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B051/B052

SERVICE MANUAL

001488MIU

RICOH GROUP COMPANIES

CÓPIA NÃO CONTROLADA

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CÓPIA NÃO CONTROLADA

WARNING

The Service Manual contains information regarding service techniques, procedures, processes and spare parts of office equipment distributed by Ricoh Corporation. Users of this manual should be either service trained or certified by successfully completing a Ricoh Technical Training Program.

Untrained and uncertified users utilizing information contained in this service manual to repair or modify Ricoh equipment risk personal injury, damage to property or loss of warranty protection.

Ricoh Corporation

CÓPIA NÃO CONTROLADA

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LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B051	DSc224	LD024c	Aficio 1224C	C2408
B052	DSc232	LD032c	Aficio 1232C	C3210

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⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.
4. If a job has started before the copier completes the warm-up or initializing period, keep hands away from the mechanical and electrical components because the starts making copies as soon as the warm-up period is completed.
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 is non-toxic, but if you get it in your eyes by accident, it may cause temporary eye discomfort. Try to remove with eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.
2. The NVRAM on the Controller board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. Do not recharge or burn this battery. Used NVRAM must be handled in accordance with local regulations.
3. The danger of explosion exists if batteries on the FCU, MBU and JBIG are 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.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner, the maintenance unit which includes developer or the organic photoconductor in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.
   When keeping used lithium batteries in order to dispose of them later, do not put more than 100 batteries per sealed box. Storing larger numbers or not sealing them apart may lead to chemical reactions and heat build-up.

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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, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Optics Housing Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKING:

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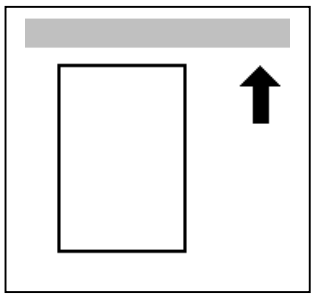
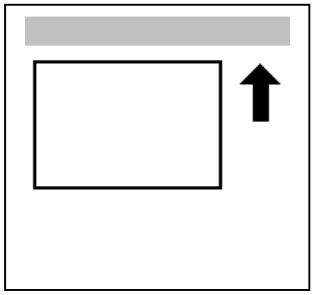
Conventions in this Manual

This manual uses several symbols.

Symbol	What it means
	Refer to section number
CT	See Core Tech Manual for details
	Screw
	Connector
	Clip ring
	E-ring



Lengthwise, SEF (Short Edge Feed)



Sideways, LEF (Long Edge Feed)

CÓPIA NÃO CONTROLADA

TAB POSITION 1

TAB POSITION 2

TAB POSITION 3

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INSTALLATION

CÓPIA NÃO CONTROLADA

1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F) (humidity to be 54% at 32°C, 89.6°F)
2. Humidity Range: 15% to 80% Rh (temperature to be 27°C, 80.6°F at 80%)
3. Ambient Illumination: Less than 1,500 lux (keep the machine out of direct sunlight.)
4. Ventilation: Air turnover of more than 30 m^3/hr/person or more
5. Ambient Dust: Less than 0.10 mg/m^3 (2.7 x 10^{-6} oz/yd^3)
6. Avoid exposing the machine to sudden temperature changes, which include:
   1) Direct cool air from an air conditioner
   2) Direct heat from a heater
7. Avoid installing the machine in areas that may be exposed to corrosive gas.
8. Install the machine at a location lower than 2,000 m (6,500 ft.) above sea level.
9. Install the machine on a strong, level base.
10. Avoid installing the machine in areas that may be subjected to strong vibration.

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

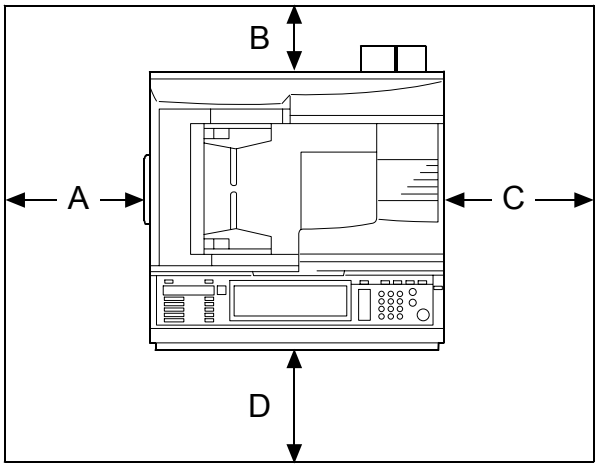
1.1.3 POWER REQUIREMENTS

⚠CAUTION

1. **Insert the plug firmly in the outlet.**
2. **Avoid using an outlet extension plug or cord.**
3. **Ground the machine.**

1. Input voltage level: 120 V, 60 Hz, More than 12 A
   220 ~ 240 V, 50/60 Hz, More than 8 A
   110 V, 50/60 Hz, More than 13A
2. Permissible voltage fluctuation: ±10%
3. Do not put or place anything on the power cord.

1.1.4 SPACE REQUIREMENTS



A: Over 100 mm (4")
B: Over 100 mm (4")
C: Over 550 mm (22")
D: Over 750 mm (29.6")

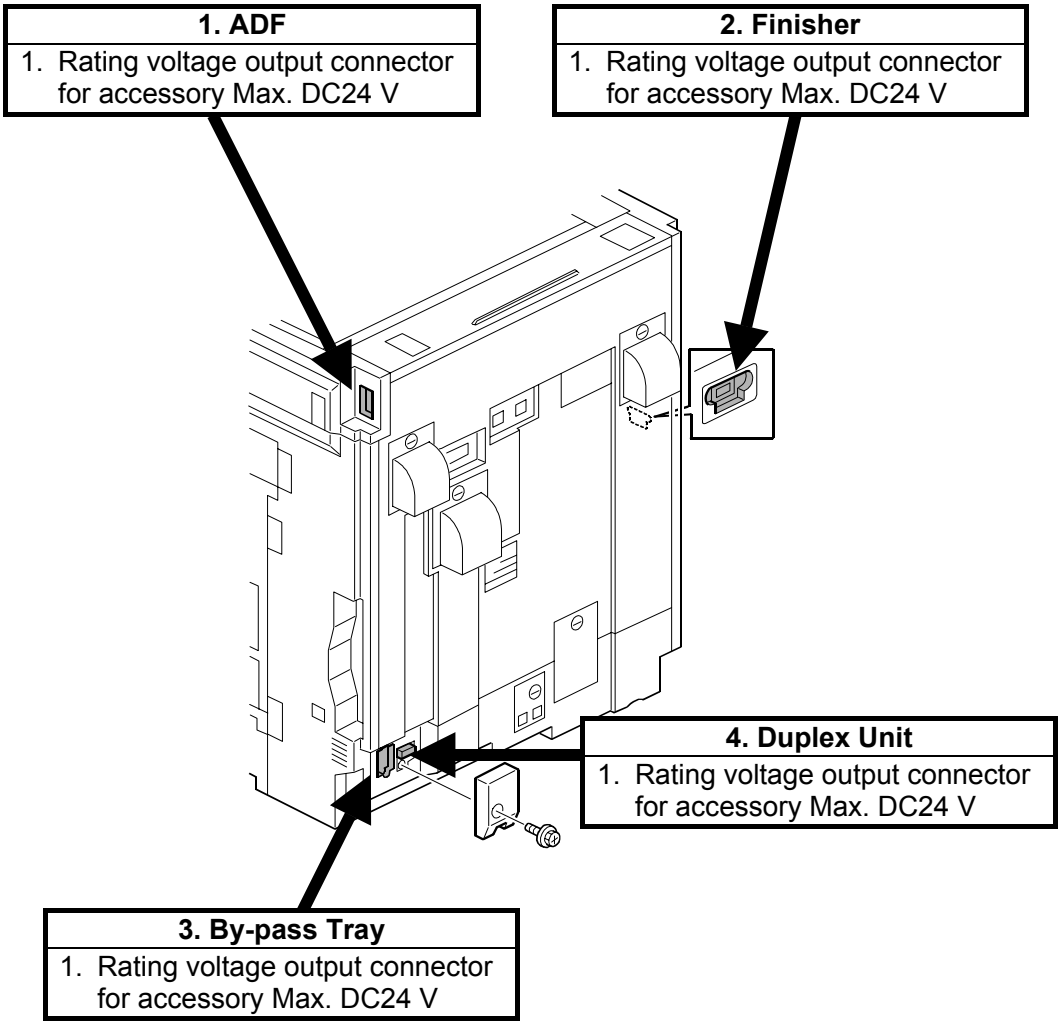
1.2 COPIER (B051/B052)

1.2.1 POWER SOCKETS FOR PERIPHERALS

⚠CAUTION

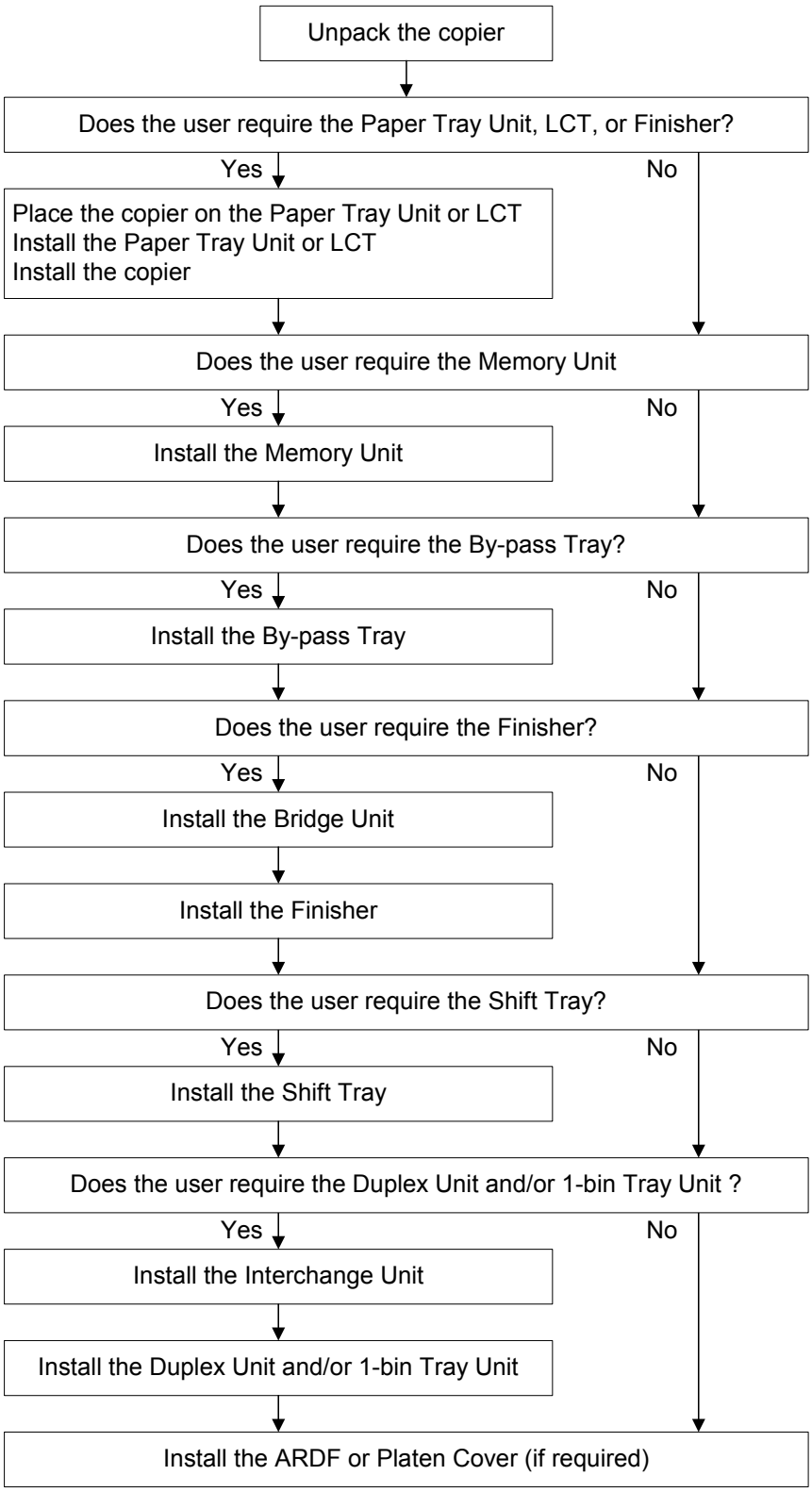
Rating voltage for peripherals.

Make sure to plug the cables into the correct sockets.



1.2.2 INSTALLATION FLOW CHART

The following flow chart shows how to install the optional units more efficiently.

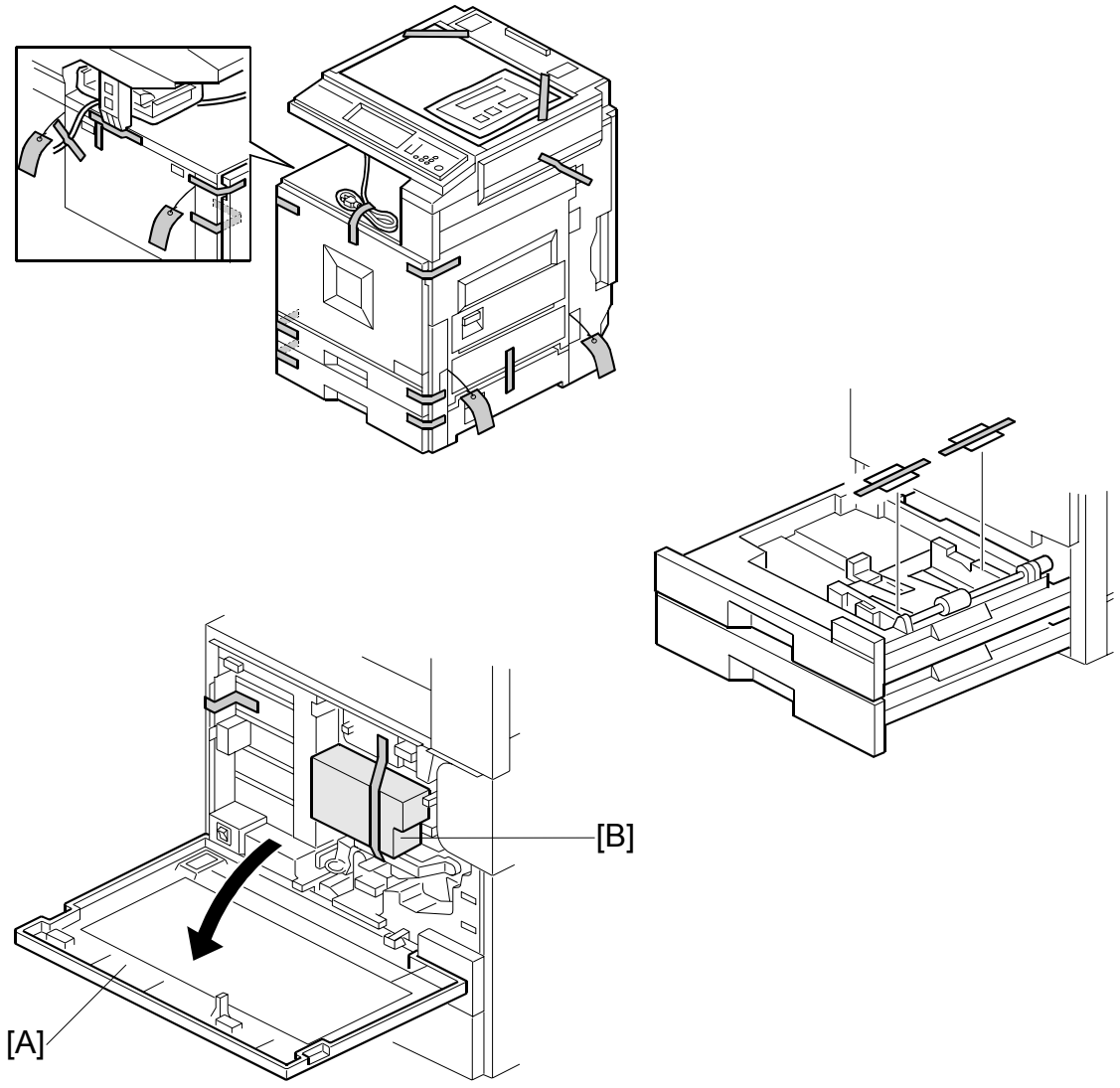


1.2.3 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box against the following list:

No.	Description	Q'ty
1	Paper Tray Decal	1
2	Model Name Decal	1
3	NECR	1
4	Factory Data Sheet	1
5	Filter Duct	3
6	Filter	3
7	Caution Decal – Power/Paper	1
8	Decal – Copy prohibition	1
9	Manual Holder	1
10	Operating Instructions – System Setting	1
11	Operating Instructions – Copy Reference	1

1.2.4 INSTALLATION PROCEDURE



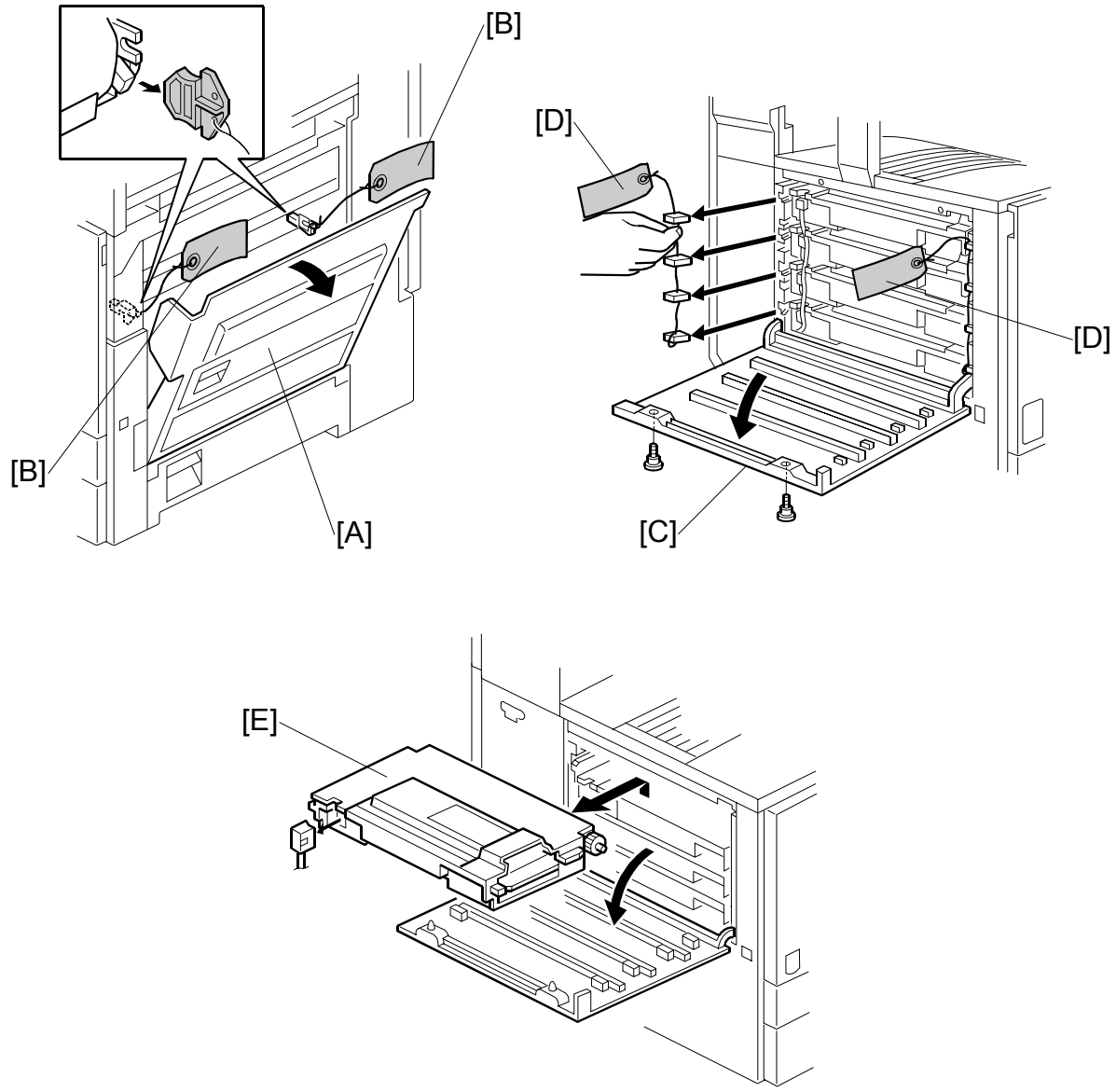
⚠CAUTION

Unplug the machine power cord before starting the following procedure.

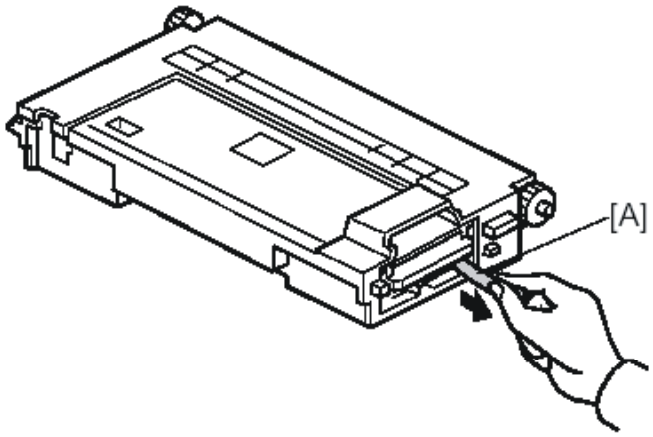
If the optional paper tray or the optional LCT will be installed at the same time, place the copier on the paper tray unit or the LCT first, then install the copier and the other options.

NOTE: Keep the shipping retainers after installing the machine. They will be reused when the machine is moved to another location in the future.

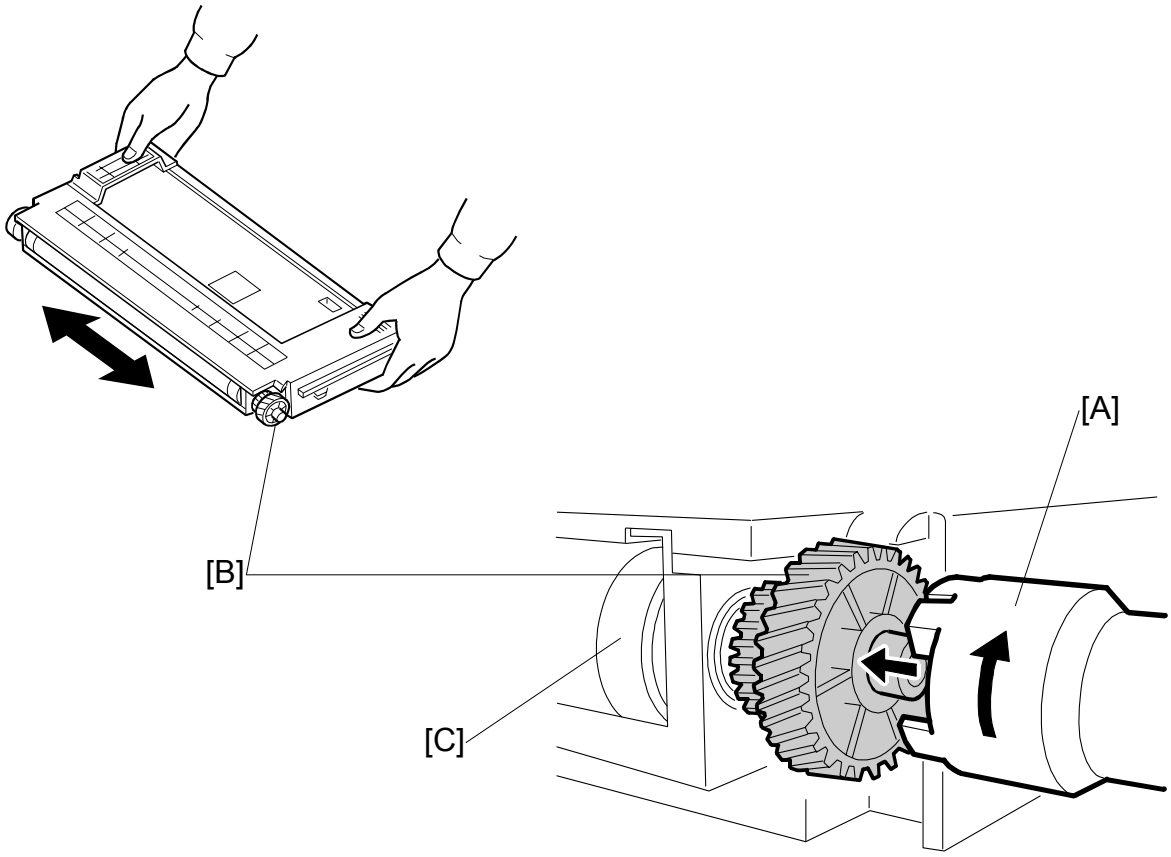
1. Remove the tapes.
2. Open the front cover [A] and remove the shipping retainer [B].



3. Open the right cover [A], and remove the red tags [B].
4. Open the left cover [C] (x 2), and remove the red tags [D].
5. Pull out all development units [E] (x 1 each).

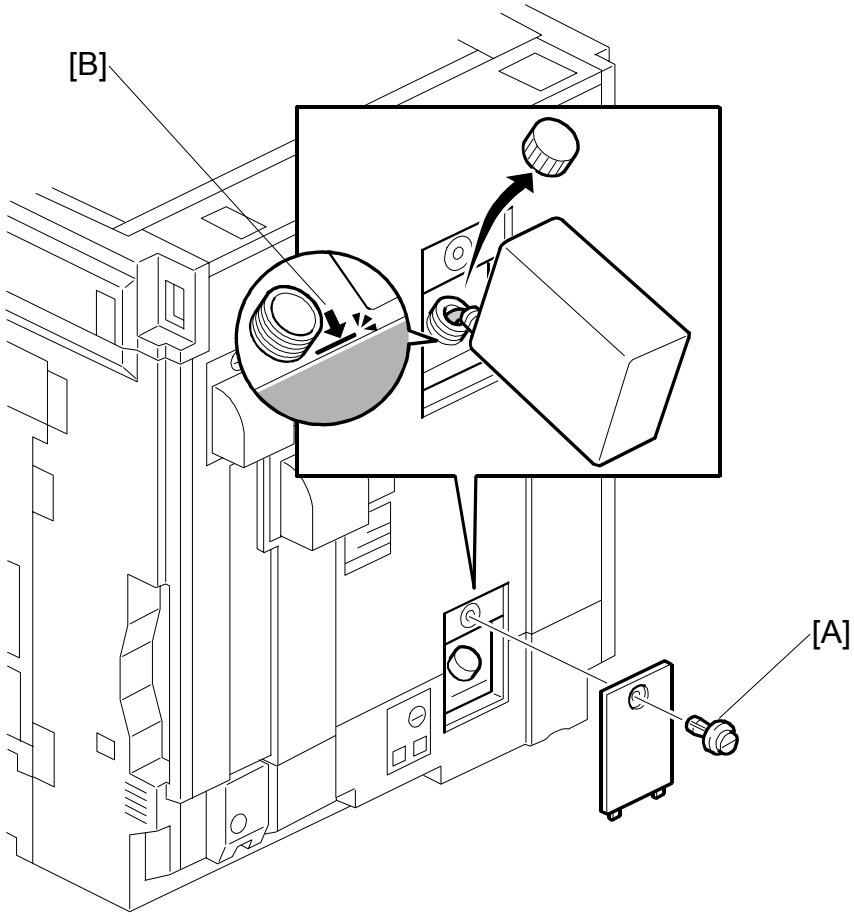


6. Peel off the toner cartridge seal [A].
7. Reinstall the toner cartridge in the development unit.

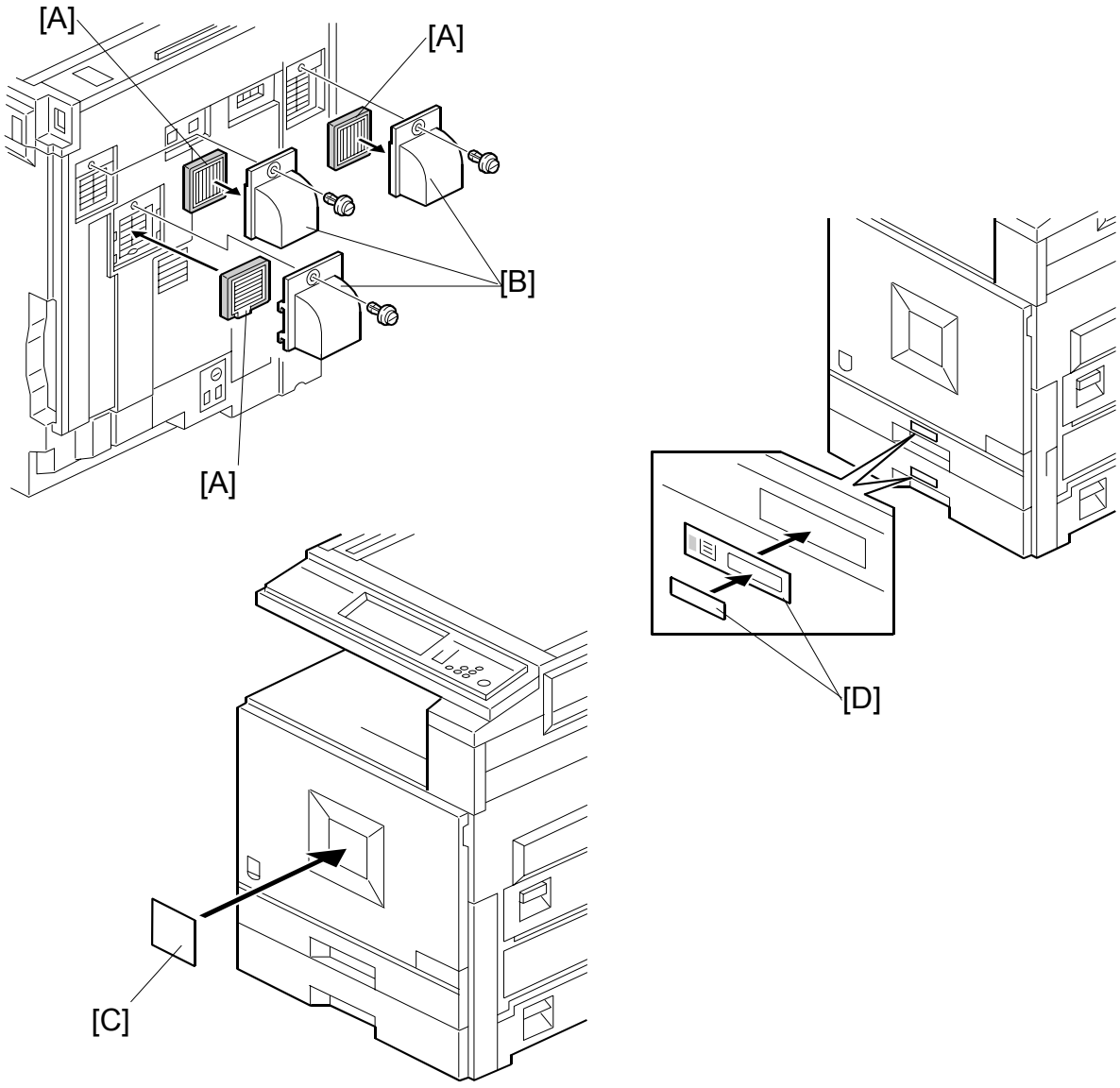


Rear view

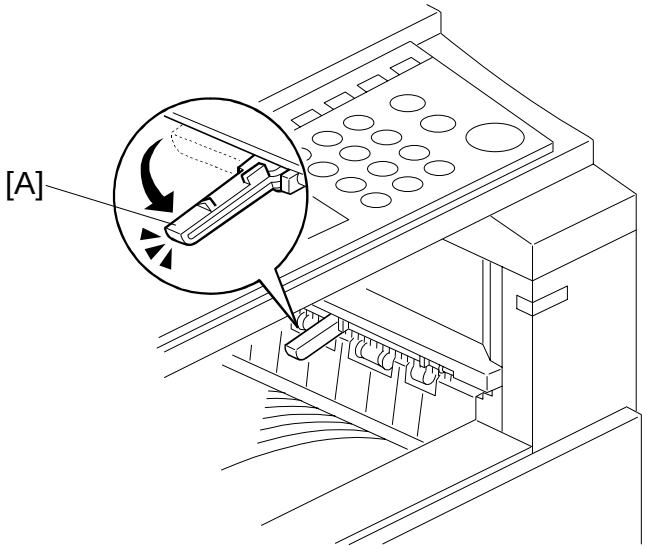
8. Keep the development unit level and shake the development unit about 10 times from side to side.
   NOTE: 1) Do not touch the development roller or the development roller gear.
   2) Use caution not to drop the cartridge or to damage it.
   3) If the cartridge has not been shaken well, the machine takes a longer time to initialize the development unit, or an error message or SC350 is displayed. When either of these occur, turn the main switch off and on.
9. Engage the special tool [A] (distributed with the machine) with the development roller gear at the rear [B].
10. Turn the tool clockwise (approximately 5 times) until the toner covers the whole area of the development roller [C].
    NOTE: If the toner does not cover the entire area of the development roller, redo step 8 to 10.



