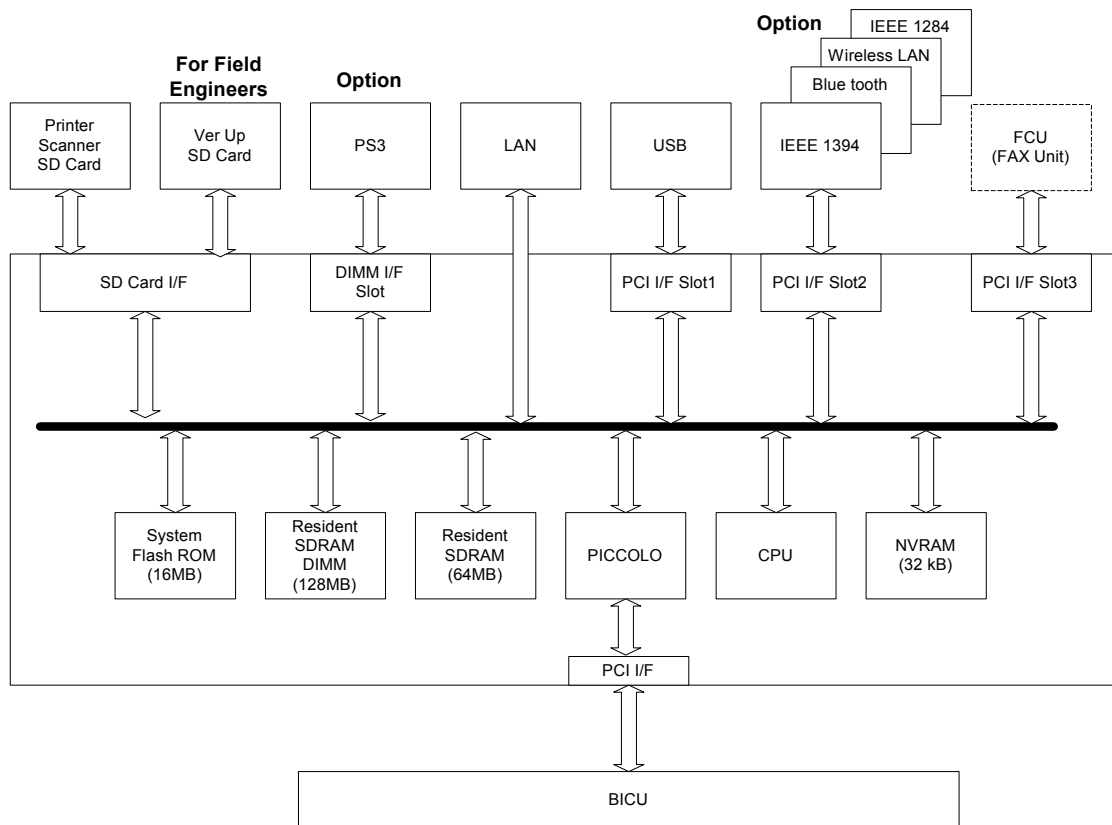
3.6 SELF DIAGNOSTIC TEST

In addition to the power-on self-test, you can make the machine conduct a more detailed test. You need the loop-back connector (P/N: G0219350).

1. Turn off the main power switch.
2. Attach the loop-back connector to the parallel interface.
3. Press the  key and the  key and hold them down.
4. Turn on the main power switch.
5. The copier prints the diagnostic report automatically. To view the SC codes, select Copy SP7-832-001.

4. DETAILED SECTION DESCRIPTIONS

4.1 OVERVIEW



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Main components

- CPU: TOSHIBA TMPR4955BFG-300
- PICCOLO: GW architecture ASIC. It controls all the functions of the controller.
- Flash ROM: 16 MB flash ROM for the system program
- SDRAM: On board 64 MB, DIMM 128 MB (resident)
- NVRAM: Stores the controller settings
- LAN interface
- USB 2.0 interface
- SD Card: Printer/scanner program

Optional components

- PostScript 3 DIMM
- IEEE1394 interface
- Bluetooth interface
- Wireless LAN interface
- IEEE1284 interface

4.2 CONTROLLER FUNCTIONS

4.2.1 PAPER SOURCE SELECTION

Auto Tray Select

When you install the optional paper feed unit (B421), the copier has three trays—tray 1, tray 2, and by-pass tray. When the user select Auto Tray Select in the dialog box of the printer driver, the printer searches tray 1 and tray 2 for the correct paper size and paper type. The by-pass tray is not searched. The following menu specifies which tray is searched first:

 > System Settings > Tray Paper Settings > Ppr Tray Priority: Printer

When the printer does not find the correct paper in the specified tray, the printer searches the other tray. If the printer does not find the correct paper in the other tray either, the printer suspends the processing until the user loads the correct paper.

Manual Tray Select

The user can specify a paper size, paper type, and paper tray in the dialog box of the printer driver. If the printer does not find the correct paper in the specified tray, the printer suspends the processing until the user loads the correct paper.

4.2.2 AUTO CONTINUE

When the printer does not find the correct paper (☛ 4.2.1), the printer waits for the user to load the correct paper. The following menu specifies the waiting time of the printer:

 > Printer Features > System > Auto Continue

When the waiting time has elapsed, the printer cancels the print job. If Auto Continue is off, the printer keeps waiting; the print job is not canceled.

4.2.3 DUPLEX PRINTING

The user cannot select the by-pass tray for duplex printing.

4.3 SCANNER FUNCTIONS

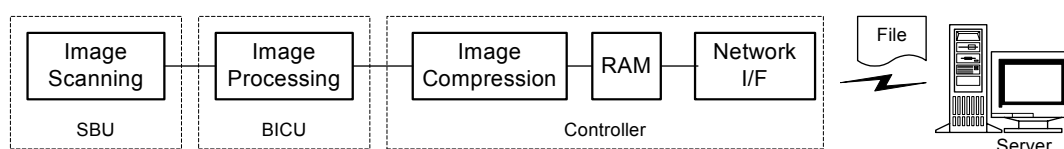
4.3.1 IMAGE PROCESSING FOR SCANNER MODE

The scanner application program executes the image processing on the IPU of the BICU. The application program receives the settings from the scanner driver (TWAIN Mode) or from the operation panel (Delivery Mode), and selects appropriate gamma tables, dither patterns, and other variables.

NOTE: The compression type for binary picture processing is specified by Scanner SP1-004.

Image Data Path

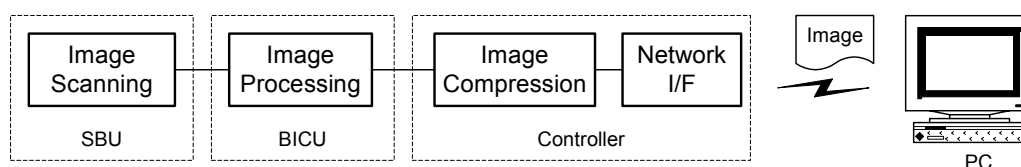
1. Image Store/Image Delivery Mode



The scanner application program processes images and compresses them. The data is stored in the controller RAM. The data format is TIFF or PDF (binary picture processing). The user selects a data format from the following menu: Options > File Type.

Before transferring the data to the server, the controller attaches the destination and page information.

2. Twain Mode

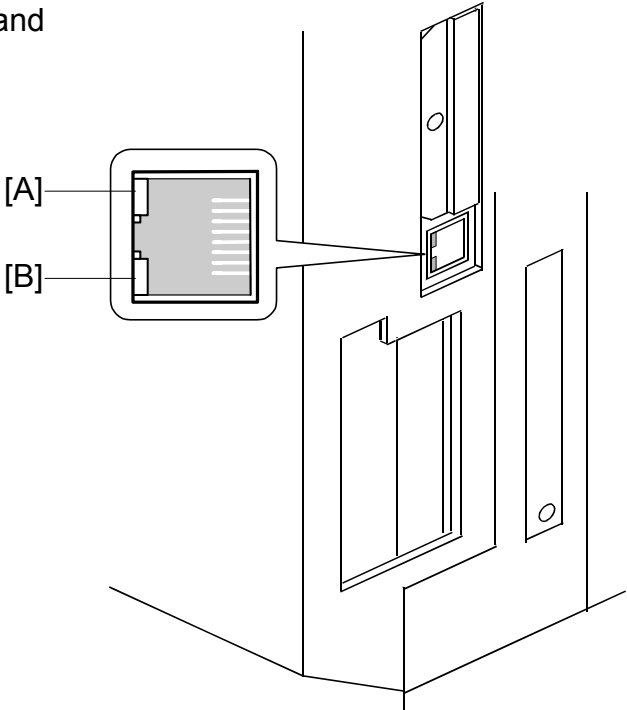


The scanner application program processes images and compresses them. The data is transferred to the scanner driver on the PC. The data format is TIFF or PDF.

4.4 NETWORK INTERFACE

4.4.1 LED

Two LEDs indicate the network status and data rate.



LED	On	Off
[A] Green (Network status)	Connected	Not connected
[B] Yellow (Transfer rate)	100 Mbps	10 Mbps

4.5 IEEE1394 INTERFACE

4.5.1 SPECIFICATIONS

Hardware Specifications

Interface: IEEE1394 (6 pins)
 (no power supply, cable power repeated, IEEE1394a-2000 compliant)
 Ports: 2 ports
 Data rates: 400Mbps/200Mbps/100Mbps

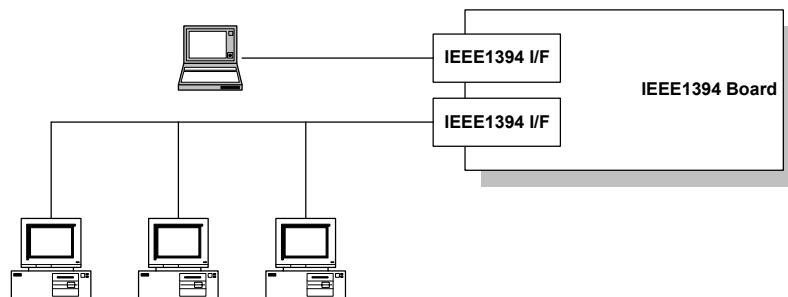
System Requirements

PC: Windows PC with IEEE1394 port
 OS: Microsoft Windows 2000 Service Pack 1
 Cable length: 4.5m (15ft)

4.5.2 IEEE 1394

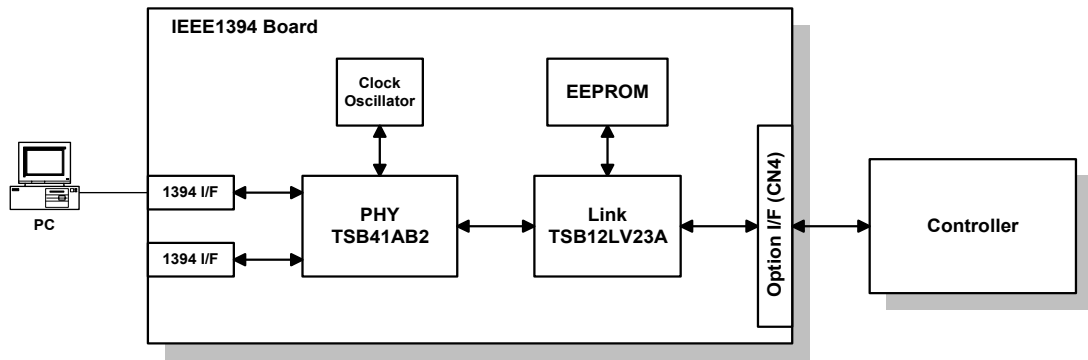
IEEE 1394 (FireWire [registered by Apple Computer, Inc.]) is a peer-to-peer networking technology. The maximum transfer rate is 400 Mbps. As of present, IEEE 1394 supports the following features:

- Hot swapping (You can connect the cable to an active device while the device is powered on.)
- Peer-to-peer networking (You do not need a dedicated server.)
- No terminator or device ID required
- Automatic device configuration (The configuration is automatically made when a device is powered on or a Plug and Play device is installed.)
- 100-, 200-, and 400-Mbps transfer rate
- Common connectors for different devices



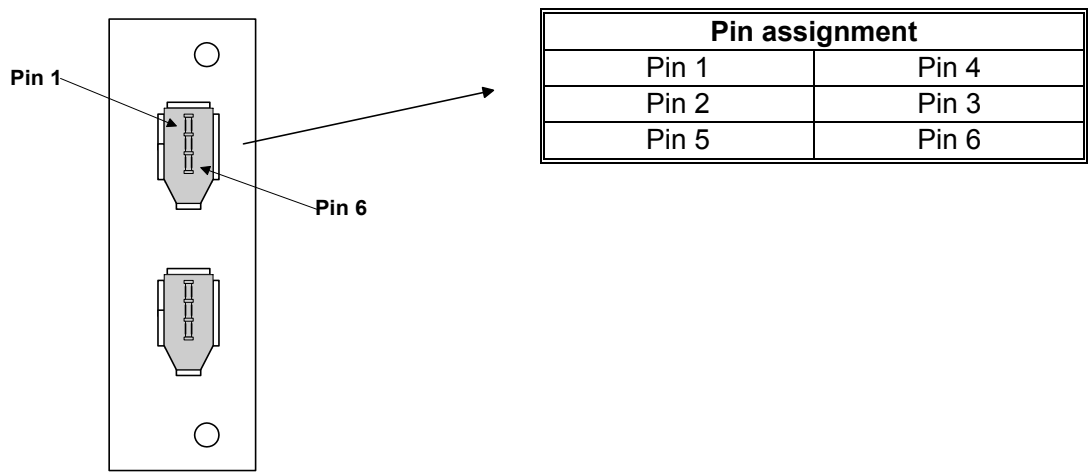
Cables are 4.5 m (15ft) or shorter. You can use up to 16 cables to connect up to 63 devices to an IEEE 1394 network. There are two types of IEEE1394 cables: four pins (data only) and six pins (data and power). B129/B130/B168/B169 supports 6-pin cables only. B129/B130/B168/B169 has two 6-pin ports.

4.5.3 BLOCK DIAGRAM



- PHY: Physical layer control device
- Link: Link layer control device
- EEPROM: 256-byte ROM

4.5.4 PIN ASSIGNMENT



Pin No.	Signal Description
1	Cable power
2	GND
3	Receive strobe
4	Transmit data
5	Receive data
6	Transmit strobe

4.5.5 REMARKS ABOUT IEEE 1394

- To check the successful installation of the interface board, see Configuration Page.
- Print jobs are not spooled. When trying to print a file, the user may receive a notification from the busy interface.
- When having requested the printer to print a file, do not turn off the power switch of the printer until the printer finishes the job. The printer can be communicating with the computer.
- The user cannot view the status of the printer with a utility program such as Printer Manager for Client.

4.5.6 TROUBLESHOOTING

Identifying Problematic Computer

When the problem is caused by somewhere unknown on the network, identify the problematic computer first. Check the computers on the network. See if you can see the status of the printer from each computer. You should see the status "Printer Ready" when the interface cable is connected; you should see the status "Offline" when it is disconnected.

Platform

Check that the computer is running Windows 2000 Service Pack 1 or later.

Interface Board

When having replaced the interface card, setup the printer once again. Each interface card has a unique address just like the MAC address for an Ethernet card. If you have changed the interface card, the printer driver does not recognize the new interface card.

Networking

IEEE 1394 does not support loop configurations (the network whose communication line makes a closed loop).

4.6 IEEE 802.11B (WIRELESS LAN)

4.6.1 SPECIFICATIONS

The wireless LAN is a local area network that sends and receives data via radio without using any physical connection between individual nodes and the hub. Usually, the wireless LAN can be integrated with an existing wired network.

Standard: IEEE 802.11b
Transfer rate 11 Mbps (140 m [153 yd.])
(Maximum 5.5 Mbps (200 m [219 yd.])
distance): 2 Mbps (270 m [295 yd.])
1 Mbps (400 m [437 yd.])
Protocol: TCP/IP, Apple Talk, NetBEUI, IPX/SPX
Bandwidth: 2.4GHz (divided over 14 channels, 2400 to 2497 MHz for each channel)

LED Indicators

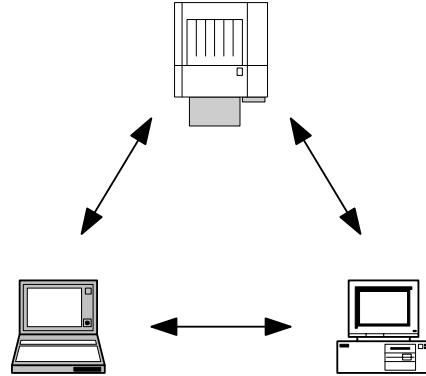
LED	On	Off
Green (Network status)	Connected	Not connected
Orange (Power supply)	On	Off

4.6.2 TRANSMISSION MODES

Wireless communication has two modes: 1) the ad hoc mode and 2) the infrastructure mode.

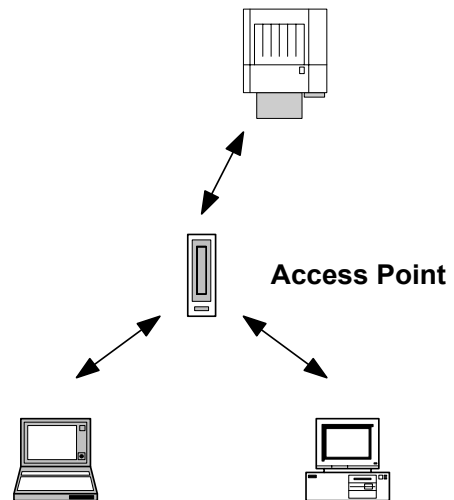
Ad Hoc Mode

The ad hoc mode is for the communication on a simple peer-to-peer network. In this mode, the two devices use the same channel for communication. By default, B129/B130/B168/B169 is in the ad hoc mode and the channel is 11. To use the infrastructure mode, specify necessary settings.



Infrastructure Mode

The infrastructure mode is for the communication between each computer and the printer via an access point. The access point has an antenna; and this access point is wired to the network. This arrangement is suitable for complex topologies. Each wireless LAN client uses the same SSID (Service Set ID) as the access point.



4.6.3 SECURITY FEATURES

SSID (Service Set ID)

The clients share the same SSID with the access point. The access point connects these clients to the network. The access point rejects any other devices. When a client does not have an SSID, it tries to find the nearest access point.

NOTE: The user can specify an SSID with the Web Status Monitor or telnet.

SSID in Ad Hoc Mode

When no SSID is set, the client can use the ASSID as the SSID in the ad hoc mode (the needs an ASSID for this).

Some devices automatically change from the ad hoc mode to the infrastructure mode when the same SSID is set for the ad hoc mode and for the infrastructure mode. To use such a device also in the ad hoc mode, specify an ASSID.

NOTE: The SSIDs in the ad hoc mode are also known as Network Name.

WEP (Wired Equivalent Privacy)

WEP is a coding system designed to protect wireless data transmission. To decrypt encoded data, the recipient device needs the proper WEP key. There are two types of WEP keys—64 bit and 128 bit. B129/B130/B168/B169 supports the 64-bit WEP key only.

NOTE: The user can specify a WEP key with the Web Status Monitor or telnet.

MAC Address

Some access points demand an MAC address in the infrastructure mode; other access points do not demand it.

4.6.4 TROUBLESHOOTING

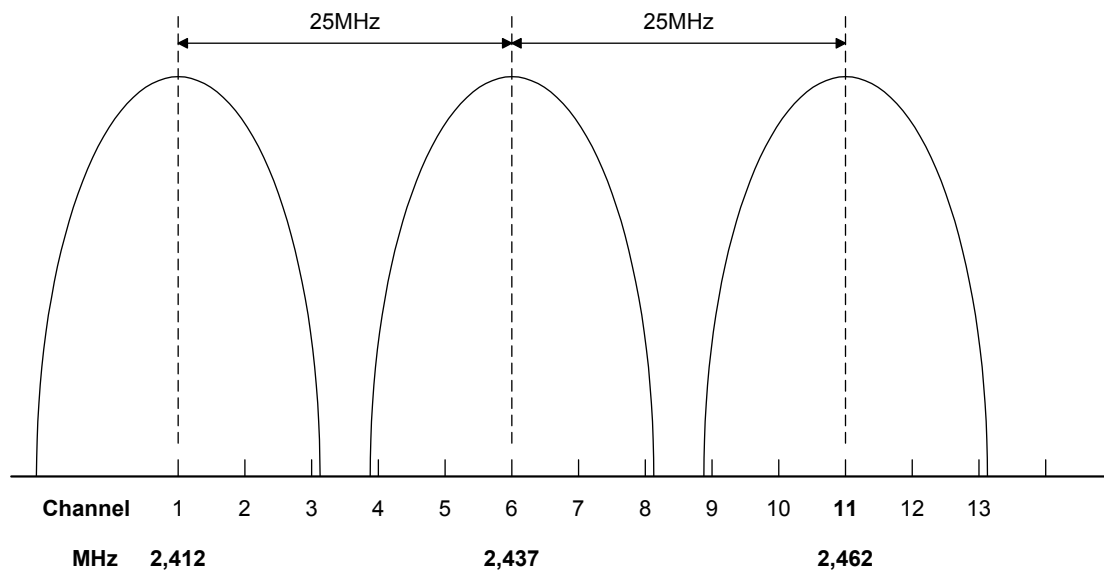
Communication Status

You can view the communication status with the Web Status Monitor or telnet. The status is described on a simple number scale. Note that the device needs to be in the infrastructure mode to check the communication status.

Status Display	Communication Status
Good	76 ~ 100
Fair	41 ~ 75
Poor	21 ~ 40
Unavailable	0 ~ 20

Channel Settings

When some noise interferes with wireless communication, you may need to change the channel settings. To avoid such interference, try using the channel higher or lower by 3. For example, if you see a problem when using channel 11 (default), try using channel 8.



Starting Point

If you see some problem, examine the following:

- Wireless-LAN-card LED: The LED indicates that the interface board is operating normally. This does not necessarily means that all wireless-LAN settings are correct.
- Network settings: Check that IEEE 802.11b is set as the LAN type.
- Channel settings: Check that the correct channel is selected.
- Security settings: Check that the correct SSID and the WEP key are selected.

If you see some problem with the infrastructure mode, examine the following:

- MAC address: Check that the MAC address is correctly set.
- Communication condition: If the condition of communication is poor, try moving the machine. Remove any obstacle that may interfere with radio communication. Try changing the communication channel.

4.7 BLUETOOTH

4.7.1 SPECIFICATIONS

Overview

Bluetooth enables radio communication between some portable nodes such as laptop computers and mobile phones. Some of the advantages are as follows:

- You do not need high-cost equipments.
- Bluetooth supports a lot of protocols for the infrared transmission (IrDA).
- Bluetooth nodes communicate with other Bluetooth nodes with no special settings.

Standard: Bluetooth 1.1 (Bluetooth Special Interest Group)

Transfer rate: 1 Mbps

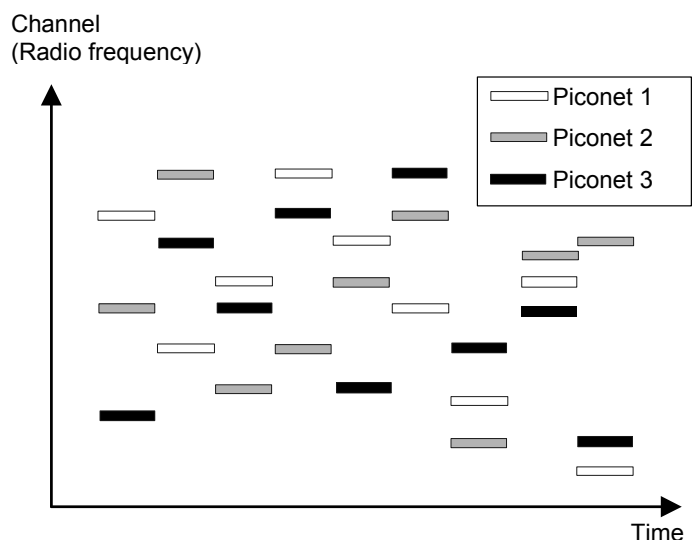
Bandwidth: 2.4GHz (Frequency Hopping Spread Spectrum [FHSS])

Piconet

The network of Bluetooth nodes is called Piconet. The nodes communicate in the ad hoc mode. Piconet consists of eight nodes or less. One of the nodes is the master; the others are slaves. The master controls the hopping frequencies and timings. The master also has the registered ID codes of the slaves. The master can be changed to a slave, and a slave can be changed to the master. When the master leaves Piconet, one of the slaves becomes the master. Usually, a printer is a slave of the master.

FHSS (Frequency Hopping Spread Spectrum)

Bluetooth has 79 channels in the bandwidth from 2,402 MHz to 2,480 MHz. The difference in the radio frequency between two adjacent channels is 1 MHz. Piconet changes the communication channel 1,600 times in a second. Doing so, the Piconet networks in the same LAN can prevent the radio frequencies from crossing.



4.7.2 PROFILE

Profiles are the protocols used by Bluetooth nodes. There are 14 profiles:

- Generic Access Profile
- Cordless Telephony Profile
- Serial Port Profile
- Dial-up Networking Profile
- LAN Access Profile
- Object Push Profile
- Synchronization Profile
- Service Discovery Profile
- Intercom Profile
- Headset Profile
- Fax Profile
- Generic Object Exchange Profile
- File Transfer Profile
- Hardcopy Cable Replacement Profile

The Serial Port Profile (SPP) and the Hardcopy Cable Replacement Profile (HCRP) are used for printers. The SPP can supersede the serial port; the HCRP can supersede the parallel port.

4.7.3 SECURITY

Public Mode/Private Mode

When the Bluetooth nodes are in the public mode, computers can browse through the Bluetooth network. B129/B130/B168/B169 is in the public mode by default. When the Bluetooth nodes are in the private mode, computers cannot browse through the Bluetooth network.

PIN Code (Personal Identification Number).

Bluetooth nodes can send a PIN code. This code identifies the node. When a computer receives a PIN code, the computer can communicate with the node. PIN codes consist of four digits. B129/B130/B168/B169 uses the last four digits of the serial number as its PIN code. You cannot change this code.

4.8 USB

4.8.1 SPECIFICATIONS

Interface: USB 2.0
Data rates: 480 Mbps (high speed)/12 Mbps (full speed)

4.8.2 GENERAL FEATURES

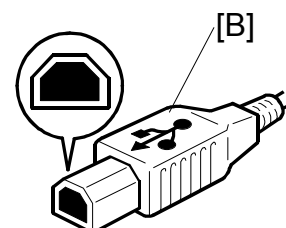
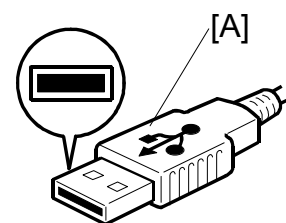
The USB (Universal Serial Bus) offers simple connectivity for computers and their peripherals. You do not need terminators or device IDs. The USB provides the following features:

- Plug & Play: When you connect a device to a computer, the computer recognizes the device and activates the correct driver. If the computer does not find a correct driver, it outputs a message.
- Hot swapping: You can connect the cable to an active device while the device is powered on.
- No terminator required
- No device ID required
- 480-Mbps (high speed)/12-Mbps (full speed) transfer rate
- Bi-directional data transfer between computers and peripherals with 4-byte headers and device IDs
- Connectivity of up to 127 peripherals (up to 6 cascade connections possible)
- Power supply from the computer
- 5-m cable (at the maximum)

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4.8.3 USB CONNECTOR

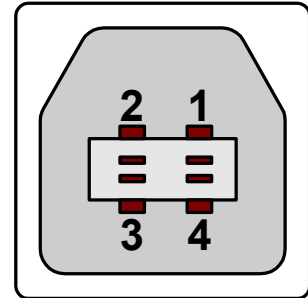
The USB has a serial protocol and a physical link. The USB cable contains two pairs of wiring: one pair transmits data and the other pair transmits electricity for downstream peripherals. There are two types of connectors: Type A [A] is for the connection on the upstream and Type B [B] is for the connection on the downstream.



4.8.4 PIN ASSIGNMENT

B129/B130/B168/B169 supports Type B connectors.

Pin No.	Signal Description	Wiring Assignment
1	Power supply	Red
2	Data –	White
3	Data +	Green
4	Power GND	White



4.8.5 REMARKS

- B129/B130/B168/B169 does not make special logs or histories dedicated to the USB.
- Only one host computer is allowed.
- When having requested the printer to print a file, do not turn off the power switch of the printer until the printer finishes the job.
- When having canceled a requested print job, make sure that the printer has already processed the cancellation before turning off the power switch. The printer can be processing some data that has been already sent before the cancellation.
- If you replace the controller board of a printer, the host computer takes the printer a newly installed peripheral.

4.8.6 SP MODE

Copy SP5-844-001 specifies the transfer rate. You can select the Full Speed (12 Mbps) or the Auto Change (480/12 Mbps). The 480-Mbps transfer rate can cause a trouble that is not caused by the 12-Mbps transfer rate. When you see a trouble, try specifying the Full Speed.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

1.1 PRINTER

Printing Speed:	Maximum 15 ppm (A4/LT SEF)
Printer Languages:	PCL6/PCL5e PostScript 3 (option) RPCS (Refined Printing Command Stream) - an original Ricoh PDL)
Resolution:	600 dpi (PCL 6/PCL5e/PS3/RPCS) 300 dpi (PCL6 PCL5e/PS3) 200 dpi (RPCS)
Resident Fonts:	PCL: 35 Intellifonts 10 True Type fonts PS3: 136 fonts (24 Type 2 fonts, 112 Type 14 fonts)
Host Interfaces:	Ethernet (100 Base-TX/10 Base-T) (standard) USB 2.0 (Standard) Bi-directional IEEE 1284 parallel x 1 (option) IEEE1394 (option) Wireless LAN (option)
Network Protocols:	TCP/IP
Memory:	128 MB
Supported Paper Size	See the copier service manual.

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1.2 SCANNER

Standard Scanner	Main scan/Sub scan
Resolution:	600 dpi
Available scanning	Twain Mode:
Resolution Range:	100 ~ 600 dpi
	E-mail/Network Delivery Scanner:
	100 dpi, 200 dpi, 300 dpi, 400 dpi, 600 dpi
Scanning	18 spm for TWAIN
Throughput:	22 spm for Delivery mode (A4S, ADF mode)
Interface:	Ethernet (100 Base-TX/10 Base-T for TCP/IP), IEEE 1394, IEEE 802.11b (Wireless LAN)
Compression	PDF, TIFF (MH, MR, MMR)
Method:	

2. SOFTWARE ACCESSORIES

2.1 PRINTER

Printer Drivers

Printer Language	Windows 95/98/ME	Windows NT 4.0	Windows 2000	Windows XP	Windows Server 2003	Macintosh
PCL 6	Yes	Yes	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	Yes	Yes	No

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 PS3 drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.

Utilities

- SmartDeviceMonitor for Admin: This utility is for the system administrator to manage network printers (☛ SmartDeviceMonitor for Admin online Help).
- SmartDeviceMonitor for Client: This utility is for users to manage their own print status on the network (☛ SmartDeviceMonitor for Client online Help).
- Font Manager 2000: This utility helps you install new screen fonts, or organize and manage fonts already installed on the system.
- 1394 Utility: This utility is for the IEEE 1394 interface board (☛ Readme or the manual that comes with the optional IEEE 1394 interface board).
- USB Printing Support: This utility is for the USB 2.0 interface. Install this to use USB on computers running Windows 98 SE/Me.
- Acrobat Reader: This utility allows you to read PDF files (Portable Document Format).
- Printer Utility for Mac: This utility allows users to download and manage a variety of fonts as well as manage printers (☛ PostScript 3 Operating Instructions Supplement).

2.2 SCANNER

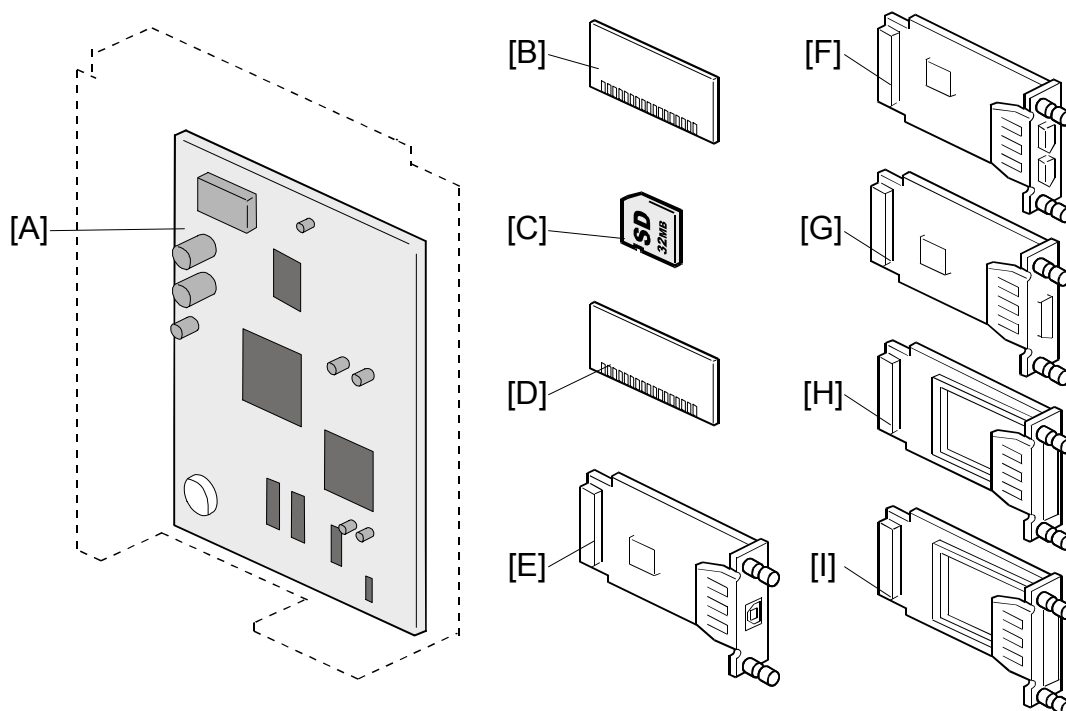
Driver

- TWAIN driver for Windows 95/98/Me/2000/XP/NT 4.0

Utilities

- RouterV2: ScanRouter V2 Lite, ScanRouter V2 Administration Utility
- DeskV2: DeskTopBinder V2 Lite
- Acroread: Acrobat Reader

3. CONFIGURATION



	Standard Component	Machine Code	Remarks
1	GW Controller Board [A]	B683*	
2	SD Card [C]	—	Application programs
3	128-MB Memory [D]	—	
4	USB Interface Board [E]	—	

	Optional Component	Machine Code	Remarks
5	PostScript 3 [B]	B681	
6	IEEE 1394 Interface Board [F]	B581	
7	IEEE 1284 Interface Board [G]	B679	
8	Wireless LAN Interface Board [H]	B682	
9	Bluetooth Interface Board [I]	G377	

* Machine code B683 refers to the optional printer/scanner unit for the basic model (B129). No machine code is given to the standard printer/scanner unit of the MFP model (B130) and the printer/scanner/copier model (B169).

**DOCUMENT FEEDER
B444
(B044/B045/B046)**

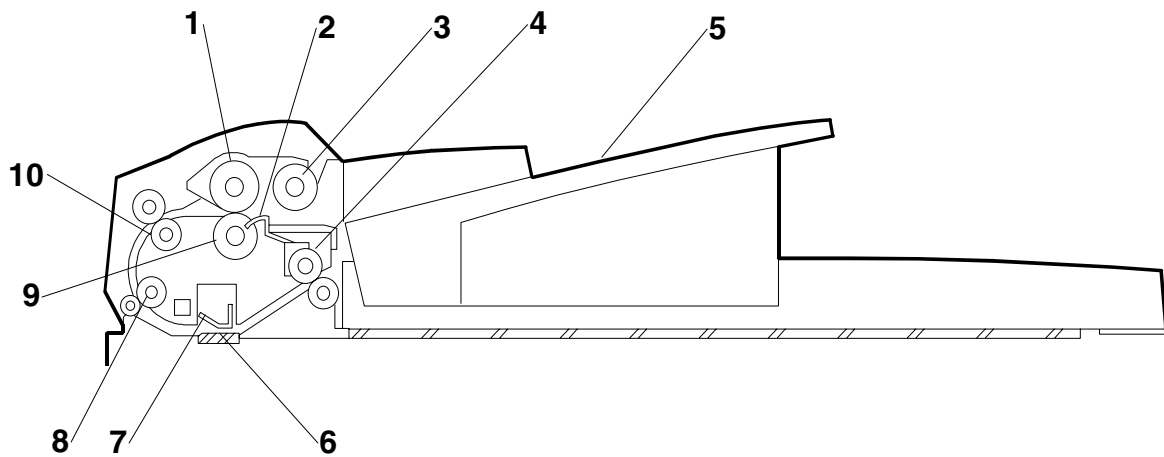
B444

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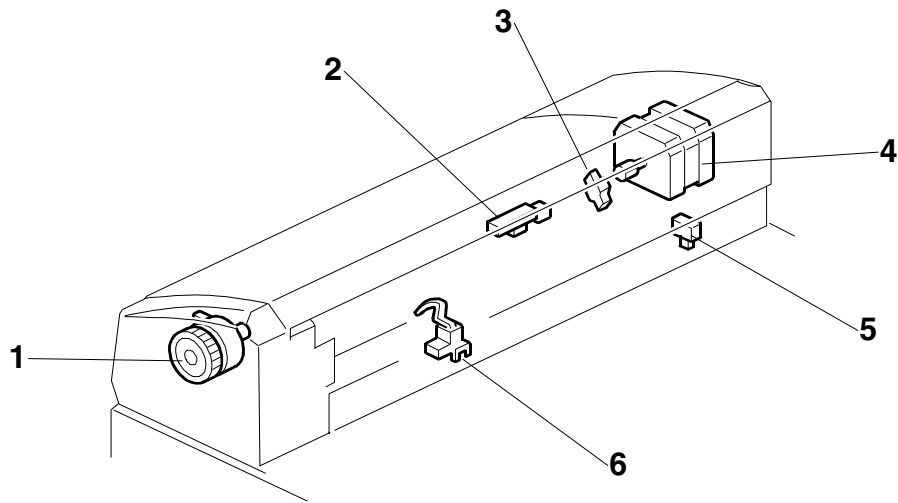
1. OVERALL INFORMATION

1.1 MECHANICAL COMPONENT LAYOUT



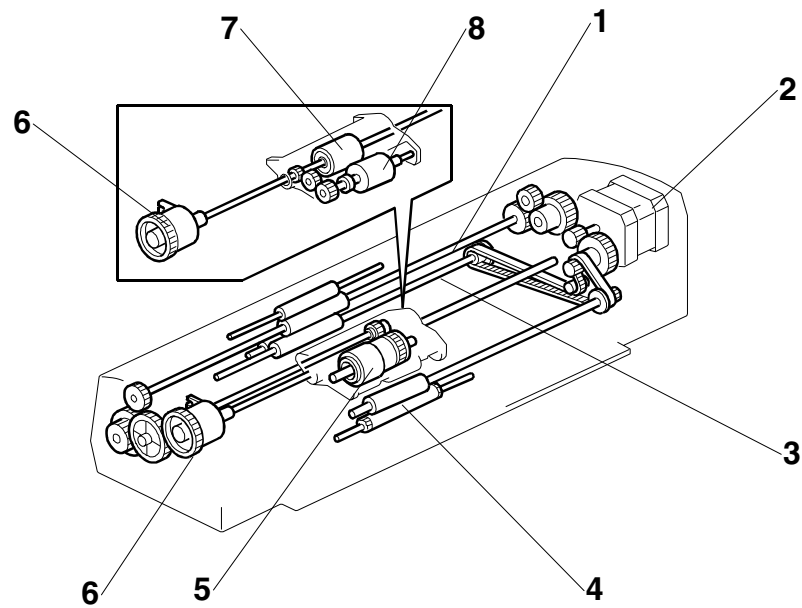
1. Feed roller	6. DF exposure glass
2. Original set sensor	7. White plate
3. Pickup roller	8. 2nd transport roller
4. Original exit roller	9. Separation roller
5. Original table	10. 1st transport roller

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

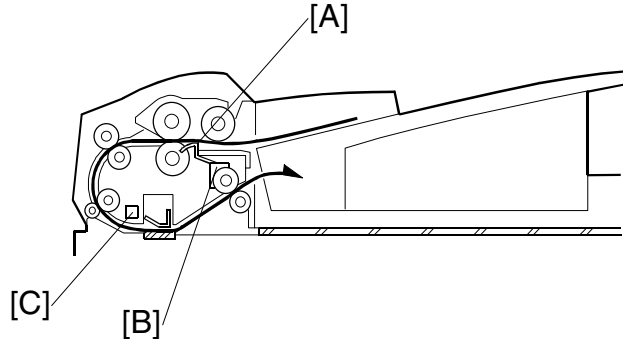
1.3 DRIVE LAYOUT



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.

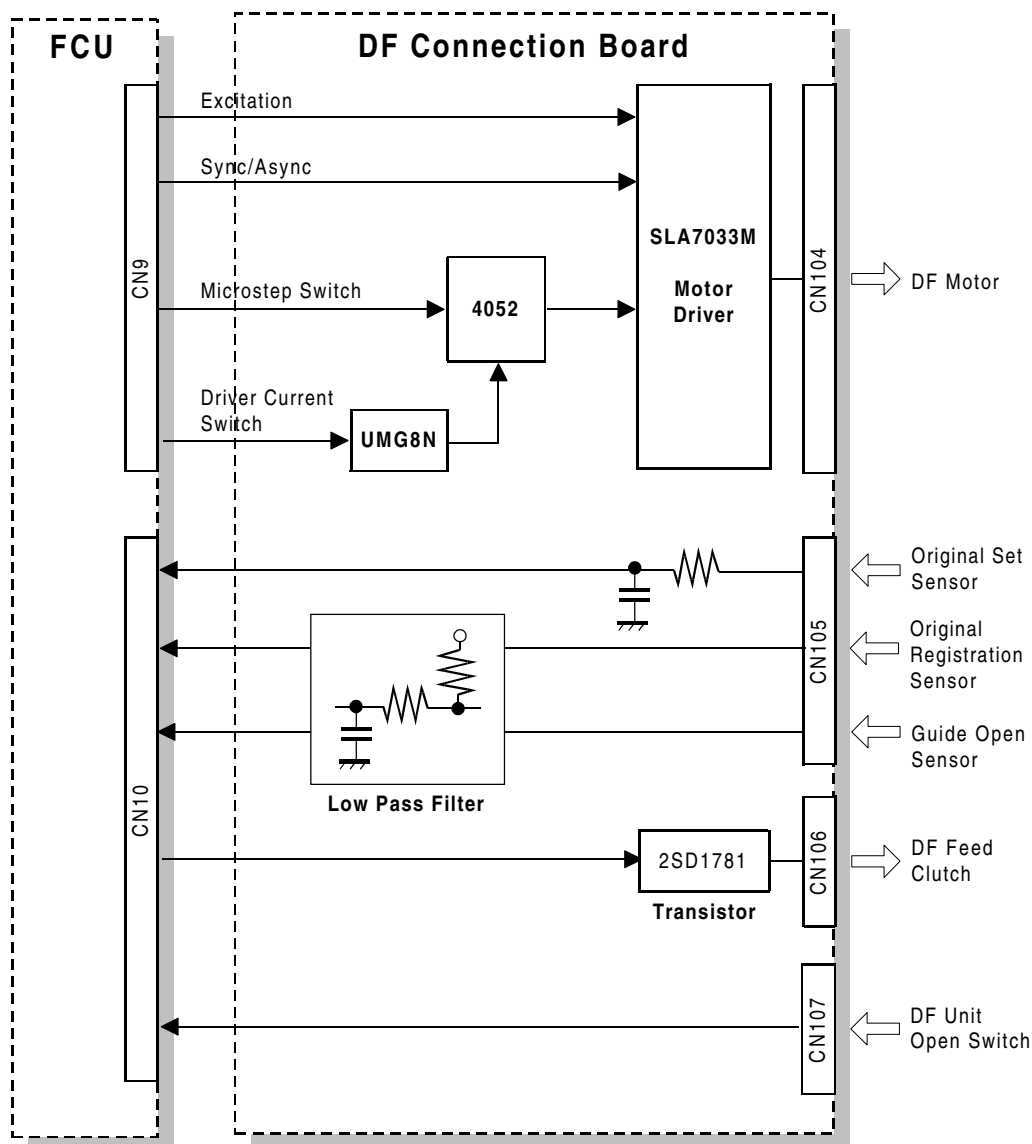
Features of the transport mechanism:

- 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.

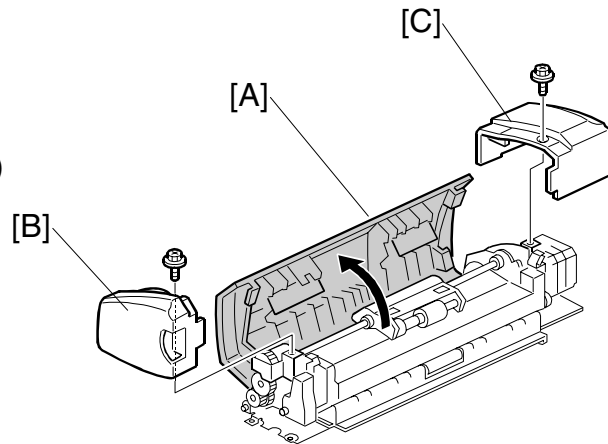
2.5 OVERALL ELECTRICAL CIRCUIT



3. REPLACEMENT AND ADJUSTMENT

3.1 DF UPPER COVERS

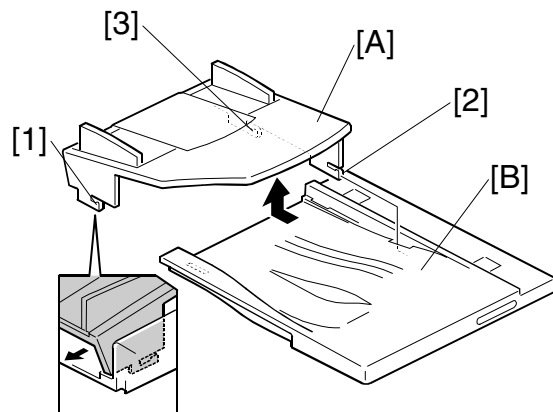
1. Open the upper guide [A].
2. DF front upper cover [B] and/or DF rear upper cover [C] (1 screw each)



3.2 ORIGINAL TABLE

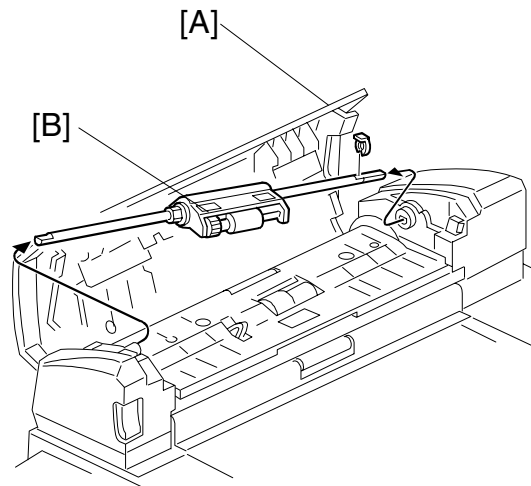
1. Push the original table [A] to the left so that the three latches come free of the platen cover [B], and lift off.

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].



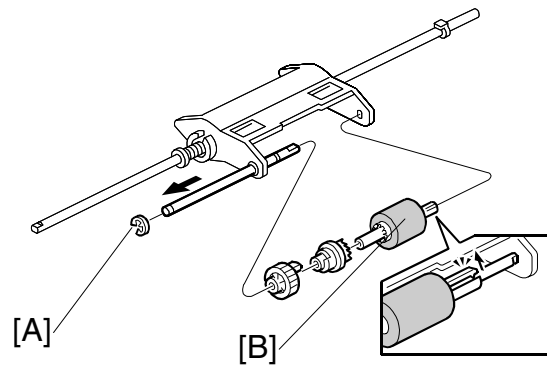
3.3 FEED UNIT

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



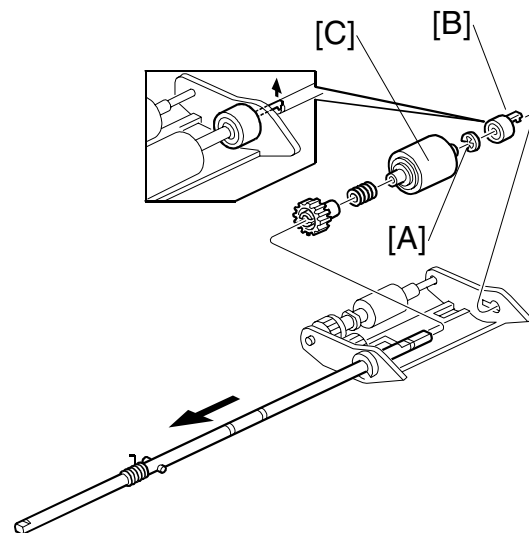
3.4 DF PICKUP ROLLER

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



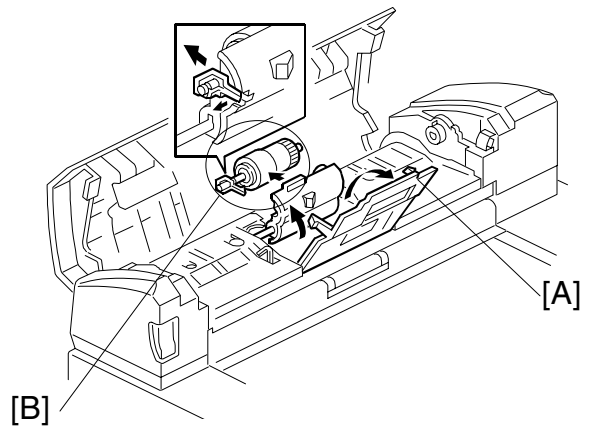
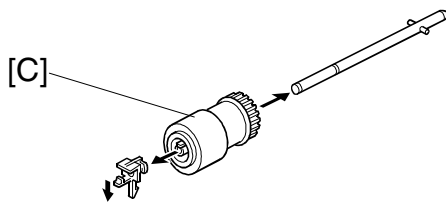
3.5 DF FEED ROLLER

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

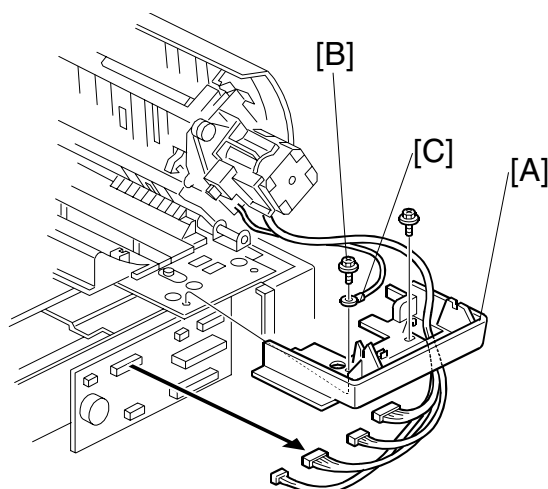
1. Feed unit (☛ 3.3)
2. Open the center lid [A]
3. Lift out the separation roller ass'y [B].
4. DF separation roller [C]



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).

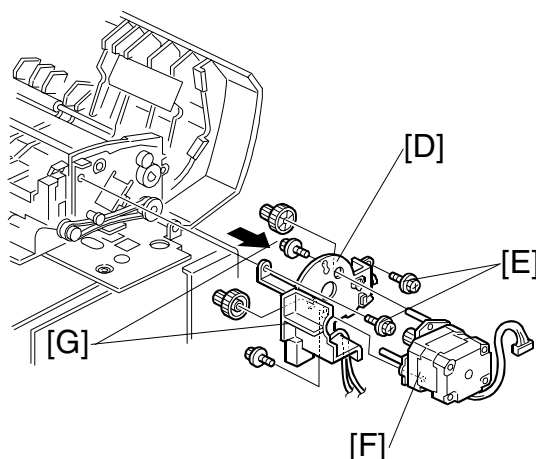
NOTE: It is not necessary to disconnect all connectors and remove the cover completely. When replacing, remember that the left screw [B] must also go through the ground line [C].



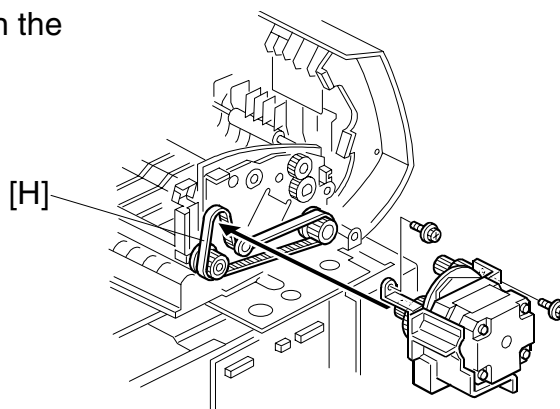
4. Motor bracket [D] (2 screws at [E]).