11. Reinstall the development units, and close the left cover.
    NOTE: A white line or band may appear on one end of the paper if a development unit is incorrectly installed. To correct this, pull out the development unit partially (about 30 mm) and slowly reinstall it.
12. Remove the oil tank cover [A] (1 clip), and fill the oil tank to the maximum line.
    NOTE: Do not fill the oil tank past the arrow [B].



13. Install the filters [A] and ducts [B] as shown.
14. Attach the appropriate model name decal [C] to the front cover.
15. Pull the paper tray out, and adjust the side guides and end guide to match the paper size.
    NOTE: To move the side guides, first pull out the tray fully, then push down the green lock at the rear inside the tray to the unlock position.
16. Attach the appropriate paper tray number decals [D] to the paper trays.
    NOTE: Paper tray number decals are also used for the optional paper tray or the optional LCT. Keep any remaining decals for use with these optional units.



17. **If the optional bridge unit will not be installed:** Swing the sensor feeler [A] out.
18. Install the optional ARDF or the optional platen cover (see ARDF Installation or Platen Cover Installation).
19. Plug in the machine and turn the main power switch on. The machine automatically performs the initialization procedure. After this has finished, the Start button LED turns green.
20. Make copies of image samples (text, photo, and text/photo modes).
21. Perform Automatic Color Calibration (ACC).
    NOTE: Since this machine has been subject to color adjustment using Automatic Color Calibration (ACC) at the factory, there is no need to make automatic color calibration again if the customer is satisfied with the image sample. If the customer is not satisfied, do the following.
    1) Print the ACC test pattern (UP mode – Maintenance – ACC – Start).
    2) Place the printout on the exposure glass.
    3) Place 10 sheets of white paper on top of the test chart. Then, close the ADF or platen cover.
    4) Press “Start Scanning” on the LCD panel. The machine performs the ACC.
22. Make sure that the sample image has been copied normally.
23. After installing the machine and all options, and making all test copies, initialize the total counter (SP 7-825) if required by the service contract.

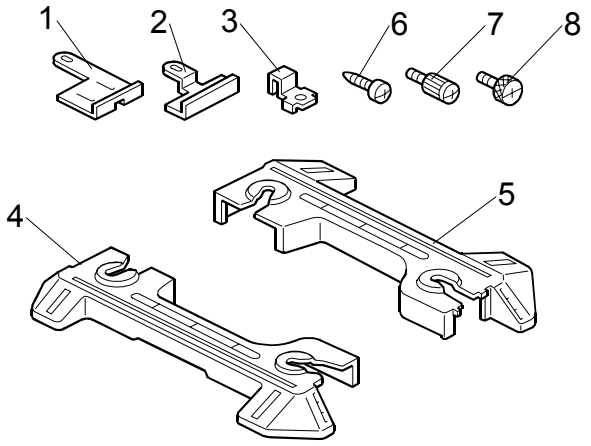
⟹ 24. Make sure SP 5 - 907 Plug and Play name is correct.

1.3 PAPER TRAY UNIT (B456)

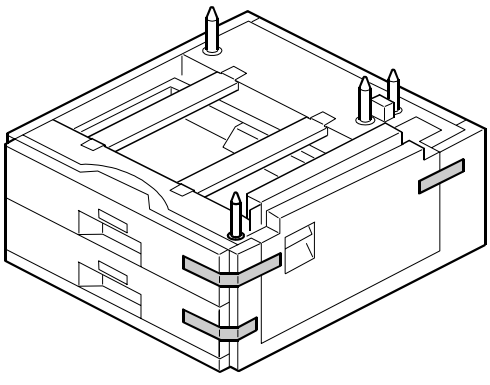
1.3.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Right Stand Bracket	1
2	Left Stand Bracket	1
3	Securing Bracket	2
4	Front Stand	1
5	Rear Stand	1
6	Screw - M4x10	4
7	Knob Screw	2
8	Stepped Screw	2



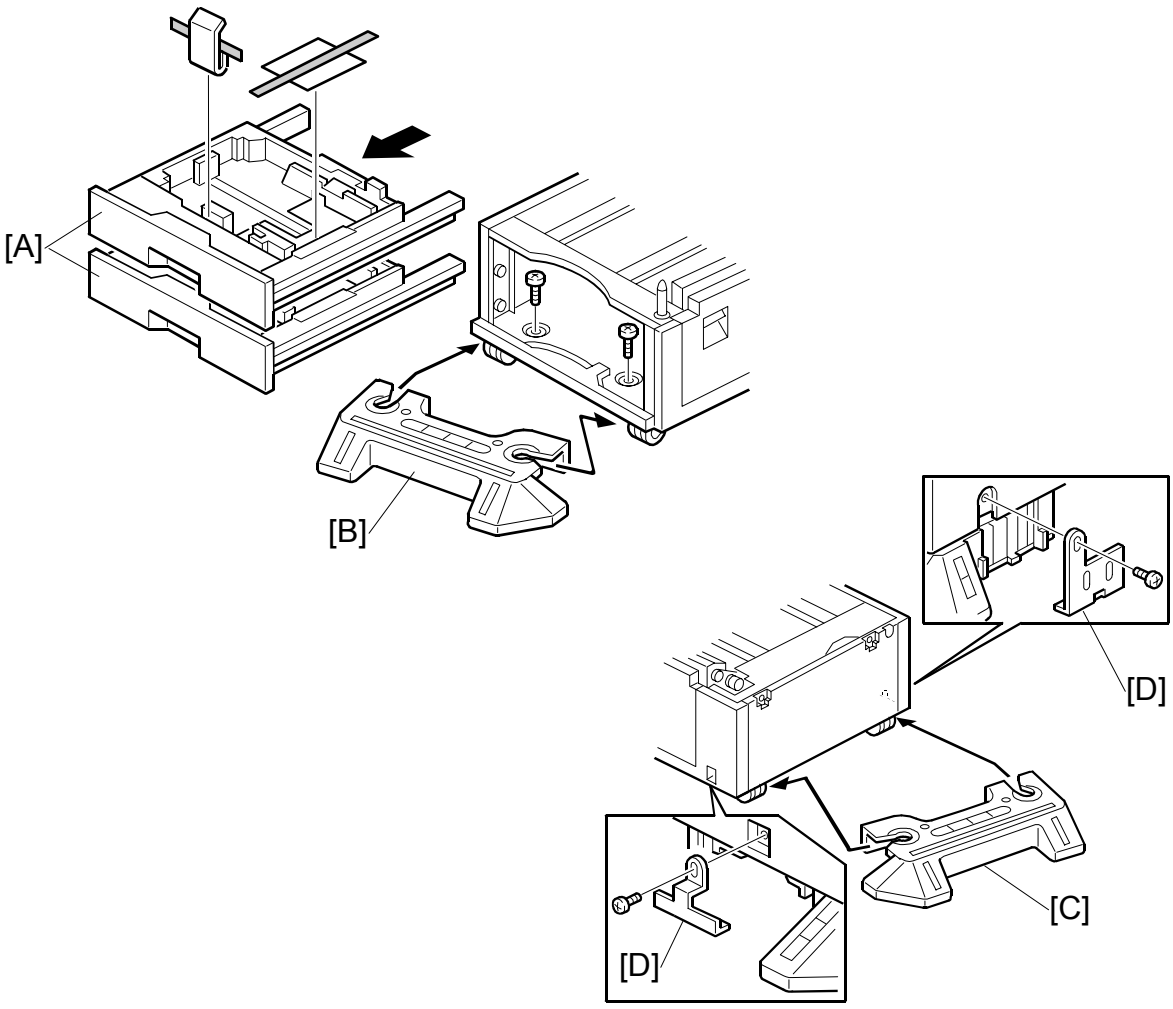
1.3.2 INSTALLATION PROCEDURE



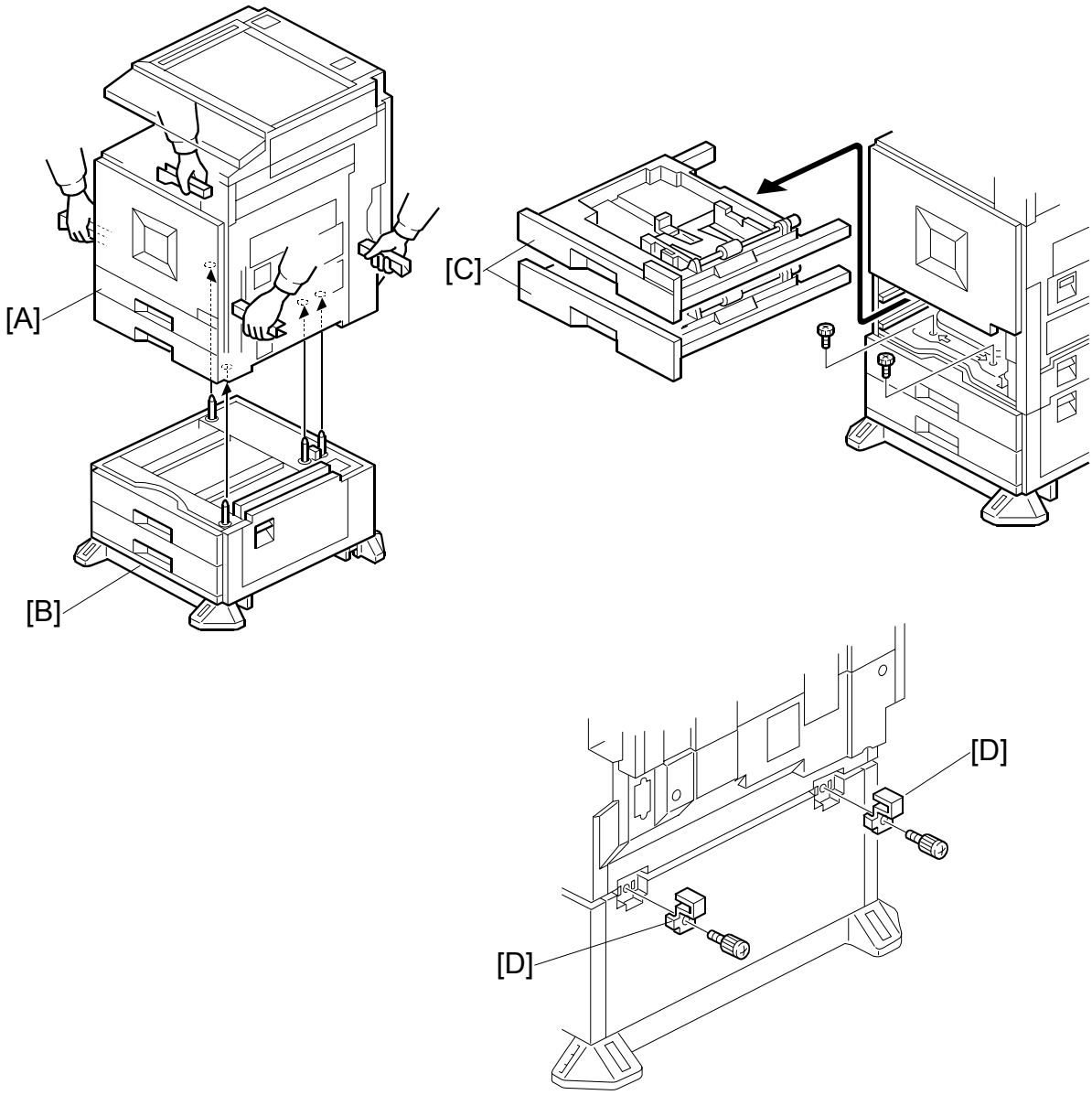
⚠CAUTION

Unplug the machine power cord before starting the following procedure.

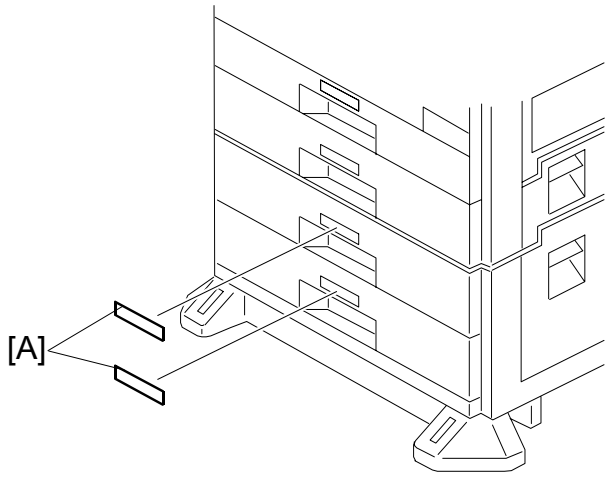
1. Remove the strips of tape.



2. Remove the paper trays [A] from the paper tray unit and remove the shipping retainers.
3. Install the front stand [B] (☞ x 2).
4. Install the rear stand [C].
5. Attach two stand brackets [D] (☞ x 1 each).



6. Set the copier [A] on the paper tray unit [B].
7. Remove the paper trays [C] from the copier and secure the paper tray unit (🔩 x 2).
8. Attach a securing bracket [D] to each side of the paper tray unit (🔩 x 1 each).



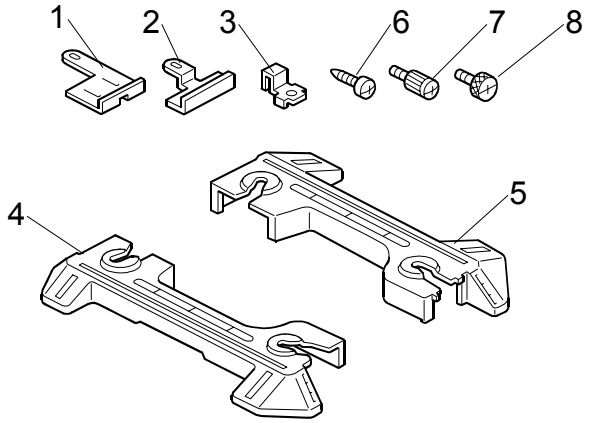
9. Reinstall the paper trays and attach the appropriate paper tray number decal [A] to the paper tray.
   NOTE: The paper tray number decal is in the accessory box for the main copier.
10. Load paper into the paper trays.
11. Turn on the main switch.
12. Check the machine's operation and copy quality.

1.4 LCT (B457)

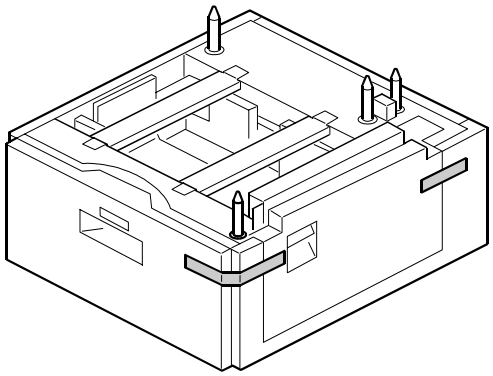
1.4.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Right Stand Bracket	1
2	Left Stand Bracket	1
3	Securing Bracket	2
4	Front Stand	1
5	Rear Stand	1
6	Screw - M4x10	4
7	Knob Screw	2
8	Stepped Screw	2



1.4.2 INSTALLATION PROCEDURE

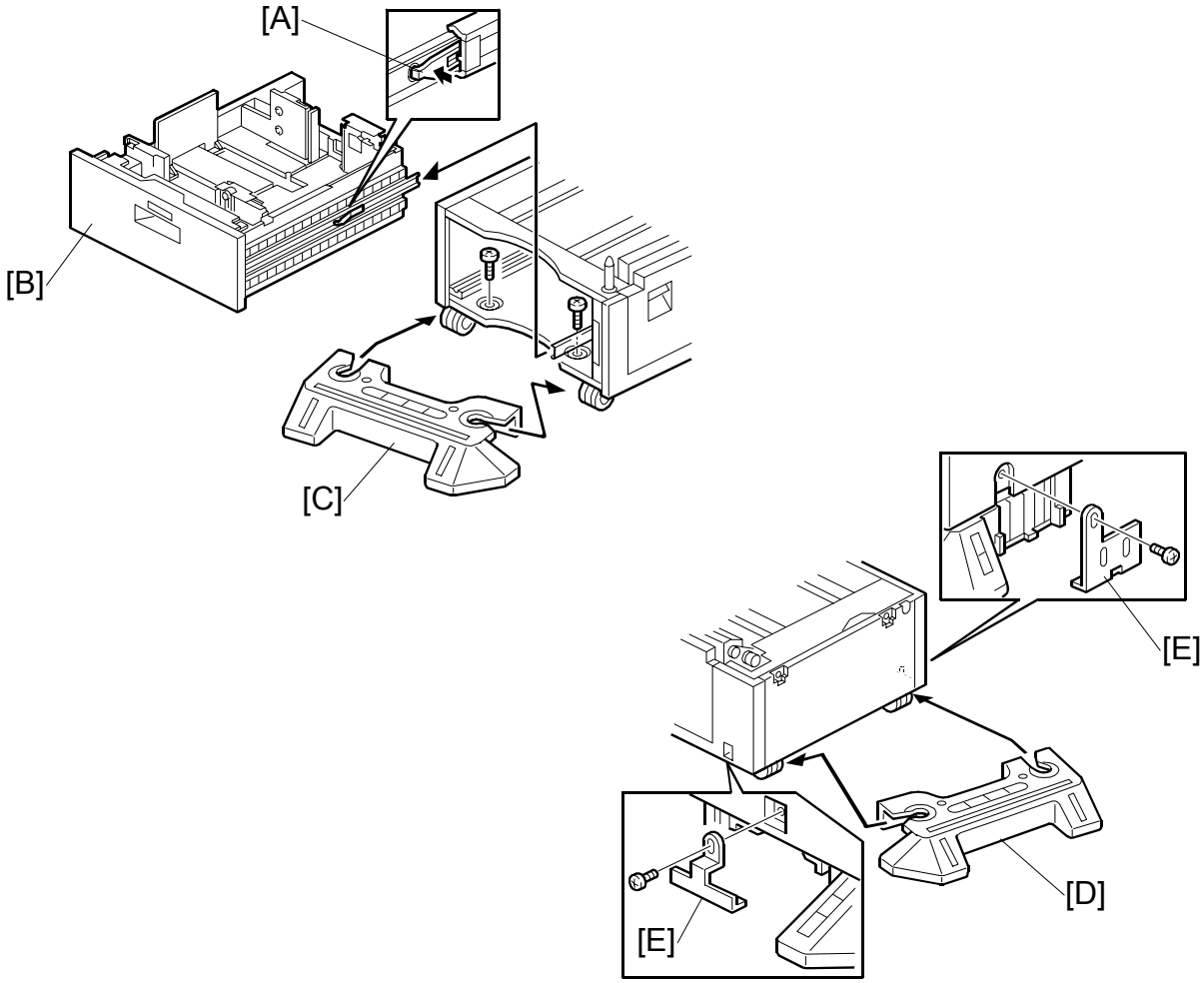


⚠CAUTION

Unplug the machine power cord before starting the following procedure.

1. Remove the strips of tape.

LCT (B457)



2. While pressing the stopper [A] attached to the guide rail, pull out the large capacity tray [B].
3. Install the front stand [C] (x 2).
4. Install the rear stand [D].
5. Attach two stand brackets [E] (x 1 each).

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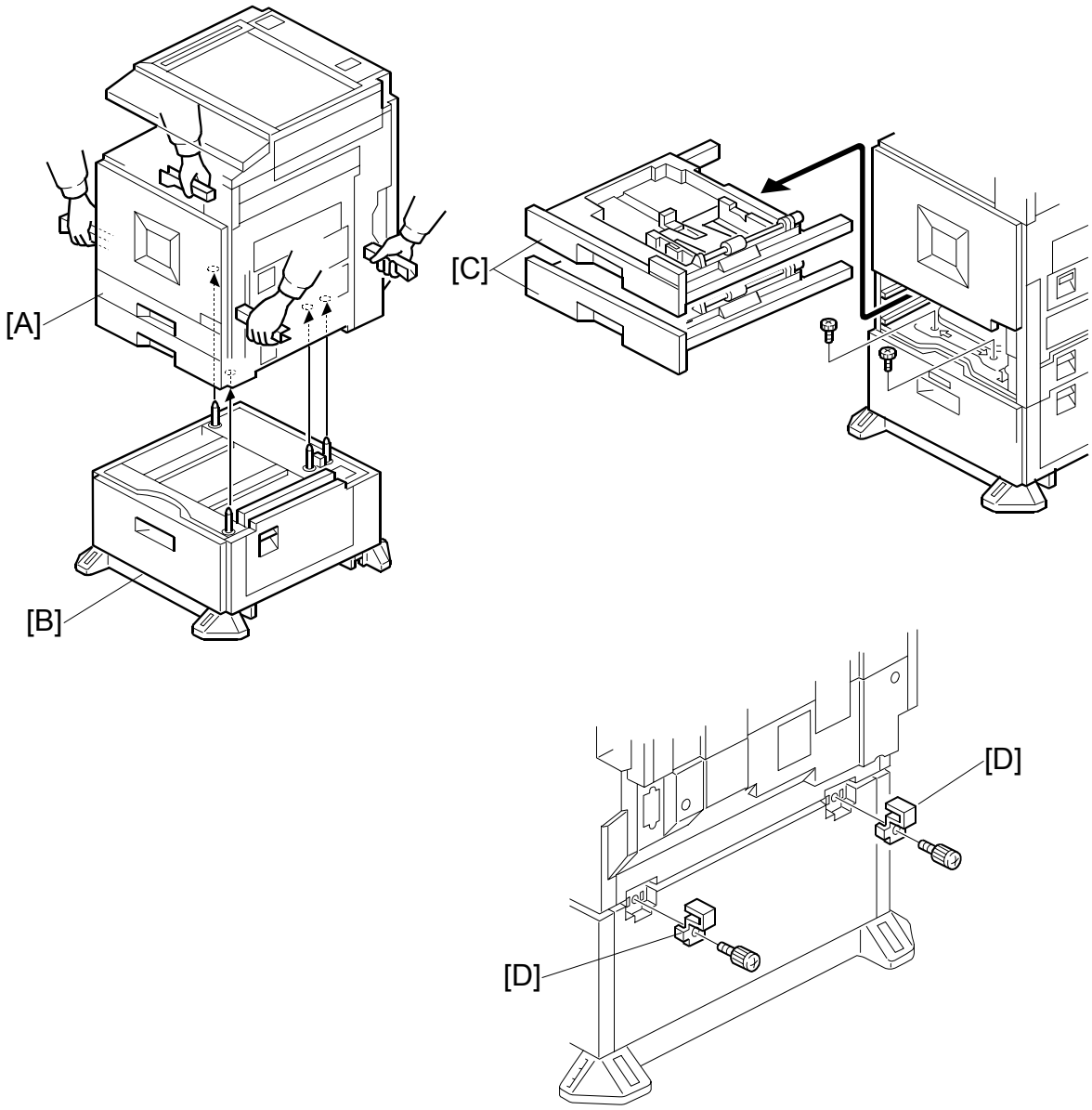
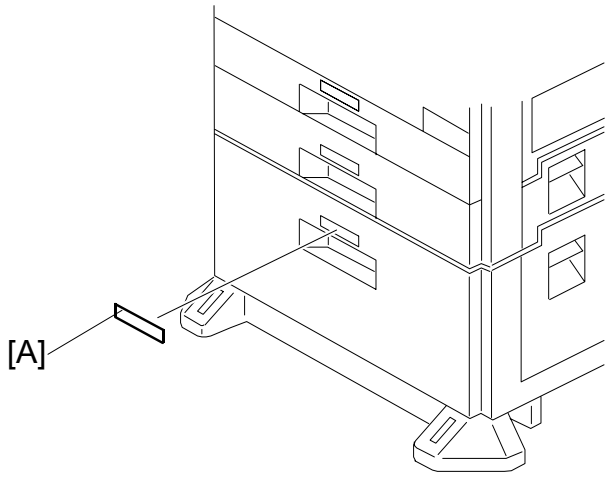


6. Set the copier [A] on the LCT [B].
7. Remove the paper trays [C] from the copier and secure the LCT (x 2).
8. Attach a securing bracket [D] to each side of the LCT (x 1 each).



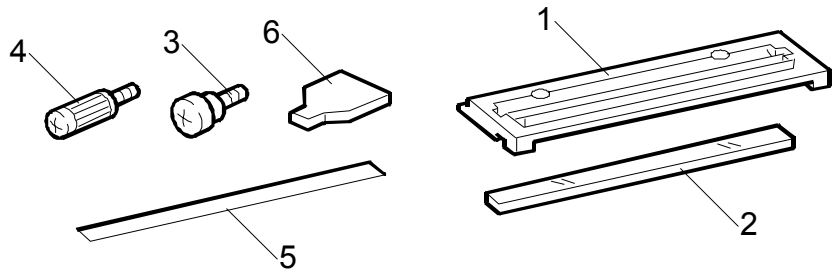
9. Reinstall the paper trays and attach the appropriate paper tray number decal [A] to the LCT.
   NOTE: The paper tray number decal is in the accessory box for the main copier.
10. Load paper into the LCT.
11. Turn on the main switch.
12. Check the machine's operation and copy quality.