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).

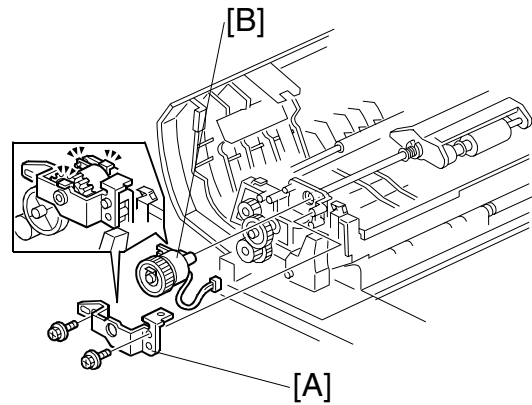


NOTE: When reinstalling, be sure that the belt [H] is arranged as shown in the illustration.

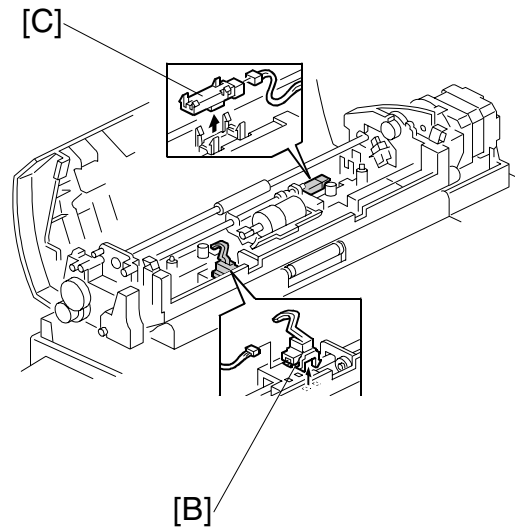
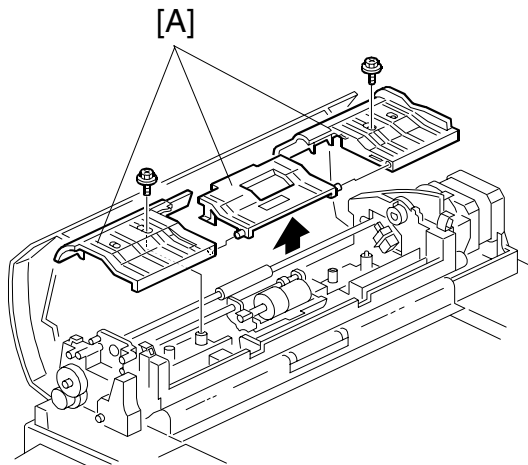


3.8 DF FEED CLUTCH

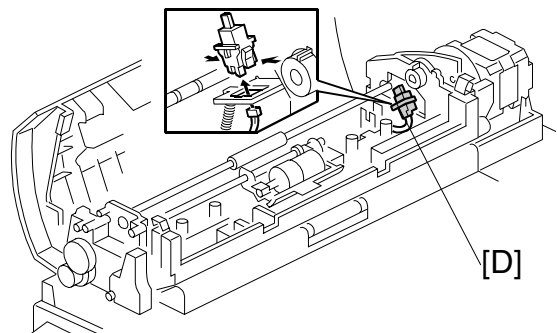
1. DF front upper cover (☛ 3.1)
2. Metal retainer [A] (🔩 × 2)
3. DF feed clutch [B] (🔌 × 1)



3.9 SENSORS

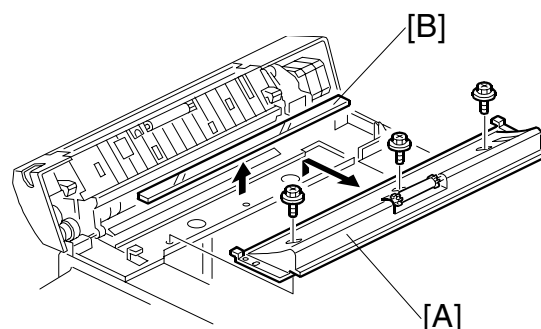


1. Feed unit (☛ 3.3)
2. Three lids [A] (🔩 × 2)
- [B]: Original set sensor (🔌 × 1)
- [C]: Original registration sensor (🔌 × 1)
- [D]: Guide open sensor (🔌 × 1)



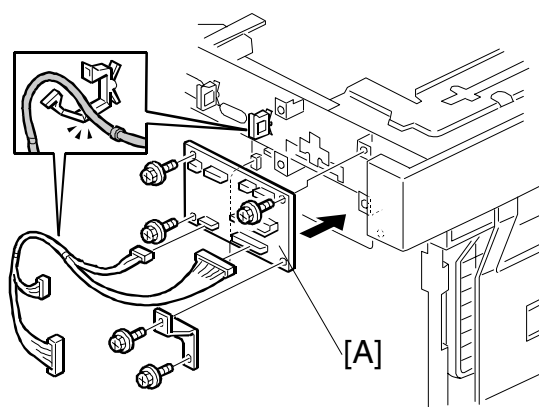
3.10 DF EXPOSURE GLASS

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
(B129/B130/B168/B169/B044/B045/B046)

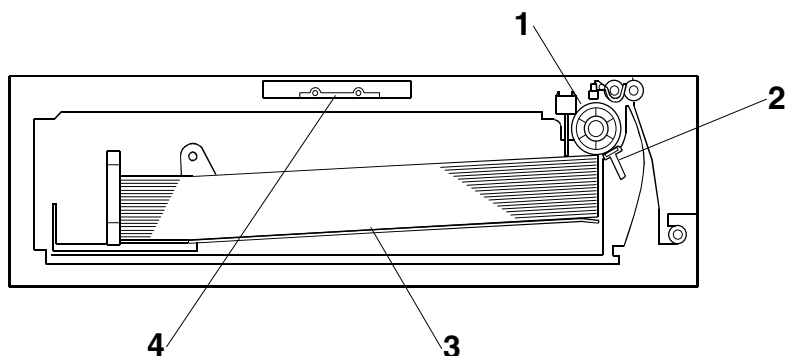
B421

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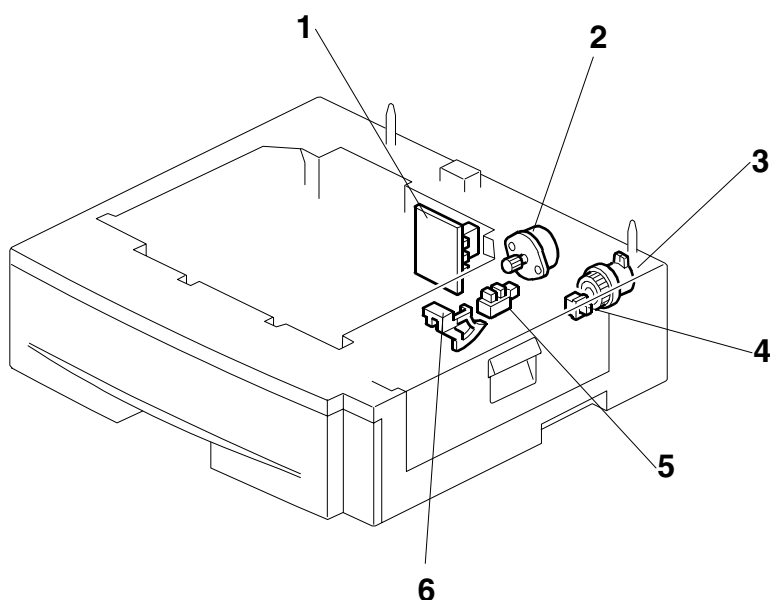
1. OVERALL MACHINE INFORMATION

1.1 MECHANICAL COMPONENT LAYOUT



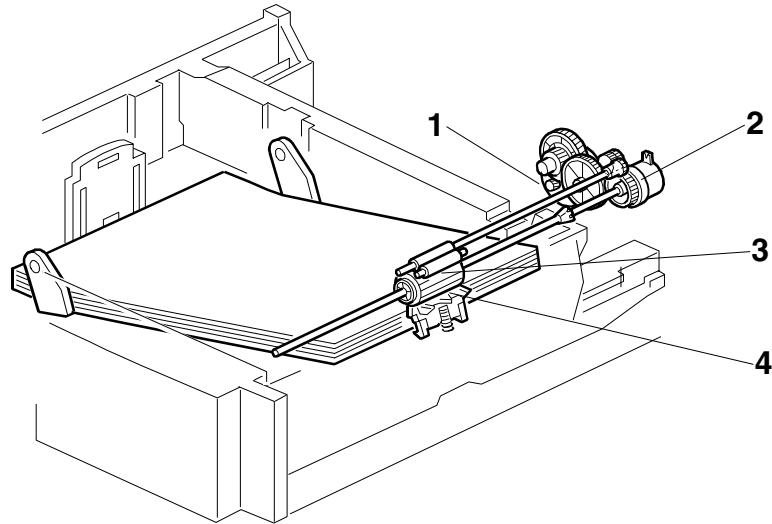
1. Feed Roller	3. Bottom Plate
2. Friction Pad	4. Optional Tray Heater

1.2 ELECTRICAL COMPONENT LAYOUT



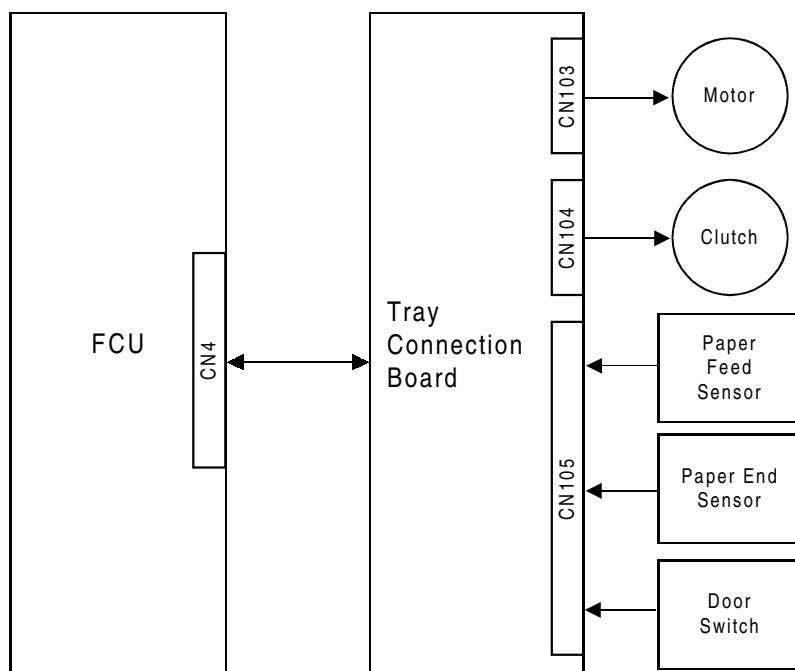
1. Tray Main Board	4. Door Switch
2. Paper Feed Motor	5. Paper Feed Sensor
3. Paper Feed Clutch	6. Paper End Sensor

1.3 DRIVE LAYOUT



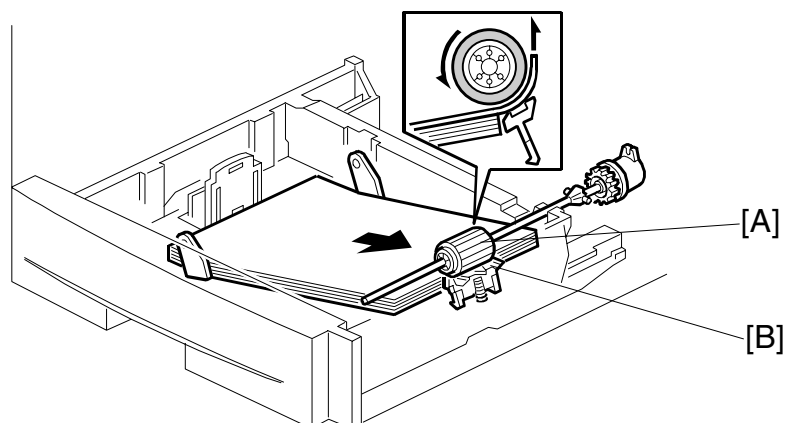
1. Paper Feed Motor	3. Feed Roller
2. Paper Feed Clutch	4. Friction Pad

1.4 OVERALL ELECTRICAL CIRCUIT



1.5 DETAILED DESCRIPTIONS

1.5.1 PAPER FEED AND SEPARATION



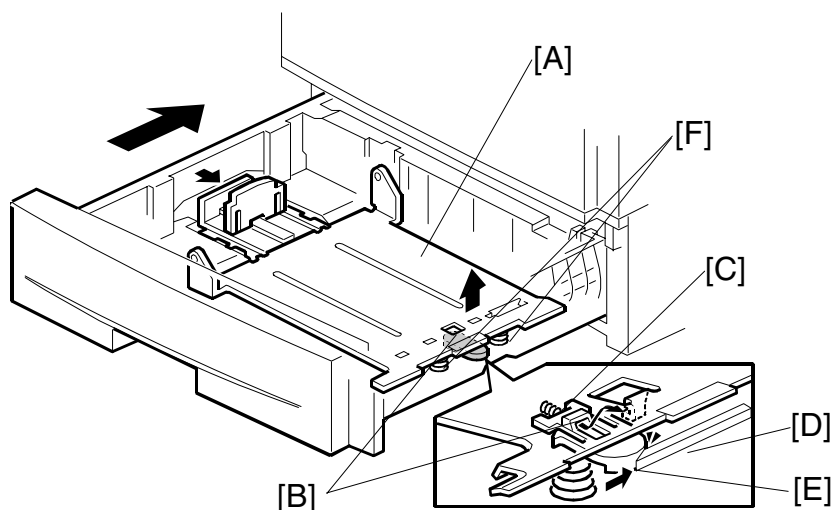
Paper Tray
Unit
B421

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

[A]: Paper feed roller

[B]: Friction pad

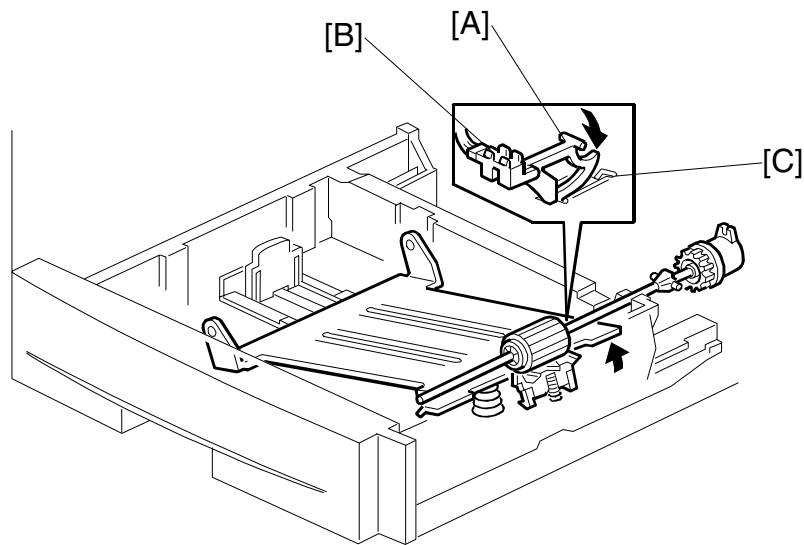
1.6 PAPER LIFT MECHANISM



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.

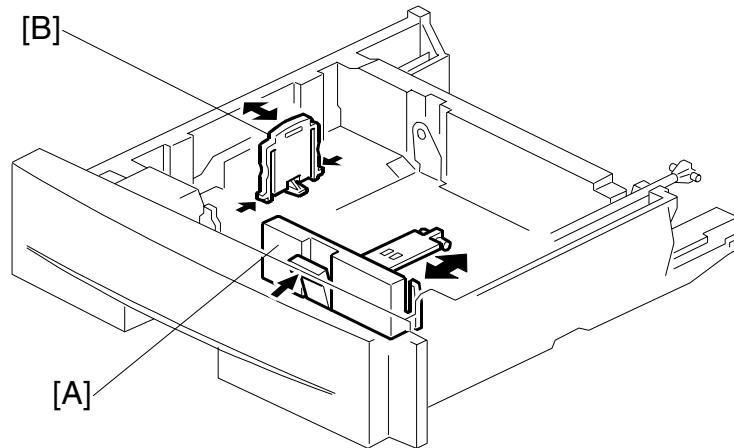
1.7 PAPER END DETECTION



[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

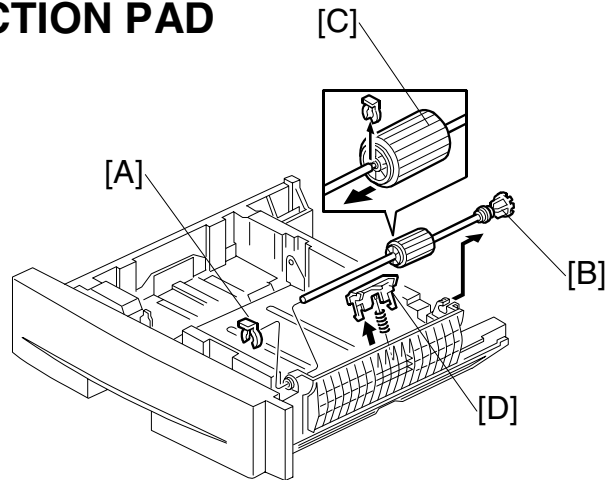
[A]: Side Fence
[B]: End Fence

- 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

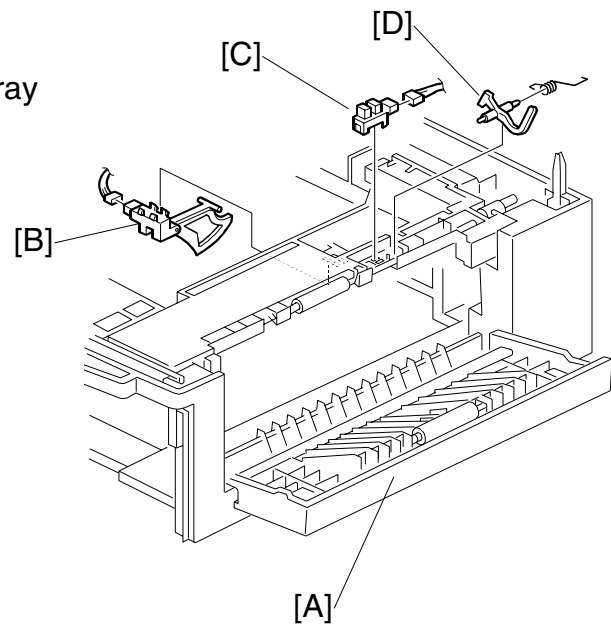
1. Refer to Section 1.4.2 of the B044/B045/B046 Service Manual, and carry out the following steps of that procedure in this order:
 - Step 2 (remove both paper trays)
 - Step 7 (remove copy tray)
 - Step 8 (remove rear cover)
 - Step 9 (remove FCU cover plate)
2. Refer to Section 1.4.2 of the B044/B045/B046 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)

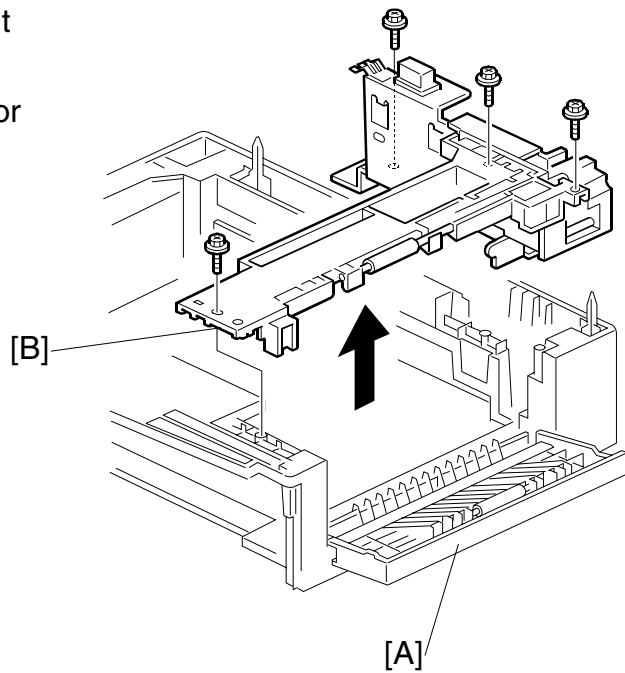


Paper Tray
Unit
B421

2.4 DRIVE SECTION

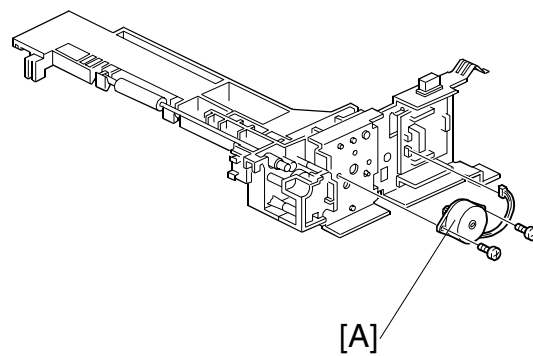
2.4.1 DRIVE BLOCK

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



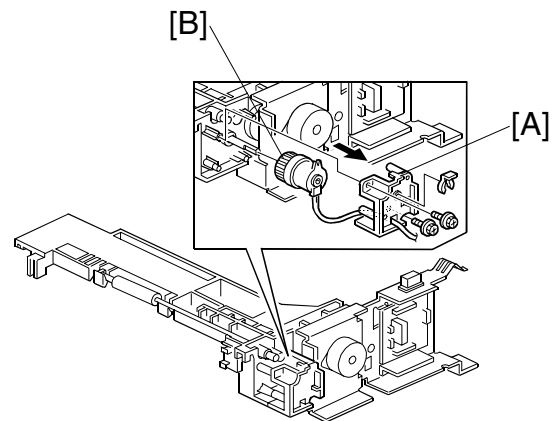
2.4.2 PAPER FEED MOTOR

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



2.4.3 PAPER FEED CLUTCH

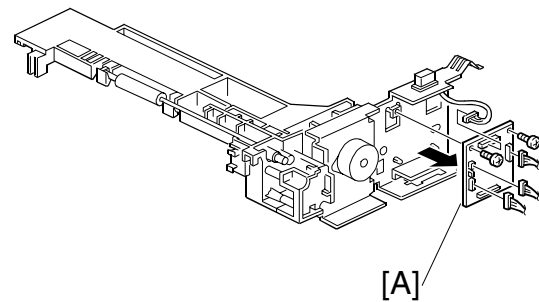
1. Drive block (☞ 2.4.1)
2. Detach the clutch cover [A]
(☞ x 1, ⚙ x 2).
3. Paper feed clutch [B] (☞ x 1)
Detach the connector from the board
side, not the clutch side.



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 (B044/B045/B046)

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.

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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

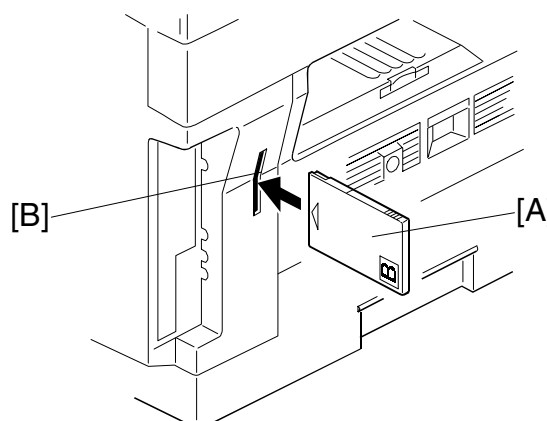
#: Adhered on the operation panel

1.1.2 INSTALLING THE FAX OPTION

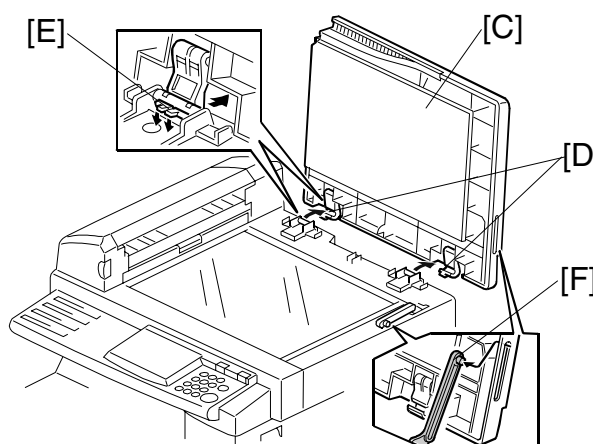
⚠ CAUTION

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].

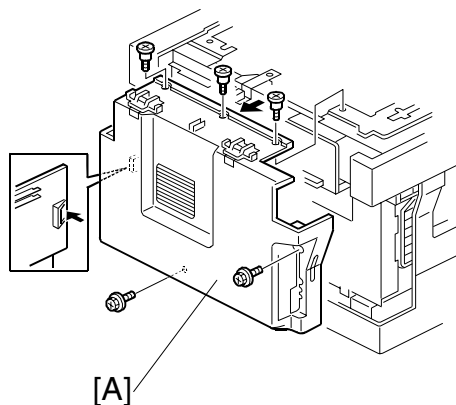


2. Turn the power on, and run SP5-824 to save (upload) the SRAM data from the current FCU into the memory card. (For instructions, see Section 5.1.8 of the base copier's service manual.)
3. Turn off the main switch, remove the memory card, and disconnect the power cord.
4. Remove the platen cover [C]. 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].

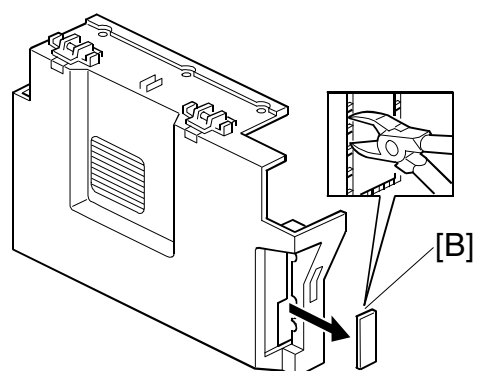


FAX UNIT

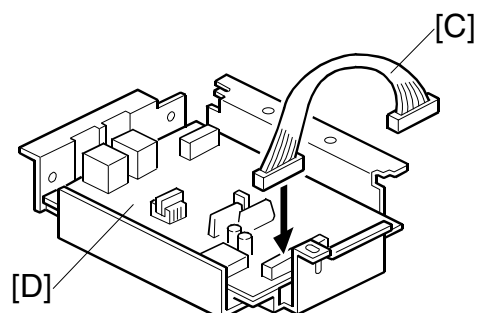
5. Remove the rear cover [A] (⌀ x 5).