1.5 AUTO REVERSE DOCUMENT FEEDER (B386)

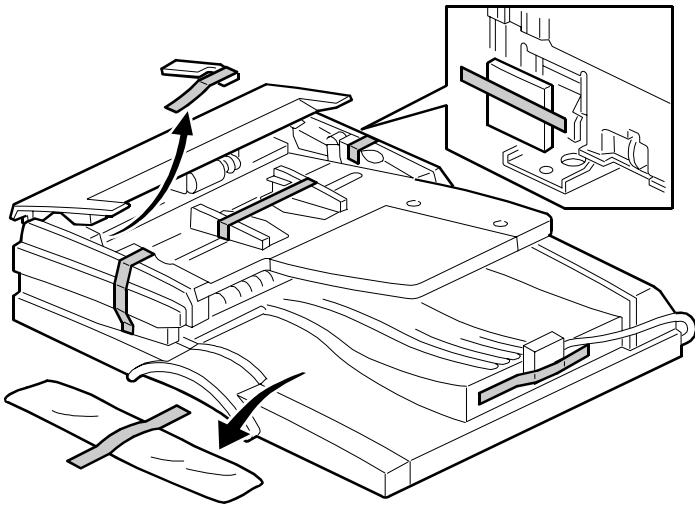
1.5.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Scale Guide	1
2	DF Exposure Glass	1
3	Stud Screw	2
4	Knob Screw	2
5	Original Size Decal	2
6	Screwdriver Tool	1

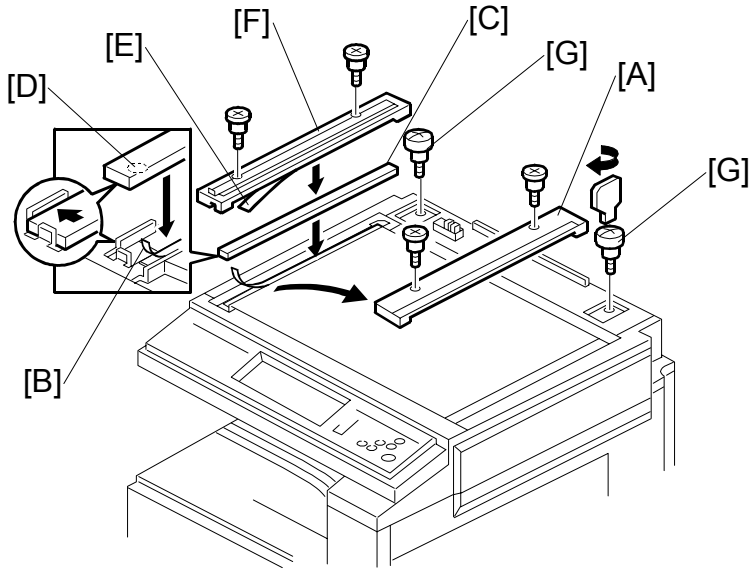


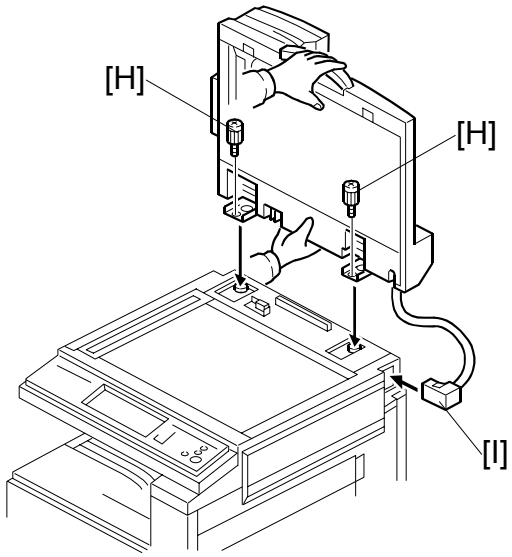
1.5.2 INSTALLATION PROCEDURE



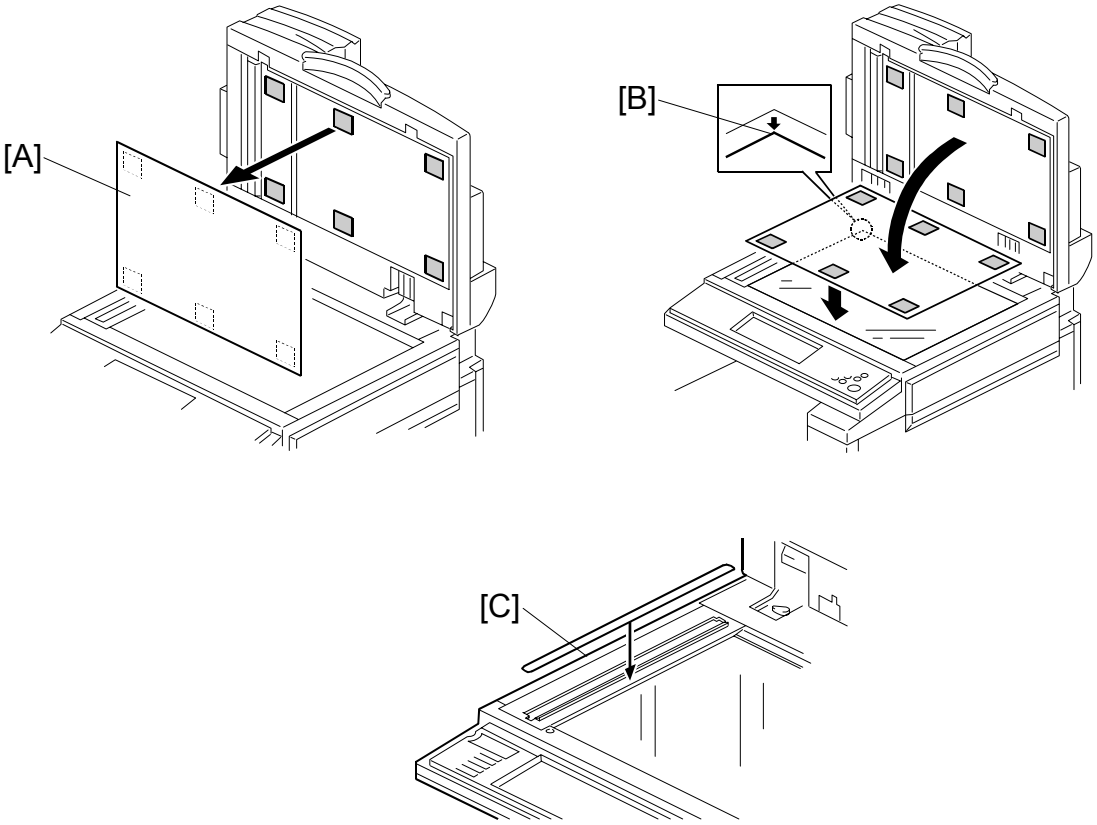
⚠CAUTION
Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape.





2. Remove the left scale [A] (🔩 x 2).
3. Peel off the backing [B] of the double-sided tape attached to the glass holder.
4. Place the DF exposure glass [C] on the glass holder.
   NOTE: When installing the DF exposure glass, make sure that the white point [D] is on the lower front side of the glass, as shown.
5. Peel off the backing [E] of the double-sided tape attached to the rear side of the scale guide [F], then install the scale guide [F] (🔩 x 2 removed in step 2).
6. Install two stud screws [G].
7. Mount the DF on the copier, then slide the DF to the front as shown.
8. Secure the DF unit with two screws [H].
9. Connect the cable [I] to the copier.



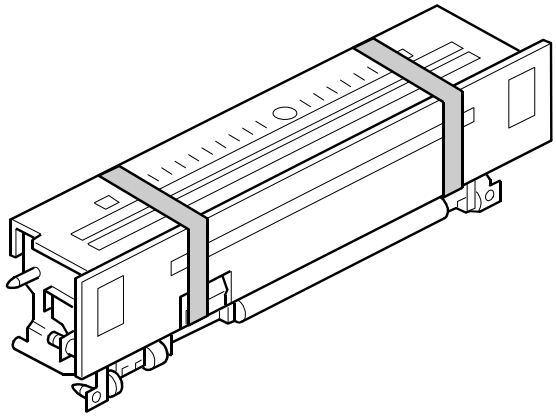
10. Peel off the platen sheet [A] and place it on the exposure glass.
11. Line up the rear left corner of the platen sheet flush against corner [B] on the exposure glass.
12. Close the ARDF.
13. Attach the appropriate scale decal [C] as shown.
14. Turn the main power switch on. Then check if the document feeder works properly.
15. Make a full size copy. Check that the registrations (side-to-side and leading edge) and image skew are correct. If they are not, adjust the registrations and image skew (refer to Replacements and Adjustments – Copy Adjustments).

1.6 INTERCHANGE UNIT (B481)

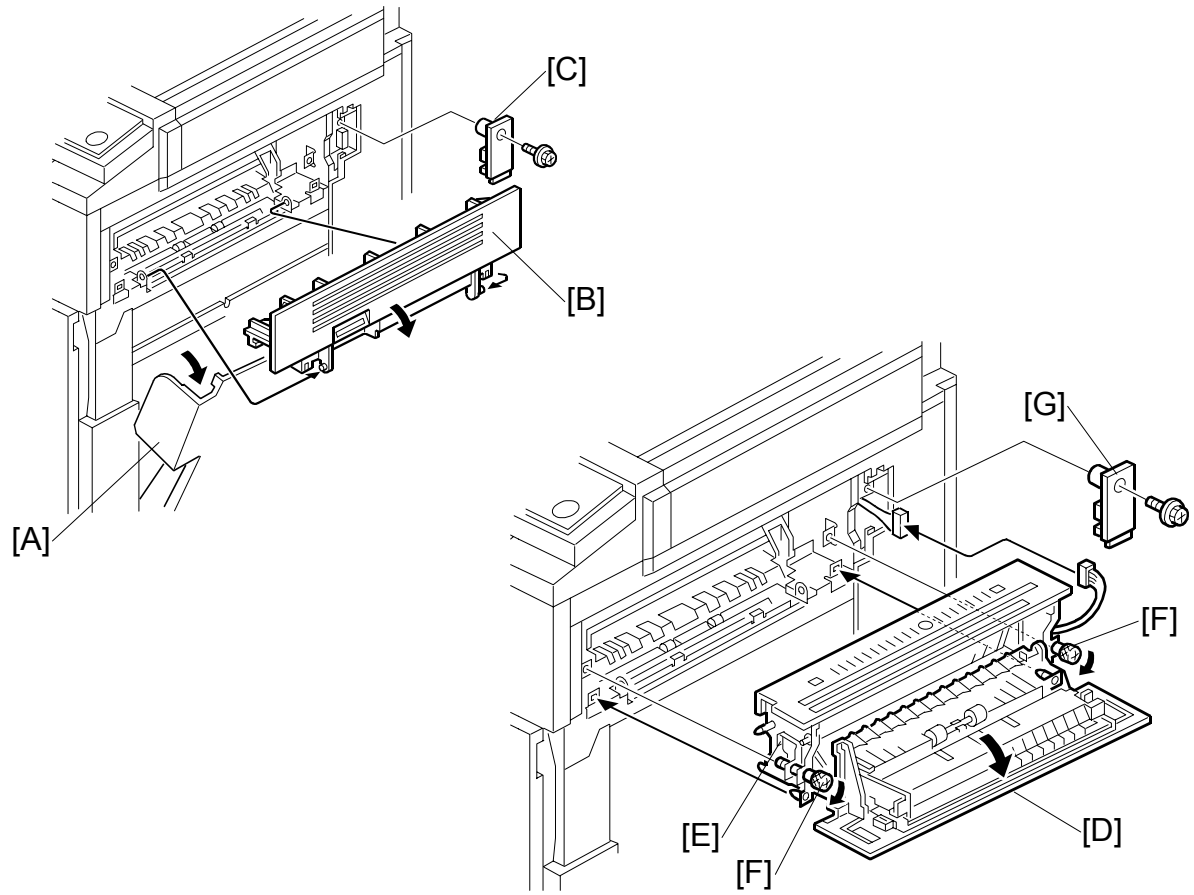
1.6.1 ACCESSORY CHECK

Check the quantity and condition of the components against the following list.

No.	Description	Q'ty
1	Interchange Unit	1



1.6.2 INSTALLATION PROCEDURE



⚠CAUTION
Unplug the copier power cord before starting the following procedure.

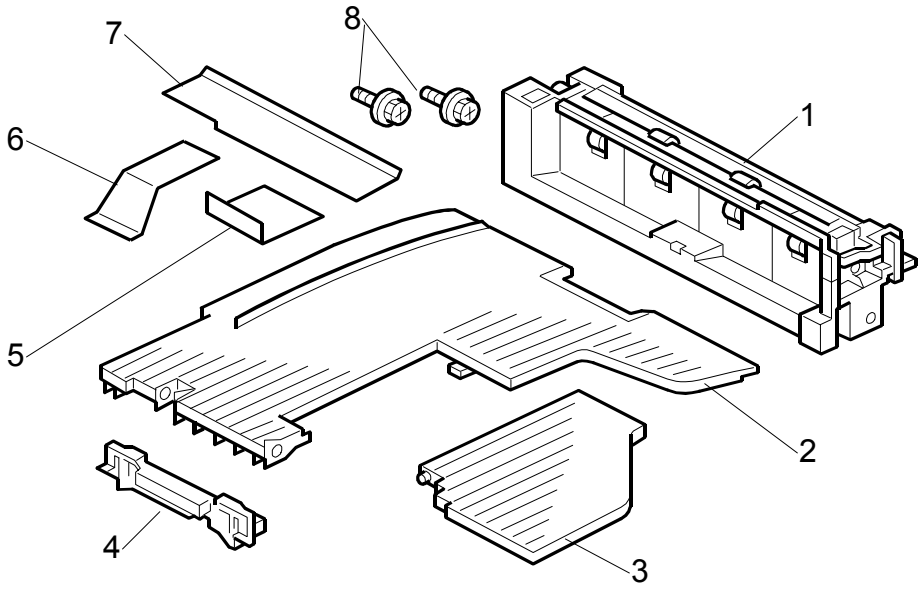
1. Remove all tapes.
2. Open the right cover [A] of the copier.
3. Open cover [B] and remove it.
   NOTE: Pull down in the direction of the arrow. Do not pull directly outwards.
4. Remove the connector cover [C] (🔩 x 1)
5. Open the cover [D] of the interchange unit.
6. Install the interchange unit [E] (✋ x 1).
   NOTE: Take care not to pinch the harness at the front side (near [E] in the drawing). This harness is not used in this procedure, but is used when installing another option.
7. Secure the interchange unit with the knob screws [F].
8. Reinstall the connector cover [G] which was removed in step 4.

1.7 1-BIN TRAY UNIT (B480)

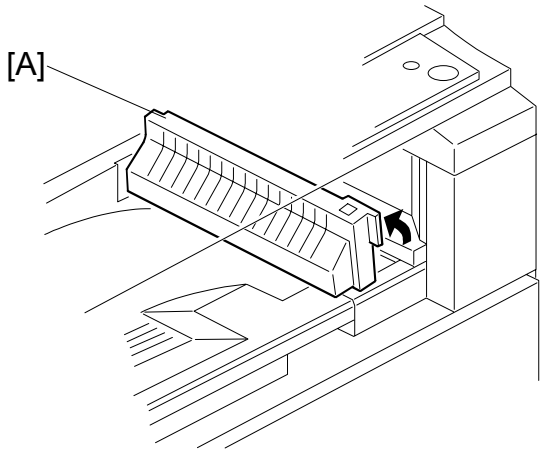
1.7.1 ACCESORY CHECK

Check the quantity and condition of the components against the following list.

No.	Description	Q'ty
1	1-Bin Tray Unit	1
2	Tray	1
3	Sub-Tray	1
4	Tray Guide	1
5	Shield Mylar	1
6	Sub Paper Guide	1
7	Paper Guide	1
8	Tapping Screw M3x8	2



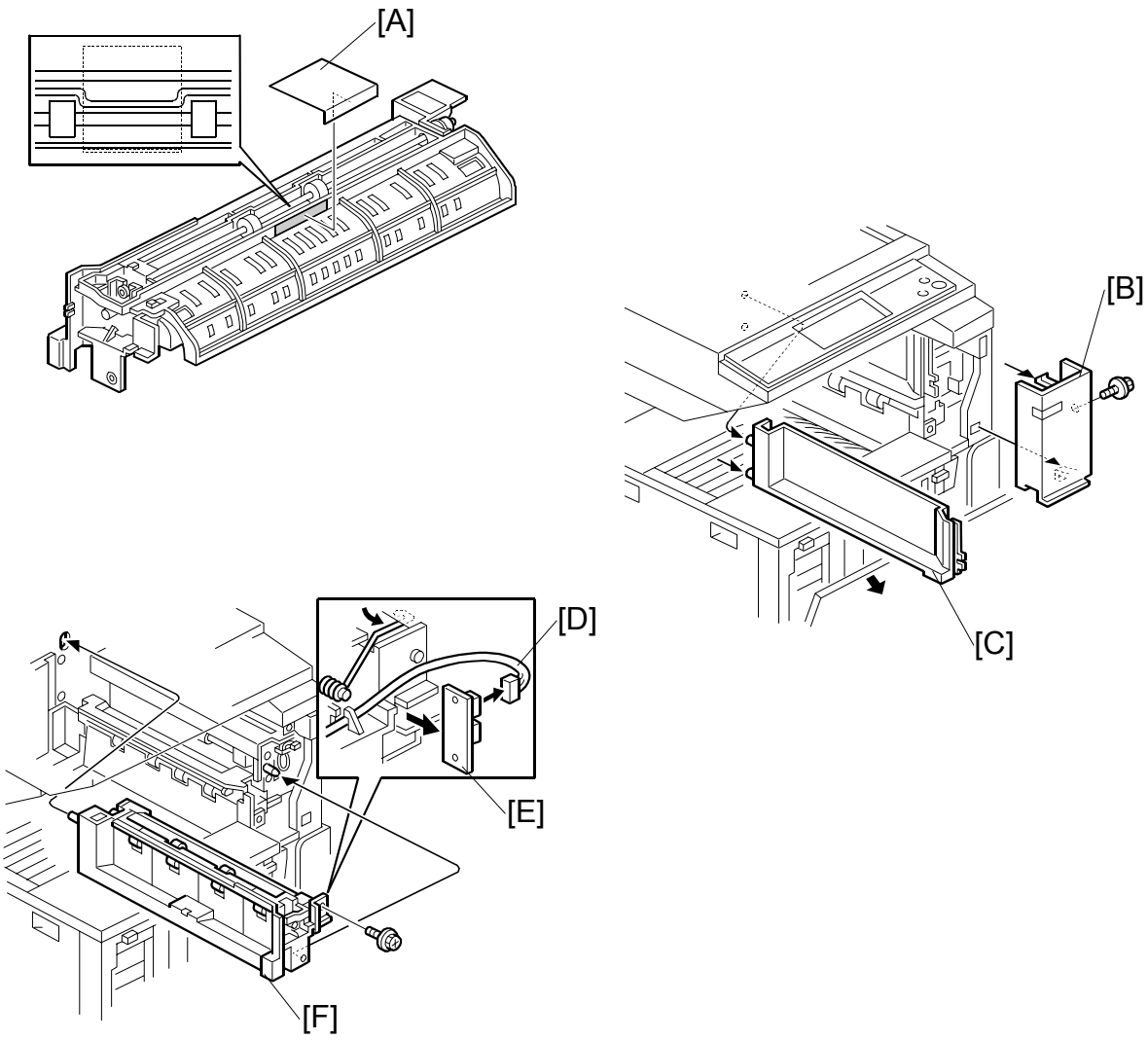
1.7.2 INSTALLATION PROCEDURE



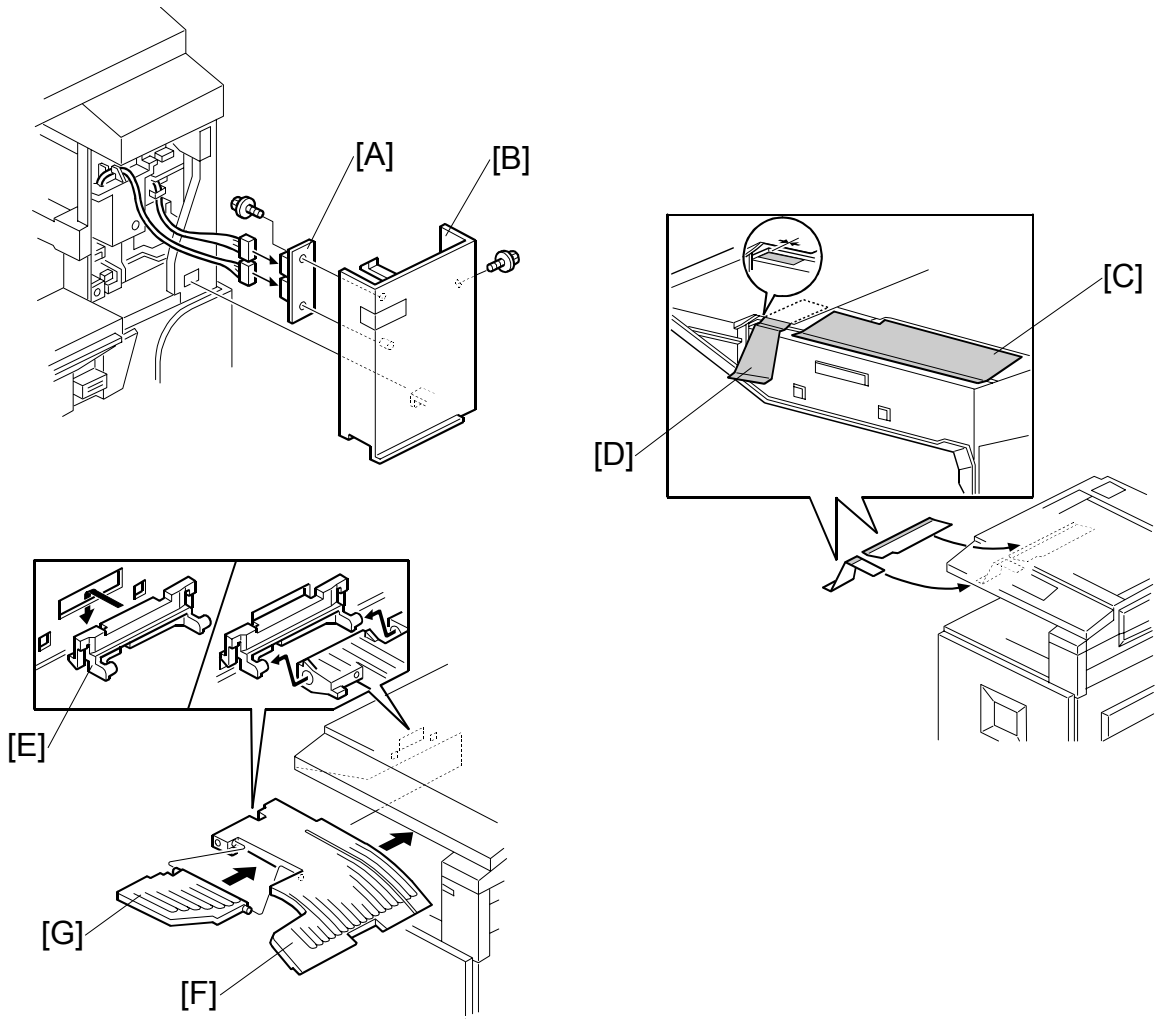
⚠CAUTION
Unplug the copier power cord before starting the following procedure.

NOTE: Before installing this 1-bin tray unit, the optional interchange unit (B416) must be installed.

1. Remove all tapes.
2. If the optional bridge unit has been installed, open the right jam removal cover [A] of the bridge unit.
   If the optional bridge unit is not installed, skip this step.



3. Peel off the backing of the double-sided tape attached to the shield mylar [A]. Then attach the shield mylar to the 1-bin unit.
4. If the front right cover [B] is installed, remove it (☞ x 1).
5. Remove the cover [C].
6. Disconnect the connector [D] and remove the LED board [E].
7. Install the 1-bin tray unit [F] (☞ x 1).



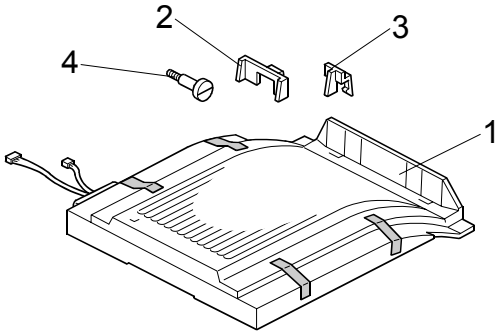
8. Install the LED board [A] on the front right cover (🔩 x 1).
9. Reinstall the front right cover [B] (✋ x 2, 🔩 x 1).
10. Peel off the backing of the double-sided tape attached to the paper guide [C]. Then attach the paper guide to the underside of the scanner unit as shown.
11. Peel off the backing of the double-sided tape attached to the sub paper guide [D]. Then attach the sub paper guide to the underside of the scanner unit as shown.
12. Install the tray guide [E].
13. Install the tray [F].
14. Install the sub-tray [G].
15. Turn on the main power switch and check the 1-bin tray unit operation.

1.8 SHIFT TRAY

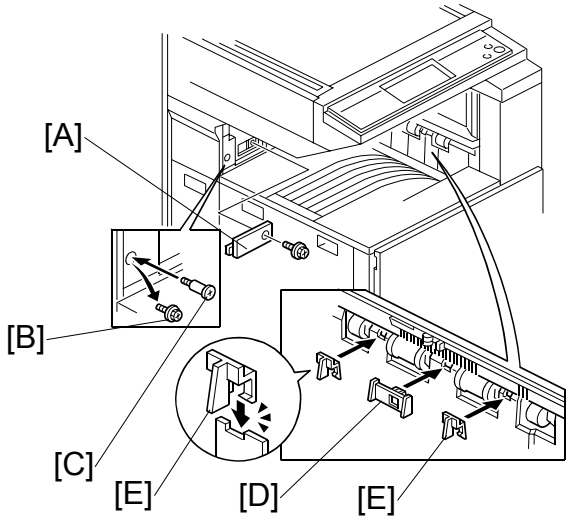
1.8.1 COMPONENT CHECK

Check the quantity and condition of the components against the following list.

No.	Description	Q'ty
1	Shift Tray Unit	1
2	Paper Guide - Large	1
3	Paper Guide - Small	2
4	Stepped Screw	1



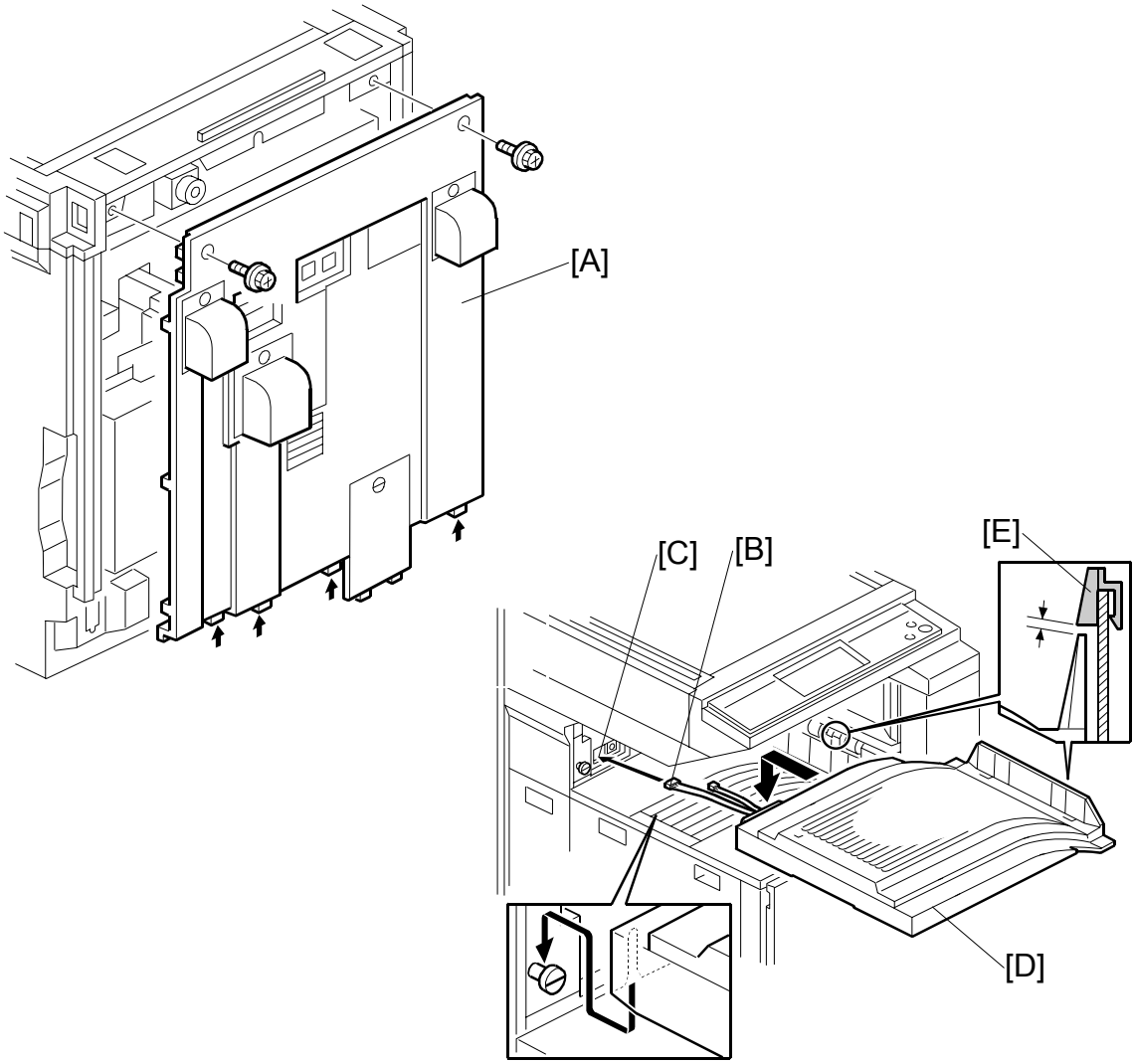
1.8.2 INSTALLATION PROCEDURE



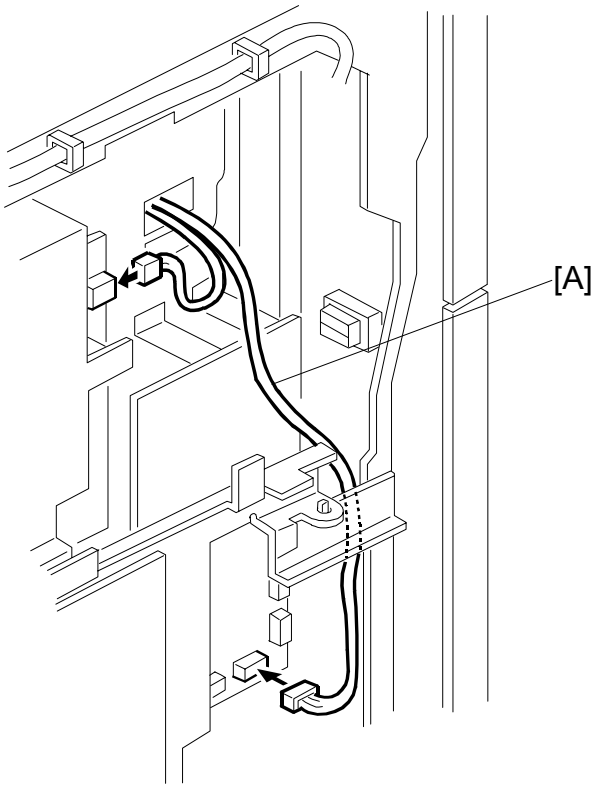
⚠CAUTION

Unplug the copier power cord before starting the following procedure.