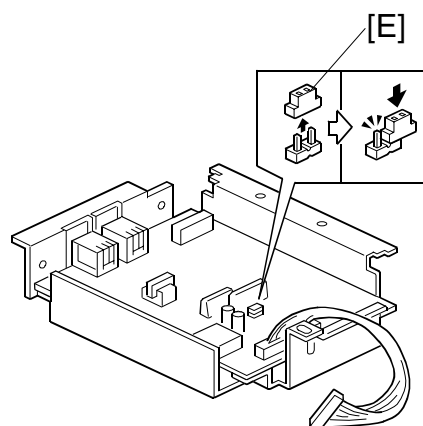
6. Cut out area [B] from the rear cover.



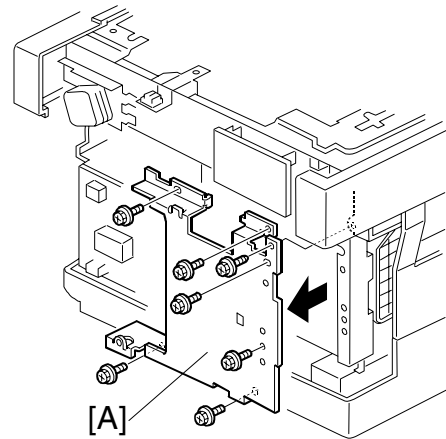
7. Connect the supplied harness [C] to the NCU [D].



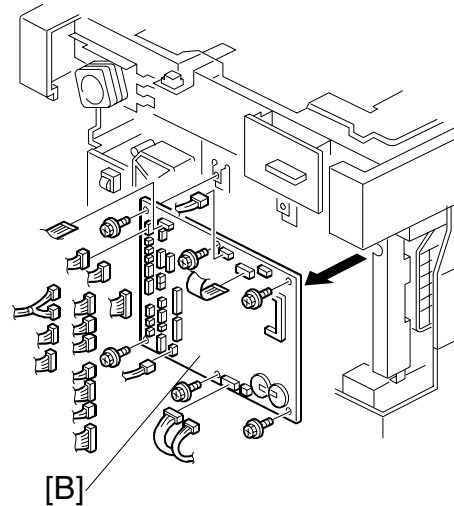
8. **On Hong Kong models only:** On the NCU, change the position of the TB1 jumper connector [E] so that the jumper is open. On all other versions, make sure that the jumper TB1 is closed.



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).

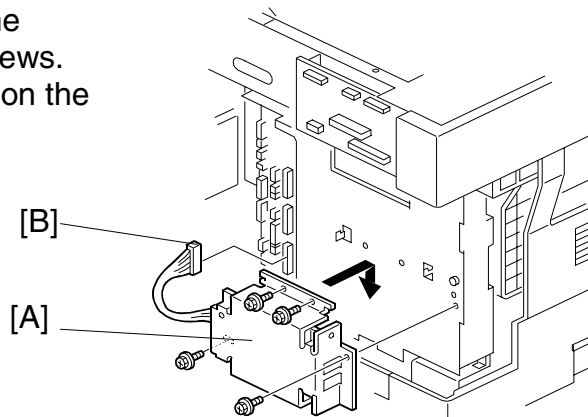


11. In place of the FCU that you just removed, install the FCU that came with the fax option (⚙ x 6, 2 flat cables, all connectors).

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

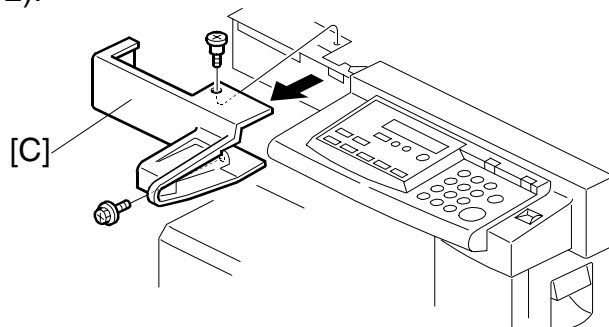
FAX UNIT

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.

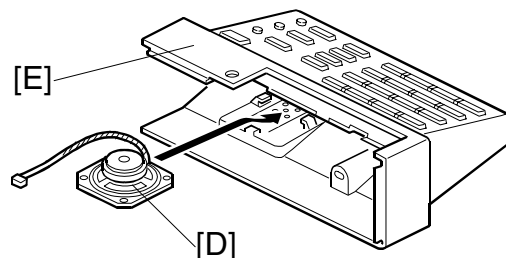


15. Reattach the rear cover.

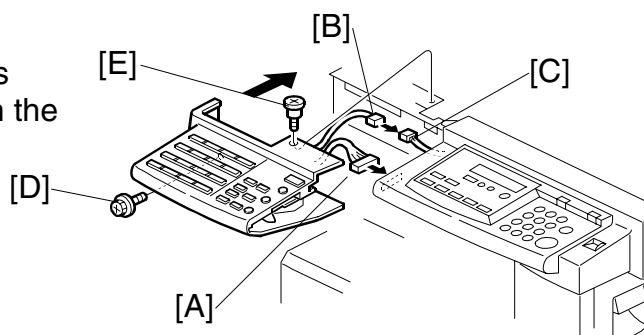
14. Remove the front left cover [C] (⌀ x 2).



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



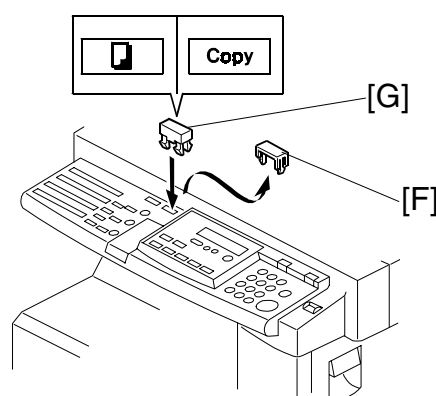
18. Connect the fax operation panel's connector [A] to the connector on the copier's operation panel.



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.

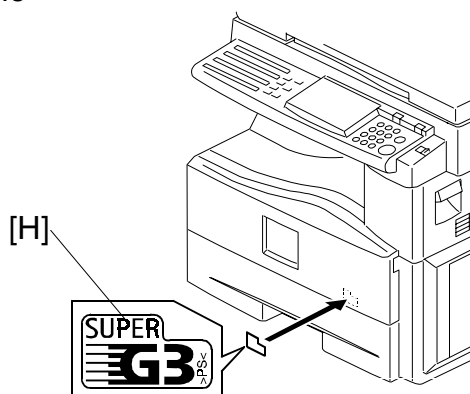
NOTE: If you mistakenly use the longer screw at [E], the screw will block the action of the scanner.

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 in to 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 ^{*1})	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 ^{*1})	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 -> 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)

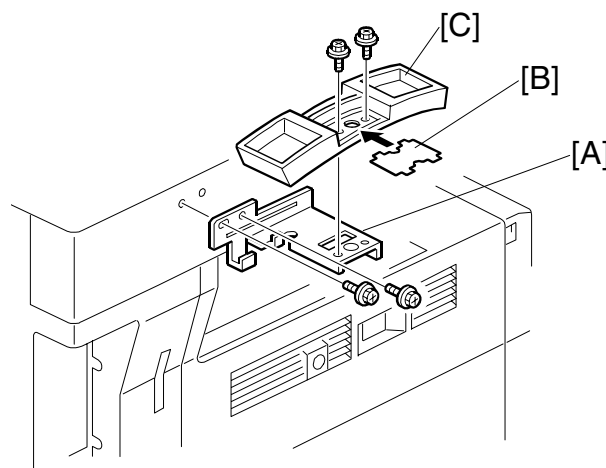
1.3.1 ACCESSORY CHECK

Check that you have the components and accessories indicated below.

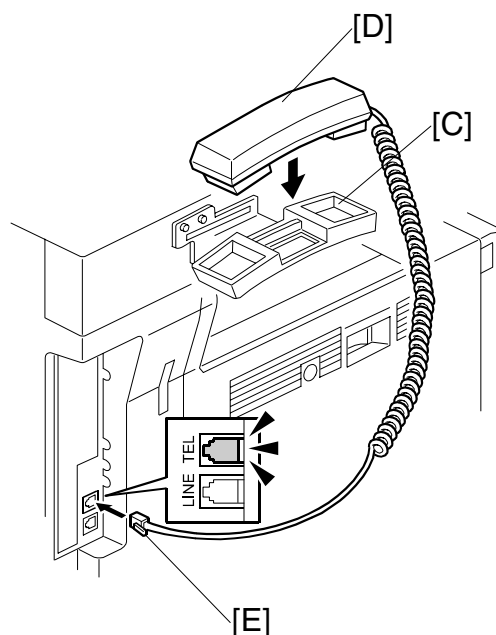
No.	Description	Q'ty
1	Handset	1
2	Handset cradle	1
3	Screws	2
4	Handset manual	1

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

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.

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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.

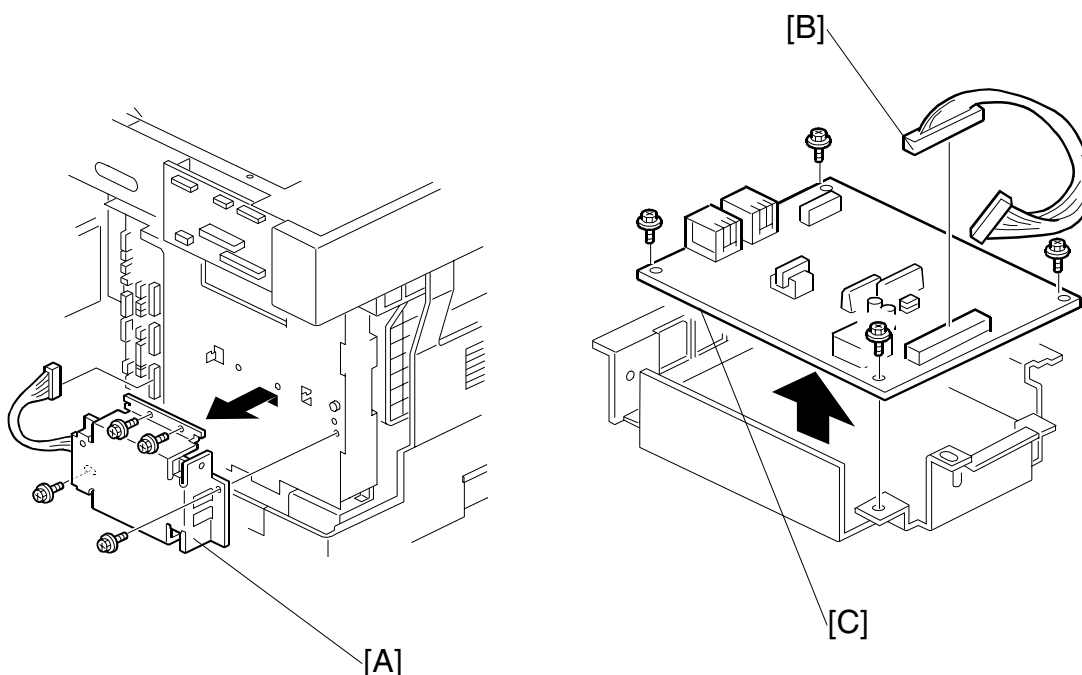
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3.2 FCU

Refer to the service manual for the base copier.

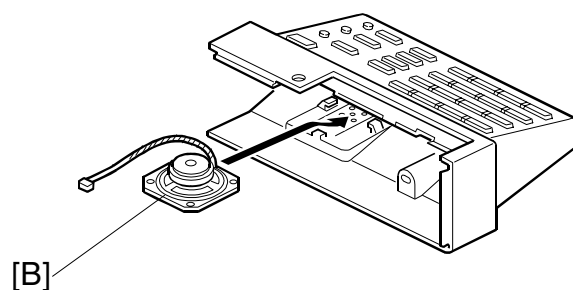
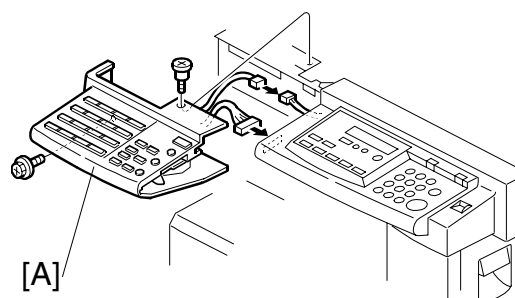
3.3 NCU

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	• Check the line connection. • Check the NCU - FCU connectors. • The machine at the other end may be incompatible. • Replace the NCU or FCU. • Check for DIS/NSF with an oscilloscope. • If the rx signal is weak, there may be a bad line.
0-01	DCN received unexpectedly	• The other party is out of paper or has a jammed printer. • The other party pressed Stop during communication.
0-03	Incompatible modem at the other end	• The other terminal is incompatible.
0-04	CFR or FTT not received after modem training	• Check the line connection. • Check the NCU - FCU connectors. • Try changing the tx level and/or cable equalizer settings. • Replace the FCU or NCU. • The other terminal may be faulty; try sending to another machine. • If the rx signal is weak or defective, there may be a bad line. Cross reference • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters
0-05	Unsuccessful after modem training at 2400 bps	• Check the line connection. • Check the NCU - FCU connectors. • Try adjusting the tx level and/or cable equalizer. • Replace the FCU or NCU. • Check for line problems. Cross reference • See error code 0-04.

ERROR CODES

Code	Meaning	Suggested Cause/Action
0-06	The other terminal did not reply to DCS	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. • The other end may be defective or incompatible; try sending to another machine. • Check for line problems. Cross reference • See error code 0-04.
0-07	No post-message response from the other end after a page was sent	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed or run out of paper. • The other end user may have disconnected the call. • Check for a bad line. • The other end may be defective; try sending to another machine.
0-08	The other end sent RTN or PIN after receiving a page, because there were too many errors	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • The other end may have jammed, or run out of paper or memory space. • Try adjusting the tx level and/or cable equalizer settings. • The other end may have a defective modem/NCU/FCU; try sending to another machine. • Check for line problems and noise. Cross reference • Tx level - NCU Parameter 01 (PSTN) • Cable equalizer - G3 Switch 07 (PSTN) • Dedicated Tx parameters
0-14	Non-standard post message response code received	• Check the FCU - NCU connectors. • Incompatible or defective remote terminal; try sending to another machine. • Noisy line: resend. • Try adjusting the tx level and/or cable equalizer settings. • Replace the NCU or FCU. Cross reference • See error code 0-08.

Code	Meaning	Suggested Cause/Action
0-15	The other terminal is not capable of specific functions.	The other terminal is not capable of accepting the following functions, or the other terminal's memory is full. • Confidential rx • Transfer function • SEP/SUB/PWD/SID
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	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Check for line problems. • Try calling another fax machine. • Try adjusting the reconstruction time for the first line and/or rx cable equalizer setting. Cross reference • Reconstruction time - G3 Switch 0A, bit 6 • Rx cable equalizer - G3 Switch 07 (PSTN)
0-21	EOL signal (end-of-line) from the other end not received within 5 s of the previous EOL signal	• Check the connections between the FCU, NCU, & line. • Check for line noise or other line problems. • Replace the NCU or FCU. • The remote machine may be defective or may have disconnected. Cross reference • Maximum interval between EOLs and between ECM frames - G3 Bit Switch 0A, bit 4
0-22	The signal from the other end was interrupted for more than the acceptable modem carrier drop time (default: 200 ms)	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try adjusting the acceptable modem carrier drop time. Cross reference • Acceptable modem carrier drop time - G3 Switch 0A, bits 0 and 1

ERROR CODES

Code	Meaning	Suggested Cause/Action
0-23	Too many errors during reception	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or FCU. • Defective remote terminal. • Check for line noise or other line problems. • Try asking the other end to adjust their tx level. • Try adjusting the rx cable equalizer setting and/or rx error criteria. Cross reference • Rx cable equalizer - G3 Switch 07 (PSTN) • Rx error criteria - Communication Switch 02, bits 0 and 1
0-24	Printer failure occurred while the memory was full during non-ECM reception; negative response returned	There is no memory space available, or substitute reception is disabled. • Try asking the user to add optional extra memory.
0-29	Data block format failure in ECM reception	Check for line noise or other line problems. • Try receiving from another machine. Replace the FCU.
0-30	The other terminal did not reply to NSS(A) in AI short protocol mode	• Check the line connection. • Check the FCU - NCU connectors. • Try adjusting the tx level and/or cable equalizer settings. • The other terminal may not be compatible. Cross reference • Dedicated tx parameters
0-32	The other terminal sent a DCS, which contained functions that the receiving machine cannot handle.	• Check the protocol dump list. • Ask the other party to contact the manufacturer.
0-33	DCR timer runs out without receiving certain amount of data.	• Check the connections between the FCU, NCU, & line. • Check for line noise or other line problems. • Replace the NCU or FCU. • The remote machine may be defective or may have disconnected.
0-52	Polarity changed during communication	• Check the line connection. Retry communication.
0-70	The communication mode specified in CM/JM was not available (V.8 calling and called terminal)	• 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.) • A polling tx file was not ready at the other terminal when polling rx was initiated from the calling terminal.

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.	- The calling terminal could not detect ANSam due to noise, etc. - ANSam was too short to detect. - Check the line connection and condition. - Try making a call to another V.8/V.34 fax.
0-75	The called terminal fell back to T.30 mode, because it could not detect a CM in response to ANSam (ANSam timeout).	- The terminal could not detect ANSam. - Check the line connection and condition. - Try receiving a call from another V.8/V.34 fax.
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).	- The called terminal could not detect a CM due to noise, etc. - Check the line connection and condition. - Try making a call to another V.8/V.34 fax.
0-77	The called terminal fell back to T.30 mode, because it could not detect a CJ in response to JM (JM timeout).	- The calling terminal could not detect a JM due to noise, etc. - A network that has narrow bandwidth cannot pass JM to the other end. - Check the line connection and condition. - Try receiving a call from another V.8/V.34 fax.
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.	- The guard timer expired while starting these phases. Serious noise, narrow bandwidth, or low signal level can cause these errors. If these errors happen at the transmitting terminal: - Try making a call at a later time. - Try using V.17 or a slower modem using dedicated tx parameters. - Try increasing the tx level. - Try adjusting the tx cable equalizer setting. If these errors happen at the receiving terminal: - Try adjusting the rx cable equalizer setting. - Try increasing the tx level. - Try using V.17 or a slower modem if the same error is frequent when receiving from multiple senders.
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.	- The signal did not stop within 10 s. - Turn off the machine, then turn it back on. - If the same error is frequent, replace the FCU.

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.	- The other terminal was incompatible. - Ask the other party to contact the manufacturer.
0-87	The control channel started after an unsuccessful primary channel.	- The receiving terminal restarted the control channel because data reception in the primary channel was not successful. - This does not result in an error communication.
0-88	The line was disconnected because PPR was transmitted/received 9 (default) times within the same ECM frame.	- Try using a lower data rate at the start. - Try adjusting the cable equalizer setting.
1-00	Document jam	Incorrectly inserted document or unsuitable document type. Check the ADF drive components and sensors.
1-01	Document length exceeded the maximum	- Try changing the maximum acceptable document length. - Divide the document into smaller pieces. - Check the ADF drive components and sensors. Cross reference Max. document length - Scanner switch 00, bits 2 and 3
1-02	Shading error (Interval of original documents is too short)	Check the ADF drive components and sensors.
1-08	Shading error (No Xenon lamp turns on)	- Check the xenon lamp connection - Replace the xenon lamp or FCU
1-10	Paper at the scan line when the power was turned on.	- Remove the paper. - Check the scan line sensor.
1-17	Document jam in the feed-out area	- Clear any debris from the sensor actuator. - Check the ADF drive components and sensors.
1-20	Paper did not reach the fusing exit at the end of printing	- Remove the paper. - Check the printer drive components and sensors.
1-21	Paper present at the fusing exit after printing	
1-30	Paper ran out during printing	Add paper in the cassette.
1-34	Paper ran out after printing	
1-35	Paper lift mechanism error at the 1 st optional paper tray	Check the printer drive components and sensors of optional paper tray.
1-71	The cover was opened or the cassette was pulled out during printing	Close the cover or put back the cassette.
2-10	The modem cannot enter tx mode	Replace the FCU.
2-11	Only one V.21 connection flag was received	Replace the FCU.

Code	Meaning	Suggested Cause/Action
2-12	Modem clock irregularity	Replace the FCU.
2-13	Modem initialization error	- Turn off the machine, then turn it back on. - Update the modem ROM. - Replace the FCU.
2-20	Abnormal coding/decoding (CPU not ready)	Replace the FCU.
2-23	JBIG compression/reconstruction error	- Turn off the machine, then turn it back on. - Replace the FCU if the error occurs frequently.
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)	- JBIG data error. - Check the remote terminal's JBIG function. - Replace the FCU if the error occurs frequently.
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)	Check the receive capabilities requested from the other terminal.
4-00	One page took longer than 8 minutes to transmit	Check for a bad line. Try the communication at a lower resolution, or without halftone. Change the FCU.
4-01	Line current was cut	- Check the line connector. - Check the connection between FCU and NCU. - Check for line problems. - Replace the FCU or the NCU.
4-02	The other end cut the received page as it was longer than the maximum limit.	Split the page into smaller pieces, or ask the other end to change their maximum receive length setting, then re-send.
4-10	Communication failed because of an ID Code mismatch (Closed Network) or Tel. No./CSI mismatch (Protection against Wrong Connections)	- Get the ID Codes the same and/or the CSIs programmed correctly, then resend. - The machine at the other end may be defective.
5-00	Data construction not possible	Replace the FCU.
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	• Temporary memory shortage. • Test the SAF memory. • Replace the FCU board
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	• Wait for the messages which are currently in the memory to be sent or delete some files from memory. • Test the SAF memory. • Ask the other end to resend the message. • Replace the FCU board.
5-24	Memory overflow after the second page of a scanned document	• Try using a lower resolution setting. • Wait for the messages which are currently in the memory to be sent or delete some files from memory.
5-25	SAF file access error	• Replace the FCU board.
5-30	Mode table for the first page to be printed was not effective	• Replace the FCU or IC memory card.
6-00	G3 ECM - T1 time out during reception of facsimile data	• Try adjusting the rx cable equalizer. • Replace the FCU or NCU.
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	• The other terminal may be defective.
6-04	G3 ECM - RTC not detected	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU.
6-05	G3 ECM - facsimile data frame not received within 18 s of CFR, but there was no line fail	• Check the line connection. • Check connections from the NCU to the FCU. • Check for a bad line or defective remote terminal. • Replace the FCU or NCU. • Try adjusting the rx cable equalizer Cross reference • Rx cable equalizer - G3 Switch 07 (PSTN)
6-06	G3 ECM - coding/decoding error	• Defective FCU. • The other terminal may be defective.
6-08	G3 ECM - PIP/PIN received in reply to PPS.NULL	• The other end pressed Stop during communication. • The other terminal may be defective.
6-09	G3 ECM - ERR received	• Check for a noisy line. • Adjust the tx levels of the communicating machines. • See code 6-05.

Code	Meaning	Suggested Cause/Action
6-10	G3 ECM - error frames still received at the other end after all communication attempts at 2400 bps	- Check for line noise. - Adjust the tx level (use NCU parameter 01 or the dedicated tx parameter for that address). - Check the line connection. - Defective remote terminal.
6-11	G3 ECM - printing impossible because of a missing first line in the MMR coding	Check for problems in the printer mechanism.
6-21	V.21 flag detected during high speed modem communication	The other terminal may be defective or incompatible.
6-99	V.21 signal not stopped within 6 s	Replace the FCU.
9-00	PIN code response because of printer SC error	Fix and release the SC error
9-02	DMA receiving error (PLU)	Replace the FCU.
9-03	Paper eject error at the last page (with image data)	Check the printer drive components and sensors
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	If the problem persists, replace the FCU.
9-08	Paper jam inside the development area	
9-09	Paper jam in the fusing exit area	
9-10	Toner end detected	Replace the cartridge.
9-12	Cover open detected during printing	Close the cover, or check the cover sensors.
9-13	LD interlock error	- Replace the polygon motor - Replace the LD unit
9-14	PSU overheat	- Check the machine's environment - Replace the PSU
9-17	Charge corona unit failure	If the problem persists, replace the FCU.
9-20	Laser diode failure	If the problem persists, replace the FCU.
9-22	Fusing lamp failure	
9-23	Hexagonal mirror motor failure	
9-24	Main motor failure	
9-29	Power pack error	- Check the connections - Replace the power pack or FCU
9-50	Paper non-feed or jam inside the upper paper feed unit	- Check if a recommended type of paper is used. - Check if the paper guides are aligned to the paper correctly. - Check the paper feed mechanism in the unit.

ERROR CODES

Code	Meaning	Suggested Cause/Action
9-51	Jam at the paper exit of the upper paper feed unit.	• Check for a blockage in the paper feed path. • Check the paper feed mechanisms inside the unit. • Check if the sensor is defective.
9-60	Printer error occurs during reception	If substitute reception is switched off and a paper jam or other printer error occurs, the machine will terminate the reception. • Check the printer mechanism.
9-61	Memory overflow occurs during reception	• Check the SAF.
9-80	Bypass feed - paper non-feed or jam at the entrance	• Check the registration roller and sensor.
9-81	Bypass feed - paper length exceeds the maximum limit (600 mm)	• Check the paper feed mechanism and sensors.
9-84	Paper non-feed or jam at the cassette entrance	• Same as 9-07
22-00	Original length exceeded the maximum scan length	• Divide the original into a few pages. • Check the resolution used for scanning. Lower the scan resolution if possible. • Add optional page memory.
22-01	Memory overflow while receiving	• Wait for the files in the queue to be sent. • Delete unnecessary files from memory. • Transfer the substitute reception files to another fax machine, if the machine's printer is busy or out of order. • Expand SAF memory.
22-02	Tx or rx job stalled due to line disconnection at the other end	• The job started normally but did not finish normally; data may or may not have been received fully. • Restart the machine.
22-04	The machine cannot store received data in the SAF	• Update the ROM • Replace the FCU.
23-00	Data read timeout during construction	• Restart the machine. • Replace the FCU
25-00	The machine software resets itself after a fatal transmission error occurred	• Update the ROM • Replace the FCU.
F0-xx	V.34 modem error	• Replace the FCU.