1. Remove all tapes (see the diagram at the top of the page).
2. Remove the covers [A] (🔩 x 1).
3. Replace screw [B] with a stepped screw [C].
4. Install the large paper guide [D] and two small paper guides [E].



5. Remove the rear cover [A] (☞ x 2).
6. Pass the harnesses [B] through the opening [C], and install the shift tray unit [D], as shown.
   NOTE: 1) Set the shift tray on the stepped screw.
   2) The shift tray must be installed under the paper guides [E] installed in step 4.



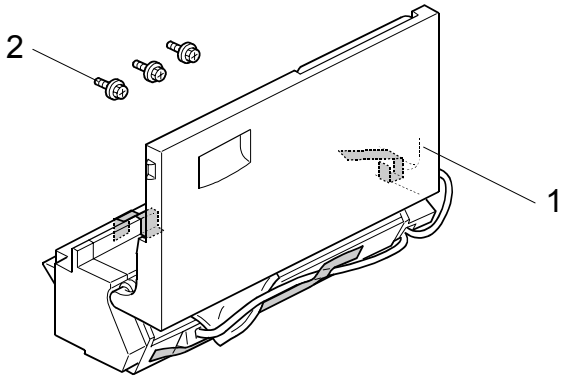
7. Connect the harnesses [A], as shown.
8. Turn on the main power switch.
9. Check the shift tray operation.

1.9 BY-PASS FEED UNIT (B490)

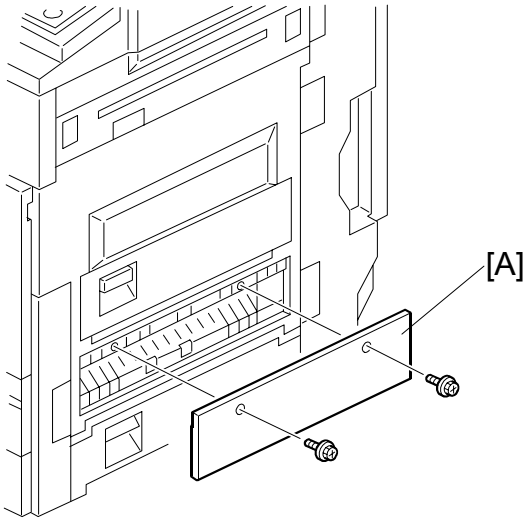
1.9.1 ACCESSORY CHECK

Check the quantity and condition of the components against the following list.

No.	Description	Q'ty
1	By-pass Tray Unit	1
2	Tapping Screw	3

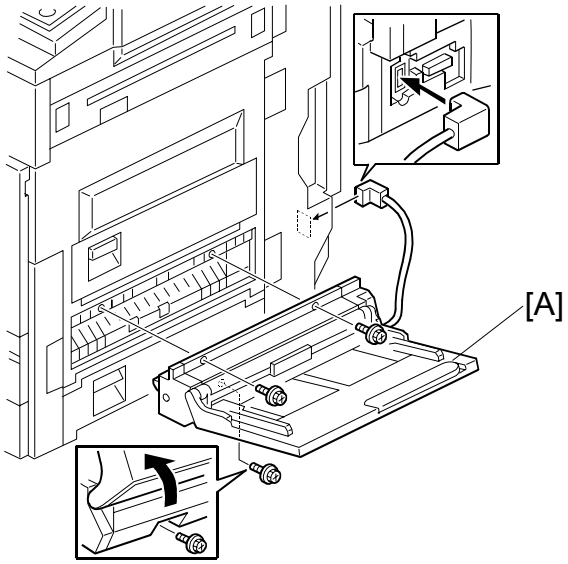


1.9.2 INSTALLATION PROCEDURE



⚠CAUTION
Unplug the copier power cord before starting the following procedure.

1. Remove all tapes (see the diagram at the top of the page).
2. Remove the entrance cover [A] (x 2).



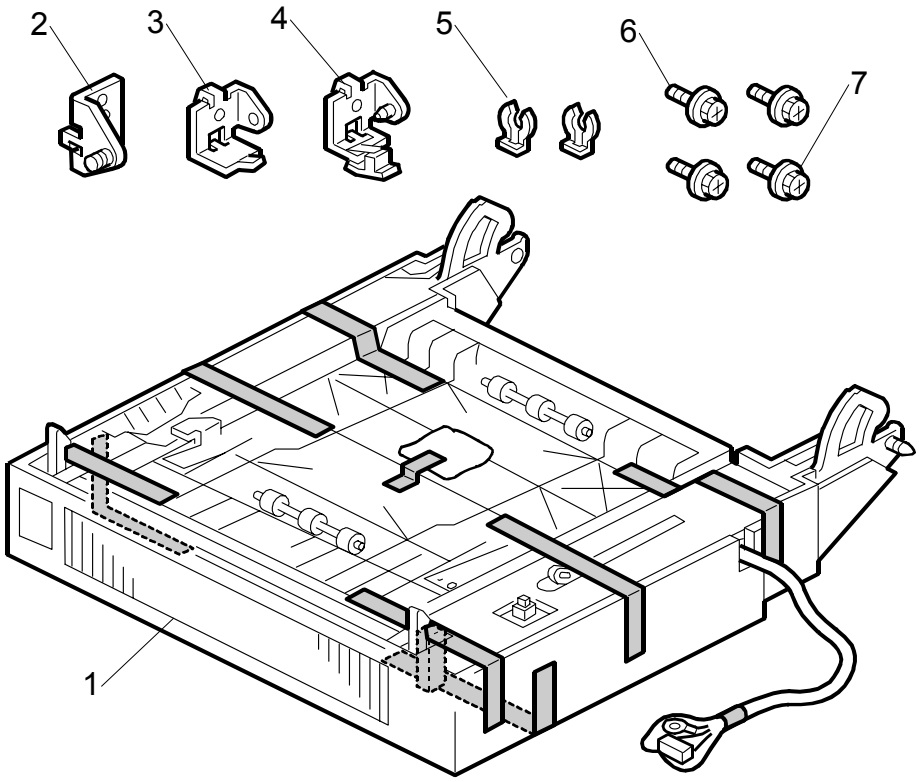
3. Install the by-pass tray unit [A] (x 3, x 1).
4. Turn the main power switch on and check the by-pass tray function.
5. Make a copy from the by-pass tray. Then check the registration.

1.10 DUPLEX UNIT (B509)

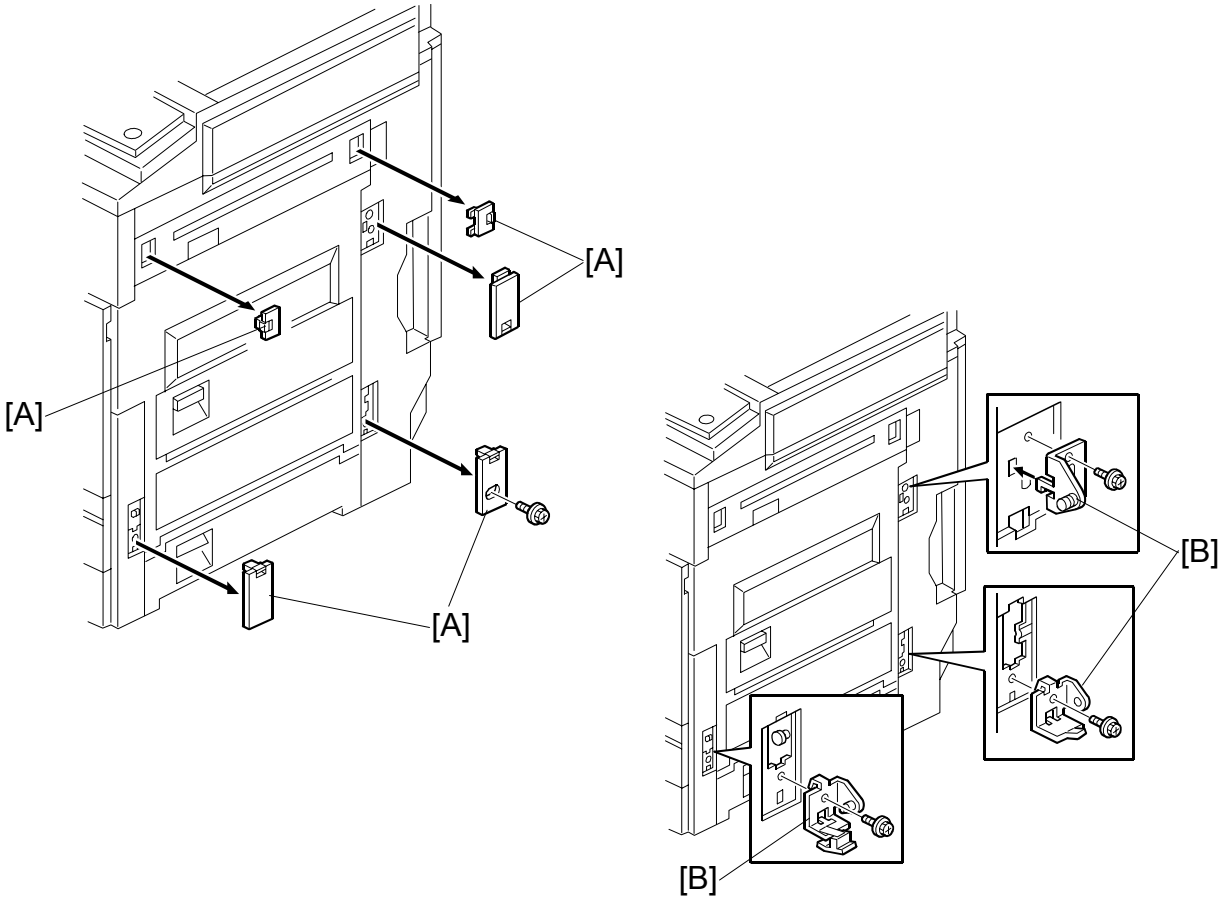
1.10.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Duplex Unit	1
2	Upper Bracket	1
3	Rear Holder Bracket	1
4	Front Holder Bracket	1
5	Clip	2
6	Tapping Screw - M4x6	3
7	Tapping Screw - M3x6	1



1.10.2 INSTALLATION PROCEDURE

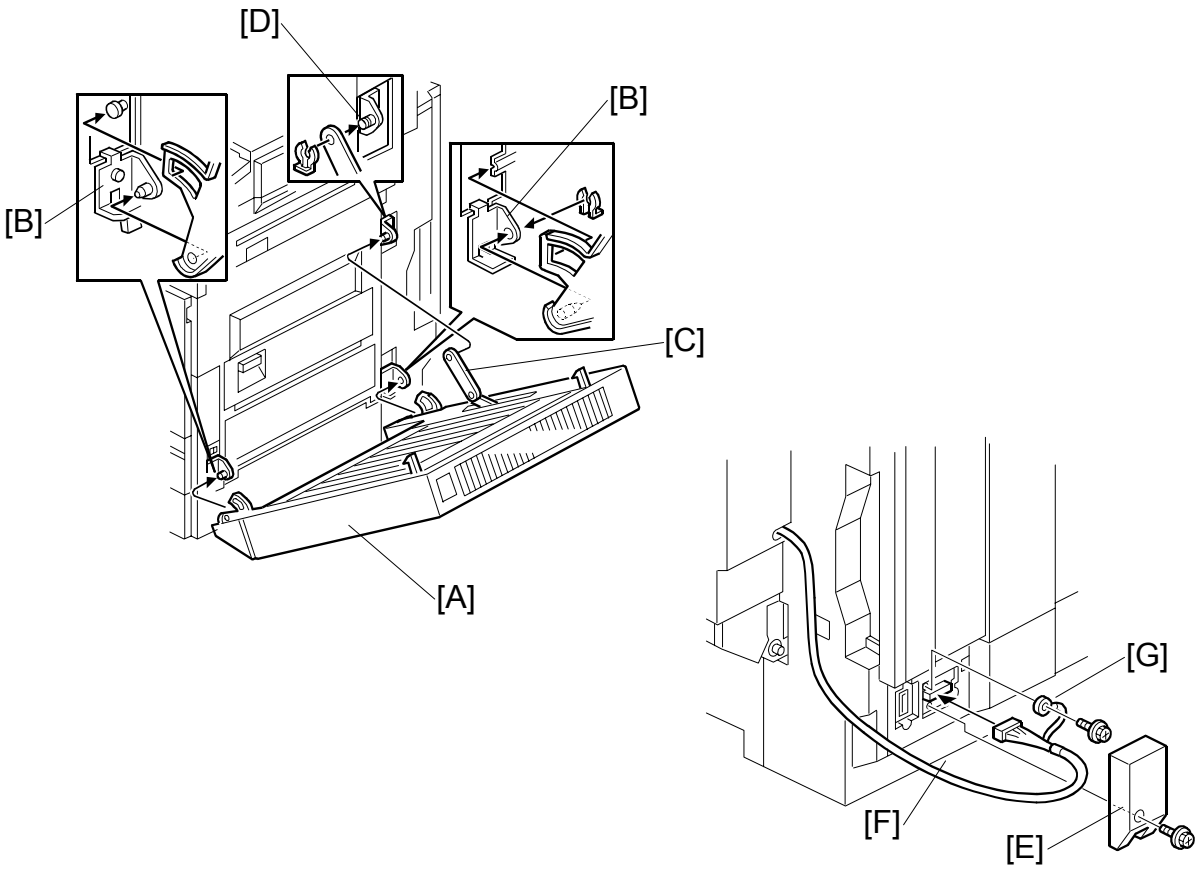


⚠CAUTION

Unplug the copier power cord before starting the following procedure.

NOTE: Before installing the duplex unit, the optional interchange unit (B481) must be installed.

1. Remove all tapes (see the previous page).
2. Remove five covers [A] (🔩 x 1).
3. Install three brackets [B] (🔩 x 1 each - M4x6).



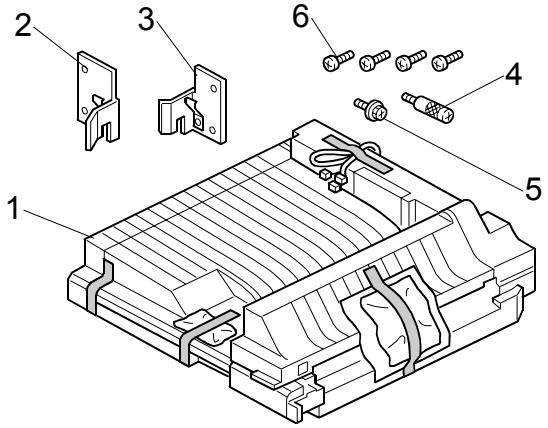
4. Set the duplex unit [A] on the brackets [B] (1 clip).
5. Attach the link [C] to the shaft [D] and secure it with the clip.
6. Remove the connector cover [E] (🔩 x 1).
7. Connect the cable [F] and secure the grounding wire [G] (🔩 x 1).
8. Install the connector cover.
9. Turn on the main power switch and check the duplex unit function.

1.11 BRIDGE UNIT (B482)

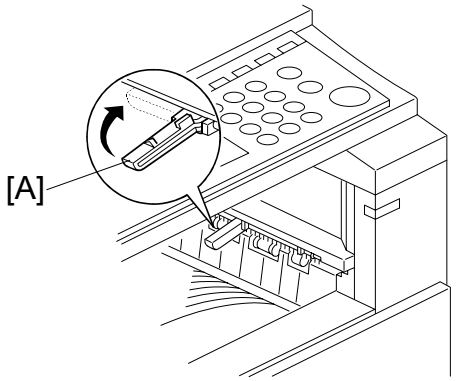
1.11.1 ACCESSORY CHECK

Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Bridge Unit	1
2	Rear Joint Bracket	1
3	Front Joint Bracket	1
4	Knob Screw	1
5	Screw - M3x6	1
6	Screw - M4x14	4

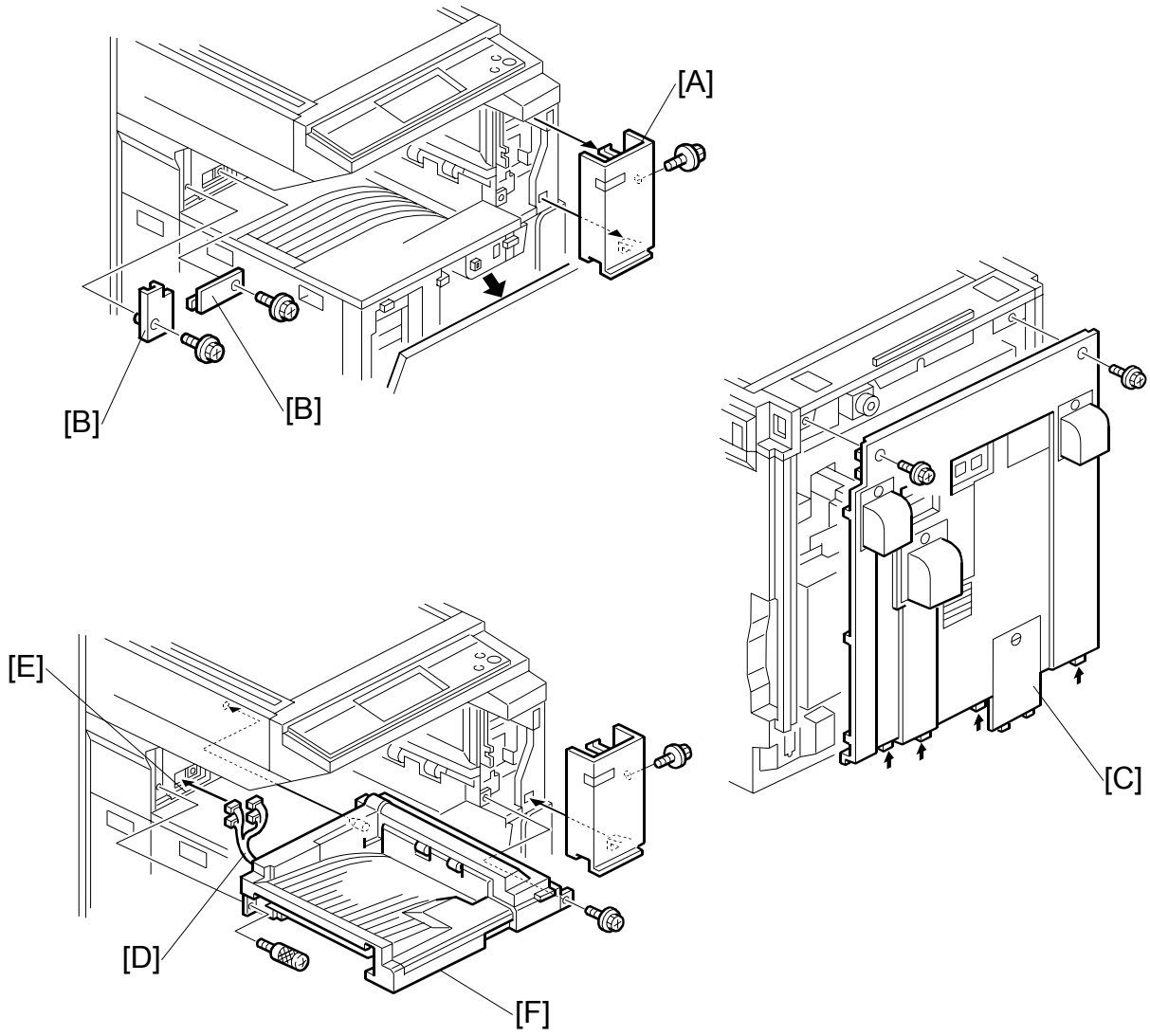


1.11.2 INSTALLATION PROCEDURE

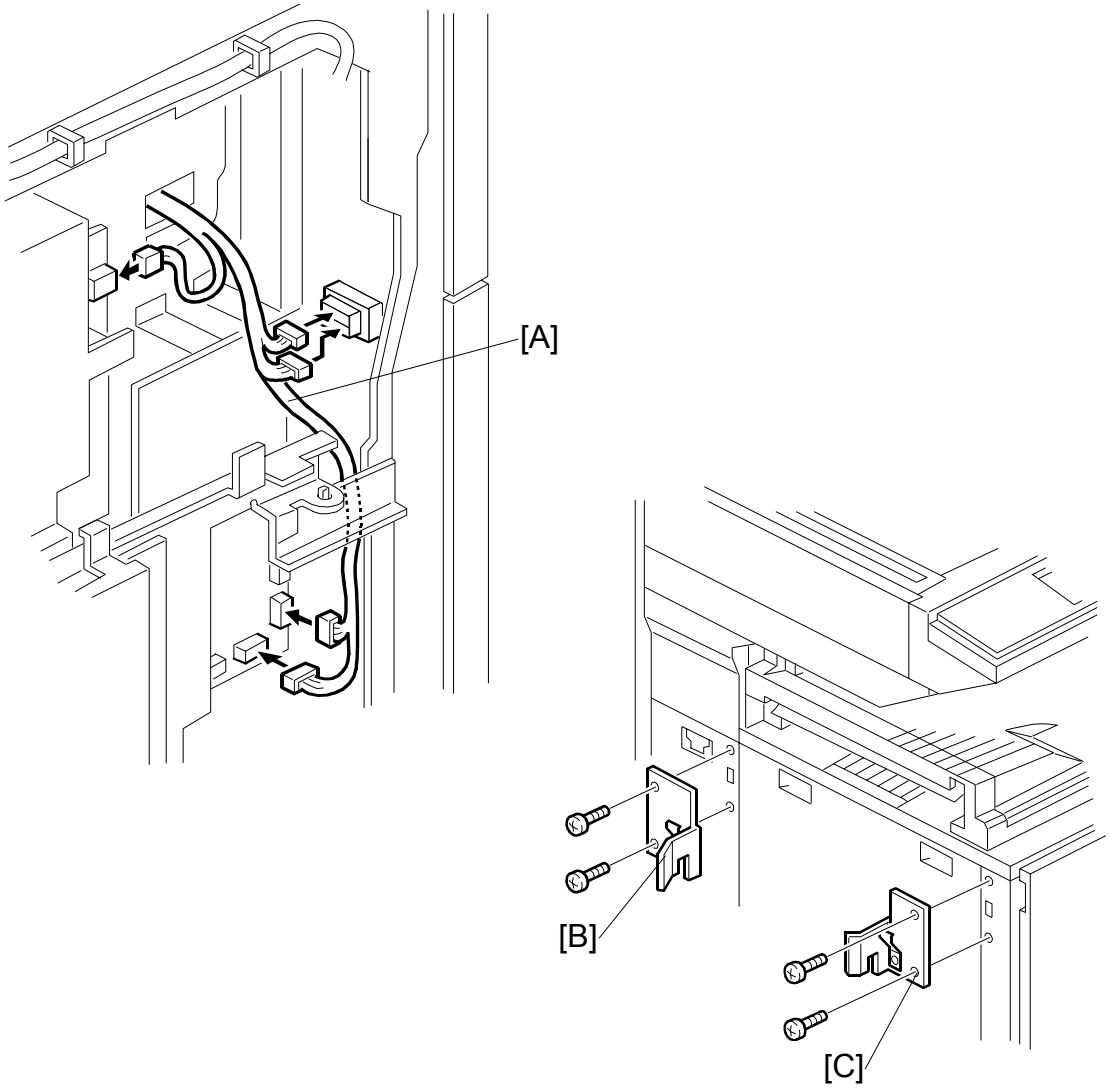


⚠CAUTION
Unplug the copier power cord before starting the following procedure.

1. Remove all tapes.
2. If the sensor feeler [A] is out, fold it away into the machine.



3. Remove the front right cover [A] (☞ x 1).
4. Remove two covers [B] (☞ x 1 each).
5. Remove the rear cover [C] (☞ x 2).
6. Pass the harnesses [D] through the opening [E], and install the bridge unit [F] (☞ x 2).
7. Reinstall the front right cover.



8. Connect the harnesses [A], as shown.
9. Reinstall the rear cover.
10. **When the 1,000-sheet finisher (Machine code: B408) will be installed**, attach the front joint bracket [B] and rear joint bracket [C] (🔩 x 2 each).
11. Install the optional finisher (refer to the finisher installation procedure).

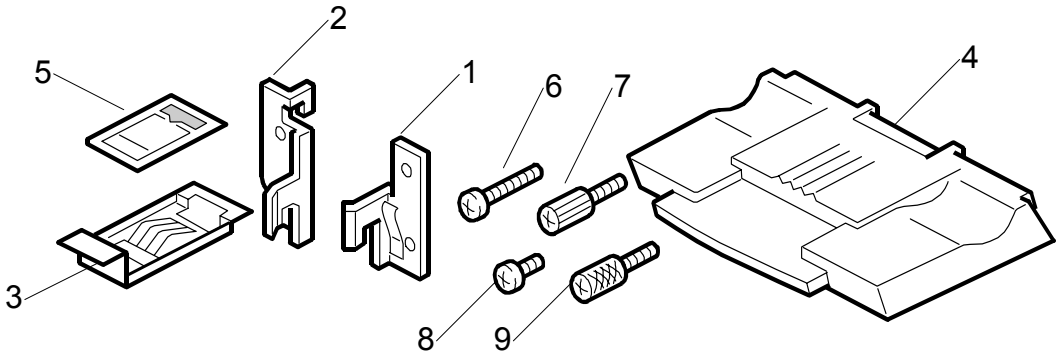
1.12 1000-SHEET FINISHER (B408)

1.12.1 ACCESSORY CHECK

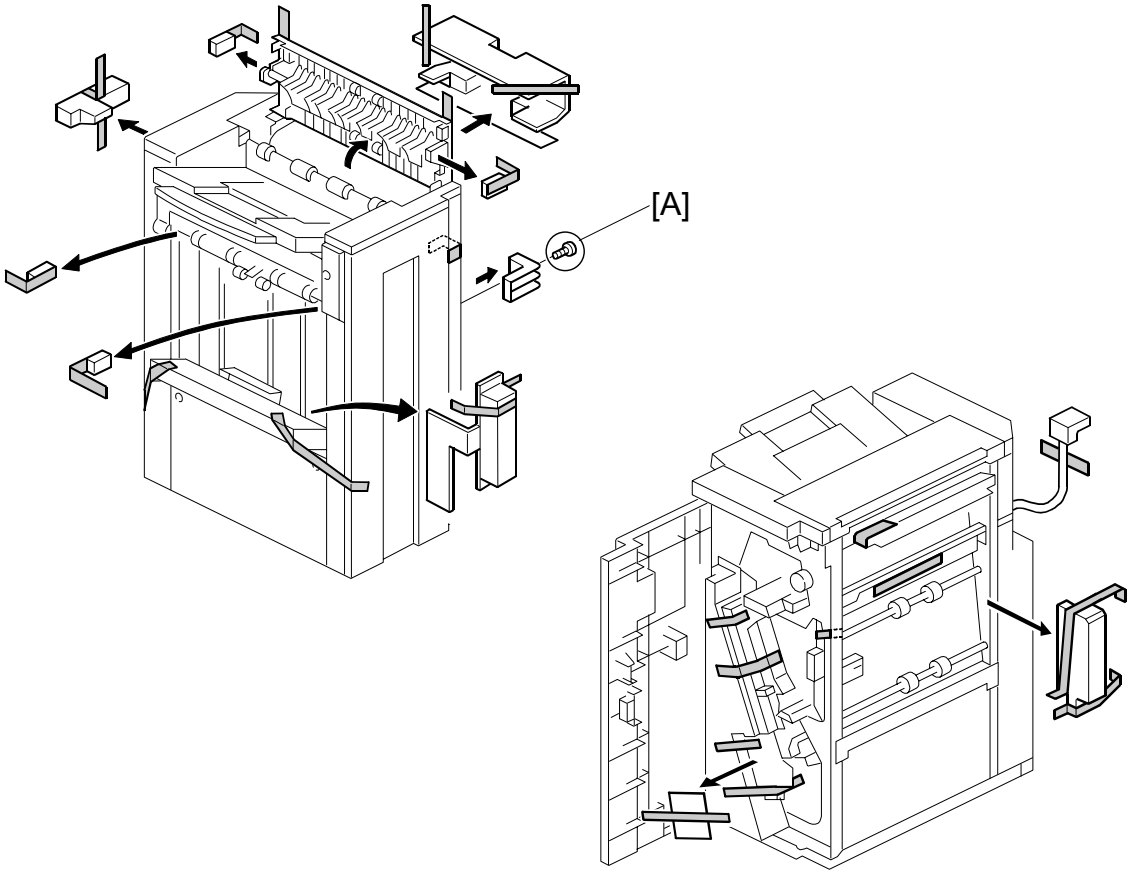
Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty	For B022/B027/B031	For B051/B052
1	Front Joint Bracket	1	O	X
2	Rear Joint Bracket	1	O	X
3	Grounding Plate	1	O	X
4	Copy Tray	1	O	O
5	Staple Position Decal	1	O	O
6	Screw - M4x17	3	O	X
7	Knob Screw - M4x10	1	O	O
8	Screw - M3x8	1	O	X
9	Knob Screw - M3x8	1	O	O

O = Necessary, X = Not necessary



1.12.2 INSTALLATION PROCEDURE



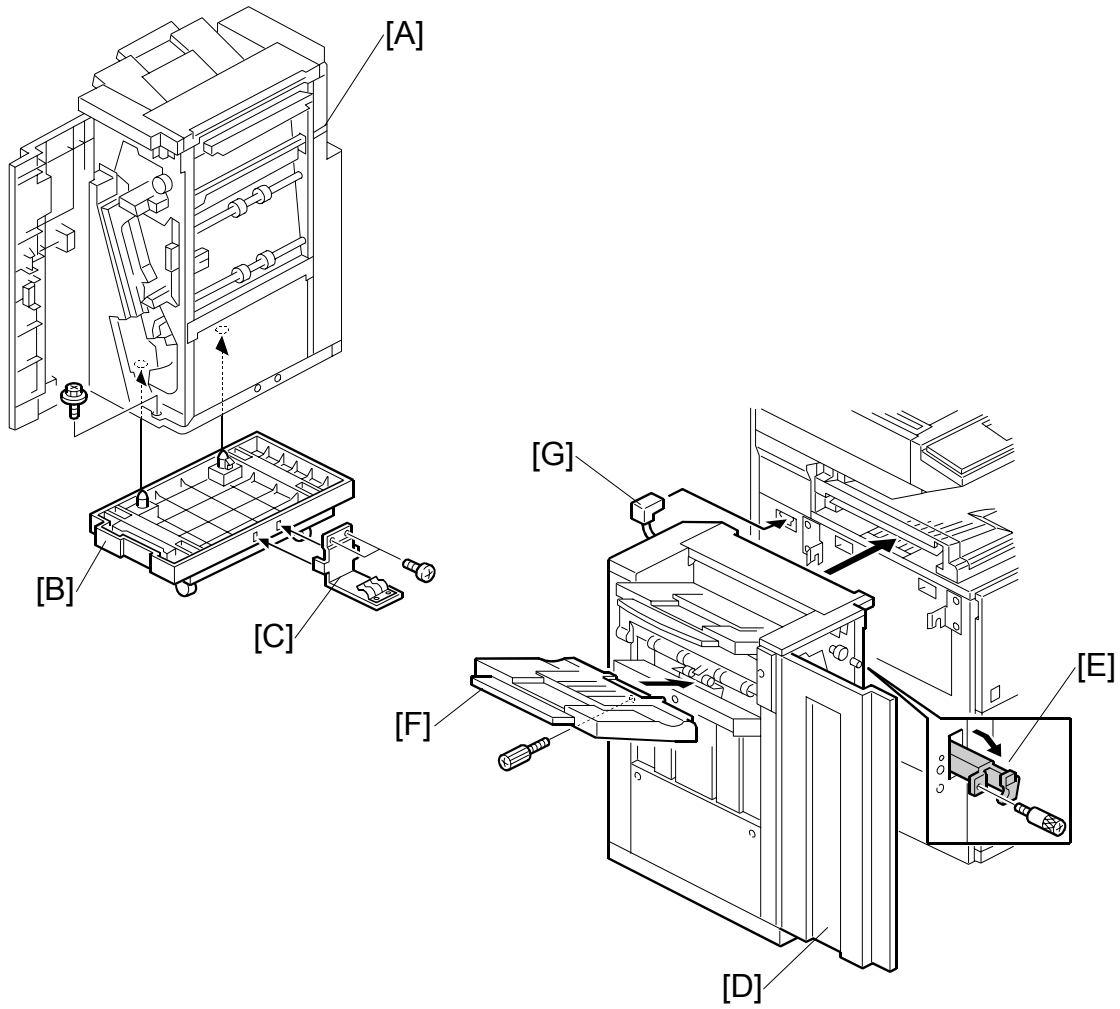
⚠CAUTION

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

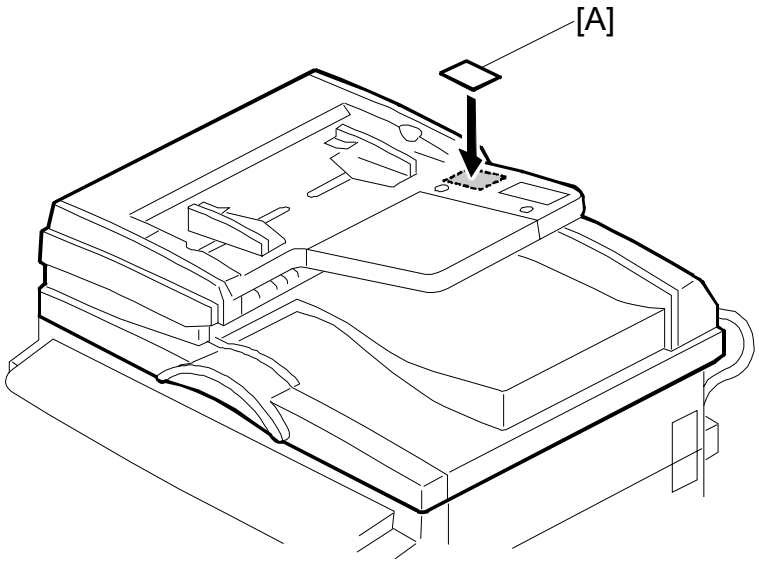
NOTE: The following options must be installed before installing this finisher.
- Bridge Unit (B482)
- Paper Tray Unit (B456) or LCT (B457)

Also, the optional adjustment table (B488) is required.

1. Unpack the finisher and remove the tapes.



2. Unpack the adjustment table (B488).
3. Set the finisher [A] on the adjustment table [B] and secure the finisher (🔩 x 1).
4. Install the grounding plate [C], which is in the accessory box for the adjustment table (🔩 x 2).
5. Open the front door [D], then pull the locking lever [E].
6. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
7. Secure the locking lever (1 knob screw - M3x8) and close the front door.
8. Install the copy tray [F] (1 knob screw - M4x10).
9. Connect the finisher cable [G] to the main machine.



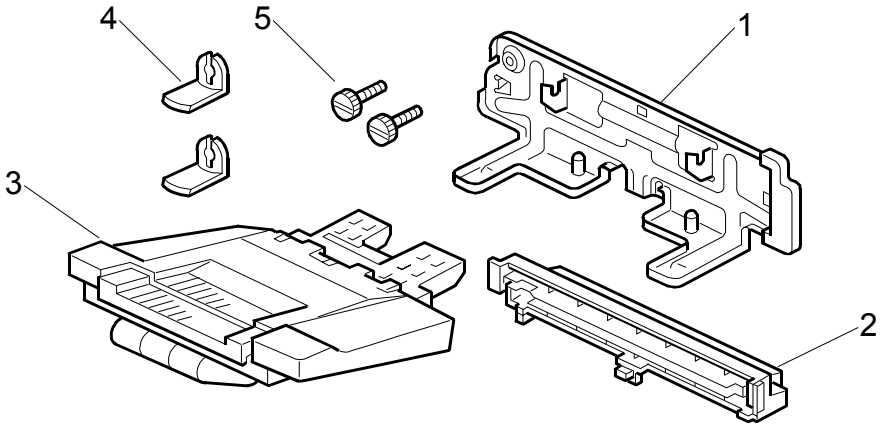
10. Attach the staple position decal [A] to the ARDF as shown.
11. Turn on the main power switch and check the finisher operation.

1.13 500-SHEET FINISHER (B458)

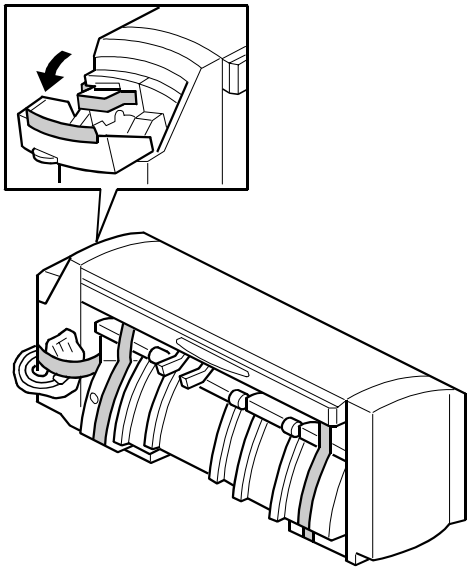
1.13.1 ACCESSORY CHECK

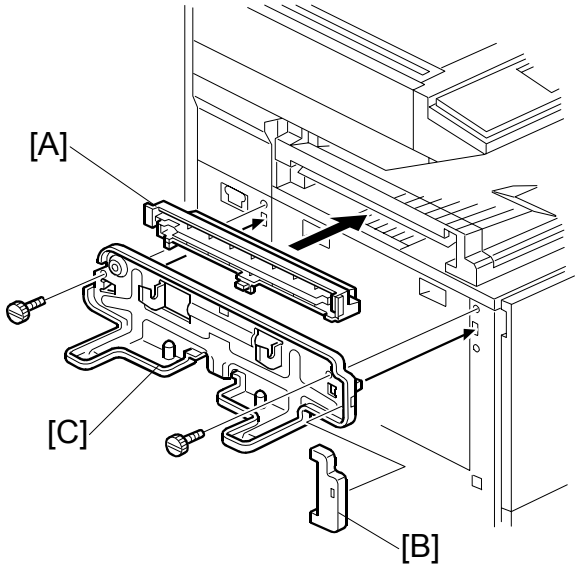
Check the quantity and condition of the accessories against the following list.

No.	Description	Q'ty
1	Unit Holder	1
2	Entrance Guide	1
3	Shift Tray	1
4	Snap Ring	2
5	Knob Screw	2



1.13.2 INSTALLATION PROCEDURE



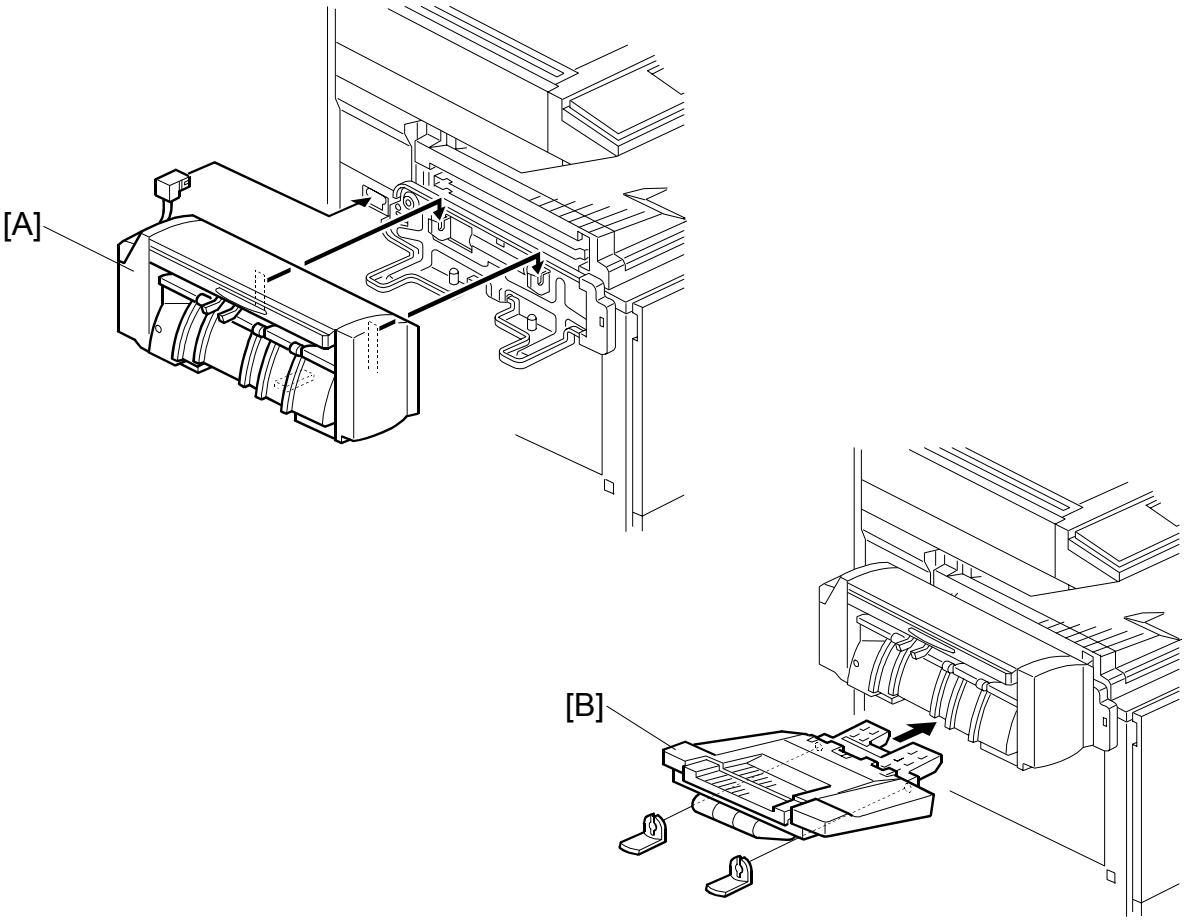


⚠CAUTION

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

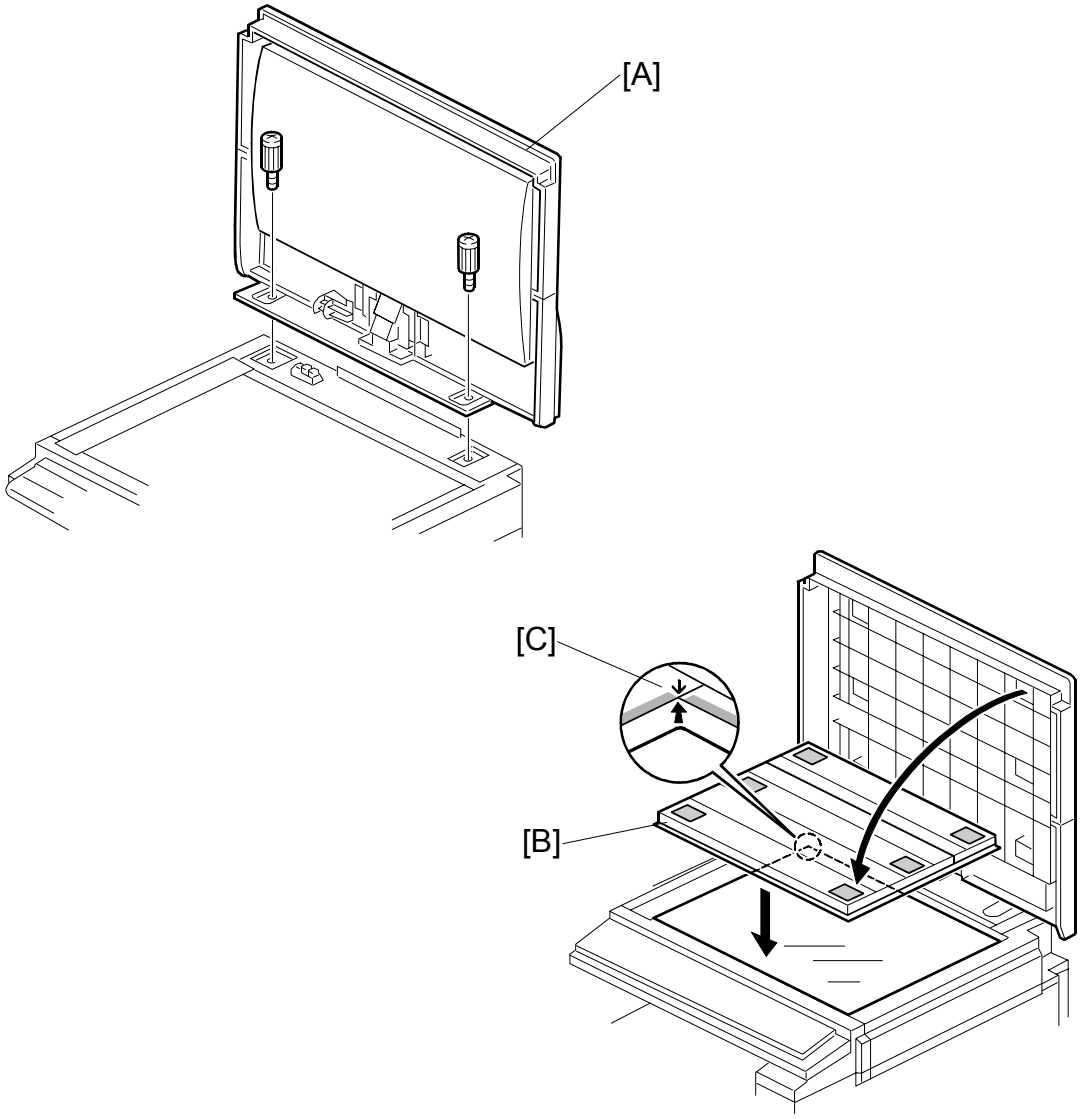
NOTE: Before installing the 500-sheet finisher, the optional bridge unit (B482) must be installed.

1. Unpack the finisher and remove the tapes.
2. Install the entrance guide [A].
3. Remove the holder cover [B]. Then install the unit holder [C] (2 screws).
4. Re-install the holder cover [B].



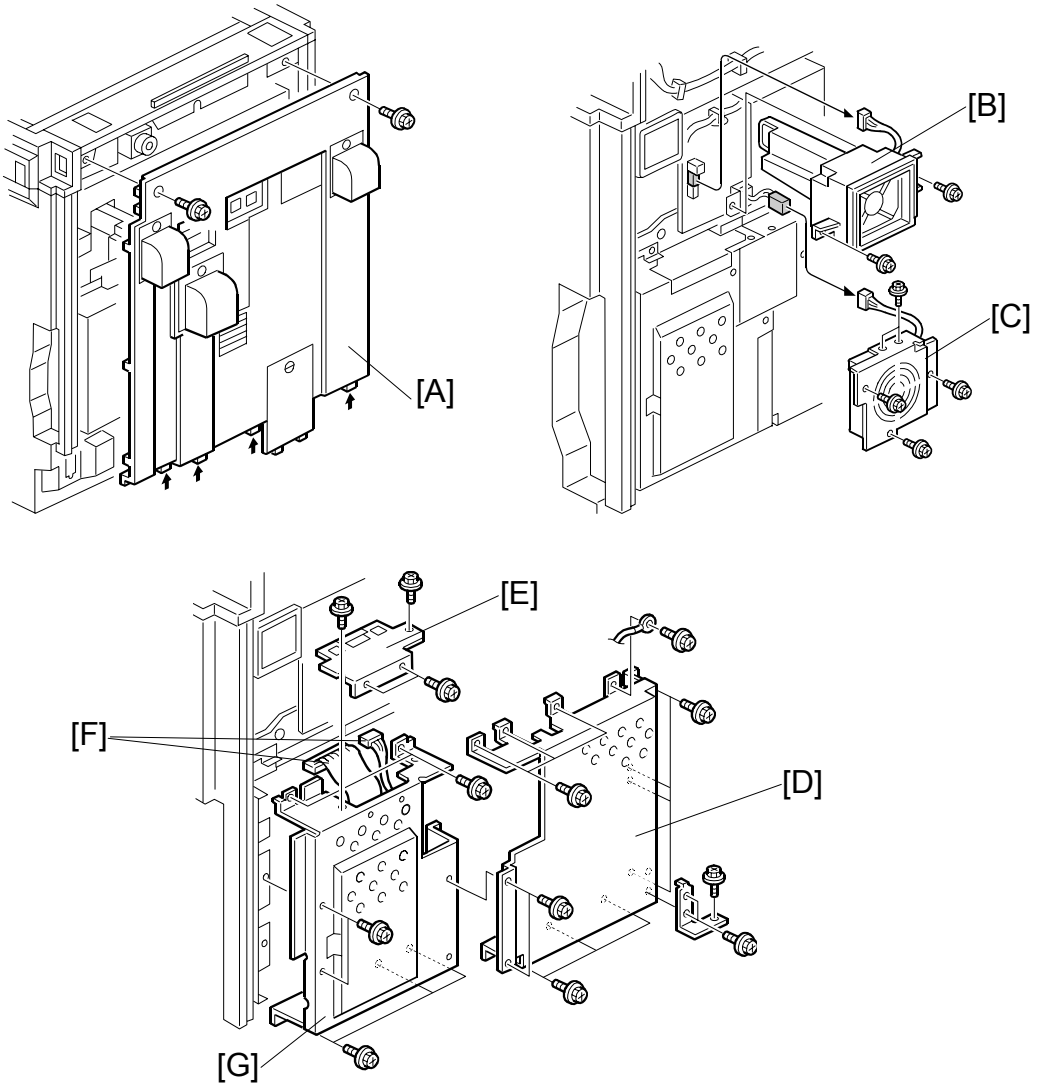
5. Install the 500-sheet finisher [A] (☞ x 1).
6. Install the output tray [B] as shown (2 snap rings).
7. Turn on the main power switch and check the finisher operation.

1.14 PLATEN COVER INSTALLATION



1. Install the platen cover [A] (x 2).
2. Peel off the platen sheet [B] and place it on the exposure glass.
3. Line up the rear left corner of the platen sheet flush against corner [C] on the exposure glass.
4. Gently close the platen cover.

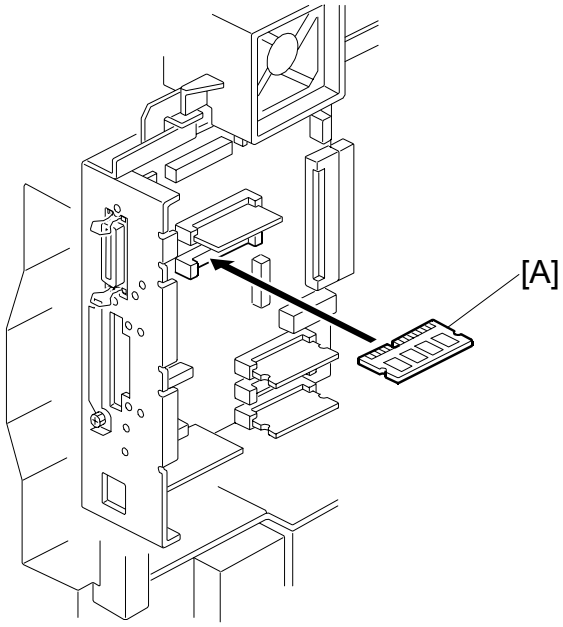
1.15 MEMORY



⚠CAUTION

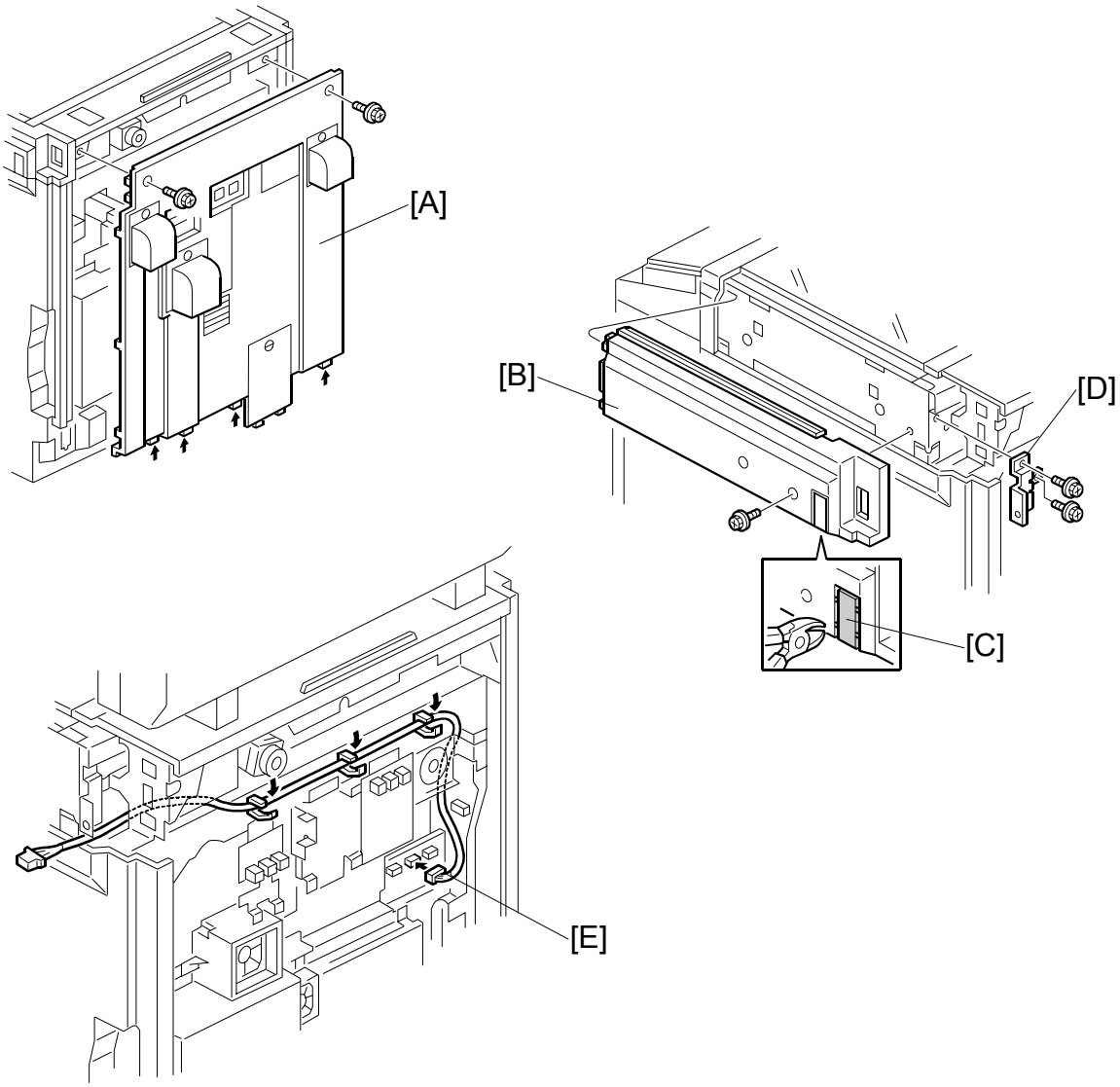
Unplug the main machine power cord before starting the following procedure.

1. Remove the rear cover [A] (☞ x 2).
2. Remove the cooling fan [B] (☞ x 2).
3. Remove the PCB fan [C] (☞ x3, 🖐 x 1).
4. Remove the BICU cover [D] (☞ x 16).
5. Remove the HDD connector cover [E] (☞ x 4).
6. Disconnect two HDD harnesses [F].
7. Remove the controller board cover [G] (☞ x 7).



8. Install the memory DIMM [A] on the controller board.
9. Replace the controller board cover and rear cover.

1.16 KEY COUNTER INSTALLATION



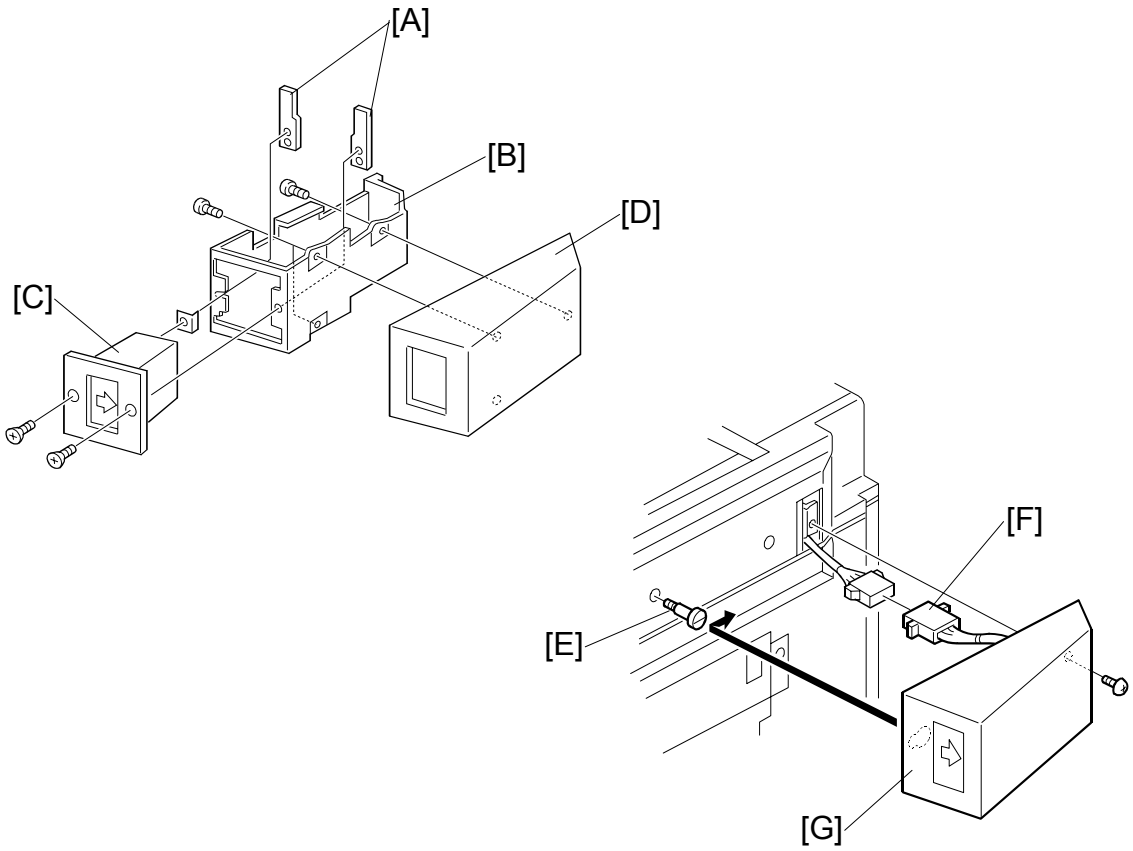
⚠CAUTION

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

1. Remove the rear cover [A] (🔩 x 2).
2. Remove the upper right cover [B] (🔩 x 1).
3. Remove the cap [C].
4. Install the bracket [D] (🔩 x 2).