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
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(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	: <u>0000584</u>

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

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	RAM Reset Bit 1 0 Reset Level 0 0 No reset 0 1 Reset Level 2 1 0 Reset Level 3 1 1 Not used	Reset Level 3: 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. Reset Level 2: 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). After erasing, the machine automatically changes these two bits back to 0. No reset: Normal operation Cross-reference RAM Reset Level 1 (Factory reset): 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.

System Switch 00		
No.	FUNCTION	COMMENTS
2	Technical data printout on Journal 0: Disabled 1: Enabled	1: Instead of a personal code, the Journal lists the following data for each analog G3 communication. E.g. 32 V34 288 M 01 00 03 02 First number: Symbol rate (V.34 only) Second number: Final modem type used Third number: Final date rate (for example, 288 means 28.8 Kbps) Fourth number: M means modem EQM./L means RX level. Fifth and sixth number: 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. Seventh number (RX mode only): Total number of error lines that occurred during non-ECM reception. Eighth number (RX mode only): Total number of burst error lines that occurred during non-ECM reception. The seventh and eighth numbers are fixed at 00 for transmission records and ECM reception records.
3	Line quality data output method 0: Error rate measurement during image data transmission 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 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 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. Be sure to reset this bit to 0 after testing.
6	Protocol dump list output 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. 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 0: Up to the limit of the memory area for protocol dumping 1: 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 168: 16800 BPS 312: 31200 BPS 144: 14400 BPS 288: 28800 BPS 120: 12000 BPS 264: 26400 BPS 96: 9600 BPS 240: 24000 BPS 72: 7200 BPS 216: 21600 BPS 48: 4000 BPS 192: 19200 BPS 24: 2400 BPS	
Resolution	F: Fine, transmitted at 8 x 15.4 dots per mm D: Detail, transmitted at 8 x 7.7 dots per mm S: Standard, transmitted at 8 x 3.85 dots per mm 21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 24: Fine (200 x 400 dpi)	
Compression mode	MMR: MMR compression MR: MR compression MH: MH compression JBO: JBIG optional compression JBB: JBIG standard compression	
Communication mode	ECM: With ECM NML: With no ECM	
Width and reduction	A4: A4 (8.3"), no reduction	
I/O rate	0: 0 ms/line 10: 10 ms/line 2/: 2.5 ms/line 20: 20 ms/line 5: 5 ms/line 40: 40 ms/line "40" is displayed while receiving a fax message using AI short protocol.	

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

System Switch 02		
No.	FUNCTION	COMMENTS
0	Memory file transfer 0: Disabled 1: Enabled	1: All messages in the memory (including confidential RX messages) are sent to the fax number that is stored as the service station. Always reset this bit to zero after transfer. Cross-reference Service station number: Function 09
1-3	Not used	Do not change these settings.
4	Automatic reset (during communication) 0: Disabled 1: Enabled	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). This timer can be adjusted with RAM addresses 4004C0 and 4004C1. Cross-reference Service RAM Addresses, section 5.5.
5	Not used	Do not change the setting.
6, 7	Memory read/write by RDS Bit 7 6 Setting 0 0 Always disabled 0 1 User selectable 1 0 User selectable 1 1 Always enabled	(0,0): All RDS systems are always locked out. (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. (1,1): At any time, an RDS system can access the machine.

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). This data is only valid if bits 6 and 7 of System Switch 02 are set to "User selectable". 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 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 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. 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. The replacement counter is programmed at the following addresses: ADF kit counter: 4002D0 to 4002D3(H) Refer to section 5.5 for more details. 1: The machine will not ask the user to replace the maintenance kits.
6	CSI programming level 0: User level 1: Service level	1: Only a service function can program the CSI.
7	Telephone line type programming mode 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.

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

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

BIT SWITCHES

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

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

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

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

System Switch 0E - Not used (do not change any of these settings)		

System Switch 0F		
No.	FUNCTION	COMMENTS
0–7	Country code for functional settings (Hex)	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. Cross-reference NCU country code: Function 07, parameter CC. 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. Note: If RAM reset level 1 is done, this bit switch resets to UK (02) for EU/Asia models and USA (11) for NA model.
	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	

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

System Switch 11		
No.	FUNCTION	COMMENTS
0	TTL printing position 0: Superimposed on the page data 1: Printed before the data leading edge	Change this bit to 1 if the TTL overprints information that the customer considers important.
1–3	Not used	Do not change these settings.
4	Received-time printing position 0: Superimposed on the page data 1: Printed after the data trailing edge	Change this bit to 1 if the reception time overprints information that the customer considers important.
5	Preferred type of terminal identification to appear on reports 0: Label programmed in the machine 1: Dialed number	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 0: Reception disabled 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. This Sw U.P.05 bit 1 -- 0 : Reception always enabled 0 1 : Reception disabled 1 1 : Reception enabled only there is no problem with 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 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 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) 0: Manual adjustment 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)

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

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

5.1.2 SCANNER SWITCHES

Scanner Switch 00																	
No.	FUNCTION	COMMENTS															
0	MTF 0: Disabled 1: Enabled																
1	Text/Photo separation in halftone mode 0: Disabled 1: Enabled	Normally keep this bit at 1 to get a good halftone quality.															
2, 3	Maximum transmittable document length <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) 0: Disabled 1: Enabled	0: The machine scans the document in 3.85 line/mm steps, then transmits or makes copies. 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 0: Disabled 1: Enabled	0: No marks are printed. 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 0: Disabled 1: Enabled	0: The next page continues from where the previous page left off. 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 0: Off 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 0: Disabled 1: Enabled	0: Incoming pages are printed without length reduction. (Page separation threshold: Plotter Switch 03, bits 4 to 7) 1: Incoming page length is reduced when printing. (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	
	Cross reference	
	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.		
	Cross-reference		
	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	

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

BIT SWITCHES

Plotter Switch 0D - Not used (do not change any of these settings)
Plotter Switch 0E - Not used (do not change any of these settings)
Plotter Switch 0F - 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 Bit 1 0 Modes 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 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 Bit 3 2 Modes 0 0 MH only 0 1 MH/MR 1 0 MH/MR/MMR 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 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 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. (1,0) - The same as above, except that only the last 4 digits are compared. (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. (0,0) - Nothing is checked; transmission will always go ahead. Note: This function does not work when dialing is done from the external telephone.
4	Operator call if no response is received in reply to NSF/DIS 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 Bit 7 6 Setting 0 0 No limit 0 1 B4 (364 mm) 1 0 A4 (297 mm) 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 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. The Low and High threshold values depend on the sub-scan resolution, and are as follows. <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> This bit is ignored if ECM is in use. 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 0: 5% 1: 10%	If the error line ratio for a page exceeds the acceptable ratio, RTN will be sent to the other end. This bit is ignored if ECM is in use.																
2	Treatment of pages received with errors during G3 reception 0: Deleted from memory without printing 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 0: No hang-up 1: Hang-up	0: The next page will be sent even if RTN or PIN is received. 1: The machine will send DCN and hang up if it receives RTN or PIN. This bit is ignored for memory transmissions or if ECM is being used.																
4, 5	Wrong connection prevention method (Auto Service Call) <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. (1,0) - The same as above, except that only the last 4 digits are compared. (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. (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 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

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

Communication Switch 04 - Not used (do not change any of these settings)
Communication Switch 05 - Not used (do not change any of these settings)

Communication Switch 06		
No.	FUNCTION	COMMENTS
0-5	Not used	Do not change these settings.
6	Dialing requirements: USA 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).
7	DTS requirements: Germany 0: Disabled 1: Enabled	

Communication Switch 07 - Not used (do not change any of these settings)
Communication Switch 08 - Not used (do not change any of these settings)
Communication Switch 09 - Not used (do not change any of these settings)

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

Communication Switch 0B - Not used (do not change any of these settings)
Communication Switch 0C - 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 (e.g. 0C(H) = 24 KB) One page is about 24 KB. The machine refers to this setting before each fax reception. If the remaining memory is below this threshold, the machine cannot receive fax messages. 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 (e.g., 06(H) = 12 s) 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 0: Disabled (default) 1: Enabled	0: Transmitting is always done in inch format. 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 0: Always in inch format 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. 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. 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 0: Off (Normal) 1: On (Double)	1: Shortens receiving time for non-ECM communication Note: 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 0: When the fusing exit sensor turns on 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). 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. 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. The data goes to SAF, like for substitute reception. However, it is different from substitute reception, as follows: • The machine rejects all incoming ringing signals when the printer is out of order. • The received image data are stored in the memory even if no RTI/CSI is received.

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 <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. 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 Bit 0 1: 200 x 100/8 x 3.85 Bit 1 1: 200 x 200/8 x 7.7 Other bits: Not used	For the best performance, do not change the factory settings. 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.

Communication Switch 16 - Not used (do not change any of these settings)
Communication Switch 17 - Not used (do not change any of these settings)
Communication Switch 18 - Not used (do not change any of these settings)
Communication Switch 19 - Not used (do not change any of these settings)
Communication Switch 1A - 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 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. Example: 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

Communication Switch 1C		
No.	FUNCTION	COMMENTS
0	Extension access code (8 and 9) to turn V.8 protocol On/Off 0: On 1: Off	Refer to communication switch 1B.
1		Example: 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.)
2–7	Not used	Do not change these settings.

Communication Switch 1D - Not used (do not change any of these settings)
Communication Switch 1E - Not used (do not change any of these settings)
Communication Switch 1F - 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) Bit 1 Bit 0 Setting 0 0 Disabled 0 1 Up to Phase B 1 0 All the time 1 1 Not used	(0, 0): The monitor speaker is disabled all through the communication. (0, 1): The monitor speaker is on up to phase B in the T.30 protocol. (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 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 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 0: Disabled 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 0: Standard and non-standard 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. 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 0: Disabled 1: Enabled	0: Communications using Quick/Speed Dials always start from the highest modem rate. 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) 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

G3 Switch 03		
No.	FUNCTION	COMMENTS
0	DIS detection number (Echo countermeasure) 0: 1 1: 2	0: The machine will hang up if it receives the same DIS frame twice. 1: Before sending DCS, the machine will wait for the second DIS which is caused by echo on the line.
1	Not used	Do not change the setting.
2	V.8 protocol 0: Disabled 1: Enabled	0: V.8/V.34 communications will not be possible. Note: 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.
3	ECM frame size 0: 256 bytes 1: 64 bytes	Keep this bit at "0" in most cases.
4	CTC transmission conditions 0: Ricoh mode (PPR x 1) 1: 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). This bit is ineffective in V.34 communications.
5	Modem rate for the next page after receiving a negative code (RTN or PIN) 0: No change 1: Fallback	1: 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.
6	Not used	Do not change the setting.
7	Polarity change after DIS/NSF detection 0: Disabled 1: Enabled	This bit should be set to "1" only to deal with communication problems caused by certain types of exchanger.

G3 Switch 04		
No.	FUNCTION	COMMENTS
0-3	Training error detection threshold	0 - F (Hex): 0 - 15 bits If the number of error bits in the received TCF is below this threshold, the machine informs the sender that the training was successful.
4-7	Not used	Do not change these settings.

G3 Switch 05		
No.	FUNCTION	COMMENTS
0-3	Initial Tx modem rate Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for transmission. Use the dedicated transmission parameters if you need to change this for specific receivers. If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. Cross reference V.8 protocol on/off - G3 switch 03, bit 2
4, 5	Initial modem type for 9.6 k or 7.2 kbps. Bit 5 Bit 4 Setting 0 0 V.29 0 1 V.17 1 0 V.34 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 Bit 3 2 1 0 Setting (bps) 0 0 0 1 2.4 k 0 0 1 0 4.8 k 0 0 1 1 7.2 k 0 1 0 0 9.6 k 0 1 0 1 12.0 k 0 1 1 0 14.4 k 0 1 1 1 16.8 k 1 0 0 0 19.2 k 1 0 0 1 21.6 k 1 0 1 0 24.0 k 1 0 1 1 26.4 k 1 1 0 0 28.8 k 1 1 0 1 31.2 k 1 1 1 0 33.6 k Other settings - Not used	These bits set the initial starting modem rate for reception. Use a lower setting if high speeds pose problems during reception. If a modem rate of 14.4 kbps or slower is selected, V.8 protocol should be disabled manually. Cross reference 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				Cross reference V.8 protocol on/off - G3 switch 03, bit 2		

G3 Switch 07																	
No.	FUNCTION	COMMENTS															
0, 1	PSTN cable equalizer (tx mode: Internal) <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	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. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.
Bit 1	Bit 0	Setting															
0	0	None															
0	1	Low															
1	0	Medium															
1	1	High															
2, 3	PSTN cable equalizer (rx mode: Internal) <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	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. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.
Bit 3	Bit 2	Setting															
0	0	None															
0	1	Low															
1	0	Medium															
1	1	High															
4	PSTN cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode: External) 0: Disabled 1: Enabled	Keep this bit at “1” in most cases.															
5–7	Not used	Do not change these settings.															

G3 Switch 08			
No.	FUNCTION	COMMENTS	
0, 1	PABX cable equalizer (tx mode: Internal) Bit 1 Bit 0 Setting 0 0 None 0 1 Low 1 0 Medium 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. Use the dedicated transmission parameters for specific receivers. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.	
2, 3	PABX cable equalizer (rx mode: Internal) Bit 3 Bit 2 Setting 0 0 None 0 1 Low 1 0 Medium 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. Also, try using the cable equalizer if one or more of the following symptoms occurs. • Communication error with error codes such as 0-20, 0-23, etc. • Modem rate fallback occurs frequently. Note: This setting is not effective in V.34 communications.	
4	PABX cable equalizer (V.27ter, V.29, V.33/V.17, V.8 rx mode: External) 0: Disabled 1: Enabled	Set this bit to 0 when line quality is good. (e.g. for a digital PABX)	
5–7	Not used	Do not change these settings.	

G3 Switch 09 - Not used (do not change any of these settings)

G3 Switch 0A			
No.	FUNCTION	COMMENTS	
0, 1	Maximum allowable carrier drop during image data reception Bit 1 Bit 0 Value (ms) 0 0 200 0 1 400 1 0 800 1 1 Not used	These bits set the acceptable modem carrier drop time. Try using a longer setting if error code 0-22 is frequent.	
2	Reception carrier drop operation. 0: Continue reception 1: Disconnect the line	This bit decides what the machine does when there is a carrier drop in the image data.	
3	Not used	Do not change the setting.	

BIT SWITCHES

G3 Switch 0A		
No.	Function	Comments
4	Maximum allowable frame interval during image data reception. 0: 5 s 1: 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.
5	Not used	Do not change the setting.
6	Reconstruction time for the first line in receive mode 0: 6 s 1: 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. Refer to error code 0-20. ITU-T T.30 recommendation: The first line should come within 5 s of CFR.
7	Not used	Do not change the setting.

G3 Switch 0B (Europe only)		
No.	FUNCTION	COMMENTS
0	Protocol requirements: Europe 0: Disabled 1: Enabled	Program these bit switches manually to match local requirements.
1	Protocol requirements: Spain 0: Disabled 1: Enabled	
2	Protocol requirements: Germany 0: Disabled 1: Enabled	
3	Protocol requirements: France 0: Disabled 1: Enabled	
4	PTT requirements: Germany 0: Disabled 1: Enabled	
5-7	Not used	Do not change these settings.

G3 Switch 0C - Not used (do not change any of these settings)
G3 Switch 0D - Not used (do not change any of these settings)
G3 Switch 0E - Not used (do not change any of these settings)
G3 Switch 0F - 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.). Note: NA model only You will have to set system switch 15 bit 2 to 1 before trying to change the NCU country code.	
		Country	Decimal Hex
		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

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Address	Function	Unit	Remarks
401401	Line current detection time	20 ms	Line current detection is disabled. 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. 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). 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 (±)				
	Bit	1	0		
		0	0	75%	Bits 2 and 3 must always be kept at 0.
		0	1	50%	
		1	0	25%	
		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). 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.	

Address	Function	Unit	Remarks
40144E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Notes 3 and 7. 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). 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). The setting must be less than -5dBm, and should not exceed the setting at 401452h above. 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: 40145B - F1 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. 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 Bits 2–0: See Note 2.	
40145F to 401464	Not used	Do not change these settings.	

NCU PARAMETERS

Address	Function	Unit	Remarks
401465	Long distance call prefix (HIGH)	BCD	For a code of 0: 401465 - FF 401466 - F0
401466	Long distance call prefix (LOW)	BCD	
401467 to 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 ± 20 ms	
40146C to 401471	Not used	Do not change these settings.	
401472	Acceptable ringing signal frequency: range 1, upper limit	1000/ N (Hz)	Function 07-0 (parameter 02). See Note 7.
401473	Acceptable ringing signal frequency: range 1, lower limit		Function 07-0 (parameter 03). See Note 7.
401474	Acceptable ringing signal frequency: range 2, upper limit	1000/ N (Hz)	Function 07-0 (parameter 04). See Note 7.
401475	Acceptable ringing signal frequency: range 2, lower limit		Function 07-0 (parameter 05). See Note 7.
401476	Number or rings until a call is detected	1	Function 07-0 (parameter 06). The setting must not be zero. See Note 7.
401477	Minimum required length of the first ring	20 ms	See Note 4 and 7. Function 07-0 (parameter 07).
401478	Minimum required length of the second and subsequent rings	20 ms	Function 07-0 (parameter 08). See Note 7.
401479	Ringing signal detection reset time (LOW)	20 ms	Function 07-0 (parameter 09). See Note 7.
40147A	Ringing signal detection reset time (HIGH)	20 ms	Function 07-0 (parameter 10). See Note 7.
40147B to 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 <u>Bit 1 0 Setting</u> 0 0 200 ms 0 1 800 ms Other Not used Bits 2 and 3 - Handset on-hook detection time <u>Bit 3 2 Setting</u> 0 0 200 ms 0 1 800 ms Other Not used Bits 4 to 7 - Not used		
401483 to 4014A4	Not used	Do not change these settings.	
4014A5	CED detection time	20 ms ± 20 ms	Factory setting: 200 ms
4014A6 to 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). See Note 7.
4014B5 to 4014B6	Not used	Do not change these settings.	
4014B7	PABX: Tx level from the modem	- dBm	
4014B8 to 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. Bit 4 – V.34 protocol dump 0 : Simple, 1 : Detailed (default) 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	0 : 12 s 1 : 30 s	1 : Maximum wait time for post message (EOP/EOM/MPS) can be changed to 30 s. 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.

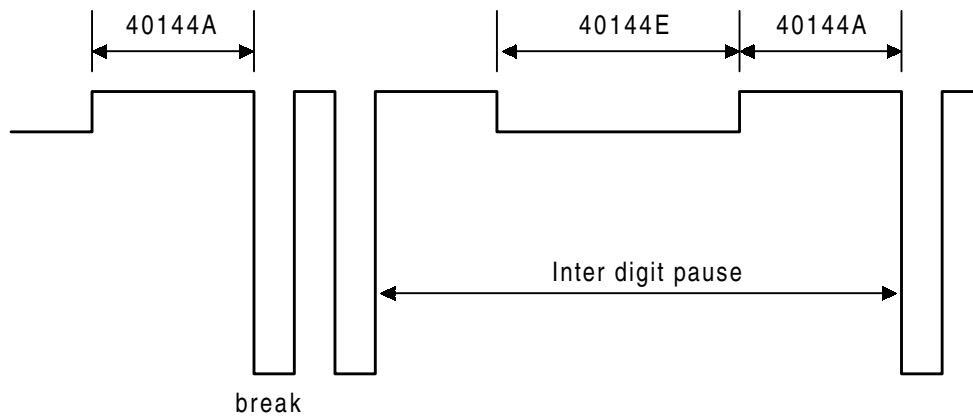
401408 (if bit 0 = 1) or 401438 (if bit 2 = 1): tolerance for on or off state duration (%), and number of cycles required for detection, coded as in address 401433.

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)	
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.	
Range:	
0 to 120 s (00h to 78h)	
FFh - The local NCU parameter factory setting is used.	
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. If the setting is 'Disabled', the NCU parameter 01 setting is used. Note: Do not use settings other than listed on the left.
	Bit 4 3 2 1 0 Setting	
	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. Also, try using the cable equalizer if one or more of the following symptoms occurs. - Communication error with error codes such as 0-20, 0-23, etc. - Modem rate fallback occurs frequently. If the setting is 'Disabled', the bit switch setting is used. Note: Do not use settings other than listed on the left.
	Bit 7 6 5 Setting	
	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	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. For the settings 14.4 or kbps slower, Switch 04 bit 4 must be changed to 0. If the setting is 'Disabled', the bit switch setting is used. Note: Do not use settings other than listed on the left.
	Bit 3 2 1 0 Setting (bps)	
	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 0: Off 1: Disabled	Refer to the Core Technology Manual for details about AI Short Protocol. 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	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. If the setting is 'Disabled', the bit switch setting is used.
	Bit 1 Bit 0 Setting	
	0 0 Inch-mm conversion available	
	0 1 Inch only	
	1 0 Not used	
2, 3	DIS/NSF detection method	(0, 1): 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. If the setting is 'Disabled', the bit switch setting is used.
	Bit 3 Bit 2 Setting	
	0 0 First DIS or NSF	
	0 1 Second DIS or NSF	
	1 0 Not used	
	1 1 Disabled	

DEDICATED TRANSMISSION PARAMETERS

Switch 03			
No.	FUNCTION	COMMENTS	
4	V.8 protocol 0: Off 1: 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. 0: V.34 communication will not be possible. If the setting is 'Disabled', the bit switch setting is used.	
5	Compression modes available in transmit mode 0: MH only 1: Disabled	This bit determines the capabilities that are informed to the other terminal during transmission. If the setting is 'Disabled', the bit switch setting is used.	
6 7	ECM during transmission Bit 7 Bit 6 Setting 0 0 Off 0 1 On 1 0 Not used 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. Note that V.8/V.34 protocol and JBIG compression are automatically disabled if ECM is disabled. If the setting is 'Disabled', the bit switch setting is used.	

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Switch 04: Not used (do not change any of these settings)
Switch 05: Not used (do not change any of these settings)
Switch 06: Not used (do not change any of these settings)
Switch 07: Not used (do not change any of these settings)
Switch 08: Not used (do not change any of these settings)
Switch 09: 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		
DEC (1 – 255; 0 = Disabled)	400340	400344	10 (H)	X
CALL (3 – 15; 0 = Disabled)	400341	400345	06(H)	Y
CLR (Low) (High)	400342	400346	30(H)	-
	400343	400347	00(H)	

Counters	Address (H)		Sys. Para. List
	ADF	Printer	
JAM : Jam counter used to place a service call	400348	40034C	Z
NO-JAM1 : Counter used for JAM counter decrement	400349	40034D	-
NO-JAM2 : 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) 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

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.