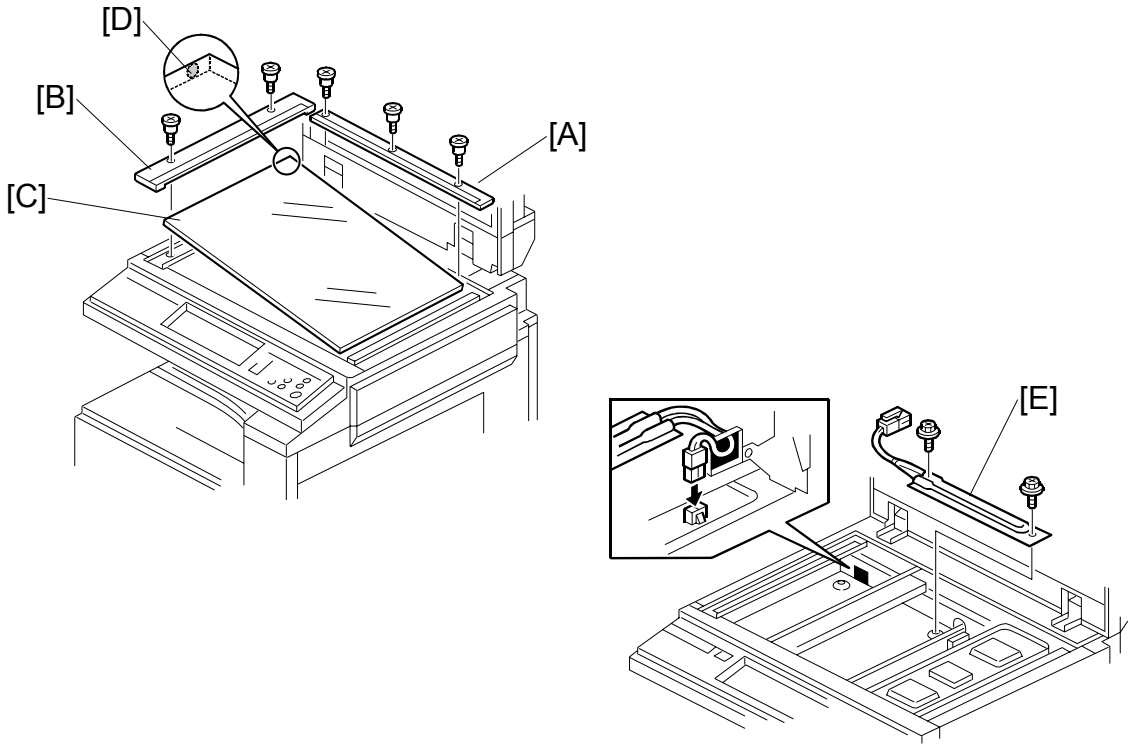
⟹5. Connect the cable [E] to the EX I/O board CN 379 and route it as shown.

KEY COUNTER INSTALLATION



6. Hold the key counter plate nuts [A] on the inside of the key counter bracket [B] and insert the key counter holder [C].
7. Secure the key counter holder to the bracket (🔩 x 2).
8. Install the key counter cover [D] (🔩 x 2).
9. Install the stepped screw [E].
1. Connect the cable [F].
10. Hook the key counter holder assembly [G] onto the stepped screw and secure it (🔩 x 1).
11. The restricted access control for the key counter is enabled by the Copier UP mode.

1.17 ANTI-CONDENSATION HEATER

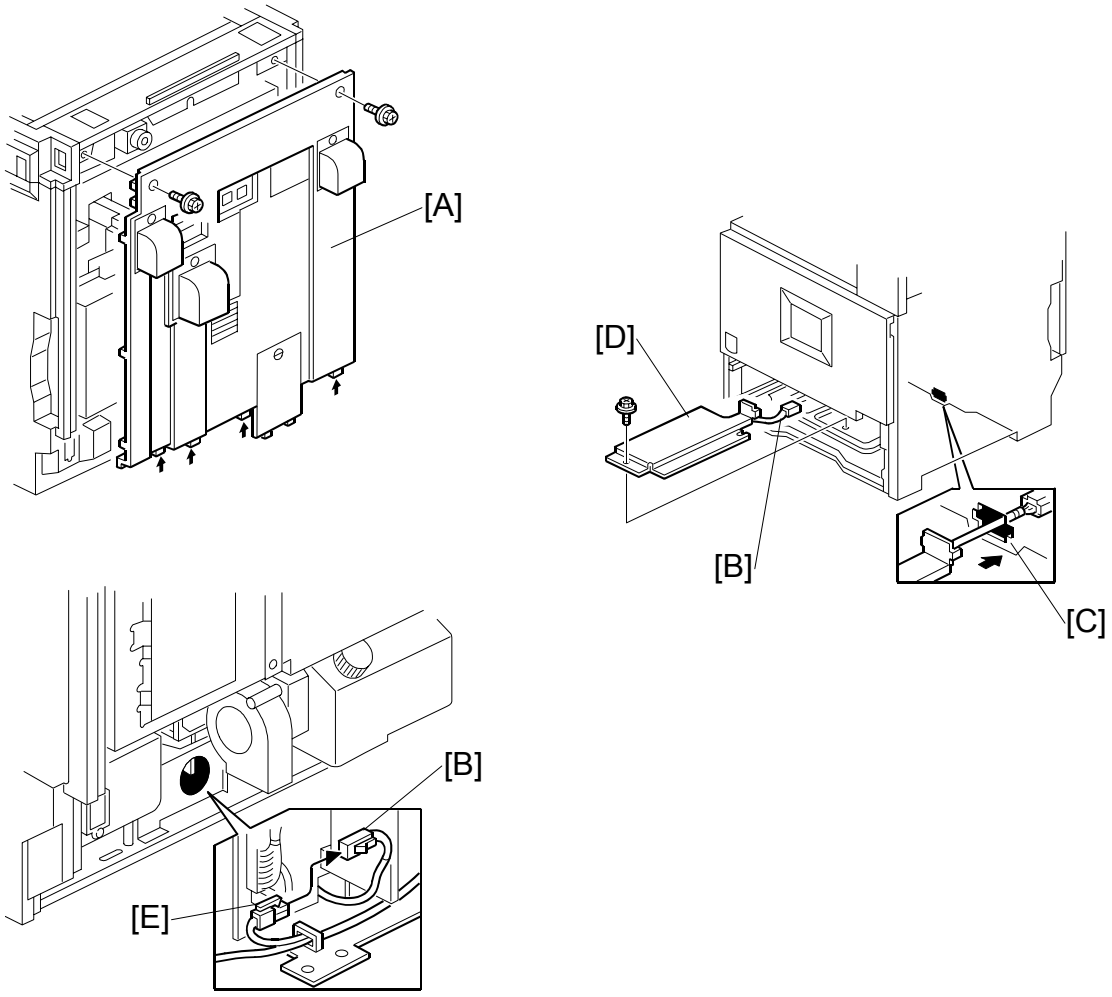


⚠CAUTION

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

1. Remove the rear scale [A] (🔩 x 3), left scale [B] (🔩 x 2), and exposure glass [C].
   NOTE: When installing the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.
2. Install the anti-condensation heater [E] (🔩 x 2, 🖐 x 1).
3. Reinstall the exposure glass and the scales.

1.18 TRAY HEATER

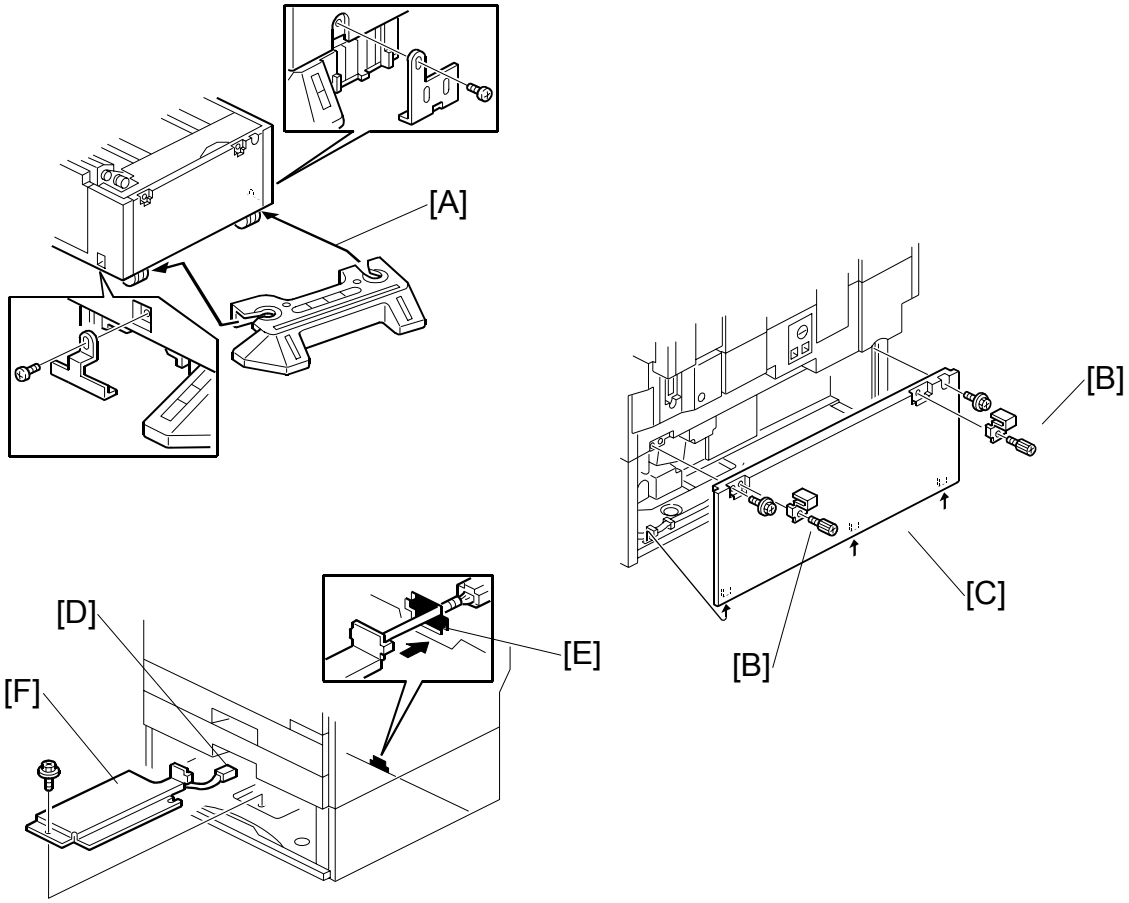


⚠CAUTION

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

1. Remove the rear cover [A] (☞ x 2).
2. Slide out the 1st and 2nd paper trays.
3. Pass the connector [B] through the opening [C].
4. Install the tray heater assembly [D] (☞ x 1).
5. Connect the heater cable to the ac cable [E].
6. Reassemble the machine.

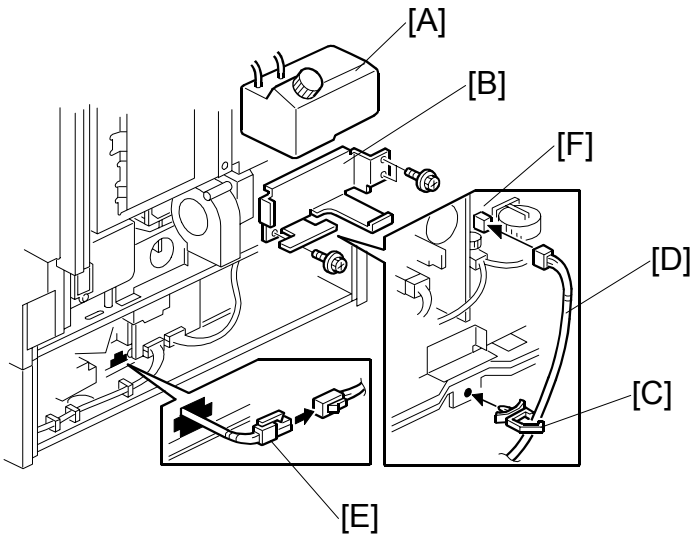
1.19 TRAY HEATER (OPTIONAL PAPER TRAY UNIT)



⚠CAUTION

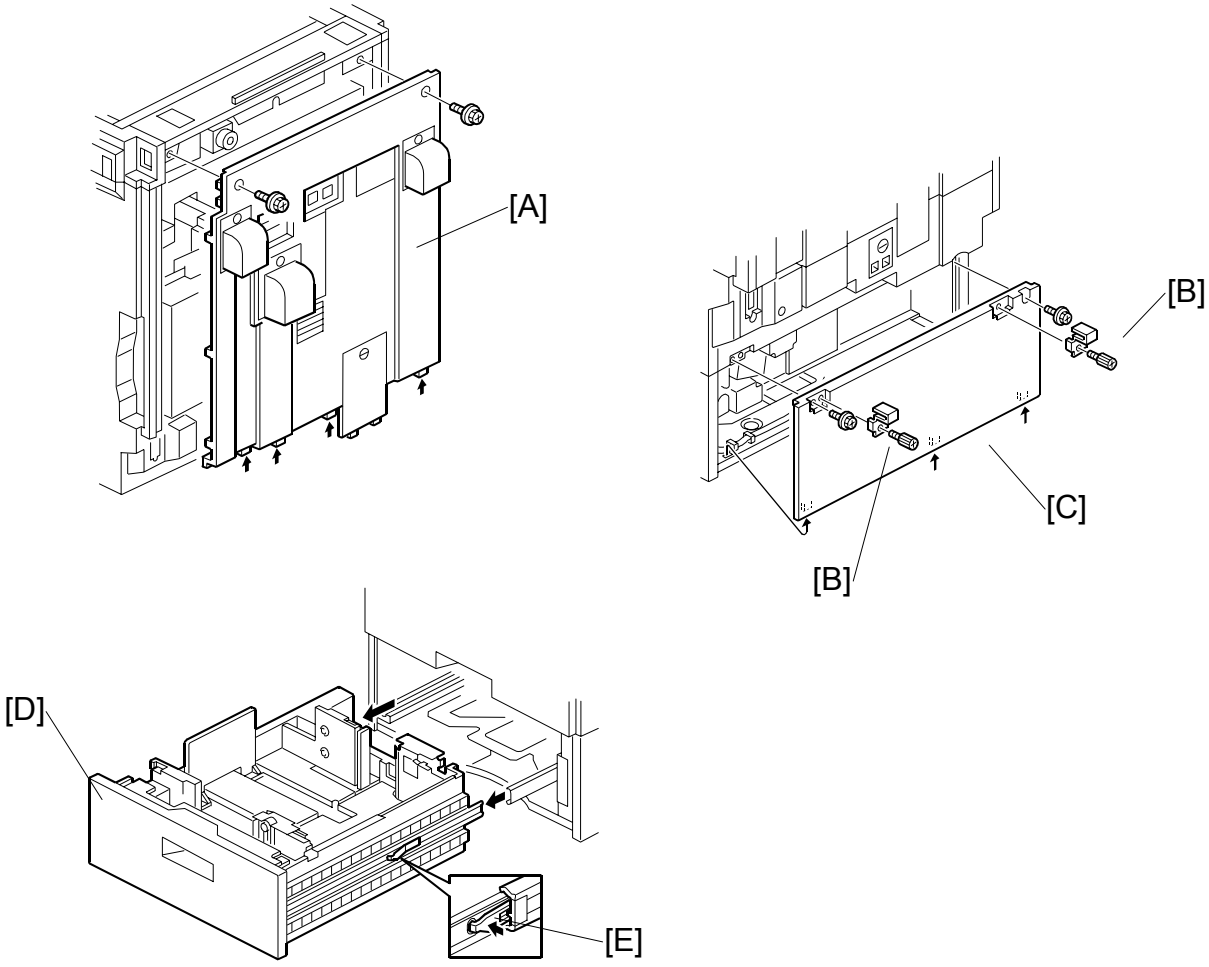
Unplug the main machine power cord before starting the following procedure.

1. Remove the rear cover for the main machine [A] (☞ x 2).
2. Remove the joint brackets [B] (☞ x 1 each).
3. Remove the rear cover for the optional paper tray unit [C] (☞ x 2).
4. Slide out the paper trays from the optional paper tray unit.
5. Pass the connector [D] through the opening [E].
6. Install the tray heater [F] (☞ x 1).



7. Remove the oil bottle [A] and the oil bottle bracket [B] (x 3).
8. Install the clamp [C].
9. Connect the cable [D] to the heater cable [E] and the PSU [F]. Then clamp the cable.
10. Reinstall the rear covers.

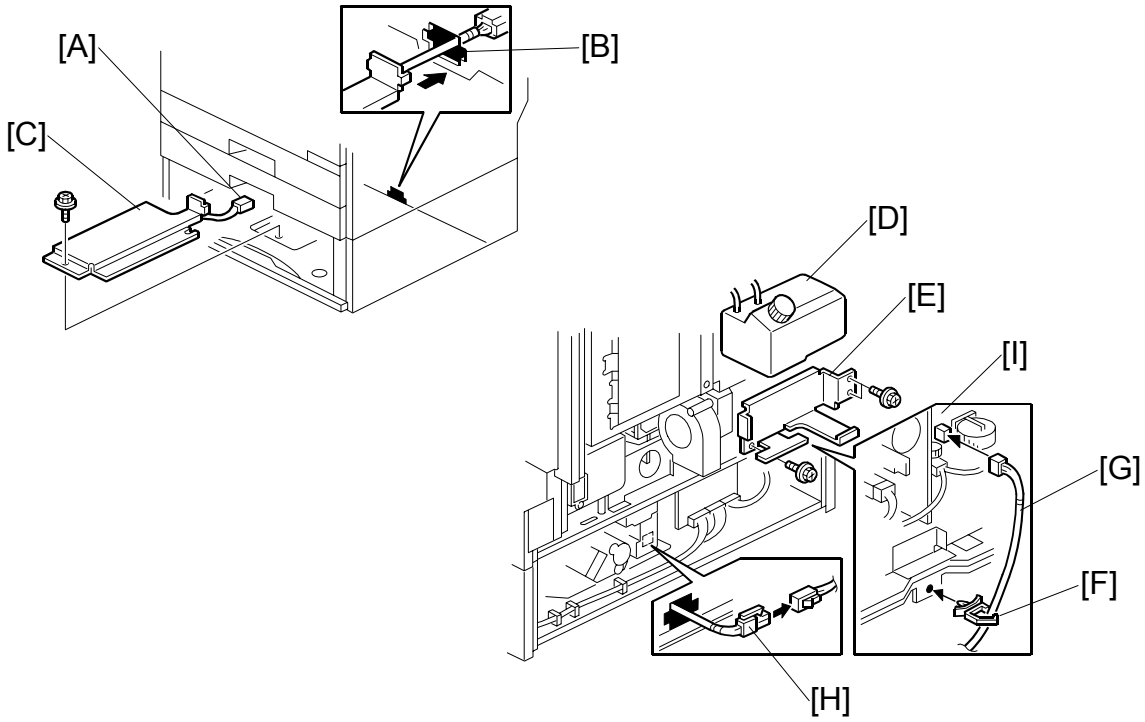
1.20 TRAY HEATER (OPTIONAL LCT)



⚠CAUTION

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

1. Remove the rear cover for the main machine [A] (🔩 x 2).
2. Remove the joint brackets [B] (🔩 x 1 each).
3. Remove the rear cover for the optional LCT [C] (🔩 x 2).
4. Slide out the paper tray [D] from the optional LCT.
5. Push stopper [E] on the right slide rail and remove the paper tray.



6. Pass the connector [A] through the opening [B].
7. Install the tray heater [C] (🔩 x 1).
8. Remove the oil bottle [D] and the oil bottle bracket [E] (🔩 x 3).
9. Install the clamp [F].
10. Connect the cable [G] to the heater cable [H] and the PSU [I]. Then clamp the cable.
11. Reinstall the rear covers.

PREVENTIVE MAINTENANCE

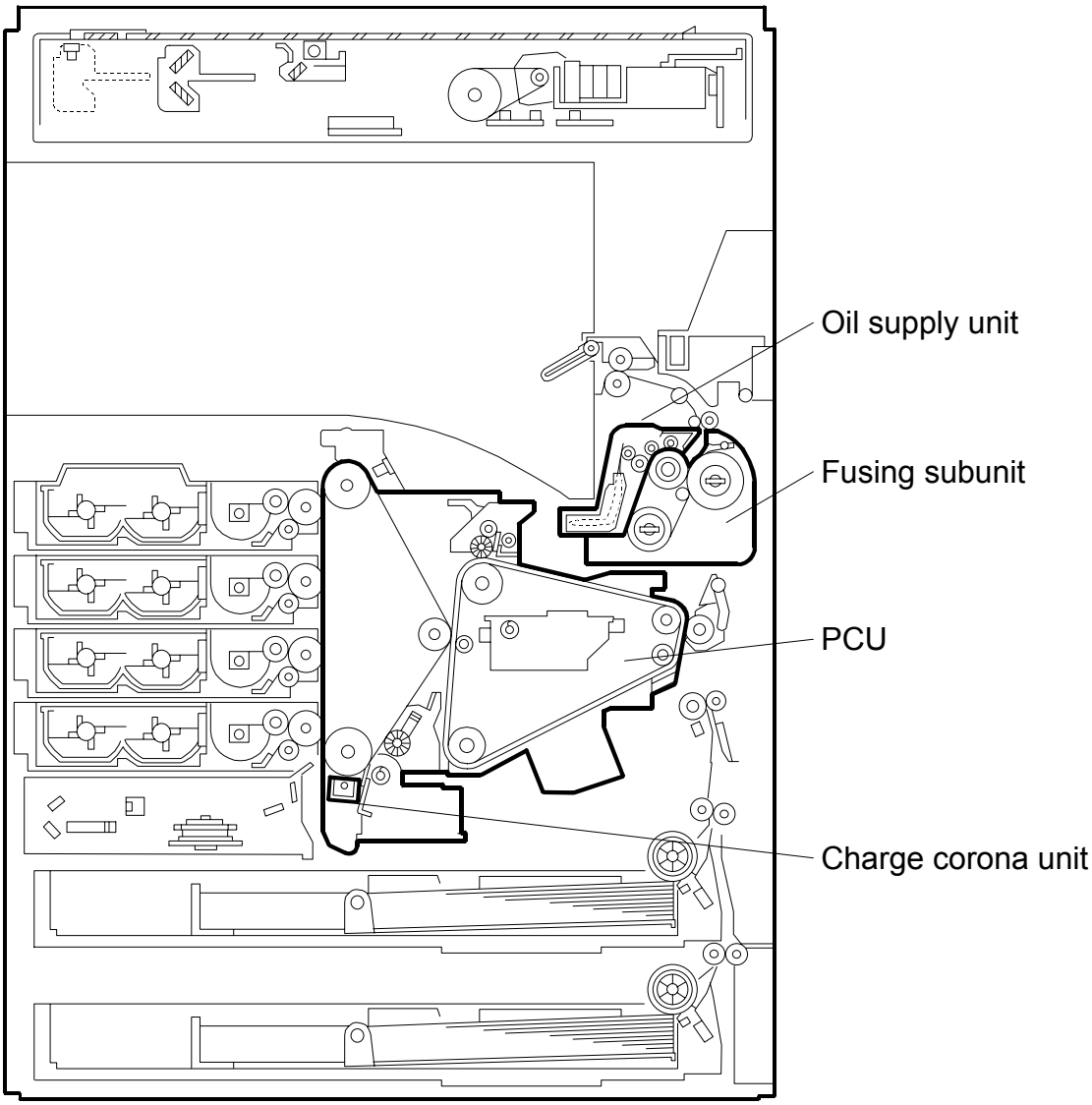
CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

2. PREVENTIVE MAINTENANCE

2.1 MAIN UNIT

2.1.1 OVERVIEW



2.1.2 PM TABLE

After replacing a part, reset the PM counter for that part (SP 7-804).

Abbreviations: Clean, **I**nspect, **O**il replenishment, **R**eplace, **E**mergency **M**aintenance

Optical System

	Prints			Developments			EM	Remarks
	70K	80K	120K	70K	120K	240K		
White plate			C					Optical cloth
1st mirror			C					Optical cloth
2nd mirror			C					Optical cloth
3rd mirror			C					Optical cloth
Front/rear rails			C					Damp/dry cloth
Exposure glass			C				C	Glass cleaner
Dust shield glass (laser optics unit)			C				C	Optical cloth and dry cloth
APS sensors			C					Dry cloth

Around the PCU

	Prints			Developments			EM	Remarks
	70K	80K	120K	50K	120K	240K		
Charge corona unit					R			Replace as whole units or individual parts (listed below).
PCU					R			
T/B waste toner bottle					R		C	Empty the bottle
ID sensor							C	Blower brush
O/B waste toner bottle				C		R	C	Empty the bottle

.Components Parts of the Charge Corona Unit

	Prints			Developments			EM	Remarks
	70K	80K	120K	50K	120K	240K		
Charge Corona Wire					R			
Charge Corona Grid					R			
Charge Corona Cleaner					R			

Development Unit

	Prints			Developments			EM	Remarks
	70K	80K	120K	60K	120K	240K		
Development unit-C				R				Refer to the PM counter for each unit (Not reclaimed at the reclamation center)
Development unit-M				R				
Development unit-Y				R				
Development unit-K					R			

Paper feed System

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Idle roller (registration)			C					Damp/dry cloth
Registration sensor			C					Damp/dry cloth
Transport guide			C					Damp/dry cloth
Feed roller (main unit)			R					
Vertical transport roller			C					Damp/dry cloth
Friction pad (main unit)			R					

Fusing Unit

	Prints			Developments			EM	Remarks
	60K	80K	120K	75K	120K	240K		
Fusing subunit			R					Replace as whole units or individual parts (listed below).
Oil supply unit	R							
Thermistor			I					
Fusing oil			O					

.Components Parts of the Fusing Sub Unit and Oil Supply Unit

	Prints			Developments			EM	Remarks
	60K	80K	120K	75K	120K	240K		
Oil supply pad	R							
Sponge roller	R							
Fusing cleaning roller	R							
Rear oil absorber			R					
Front oil absorber			R					
Front oil tank absorber			R					
Long oil tank absorber			R					
Rear oil tank absorber			R					
Fusing cover absorber			R					
Oil supply roller			R					
Oiling roller			R					
Pressure cleaning roller			R					
Fusing belt unit			R					
Pressure roller			R					
Pressure roller strippers			R					
Idle gear – 28Z/35Z			R					
Gear – 47Z			R					
Front spring plate			R					
Rear spring plate			R					

Filters

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Exhaust filters					R			
Ozone filter					R			

By-pass Tray Unit

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Feed roller			R					
Pickup roller			R					
Separation roller			R					
Friction pad							C	Damp cloth

2.2 OPTIONAL UNIT PM TABLE

Abbreviations: **C**lean, **I**nspect, **O**il replenishment, **R**eplace, **E**mergency **M**aintenance

Duplex Unit

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Idle roller (inverter)			C					Damp/dry cloth
Idle roller (vertical transport)			C					Damp/dry cloth

Auto-reverse Document Feeder

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Pickup roller		R						
Feed belt		R						
Separation roller		R						
Stamp			I					
ADF exposure glass			C				C	Damp/dry cloth
Platen cover			C				C	Damp/dry cloth

Paper Tray Unit

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Pickup roller			R					
Feed roller			R					
Separation roller			R					

Large Capacity Tray

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Pickup roller			R					
Feed roller			R					
Separation roller			R					

CÓPIA NÃO CONTROLADA

REPLACEMENT AND ADJUSTMENT

CÓPIA NÃO CONTROLADA

3. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

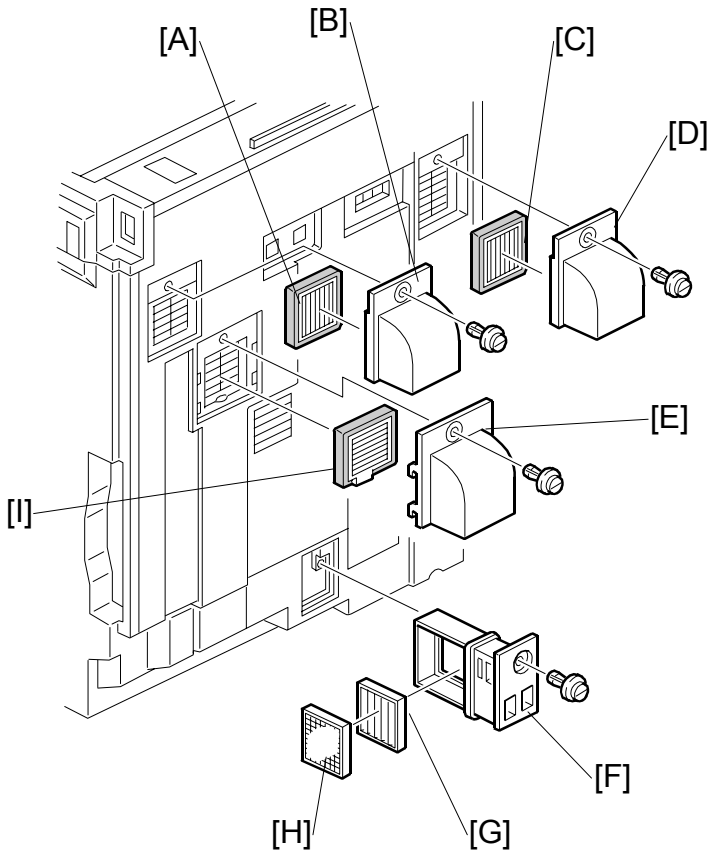
NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

3.1 SPECIAL TOOLS

Part Number	Description	Q'ty
A0069104	Scanner Positioning Pin (4 pcs/set)	1
N8036701	Flash Memory Card - 4MB	1
A0929503	C4 Color Test Chart (3 pcs/set)	1
C4019503	20X Magnification Scope	1

3.2 FILTERS

1. Filter covers [B, D, and E]
2. Exhaust filters [A, C, G, and I]
3. Filter holder [F]
4. Ozone filter [H]

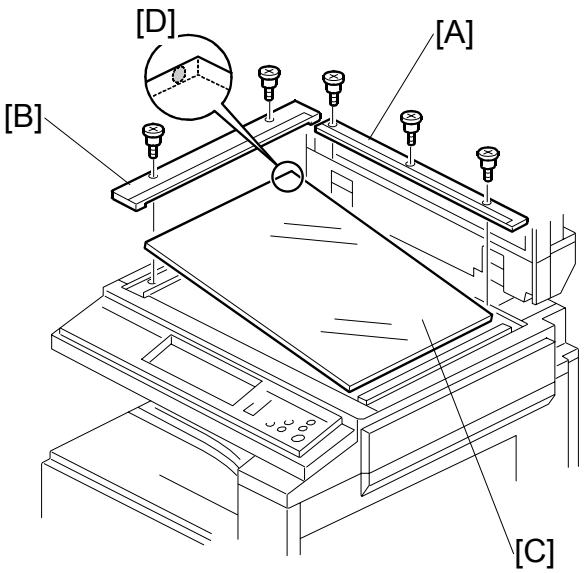


3.3 SCANNER UNIT

3.3.1 EXPOSURE GLASS

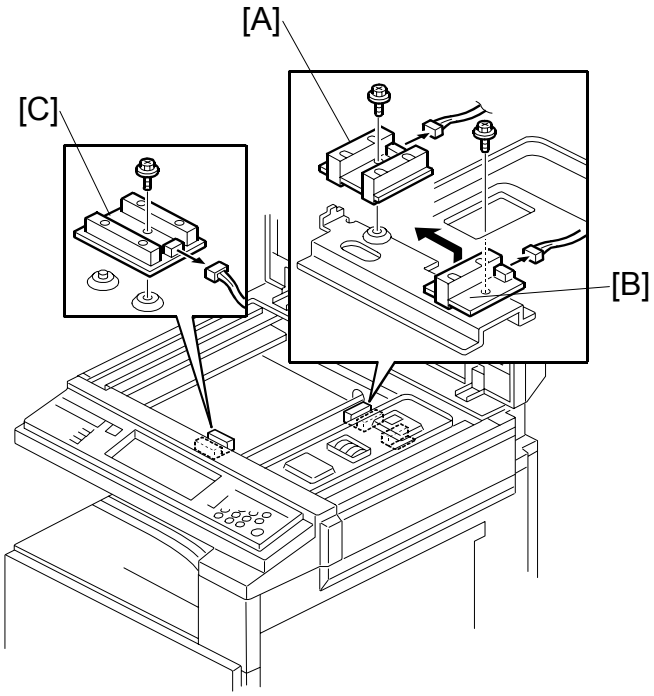
1. Rear scale [A] (☞ x 3)
2. Left scale [B] (☞ x 2)
   NOTE: After replacing the left scale, adjust the scanner white level (☛ 3.14).
3. Exposure glass [C]

NOTE: When reassembling, position the glass marker [D] at the rear-left corner.