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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 (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 when printing (Rx only)	O

Communication Features – Automatic	
Automatic fallback	O
Automatic redialing (Memory tx only)	O
Dual Access	O
Length Reduction	O
Resolutions available for reception	
Detail	O
Fine	X
Superfine	X
Substitute reception	O
JBIG communication	X
V34 communication	O

Communication Features – User 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 (pulse or DTMF)	O

Communication Features – User 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 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

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SPECIFICATIONS

Reports – Automatic	
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

Reports - User-initiated	
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

Service Mode Features	
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

Service Mode Features	
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

SPECIFICATIONS

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[®]  **LANIER RICOH[®] SAVIN[®]**

**B441 PRINTER CONTROLLER
TYPE 1013
SERVICE MANUAL
(B044/B045/B046)**

B441

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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:

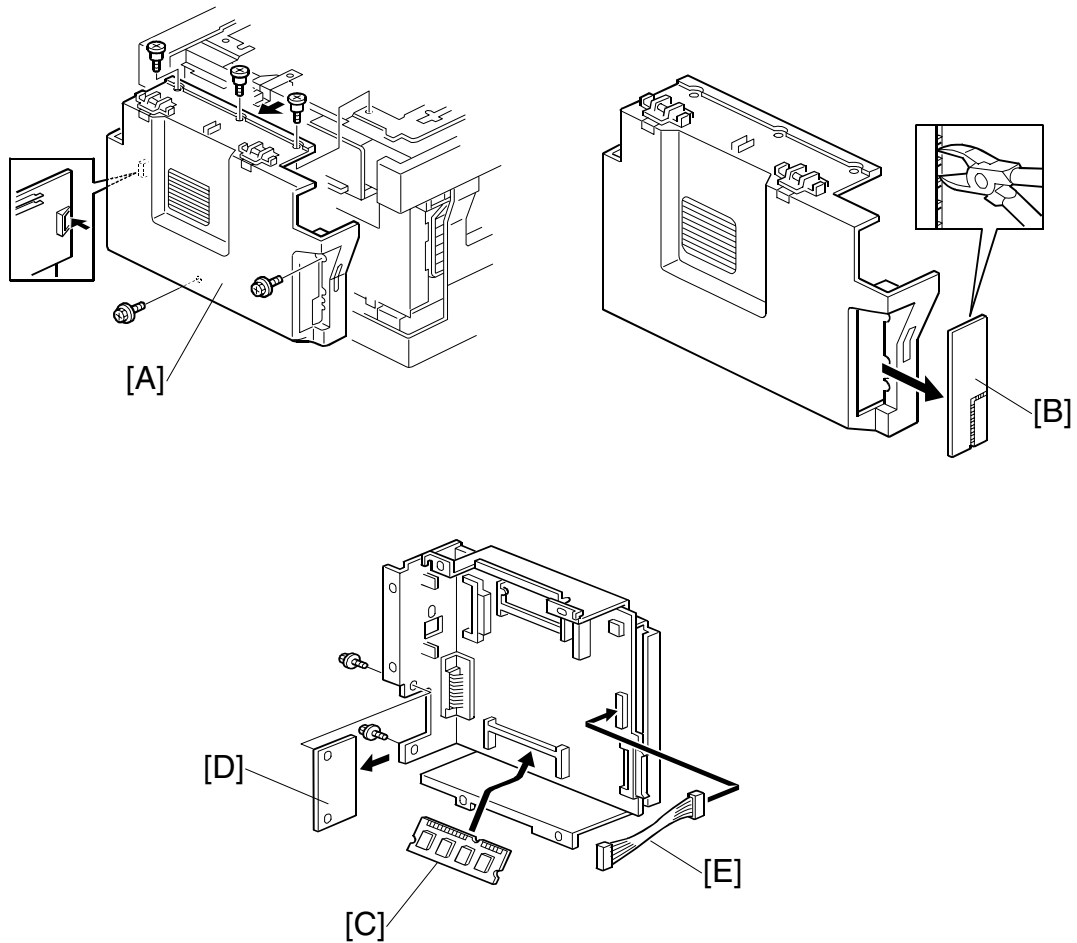
No.	Description	Q'ty
1	CD ROM	1
2	Key Top – Printer	1
3	Key Top - Copy	1
4	Printer Key Cover	1
5	Harness - Controller/FCU	1
6	Screw - M3x6	8
7	Installation Procedure	1
8	Software License Agreement	1

Printer Controller Installation

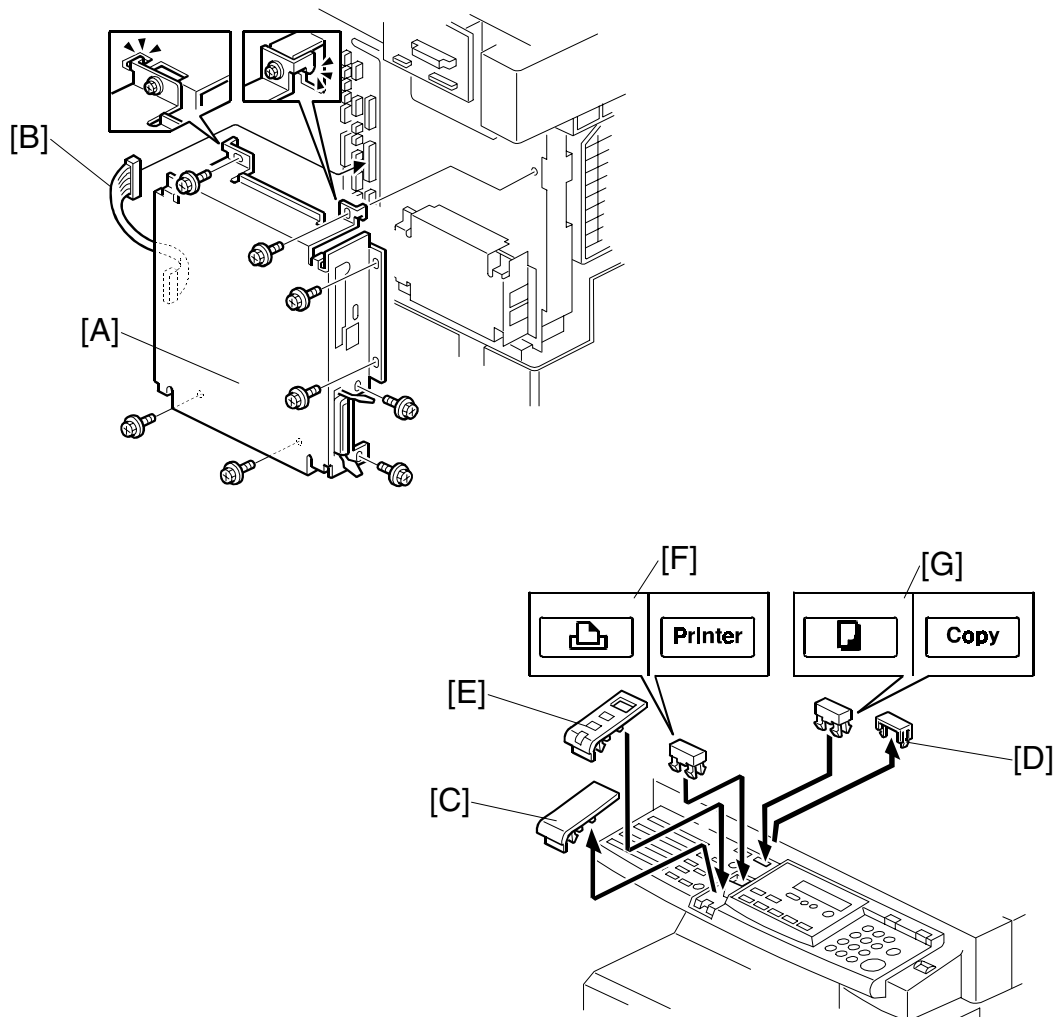
⚠ CAUTION

- 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.



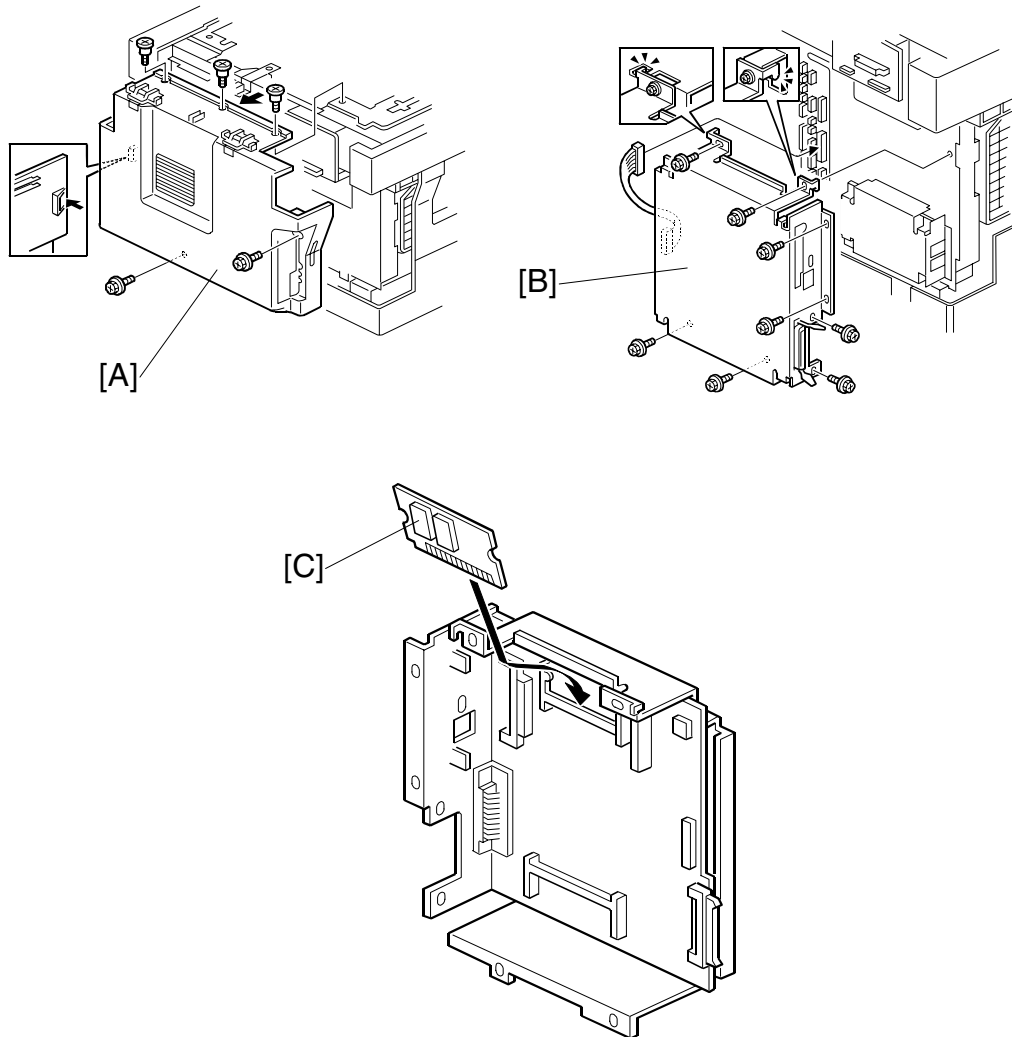
4. Install the controller [A] (1 connector and 8 screws) as shown.
5. Connect the harness [B] into CN3 on the FCU board.
6. Replace the rear cover.
7. Remove the covers [C] and [D] from the operation panel.
8. Install the printer key cover [E], the printer key top [F] and the copy key top [G].

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.



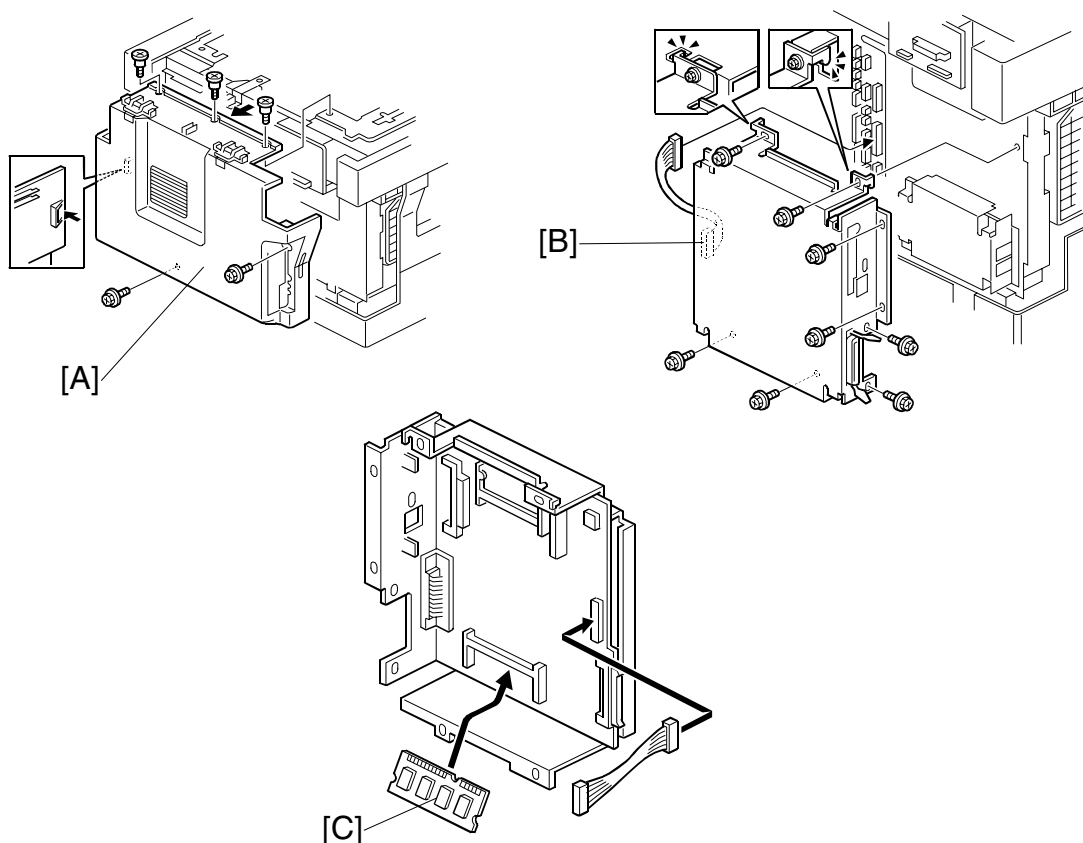
1. Remove the rear cover [A] (5 screws).
2. Remove the controller board [B] from the machine (1 harness and 8 screws or 6 screws if no fax option).
3. Connect the PS 2 emulation board [C] to CN505 on the controller board.
4. Replace the controller board assembly in the machine.
5. Replace the rear cover.

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
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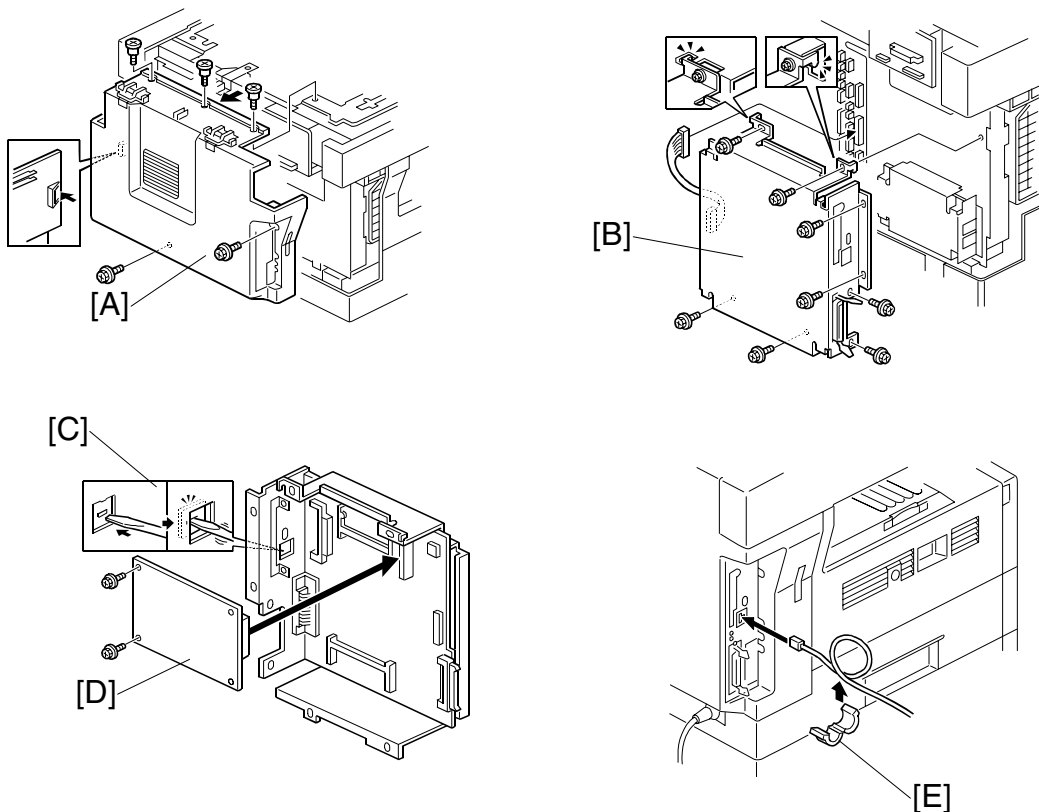
1. Remove the rear cover [A] (5 screws).
2. Remove the controller board [B] from the machine (1 harness and 8 screws or 6 screws if no fax option).
3. Connect the memory board [C] to CN502 on the controller board.
4. Replace the controller board assembly in the machine.
5. Replace the rear cover.

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.

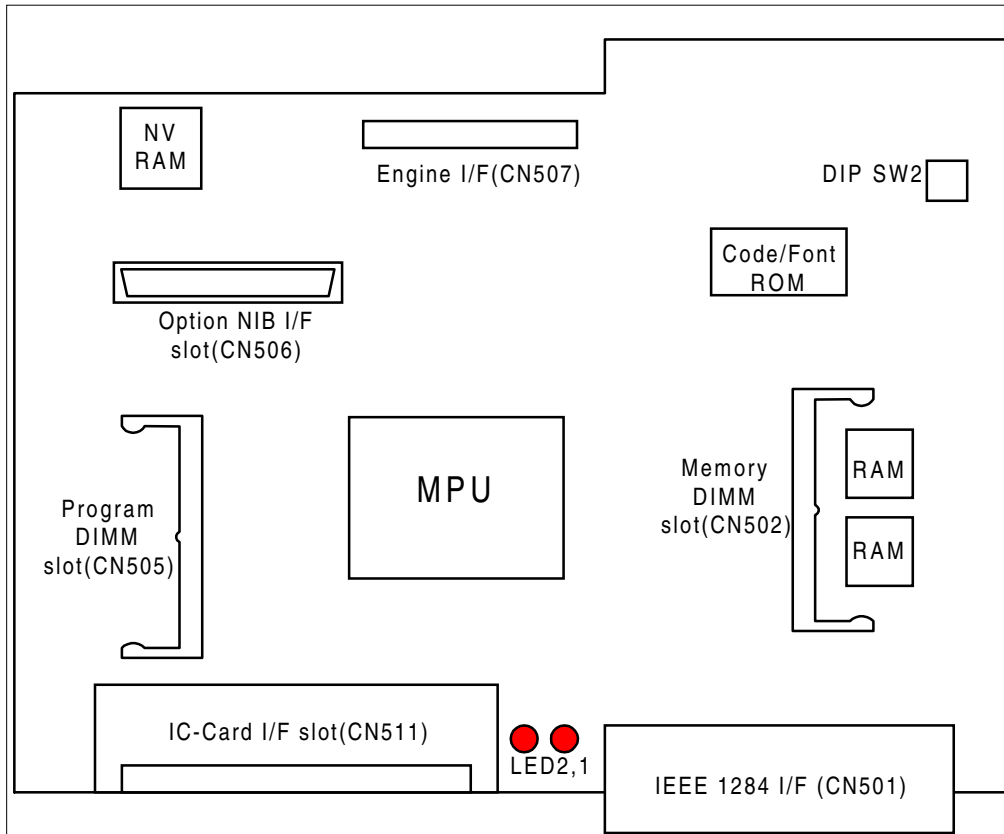
Code	Description	Required Action
00xx	Exceptional operation error	Replace the controller if the error is frequent.
0101	Code ROM error	Replace the controller if the error is frequent.
0201	Resident RAM error	Replace the controller if the error is frequent.
0301	Optional RAM error	Replace the optional DIMM if the error is frequent.
06xx	CPU error	Replace the controller if the error is frequent.
0Fxx	Engine interface and video data error	Check the connection between the engine board and the controller
11xx	Centronics parallel interface error	Replace the controller if the error is frequent.
1401	NVRAM error	Replace the NVRAM if the error is frequent.
1601	Font ROM error	Replace the controller if the error is frequent.
1Bxx	NIB interface error	Replace the controller if the error is frequent.
1Cxx	Parallel interface error	Replace the controller if the error is frequent.
25xx	PS2 error	Replace the PS DIMM if the error is frequent.

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.



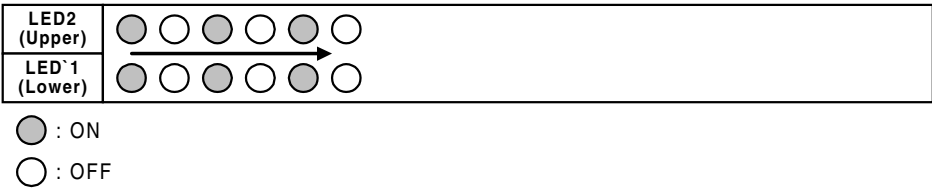
When the machine is operating normally, LED 1 blinks (on/off) and LED 2 remains always off. LED 2 only comes on if there is an error; see the next section of the manual.

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.

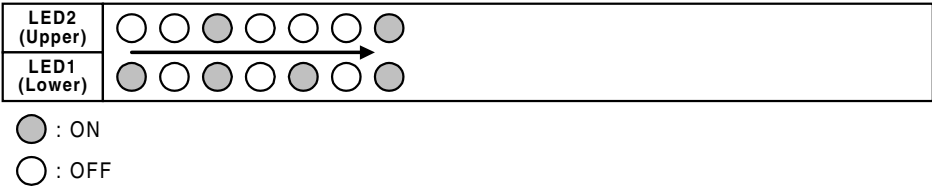
If one of the following fatal errors happens, the LED status changes as shown (read from the left of the diagram to the right).

Code ROM Error



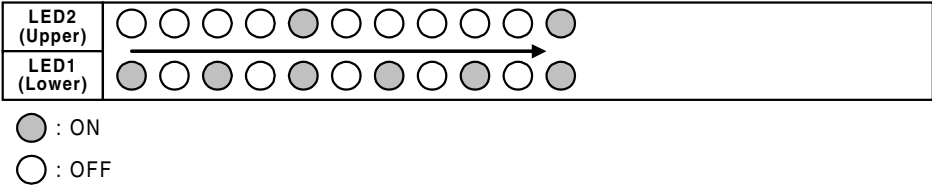
Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

Resident RAM Error



Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

CPU Error

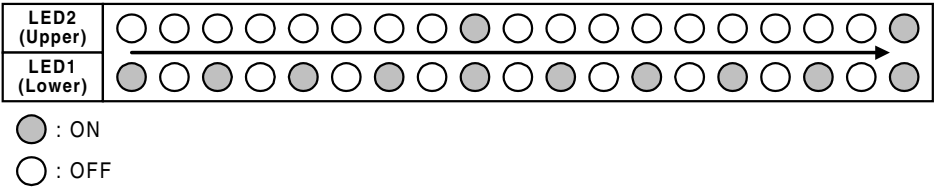


Turn off the machine and turn it back on. If the controller detects the same error, replace the controller.

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.

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3.1.2 SERVICE MENU TABLE

	Description	Function
A	BitSw#1 Set	Adjusts bit switch settings. Note: 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.

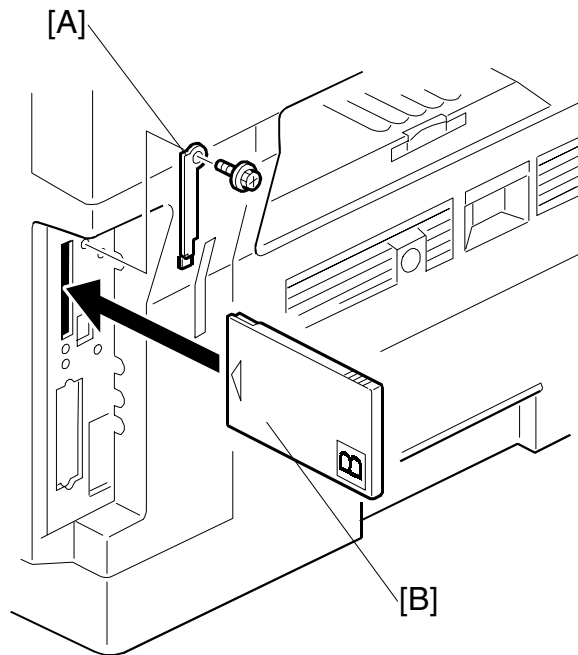
3.3 FIRMWARE UPDATE PROCEDURE

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.



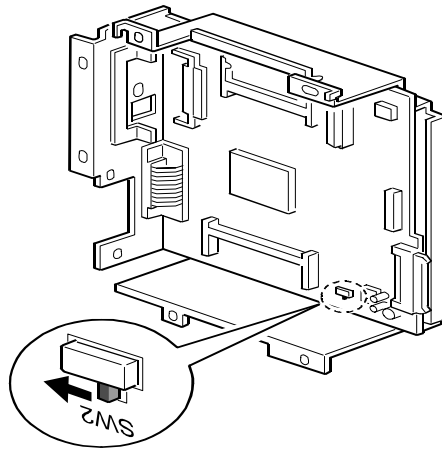
1. Prepare an IC card that contains the required firmware.
2. Turn off the machine and remove the cover [A] (1 screw).
3. Insert the card [B] into the IC card slot.
NOTE: The “B” side of the card must face towards the rear of the machine.
4. Turn on the machine. Press the “Printer” key.
5. Start downloading 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: xxxxxxxxxx	Retry the download.
Writing Failed ARDS: xxxxxxxxxx	
Melting Failed	The firmware file on the card may be damaged. Get a new firmware file and store it on the card. NOTE: 'Melting' means 'extraction of compressed data.'
DIMM installable program cannot find	Wrong type of firmware on the card.
CRC error. Please 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.

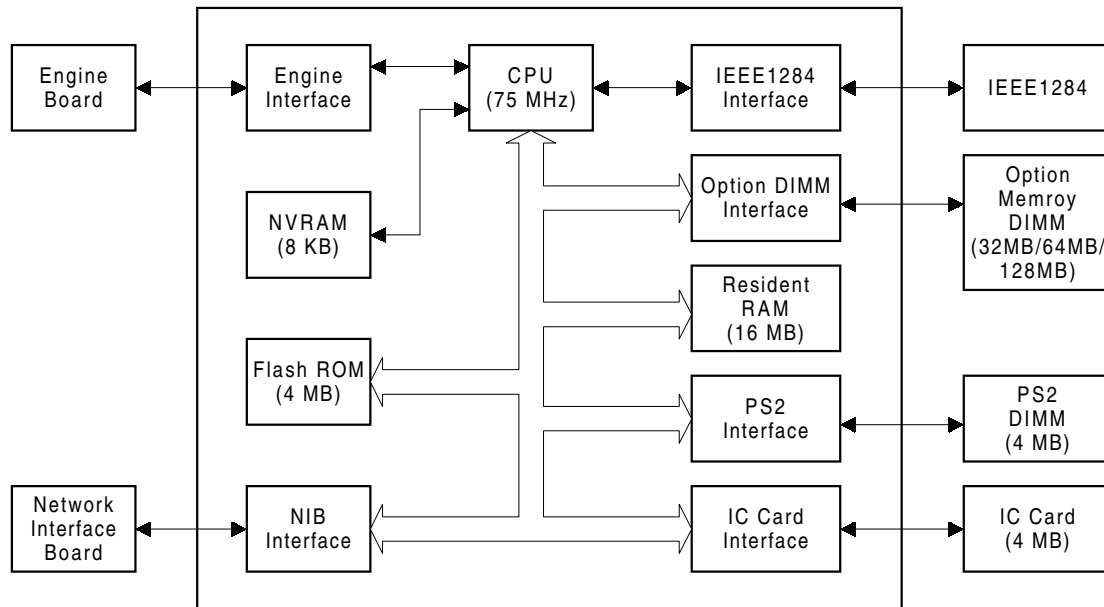
User Mode Table

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.

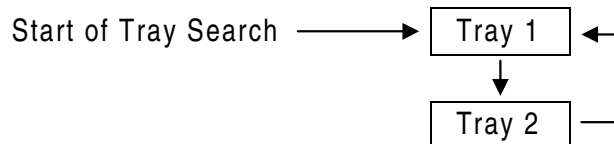
There is one optional memory socket that can have either a 32MB, 64MB, or a 128MB memory DIMM to increase RAM capacity and enable RAM collation. With the 128MB memory DIMM, the RAM capacity is increased to 144MB. There is another memory socket for the optional PS2 DIMM.