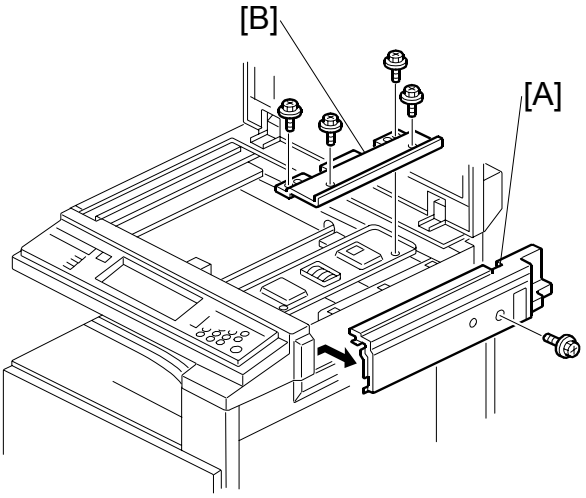


3.3.2 APS SENSORS

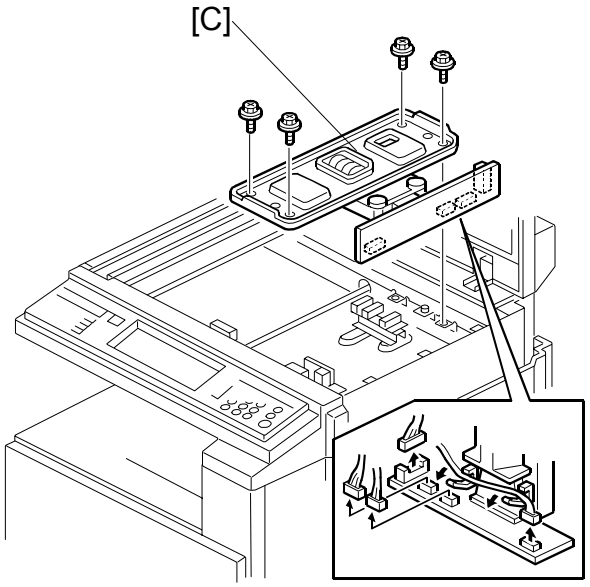
1. Exposure glass (☛ 3.3.1)
2. Original length sensor 1 [A] (☞ x 1, ☞ x 1)
3. Original length sensor 2 [B] (☞ x 1, ☞ x 1)
4. Original width sensor [C] (☞ x 1, ☞ x1)



3.3.3 LENS BLOCK ASSEMBLY



1. Exposure glass (☛ 3.3.1)
2. Rear cover (☛ 3.4.2)
3. Scanner right cover [A] (☞ x 1)
4. Inner cover [B] (☞ x 4)

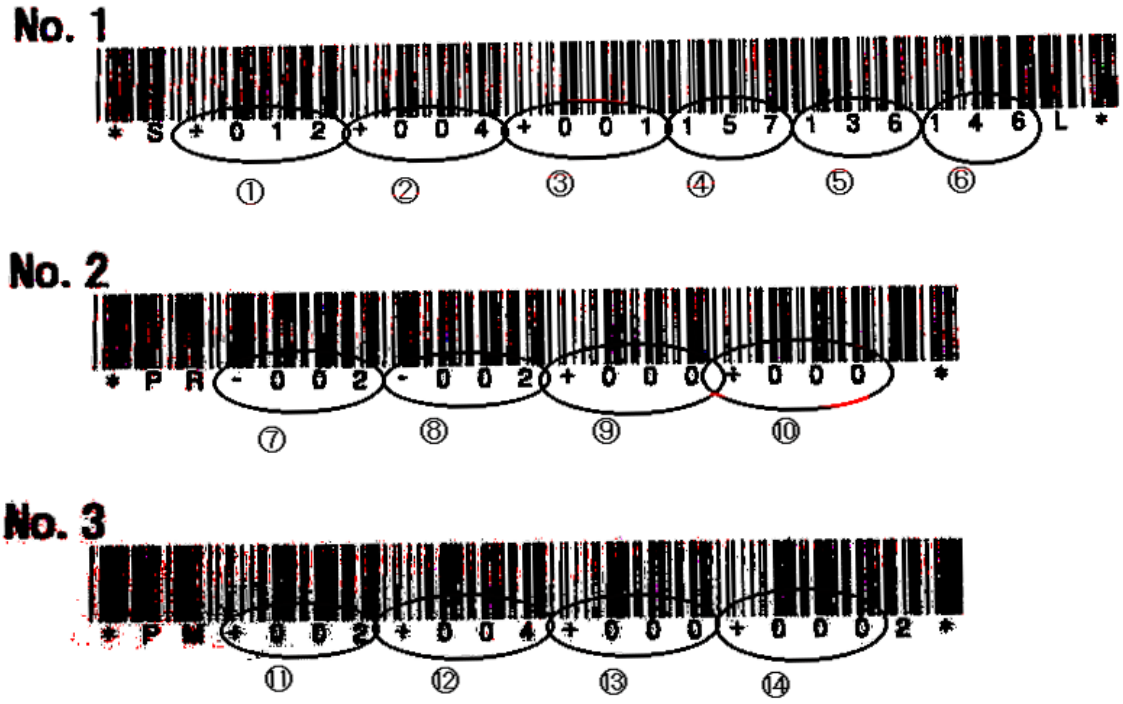


5. Lens block assembly [C]
   (☞ x 4, ☞ x 4)
   NOTE: Do not remove the paint-locked screws.
6. After reassembling, input the data in accordance with the data sheet included in the spare SBU unit (☛ SP4-540).

   Refer to the diagram on the next page.

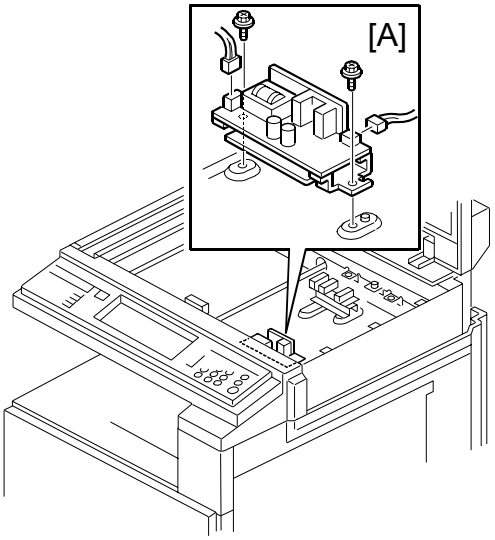
   - Row No. 1: Numbers 1 to 6 – please ignore
   - Row No. 2: Numbers 7 to 10 – please store in the following SP modes
     7: SP 4-540-001
     8: SP 4-540-002
     9: SP 4-540-003
     10: SP 4-540-004
   - Row No. 3: Numbers 11 to 14 – please store in the following SP modes
     11: SP 4-540-021
     12: SP 4-540-022
     13: SP 4-540-023
     14: SP 4-540-024
   - Before inputting the number, check whether it is + or – (look at the data sheet), then input a +ve or –ve number accordingly.
7. Check the registrations (☛ SP4-010/011 Chapter 3, Copy adjustments)

NOTE: After replacing the left scale, adjust the scanner white level (☛ 3.14).



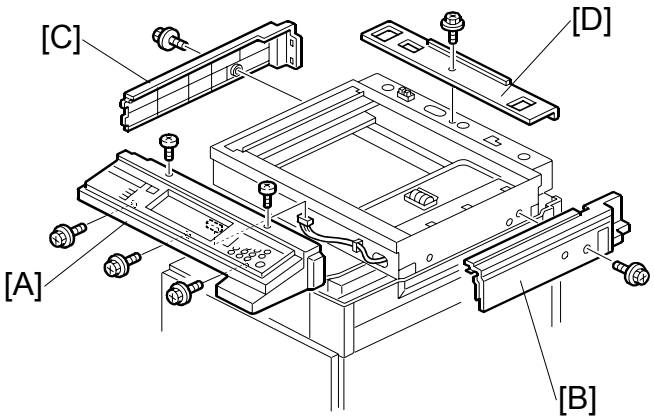
3.3.4 EXPOSURE LAMP STABILIZER

1. Lens block assembly (☛ 3.3.3)
2. Exposure lamp stabilizer [A] (🔩 x 2, 🖐 x 2)

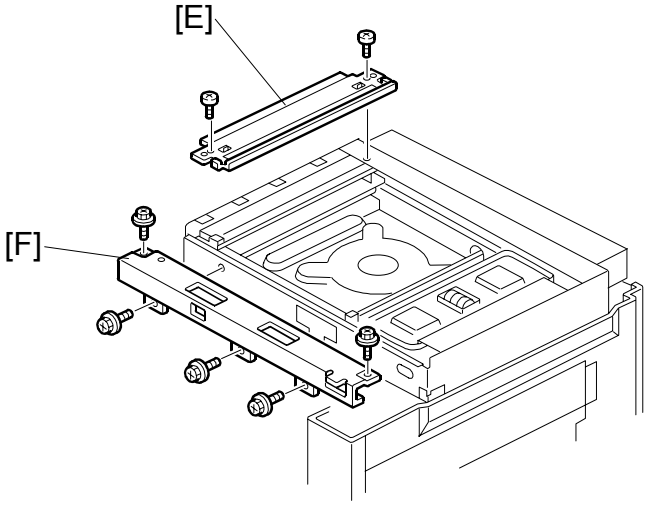


3.3.5 SCANNER LAMP

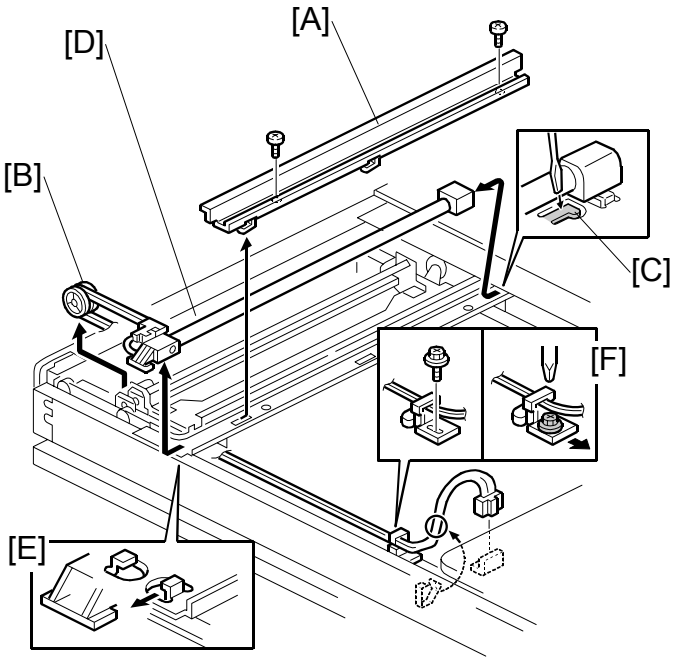
1. Exposure glass (☛ 3.3.1)
2. Rear cover (☛ 3.4.2)
3. Operation panel [A] (🔩 x 5, 🖐 x 1)
4. Scanner right cover [B] (🔩 x 1)
5. Scanner left cover [C] (🔩 x 1)
6. Scanner rear cover [D] (🔩 x 1)



7. Left frame [E] (🔩 x 2)
8. Front frame [F] (🔩 x 5)



9. Lamp guard [A] (🔩 x 2)
10. Pulley [B]
    NOTE: Use caution not to bend the pulley guides.
11. Push down the part [C], then slide out the scanner lamp.
12. Slide out the scanner lamp [D] and unhook it from the clamps [E].
    NOTE: After replacing the scanner lamp, adjust the scanner white level (☛ 3.14).

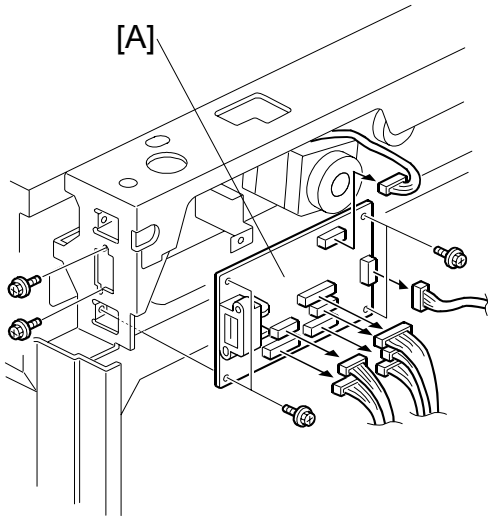


Reassembling

1. Take up the cable slack.
   NOTE: Make sure the cable is not dangling and the wires are not crossed.
2. Adjust the cable clamp position [F] if necessary.
   NOTE: Do not open the clamp.

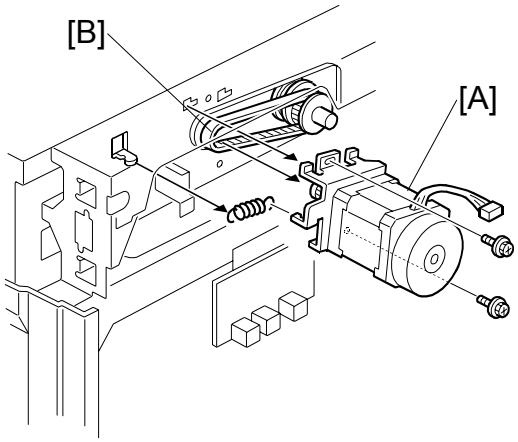
3.3.6 SCANNER I/O BOARD

1. Scanner right cover and scanner rear cover (☛ 3.3.5)
2. Scanner I/O board [A] (🔩 x 6, 🖐 x 7)



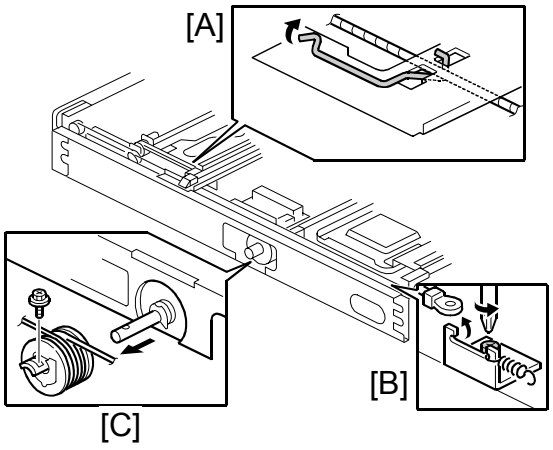
3.3.7 SCANNER MOTOR

1. Scanner I/O board (☛ 3.3.6)
2. Scanner motor [A] (🔩 x 2, Spring x 1)
3. Timing belt [B]

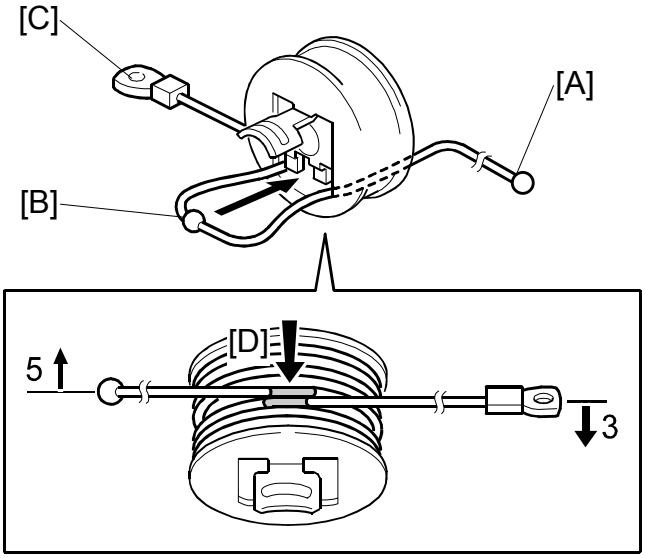


3.3.8 FRONT SCANNER WIRE

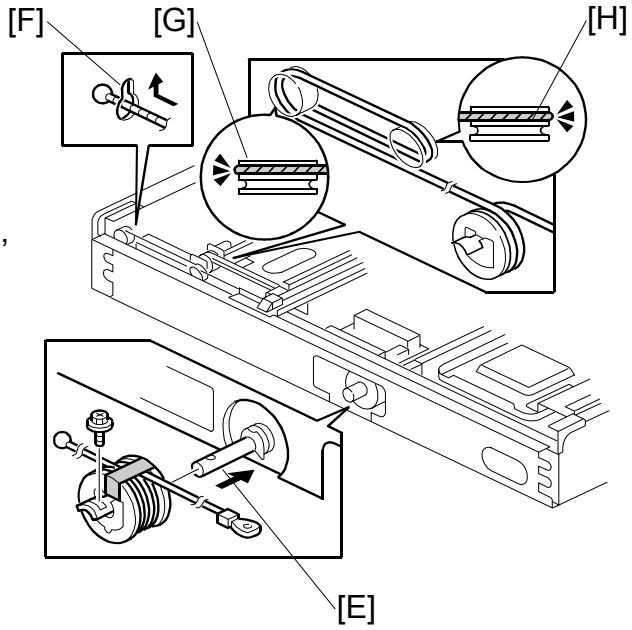
1. Front frame (☛ 3.3.5)
2. To make reassembly easy, slide the first scanner to the right (☛ Reassembling the Front Scanner Wire).
3. Front scanner wire clamp [A]
4. Front scanner wire bracket [B] (🔩 x 1)
5. Front scanner wire and scanner drive pulley [C] (🔩 x 1)



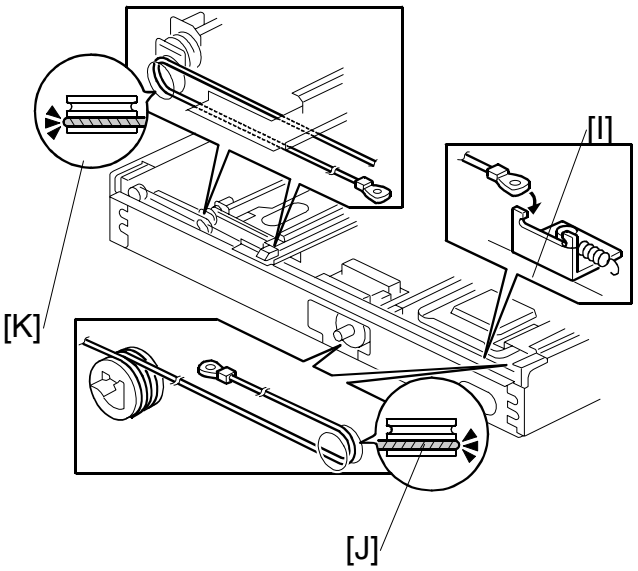
Reassembling the Front Scanner Wire



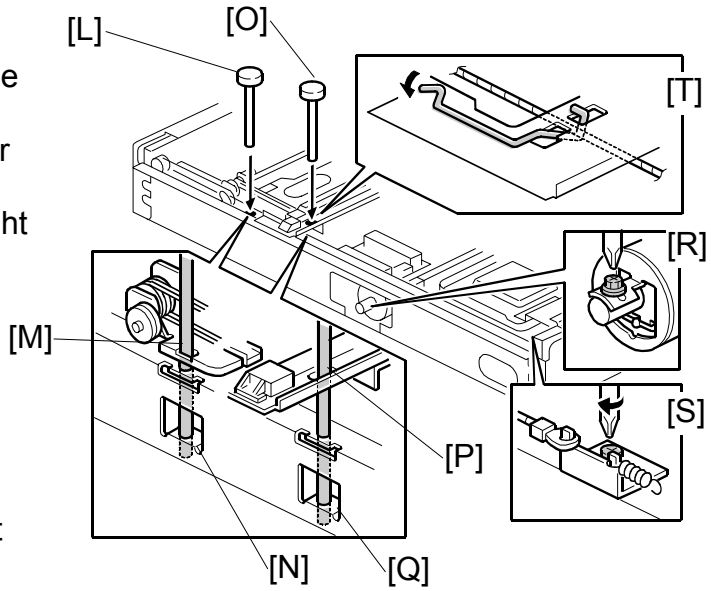
1. Pass the end with the ball [A] through the left square hole from the front.
2. Position the center ball [B] in the middle of the notch, as shown by the arrow.
3. Pass the ball end [A] through the notch on the right.
4. Wind the end with the ring [C] clockwise three times; wind the ball end [A] counterclockwise five times.
   NOTE: The two red marks [D] should meet when you have done this.
5. Stick the wire to the pulley with tape, so you can easily handle the pulley and wire during installation.
6. Install the drive pulley on the shaft [E].
   NOTE: Do not screw the pulley onto the shaft yet.
7. Insert the ball end into the slit [F], with the end going via the rear track of the left pulley [G] and the rear track of the movable pulley [H].



8. Hook the ring end onto the front scanner wire bracket [I], with the end going via the front track of the right pulley [J] and the front track of the movable pulley [K].
   NOTE: Do not screw the scanner wire bracket in place yet.
9. Remove the tape from the drive pulley.



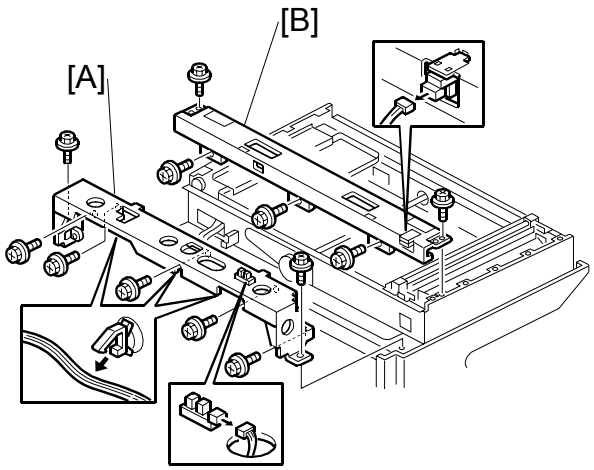
10. Insert a scanner positioning pin [L] through the 2nd carriage hole [M] and the left holes [N] in the front rail. Insert another scanner positioning pin [O] through the 1st carriage hole [P] and the right holes in the front rail [Q].
11. Insert two more scanner positioning pins through the holes in the rear rail.
12. Screw the drive pulley to the shaft [R].
13. Screw the scanner wire bracket to the front rail [S].
14. Install the scanner wire clamp [T].
15. Pull out the positioning pins.



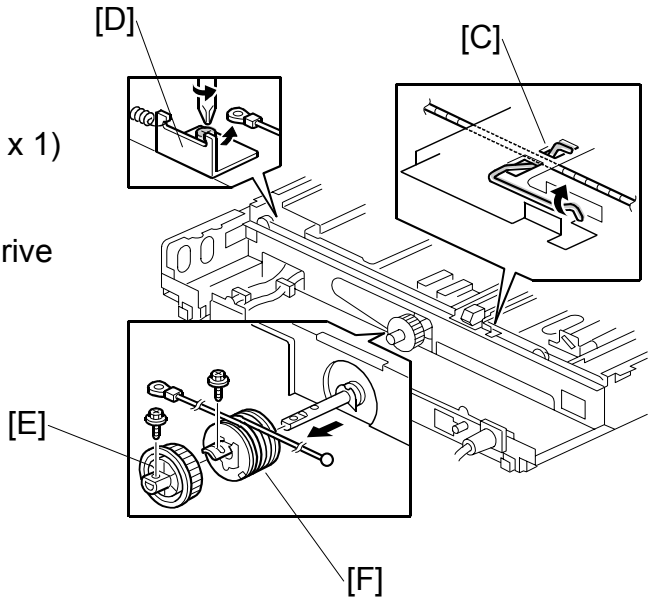
NOTE: 1) After removing the positioning pins, make sure the 1st and 2nd carriages move smoothly. If they do not, repeat steps 10 through 15.
2) After replacing the carriage, adjust the scanner white level (☛ 3.14).

3.3.9 REAR SCANNER WIRE

1. Exposure glass (☛ 3.3.1)
2. Scanner motor (☛ 3.3.7)
3. Left frame (☛ 3.3.5)
4. Rear frame [A] (x 7, x 1)
5. Rear rail frame [B] (x 5, x 1)
6. To make reassembly easy, slide to the right (☛ Reassembling the Rear Scanner Wire).

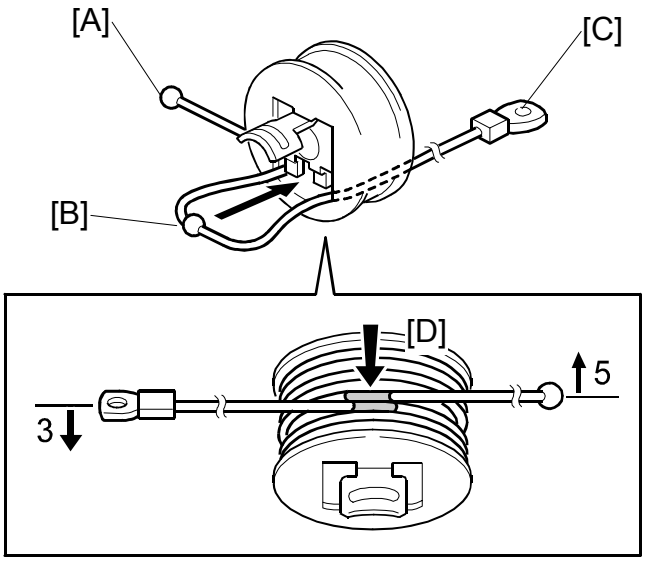


7. Rear scanner wire clamp [C]
8. Rear scanner wire bracket [D] (x 1)
9. Scanner motor gear [E] (x 1)
10. Rear scanner wire and scanner drive pulley [F] (x 1)



Reassembling the Rear Scanner Wire

1. Pass the end with the ball [A] through the right square hole from the front.
2. Position the center ball [B] in the middle of the notch, as shown by the arrow.
3. Pass the ball end [A] through the drive pulley notch.
4. Wind the end with the ring [C] counterclockwise five times; wind the ball end clockwise three times.
   NOTE: The two red marks [D] should meet when you have done this.



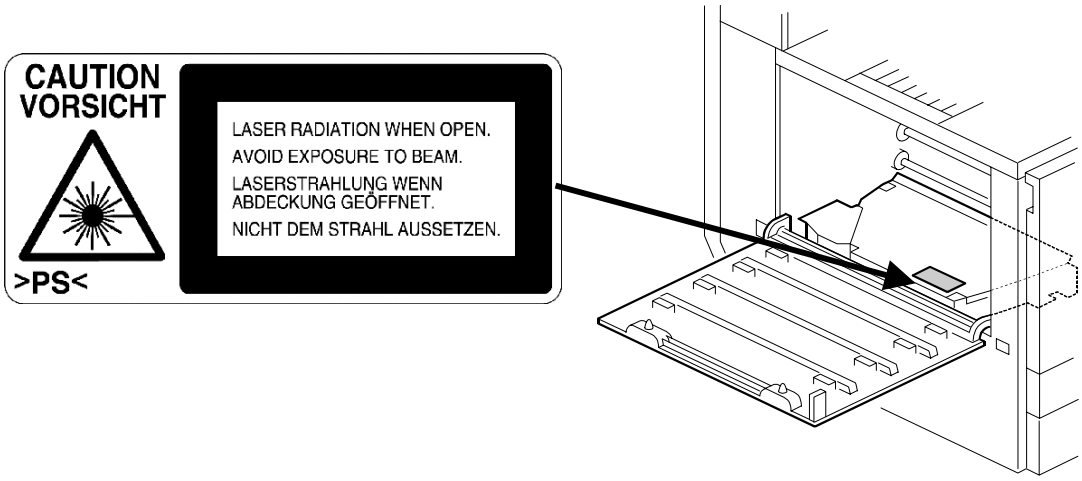
5. Stick the wire to the pulley with tape, so you can easily handle the pulley and wire during installation.
6. Install the drive pulley on the shaft.
   NOTE: Do not screw the pulley onto the shaft yet.
7. Install the wire.
   NOTE: The winding pattern is a mirror image of that of the front scanner wire.
8. Perform steps 10 through 15 in “Reassembling the Front Scanner Wire”.