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)

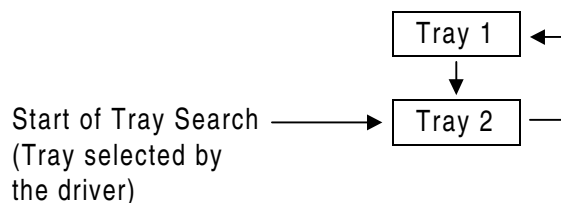


The controller searches for the specified paper size, starting from Tray 1, and uses the first tray that has the specified paper size. If the selected tray is pulled out or runs out of paper during printing, the controller searches for another tray with the specific paper size and if found, automatically 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) B044/B046: Maximum 13 ppm (A4/LT SEF) H555: Maximum 13 ppm (A4/LT SEF)
Printer Languages:	PCL6/PCL5e PostScript Level 2 Emulation (option)
Resolution:	600 dpi (PCL6/PCL5e/PS2) 300 dpi (PCL5e/PS2)
Resident Fonts:	PCL: 35 Intellifonts 10 True Type fonts 1 PCL Bitmap PS2 (Optional): 80 PS fonts
Host Interfaces:	Bi-directional IEEE1284 parallel x 1 (standard) Ethernet (100 Base-TX/10 Base-T) (option)
Network Protocols:	TCP/IP, IPX/SPX, Apple Talk
Memory:	Standard 16 MB Options 48 MB (Standard 16 MB + 32 MB optional DIMM) 80 MB (Standard 16 MB + 64 MB optional DIMM) 144 MB (Standard 16 MB + 128 MB optional DIMM)

SPECIFICATIONS

1.2 SUPPORTED PAPER SIZES

Paper	Size (W x L)	Paper Trays Main Unit/Option		By-pass Tray
		US	Eur/Asia	
A4 SEF	210 x 297 mm	Y [#] /Y	Y/Y	Y
A5 SEF	148 x 210 mm	N/N	N/N	Y [#]
A5 LEF	210 x 148 mm	Y [#] /N	Y [#] /N	Y [#]
Legal SEF	8.5 x 14"	N/Y [#]	N/Y [#]	Y [#]
Letter SEF	8.5 x 11"	Y/N	Y [#] /N	Y [#]
Half Letter SEF	5.5 x 8.5"	N/Y [#]	N/Y [#]	Y [#]
Half Letter LEF	8.5 x 5.5"	Y/N	Y [#] /N	Y [#]
F	8 x 13"	N/N	N/N	Y [#]
Foolscap	8.5 x 13"	N/Y [#]	N/Y [#]	Y [#]
Folio	8.25 x 13"	N/Y [#]	N/Y [#]	Y [#]
Custom	Width: 90 - 216 mm Length: 140 - 356 mm	N	N	Y ^C

Remarks:

Y	Supported. The paper size sensor detects the paper size.
Y [#]	Supported. The user has to select the correct paper size for the tray.
Y ^C	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.

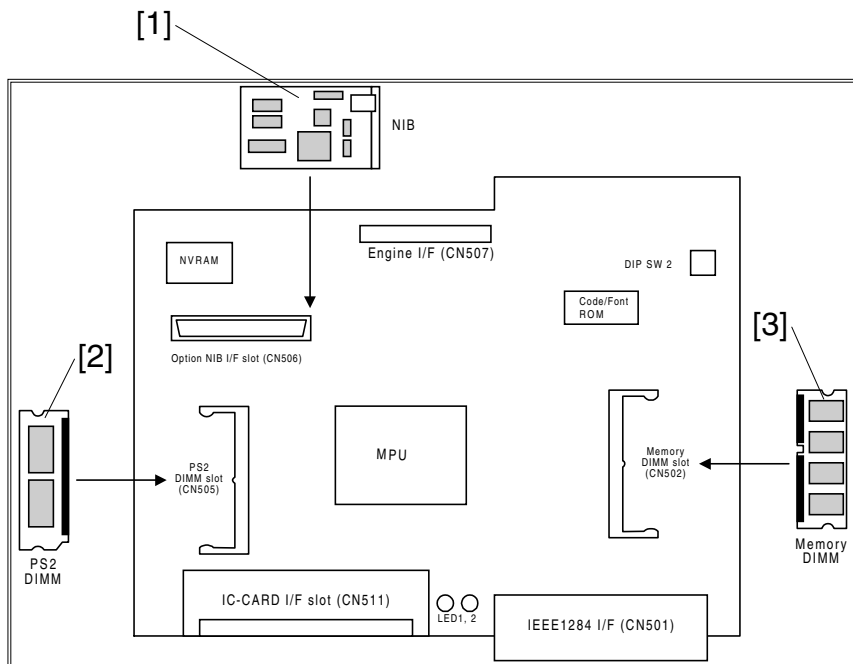
UTILITY SOFTWARE

Software	Description
Agfa Font Manager (Win 95/98/Me, NT4, 2000)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/Me, NT4, 2000)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartNetMonitor for Client (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.

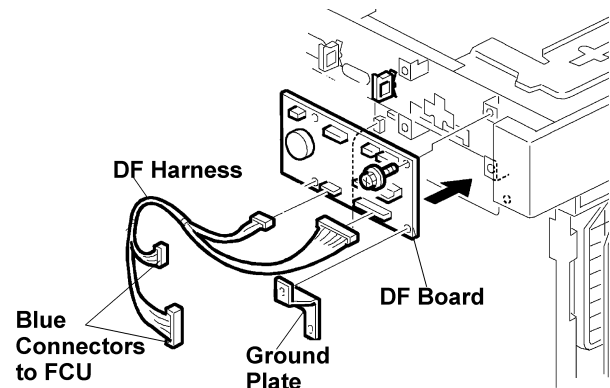
CAUSE:

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:

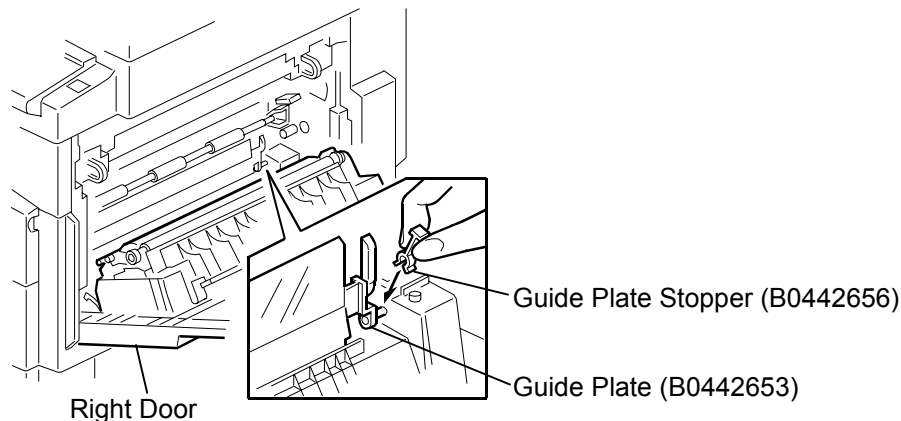
The Paper Feed Guide Plate (P/N B0442653) disconnects from the pivot area. (See illustration below.)

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.

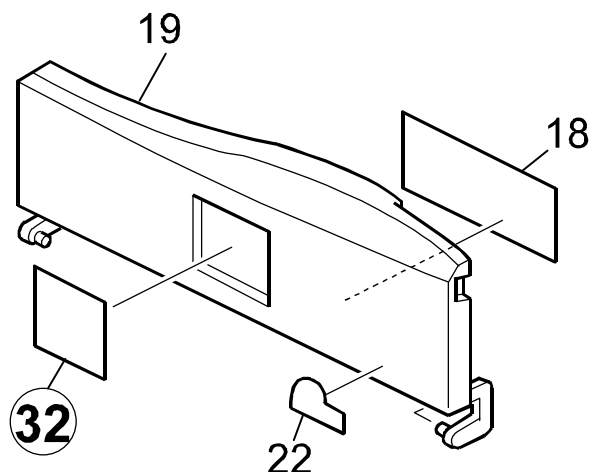
UNITS AFFECTED:

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.



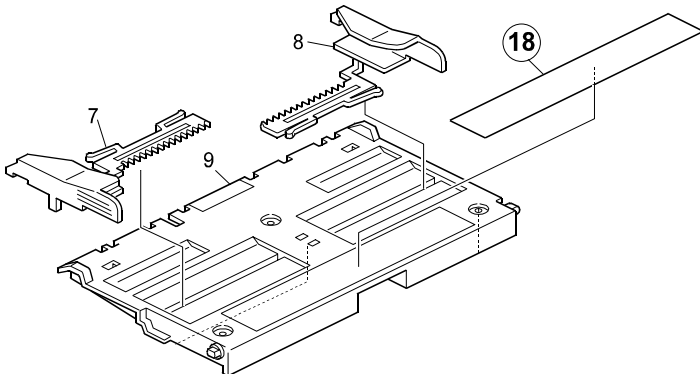
			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
B0447508	Model Name Plate-GES EU (B044)	1	7	32 *
B0457508	Model Name Plate-GES EU (B045)	1	7	32 *
B0467508	Model Name Plate-GES EU (B046)	1	7	32 *
B0447501	Model Name Plate-RIC (B044)	1	7	32 *
B0457501	Model Name Plate-RIC (B045)	1	7	32 *
B0467501	Model 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 *
B0447504	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...



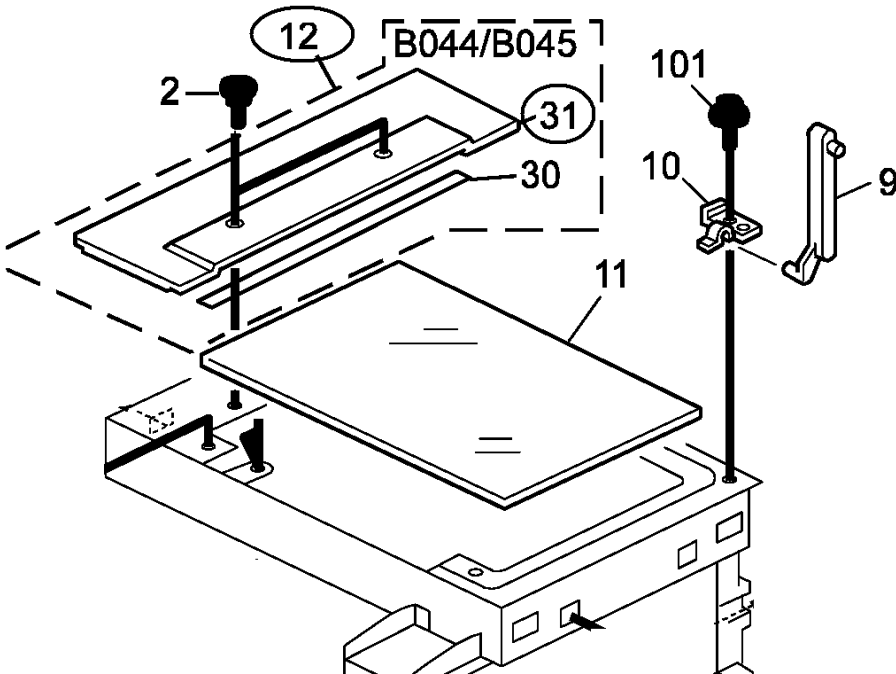
- **UPDATE 2:** **Manual Feed Decal** – The Manual Feed Decal was omitted from the parts catalog. Please add the following information to your B044/B045/B046 Parts Catalog.



			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AA003011	Manual Feed Decal	1	11	18 *

*DENOTES NEW ITEM NUMBER

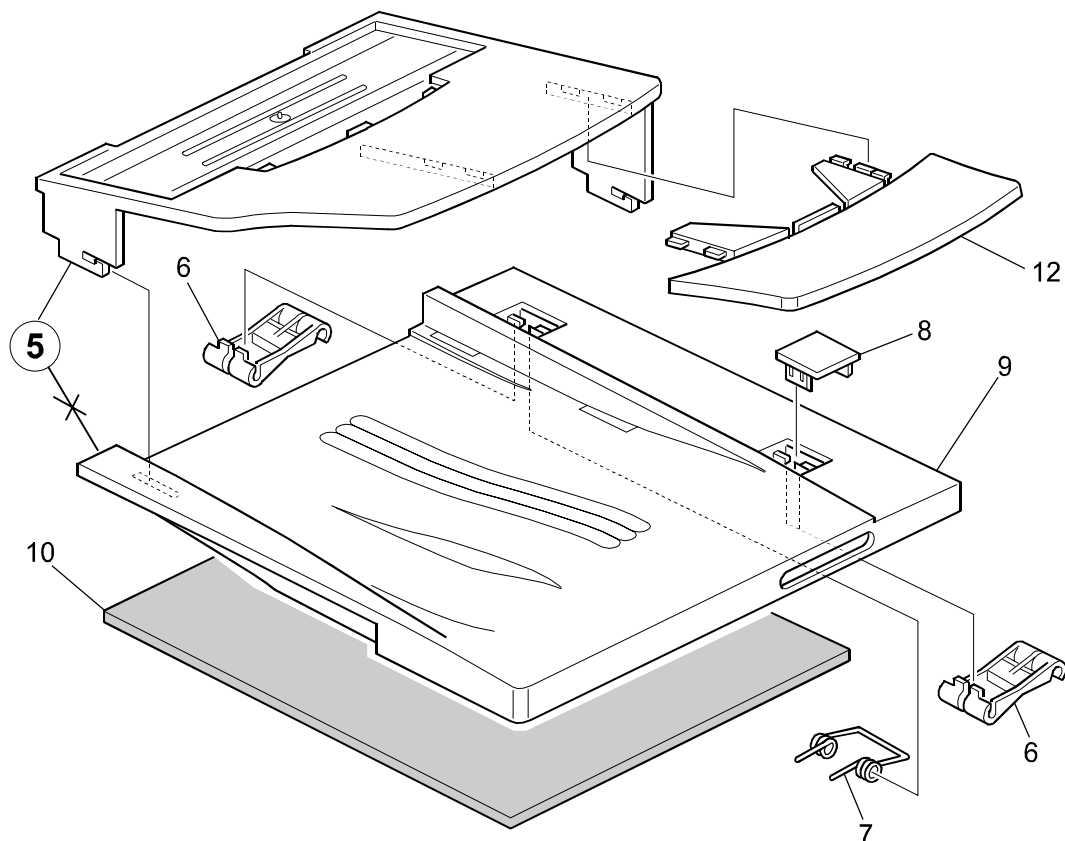
- **UPDATE 3:** **Left Scale** – The description for the Left Scale was incorrect in the parts catalog. Please correct the following information in your B044/B045/B046 Parts Catalog.



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

Continued...

- **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

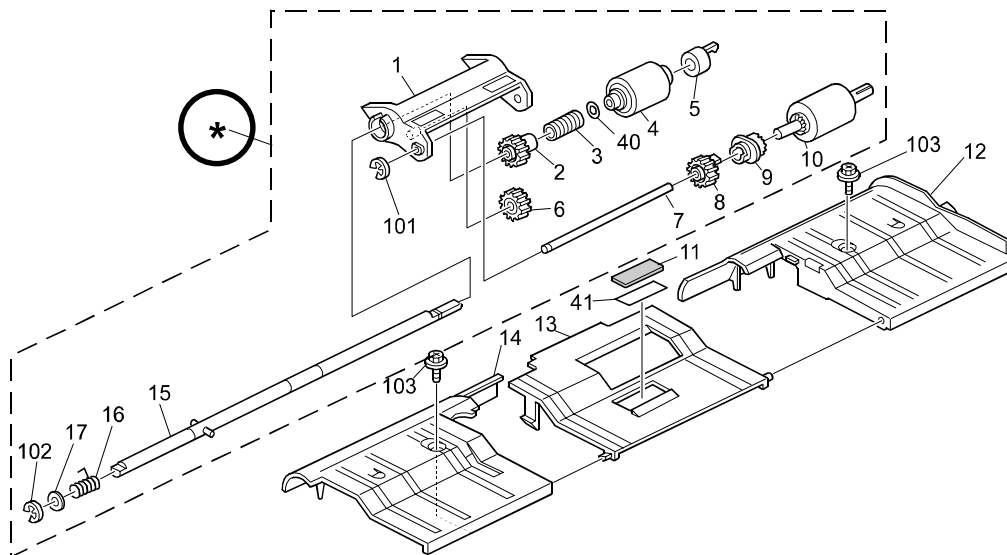
RICOH – AFICIO 1013/120/1013F

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

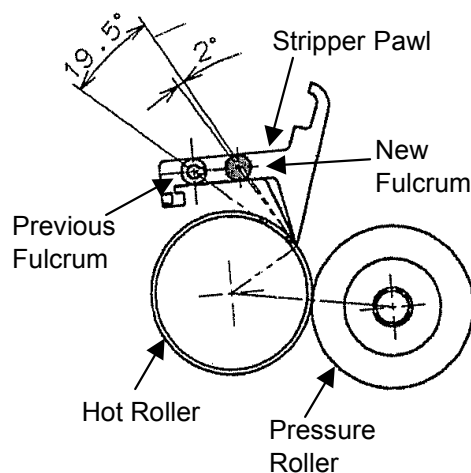
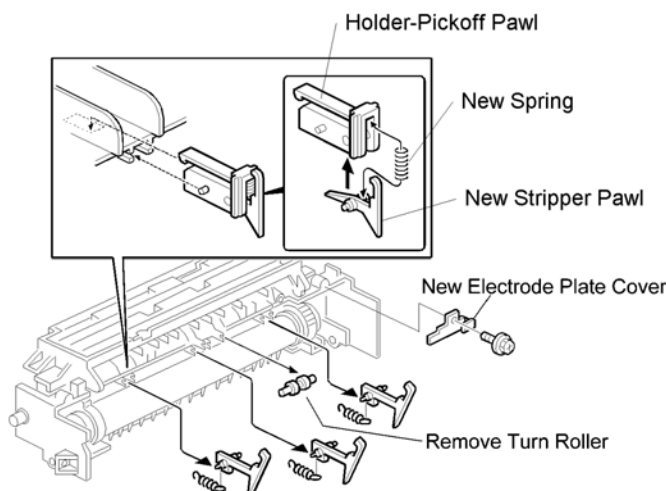
SUBJECT: STRIPPER PAWLS & FUSING FRAME

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 Lanier 5613 Ricoh Aficio 1013 Savin 2513	H9029300001
Lanier 5612 Ricoh Aficio 120	H91294xxxxx
Gestetner 1302f Lanier 5613F Ricoh Aficio 1013F 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. 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 – 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:

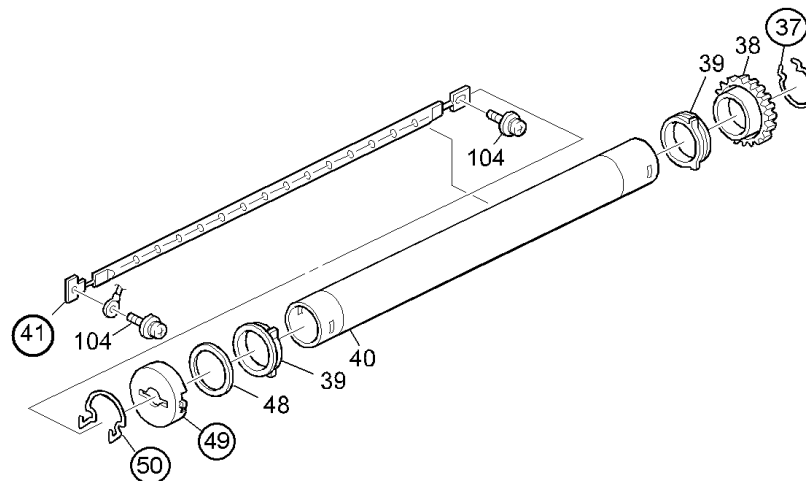
The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.

● **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

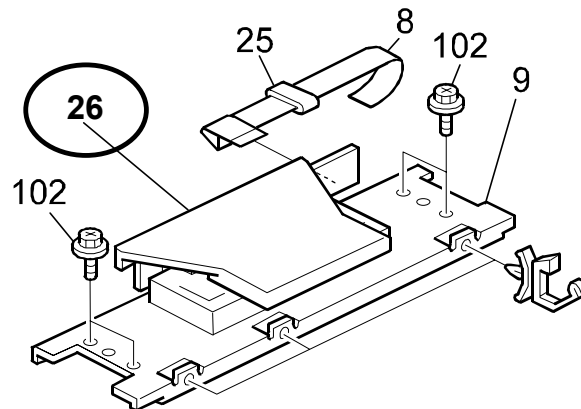
UNITS AFFECTED:

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 Lanier 5613 Ricoh Aficio 1013 Savin 2513	H9029600001
Gestetner NA Lanier 5612 Ricoh Aficio 120 Savin NA	H91296xxxxx
Gestetner 1302F Lanier 5613F Ricoh Aficio 1013F 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.		

BULLETIN NUMBER: B044/B045/B046 – 009 REISSUE ★

06/15/2004

APPLICABLE MODEL:

GESTETNER – 1302/1302F
LANIER – 5613/5612/5613F
RICOH – AFICIO 1013/120/1013F
SAVIN – 2513/2513F

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

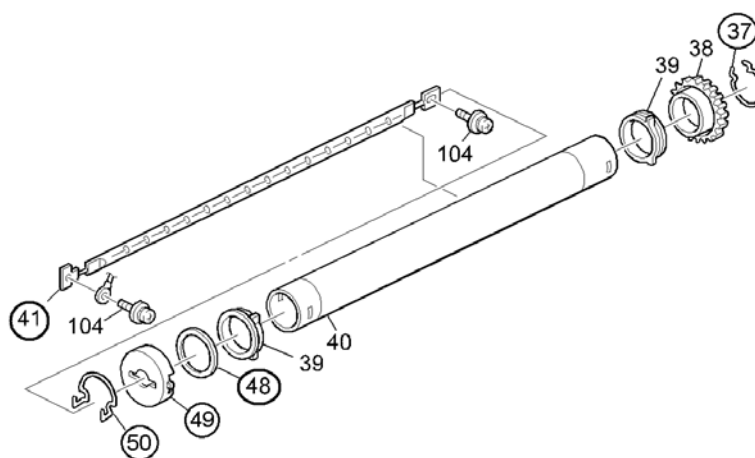
The following parts updates are being issued for all B044/B045/B046 Parts Catalogs.

● **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
-	B0444111	Hot Roller Spacer	1	3/S	35	48 *

* DENOTES NEW ITEM NUMBER

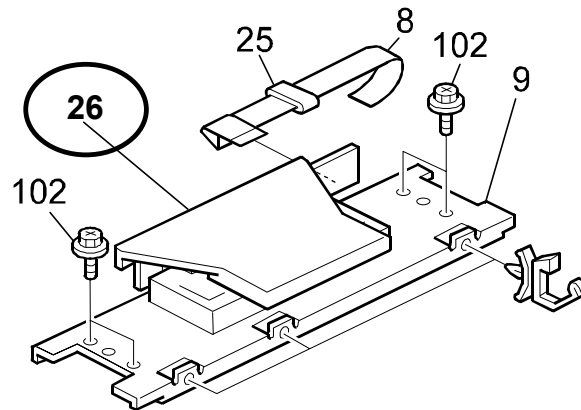
UNITS AFFECTED:

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 Lanier 5613 Ricoh Aficio 1013 Savin 2513	H9029600001
Gestetner NA Lanier 5612 Ricoh Aficio 120 Savin NA	H91296xxxxx
Gestetner 1302F Lanier 5613F Ricoh Aficio 1013F 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

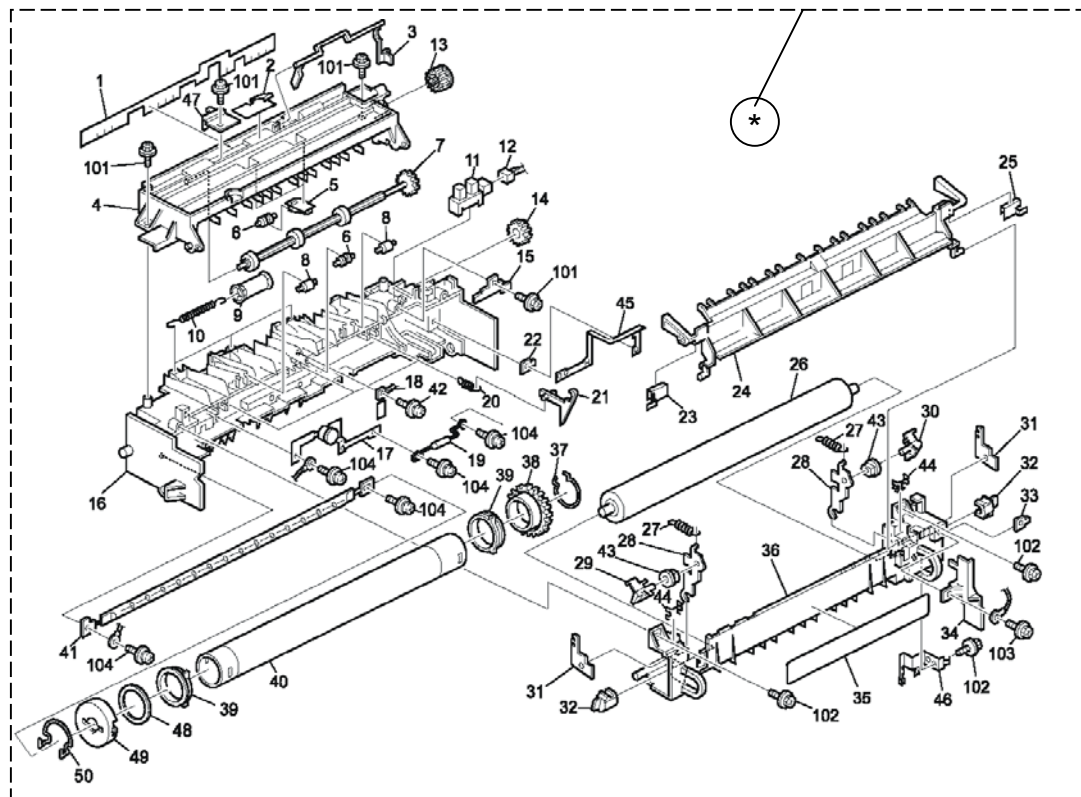
SUBJECT: FUSING UNIT

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.



■ PARTS



			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) 0: Disabled 1: Enabled	0: Change this bit to 0 if you wish to disable the standard G3 line. 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

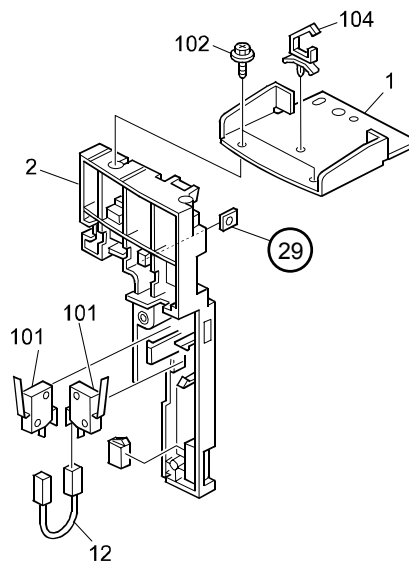
GENERAL:

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.

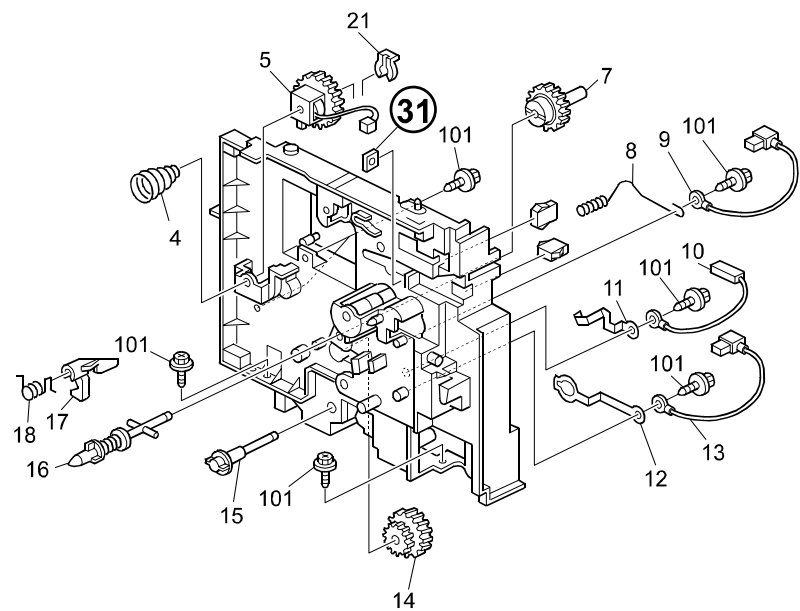


			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
B0444200	Fusing Plate Nut	1	13	29 *

*** 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.

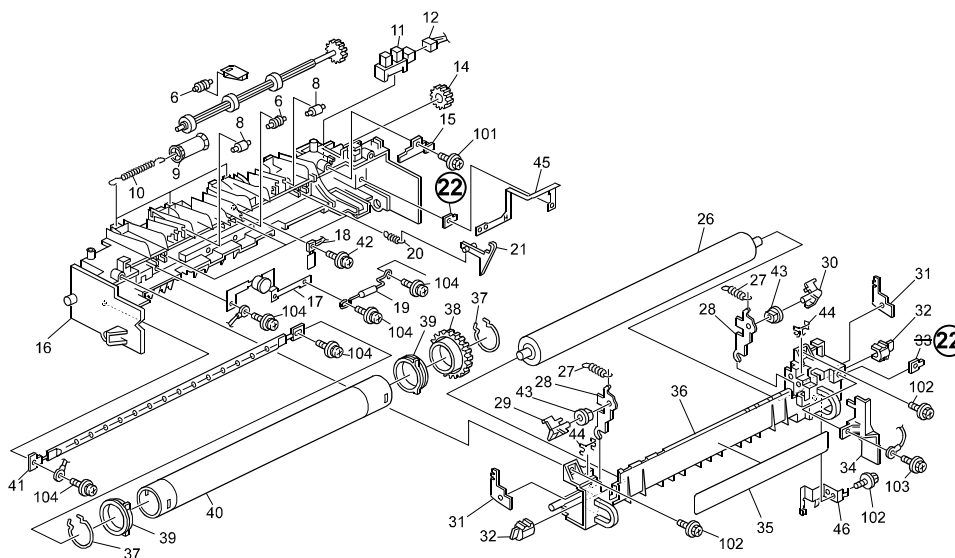


			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
B0444200	Fusing Plate Nut	1	33	31 *

* 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

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B044/B045/B046 – 014

06/15/2004

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.

An arrow has highlighted the revised areas ⇒.

PAGES:

- 5-13 Updated Information (SP5-501)
- 5-15 Updated Information (SP5-912)



**SERVICE
MANUAL**

SP5-XXX (Mode)

5001	All Indicators On
5001 1	Turns on all LEDs. The LCD turns on or off every 3 seconds. Press the reset key to end this program.

5113*	Optional Counter Type	0: None 11: MF key card (Increment) 12: MF key card (Decrement)
5113 1	Selects the corresponding key for installed devices such as coin lock.	

5120*	Clear-OP Count Remove	[0=Yes / 1=Standby only / 2=No]
5120 1	Specifies the condition to reset the copy job settings when the key counter is removed. • 0 = Yes: The settings are cleared when the counter is removed. • 1 = Standby only: The settings are cleared when the counter is removed at the end of a job. • 2 = No: The settings are not cleared under either condition. As for duplex copying, the job settings are always preserved regardless of these setting.	

5121*	Count Up Timing	[0 = Feed In / 1 = Exit]
5121 1	Selects the count-up timing. • 0 = Feed: At each paper feed • 1 = Exit: At each paper exit	



5501*	PM Alarm Mode	
5501 1	Interval	Sets the base PM interval. [1 ~ 255 / 90 / 1K copies/step] <i>This setting is meaningful only if SP5-501-2 is set to "1".</i> Specifies when the PM alarm occurs.
5501 2	On/Off	Enables/disables the PM alarm for the total number of prints, copies, and faxes. [0 = Disable / 1 = Enable]

5801	Memory Clear (basic model only)
5801 2	Engine 5.1.5

5802	Machine Free Run
5802 1	Conducts machine free run (including the scanner unit). Press "ON" to start; press "OFF" to stop.

5803	Input Check
	5.1.6

5804	Output Check
	5.1.7



5912*	PCU Alarm	
5912 1	Alarm Display On/Off	Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2. [0 = Display / 1 = Do not display]
5912 2	Interval	Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs. [1 ~ 255 / 45 / 1000 sheets/step]

5990	SMC Print	
5990 1	All	5.1.12
5990 2	SP	
5990 3	User Program	
5990 4	Logging Data	
5990 5	Big font	

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B044/B045/B046 – 014 REISSUE ★

06/23/2004

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.

An arrow has highlighted the revised areas ⇒.

PAGES:

- 5-72 Updated Information (SP5-501)
- 5-75 Updated Information (SP5-912)



■
SERVICE
MANUAL

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). <i>After checking, press  or Cancel to exit.</i>
302*	Date/Time	
		Sets the date and time. - For the year value, you can set the last two digits only. (The first two digits are fixed at "20".) - You cannot set the seconds value directly. Instead, the seconds value automatically resets to 0 when you enter the setting for the minutes value. - 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.
⇒ 501*	PM Alarm Mode	
	1 Interval	Sets the base PM interval. [1 ~ 255 / 90 / 1K copies/step] <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. [0 = Disable / 1 = Enable]
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) [0 = No / 1 = Yes] - Before clearing the SRAM, be sure to output an SMC printout of all current SRAM content. (☛ SP5-992). - This SP mode should generally not be used.
802	Free Run	
		Starts a free run of both the scanner and the printer. [0: = No / 1 = Yes] - For details about free runs: ☛ 5.1.7. - After selecting "1", press the OK key (or the  key) twice to start the free run. Press  to stop the free run.
803	Input Check	
		Displays the signals being received from a selected sensor or switch. (☛ 5.1.3) <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]
912*	PCU Alarm		
	1	Alarm Display On/Off	Selects whether or not the machine will display a "Replace PCU" warning when the PCU alarm counter reaches the interval set by SP912-2. [0 = Display / 1 = Do not display]
	2	Interval	Sets the PCU Alarm interval (count) at which a "Replace PCU" warning occurs. [1 ~ 255 / 45 / 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). [0 = No / 1 = Yes] <i>This operation is equivalent to executing a System Reset with the User Tools.</i> <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>
956	Preset Small-Size Setting		
	1		Enables setting of small paper sizes. [0 = No / 1 = Yes] <i>Setting this value to "1" enables setting of the following standard small sizes, for both paper tray and bypass tray: B5 SEF, Executive SEF.</i> 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 / 0 / 1/step] DFU
992	SMC Printing		
			Prints out machine data. (5.1.5) [0 = No / 1 = SP settings / 2 = All / 3 = Memory]

BULLETIN NUMBER: B129/B130/B168/B169/B044/B045/B046 - 015

07/22/2004

APPLICABLE MODEL:

GESTETNER – DSm415/DSm415pF/DSm415F

LANIER - LD015/LD015SPF/LD015F

RICOH – AFICIO 1515/1515MF/1515F

SAVIN – 3515/3515MF/3515F

SUBJECT: PARTS CATALOG UPDATES

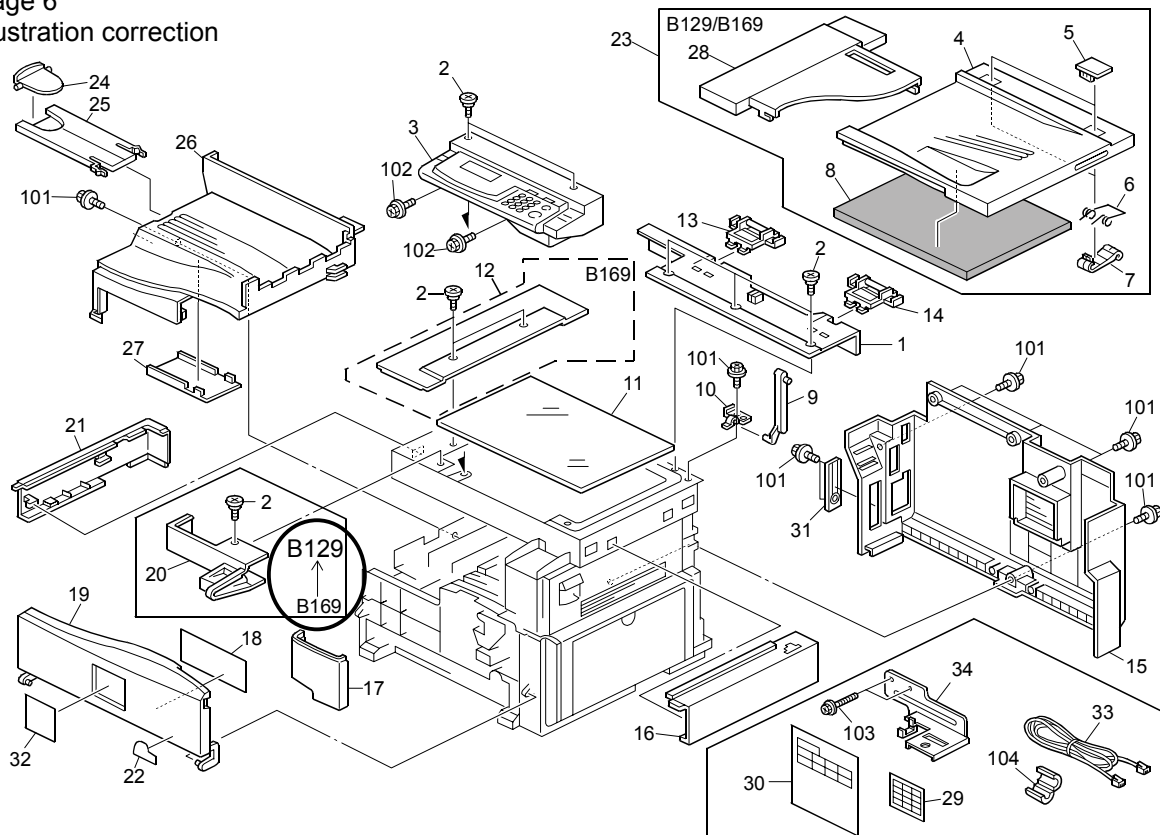
GENERAL:

The following parts updates are being issued for all B129/B130/B168/B169 Parts Catalogs.

● **UPDATE 1:**

Illustration Correction - Please correct your Parts Catalogs as follows. Item 20 insert on page 6 should be labeled B129. The Model Name Plate for Gestetner was labeled wrong on page 7 see table.

Page 6
Illustration correction

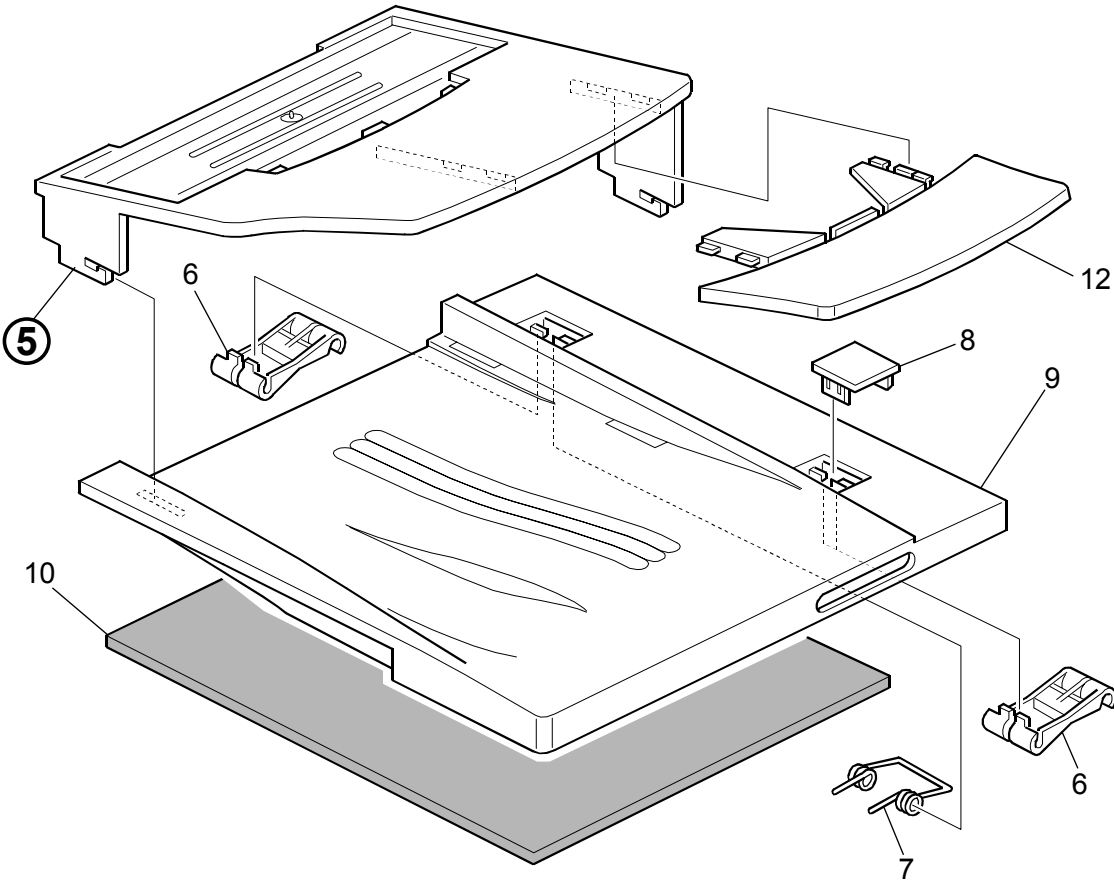


Page 7
- Description Correction -

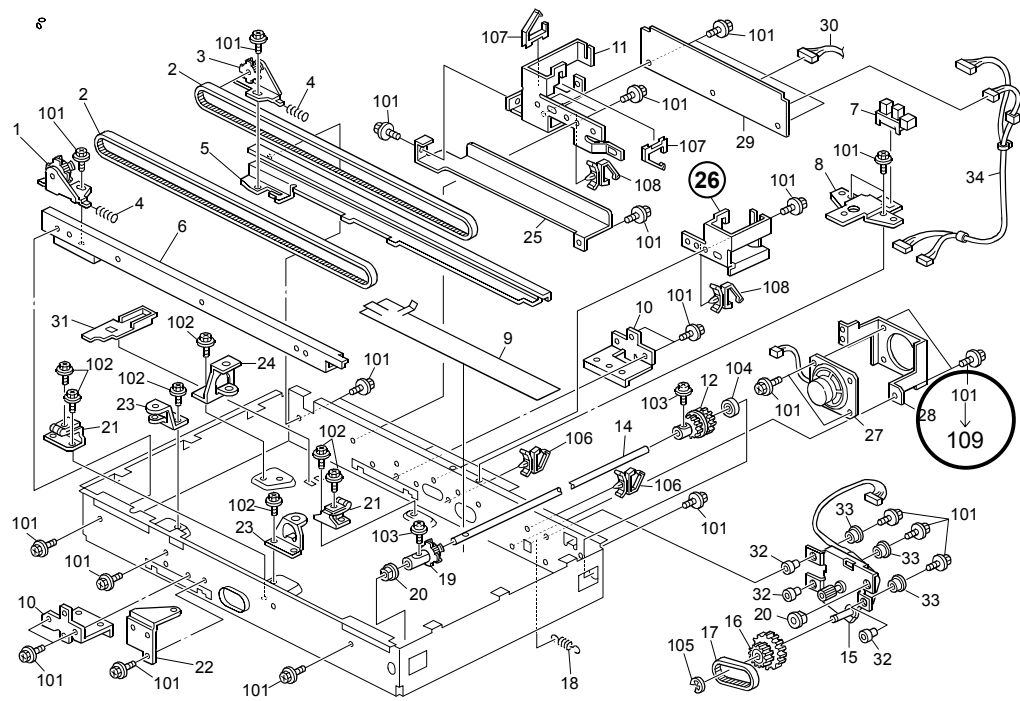
			REFERENCE	
PART NUMBER	INCORRECT DESCRIPTION	CORRECT DESCRIPTION	QTY	ITEM
B1297508	Model Name Plate (B129 RIC TWN)	Model Name Plate – GES DSM415	1	32
B1307508	Model Name Plate (B130 RIC TWN)	Model Name Plate – GES DSM415PF	1	32
B1687508	Model Name Plate (B168 GES)	Model Name Plate – GES DSM415F	1	32
B1687514	Model Name Plate (B168 GES)	Model Name Plate – REX DSM415F	1	32

- **UPDATE 2:**
- Illustration Correction: - Pages 18; Item 5 Original Table was not labeled, and Page 28 had a screw mislabeled. Item 101 should be item 109

Page 18
- Illustration Correction -



Page 28
- Illustration Correction -



Page 29
- Addition -

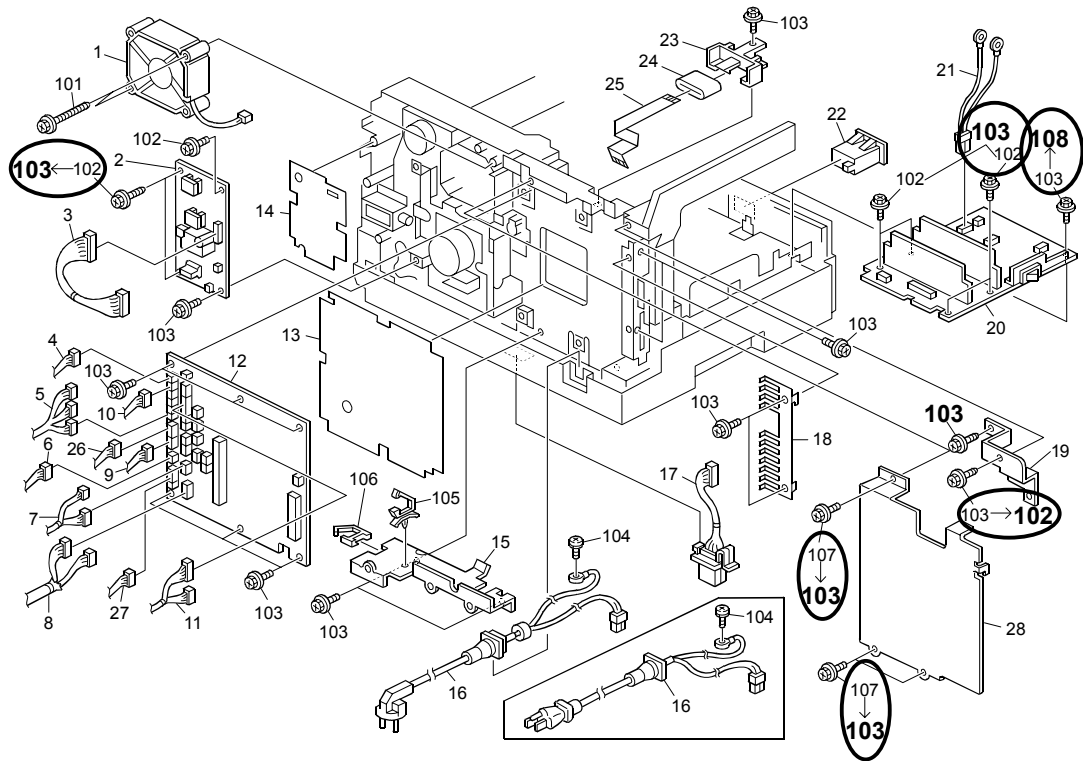
		REFERENCE	
NEW PART NUMBER	DESCRIPTION	PAGE	ITEM
04533006N	Tapping Screw – M3 x 6	29	109*

* DENOTES NEW ITEM NUMBER

● UPDATE 3:

Illustration Correction – Item 108 and numerous other Items were mislabeled.

Page 38
Illustration Correction



Addition

		REFERENCE	
NEW PART NUMBER	DESCRIPTION	PAGE	ITEM
09543008B	Philips Screw – M3 x 8	38	108*

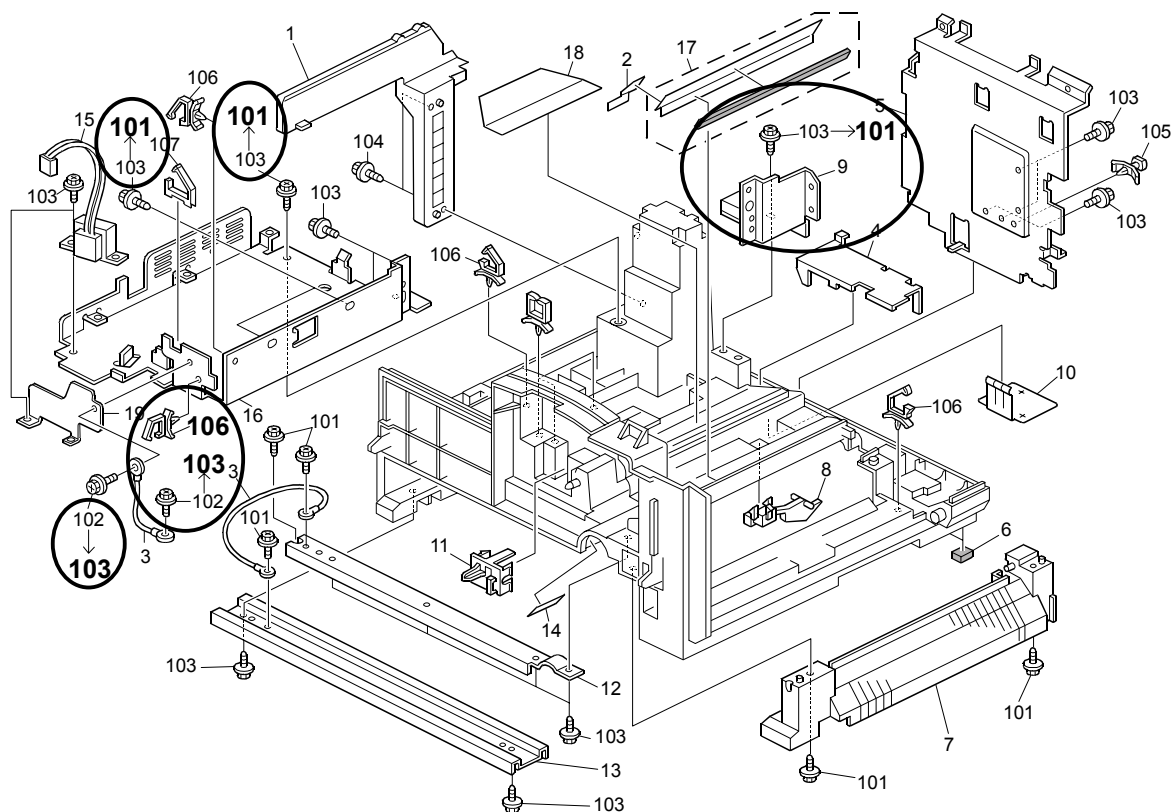
* DENOTES NEW ITEM NUMBER

- **UPDATE 4:**

Illustration Correction – numerous items were mislabeled.

Page 40

- Illustration Correction -



BULLETIN NUMBER: B129/B130/B168/B169/B044/B045/B046 - 016

08/04/2004

APPLICABLE MODEL:

GESTETNER - DSm415/DSm415pF/DSm415F

LANIER - LD015/LD015SPF/LD015F

RICOH - AFICIO 1515/1515MF/1515F

SAVIN - 3515/3515MF/3515F

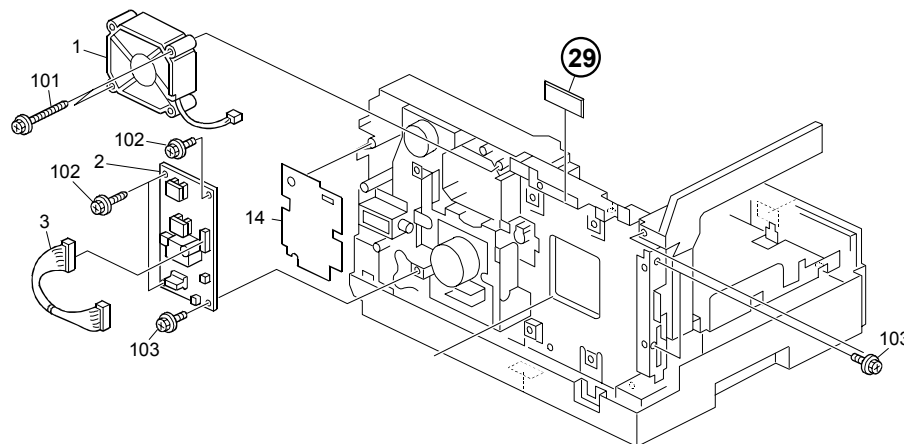
SUBJECT: PCB DFB

GENERAL:

The PCB DFB was omitted from the B129/B130/B168/B169 Parts Catalog. Please correct your parts catalog with the following information. The following part update is being issued for all B129/B130/B168/B169 Parts Catalogs.



PARTS



B129/B130/B168/B169 only

			REFERENCE	
NEW PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
B1295170	PCB DFB	1	39	29 *

*** DENOTES NEW ITEM NUMBER**

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

Note: This copy is intended as a master original
for reproduction of additional bulletins.

B431 PRINTER OPTION PS2 FIRMWARE MODIFICATION			
DESCRIPTION OF MODIFICATION	FIRMWARE LEVEL	SERIAL NUMBER	FIRMWARE VERSION
Corrects the following: - Sometimes a PS file made in a UNIX environment cannot be printed. - Print image density in PostScript mode has been fine tuned to the same level as PCLXL.	B4315280 H	January 2003 Production	1.90