3.4 LASER UNIT

⚠WARNING

Turn off the main switch and unplug the machine before beginning any of the procedures in this section. Laser beams can cause serious eye injury.

3.4.1 CAUTION DECAL LOCATION

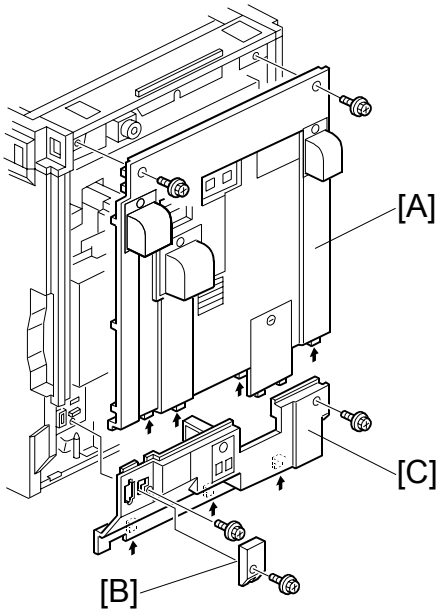


⚠DANGER

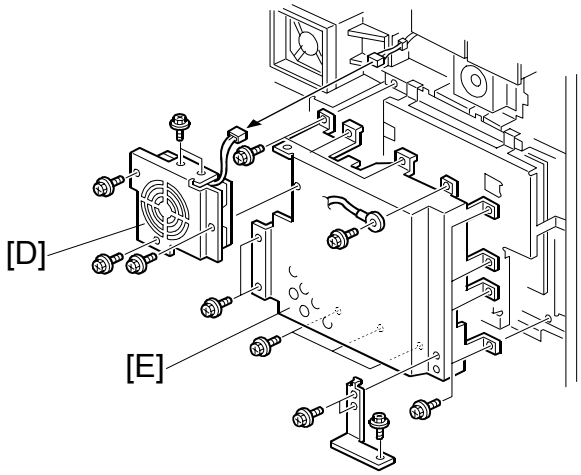
Turn off the main switch and disconnect the power plug from the power outlet before beginning any disassembly or adjustment of the laser unit. This printer uses a class-1 laser beam with a wavelength of 650 nm and an output of 7 mW. The laser can cause serious eye injury.

3.4.2 LASER UNIT

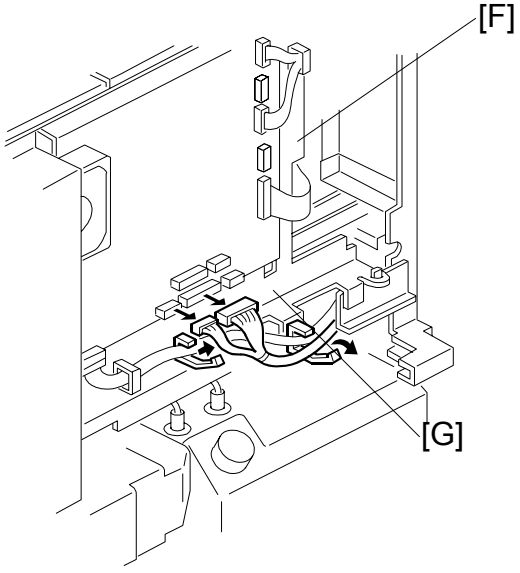
1. Rear cover [A] (x 2)
2. Connector cover [B] (x 1)
3. Lower rear cover [C] (x 2)



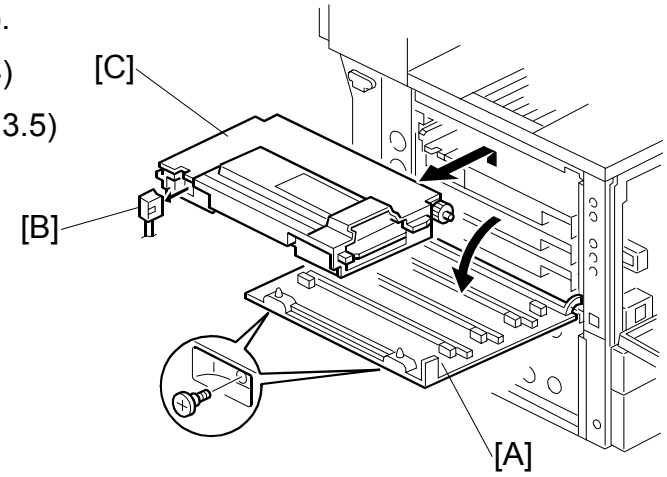
4. Fan [D] (x 5)
5. BICU cover [E] (x 11)



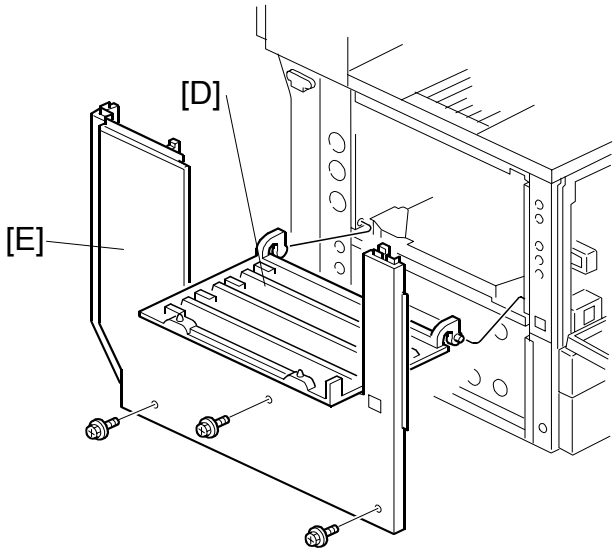
6. Flat cable [F]
7. LD unit cables [G] (x 2)



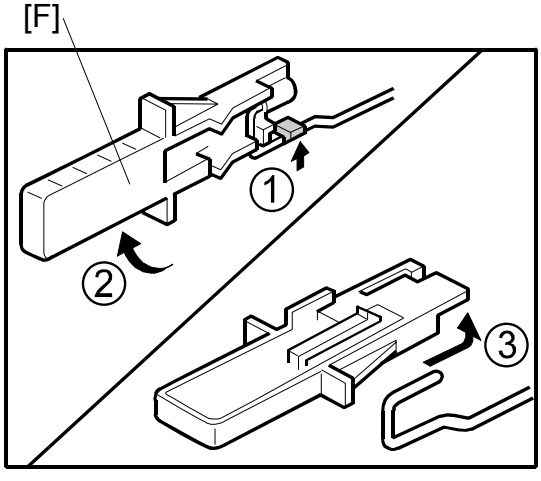
8. Open the left cover [A] (☞ x 2).
9. ID chip connectors [B] (☞ x 4)
10. Development units [C] x 4 (☛ 3.5)



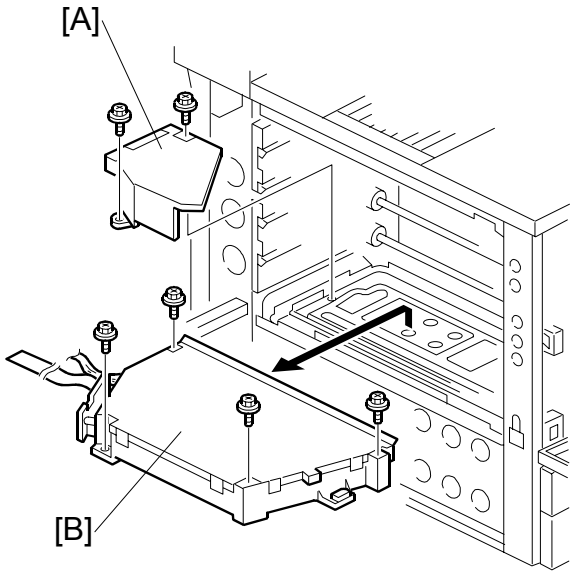
11. Left cover [D]
12. Lower left cover [E] (☞ x 3)



13. Open the front cover.
14. Dust shield glass cleaner lever [F]
    NOTE: The dust shield glass cleaner lever is the blue lever at the left side of the charge corona unit (☛ 3.6.3).

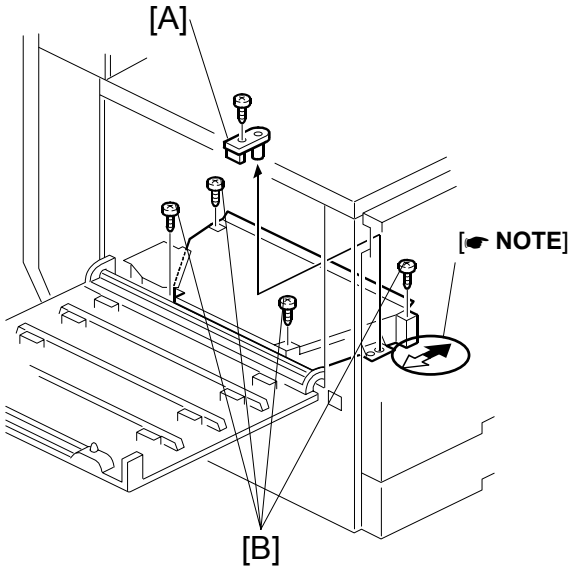


15. LD cover [A] (☞ x 2)
16. Laser unit [B] (☞ x 5, Flat cable x 1)
    NOTE: Also remove 2 connectors on the BICU Board. When reassembling, connect the flat cable with the blue side down.

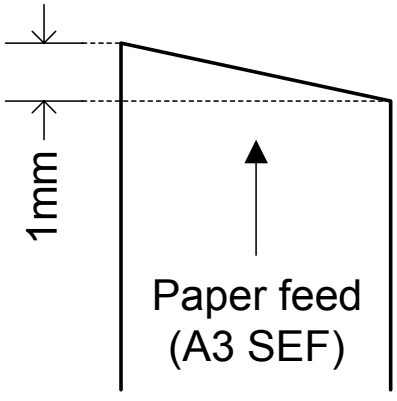


Adjusting for Image Skew

1. Positioning pin [A] (☞ x 1)
2. Loosen ☞ (x 4) [B].
3. Adjust the position of the laser optics housing unit (☛ Adjustment).
4. Fasten ☞ (x 4) [B].
   NOTE: After changing the position of the laser optics housing unit, do not reinstall the positioning pin. Keep the pin in a safe place.



NOTE: When the image skews as shown on the right, move the unit 1 mm in the direction of the black arrow as shown in the diagram **above and to the right**.



D-Phase Adjustment

This adjustment corrects the difference in density on the left and right sides of the paper. The data sheet (distributed with the laser unit) is necessary for this adjustment. After replacing the laser unit, do the following adjustment.

NOTE: 1) If the D-phase adjustment is not made, a difference in the density may be seen. This difference can be conspicuous when the gray scale in the Color Chart C-4 is copied or when an original is repeatedly copied.
2) The D-phase adjustment is necessary whenever a difference in the density is seen. Keep the data sheet inside the front cover for future use.

1. Print out the test pattern with SP5-955-6 (☛ 5.1.3).

2. Check if horizontal black stripes can be seen.
   a) If stripes cannot be seen (Figure 2), the D-phase adjustment is not required.
   b) If stripes can be seen (Figure 1), the D-phase adjustment is required. Go on to the next step.

Feed direction ➡

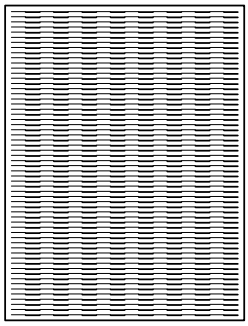


Figure 1

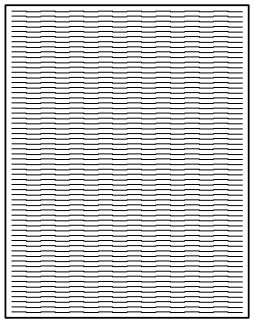


Figure 2

3. See the value of “Mag. Shift Error: LD1-2” below the bar code on the data sheet, and find the range in Table 1 which includes the value.

4. Find the corresponding values of “Adjustment” in Table 1, and input them in SP2-951-1 and SP2-951-2 respectively.

   For example, when the value of “Mag. Shift Error: LD1-2” on the data sheet is “–4.0”, enter “3” in SP2-951-1 and enter “0” in SP2-951-2.

5. Print out the test pattern with SP5-955-6.

6. Check if vertical black stripes can be seen.

Mag. Shift Error: LD1-2	Adjustment	
	SP2-951-1	SP2-951-2
–11.8 ~ –10.4	8	0
–10.3 ~ –9.0	7	0
–8.9 ~ –7.6	6	0
–7.5 ~ –6.2	5	0
–6.1 ~ –4.8	4	0
–4.7 ~ –3.4	3	0
–3.3 ~ –2.0	2	0
–1.9 ~ –1.0	1	0
–0.9 ~ 1.0	0	0
1.1 ~ 2.0	0	1
2.1 ~ 3.4	0	2
3.5 ~ 4.8	0	3
4.9 ~ 6.2	0	4
6.3 ~ 7.6	0	5
7.7 ~ 9.0	0	6
9.1 ~ 10.4	0	7
10.5 ~ 11.8	0	8

Table 1

Laser Beam Pitch Adjustment

1. Print out the test pattern with SP5-955-1, then select pattern 15 (☛ 5.1.3).
2. Check if vertical black stripes can be seen.
   a) If stripes cannot be seen (Figure 2), laser beam pitch adjustment is not required.
   b) If stripes can be seen (Figure 1), laser beam pitch adjustment is required. Go on to the next step.

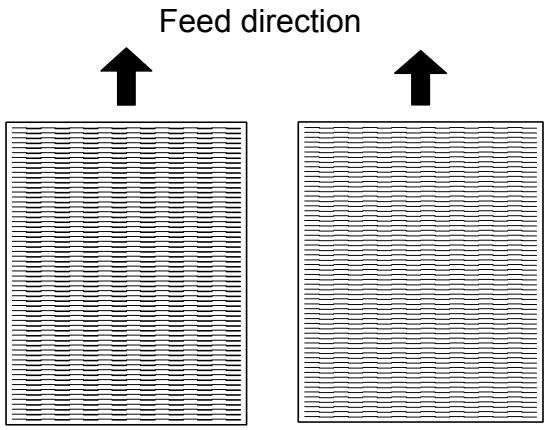
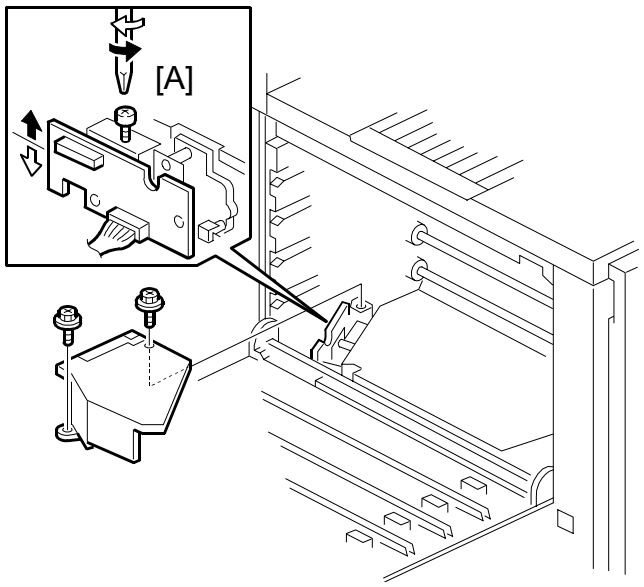


Figure 1 Figure 2

3. To adjust the laser beam pitch, tighten or loosen the screw [A] on the LD unit holder.
4. Print out the test pattern with SP5-955-1.
5. Repeat steps 2 through 4 until the black stripes disappear (Figure 2).

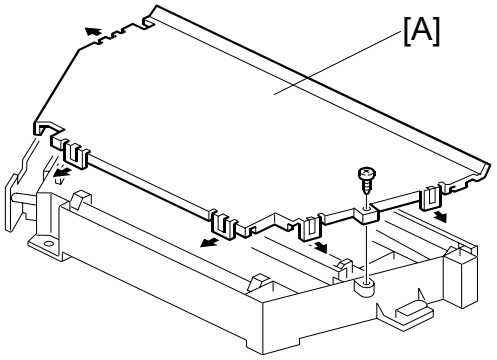


3.4.3 POLYGONAL MIRROR MOTOR AND LASER SYNCH. DETECTION

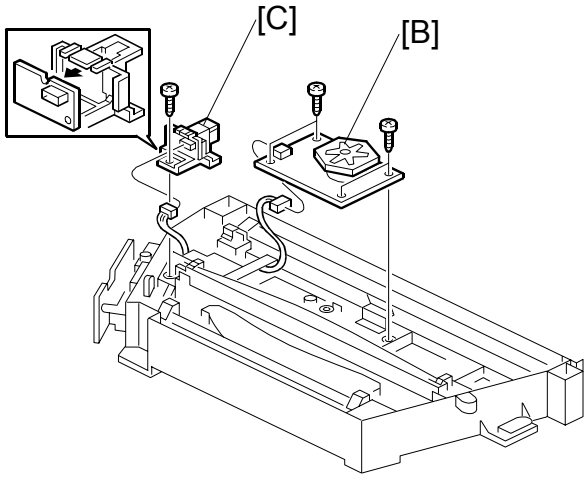
⚠WARNING

Do not touch any edges of the polygon mirror, spring, or bracket. These edges can cause serious injury.

1. Development units, LD cover (☛ 3.4.2)
2. Cover [A] (🔩 x 1)
   NOTE: Before removing the cover, clean the cover to prevent toner from entering into the unit.



3. Polygonal mirror motor [B] (🔌 x 1, 🔩 x 4)
   NOTE: Do not touch the mirror surface.
4. Laser Synch. Detection board (LSD) [C] (🔌 x 1, 🔩 x 1)

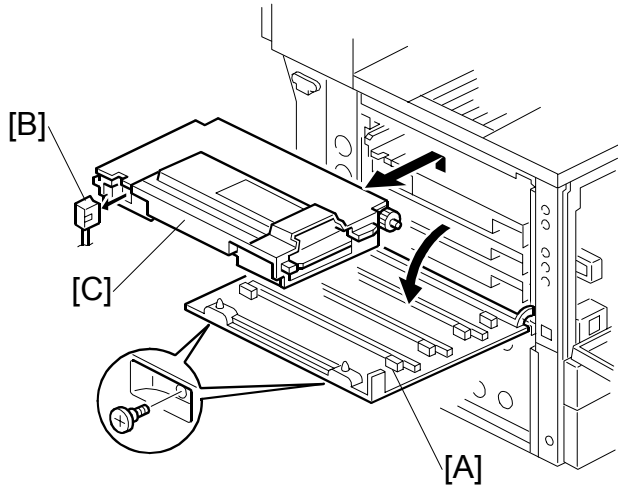


3.5 DEVELOPMENT UNIT

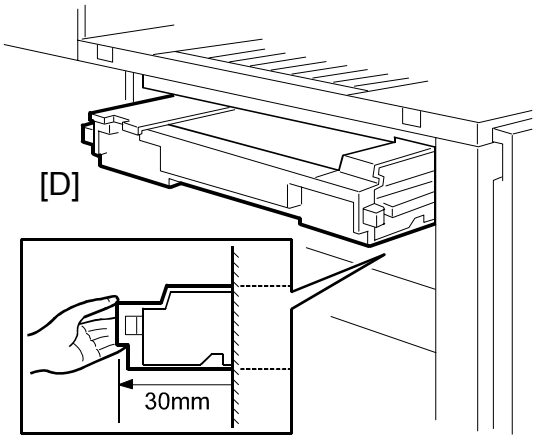
⚠CAUTION
Do not touch the development unit sleeves or ID chip terminals.

1. Open the left cover [A] (🔩 x 2)
2. ID chip connector [B]
3. Lift up the development unit [C], and pull it out of the machine.

NOTE: Remove the units in the order K, Y, C, M. For example, before removing the M unit, remove the K, Y, and C units first.



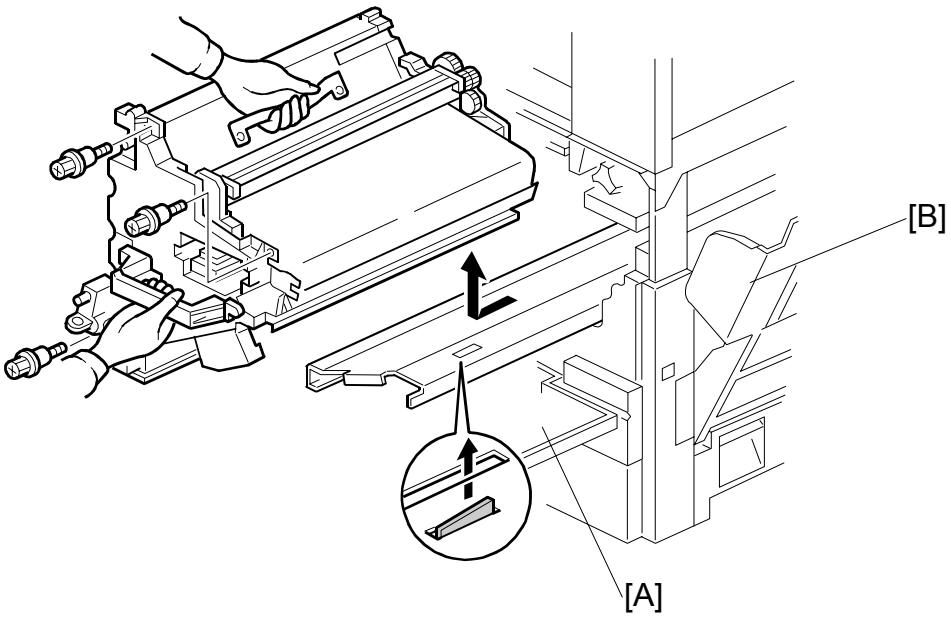
4. Peel off the toner cartridge seal [D].
5. Take out the toner cartridge from the new development unit.
6. Shake the toner cartridge well, as shown.
   NOTE: Hold the center of the cartridge, at the other side from the toner shutter, and shake it about 10 times.
7. Reinstall the toner cartridge in the development unit.
8. Shake the development unit well.
9. Tilt the unit about 90 degrees, and shake it about 10 times.
10. Install the development unit to the machine.
    NOTE: A white line or band may appear on one end of the paper if a development is incorrectly installed. To correct this, pull out the development unit partially (about 30 mm) [D] and slowly reinstall it.



3.6 PHOTOCONDUCTOR UNIT (PCU)

3.6.1 PCU ASSEMBLY

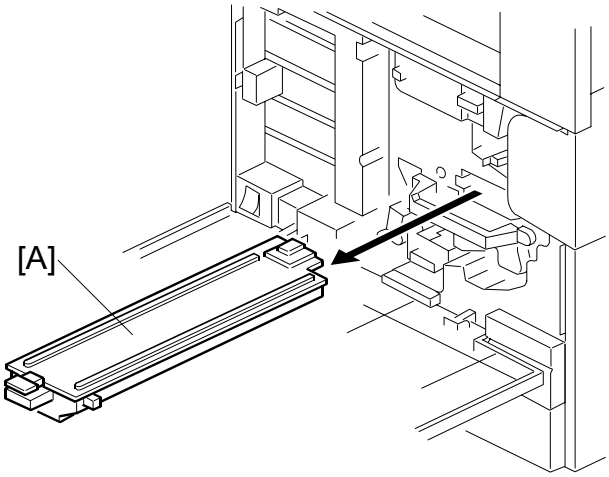
NOTE: 1) Before replacing any of the parts or consumables in this section, cover the floor with cloth or some sheets of paper.
2) Never tilt the unit. The toner may come out of the unit.
3) When handling the unit, grasp the brown (front) and green (top) grips. Never touch the OPC (left) or transfer (right) belts.
4) After removing the photoconductor unit, cover it with a light-proof sheet. Keep it in a dark place.



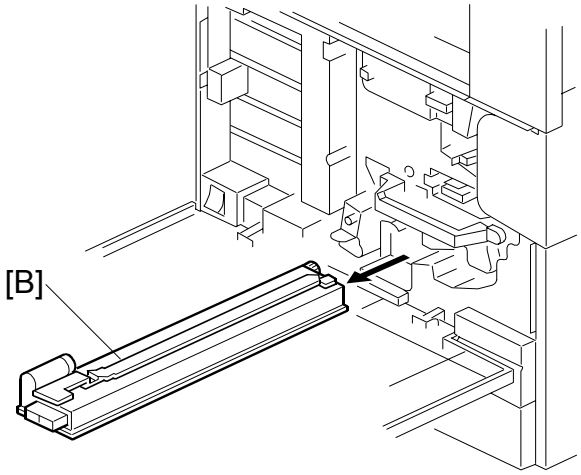
1. Open the front cover [A].
2. Open the right cover [B].
3. Pull the unit out of the machine (🔩 x 3).
4. Grasp the brown and green grips.
5. Lift the unit and remove it.

3.6.2 WASTE TONER BOTTLES

1. T/B waste toner bottle [A]

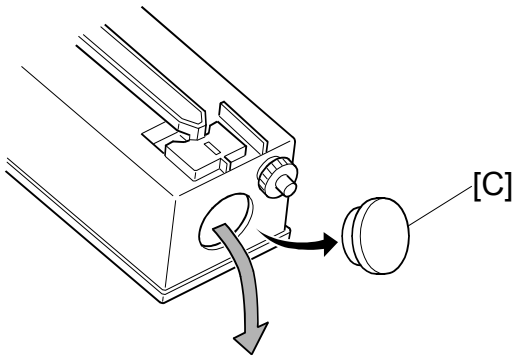


2. O/B waste toner bottle [B]
   NOTE: There is much more O/B waste toner than T/B waste toner. Dispose of the O/B waste toner whenever you work on the machine.



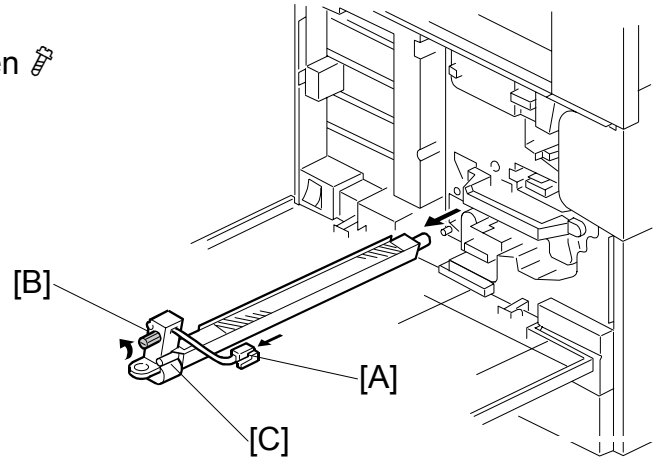
Toner Disposal

1) Remove the cap [C].
2) Dispose of the toner according to local regulations.

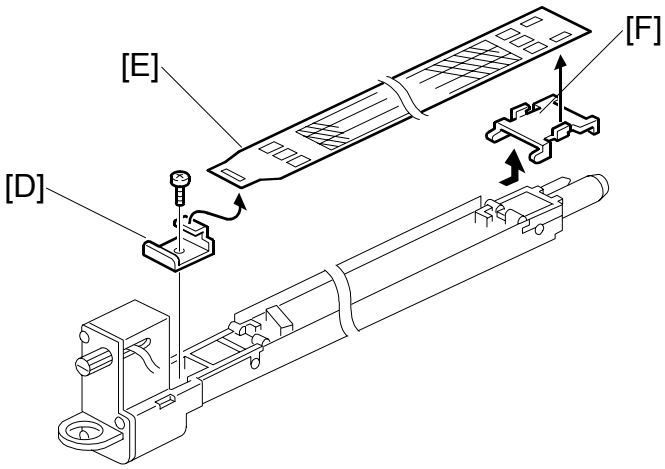


3.6.3 CHARGE CORONA UNIT, GRID, WIRE, AND CLEANER

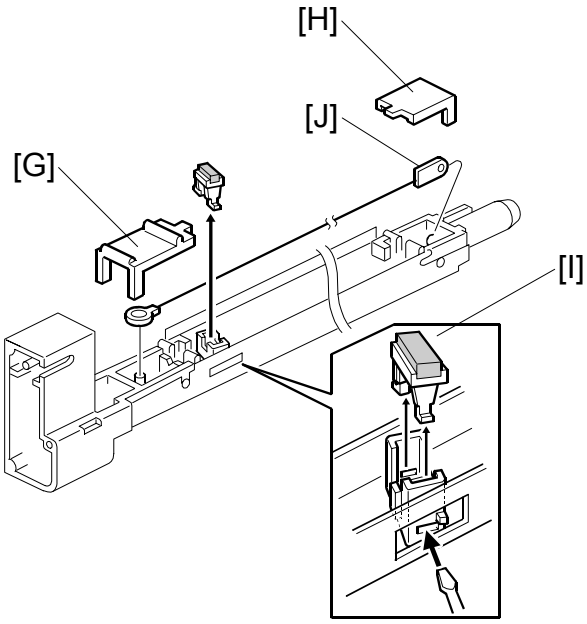
1. Modular cable [A]
2. Charge corona unit [C] (Loosen [B], x 1)



3. Front bracket (x 1) [D]
4. Grid [E]
5. Rear bracket [F]

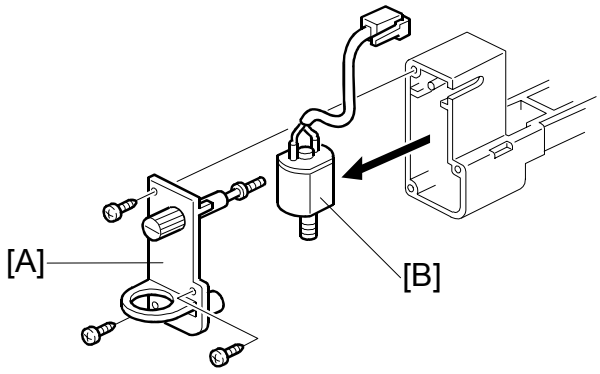


6. Front wire cover [G]
7. Rear wire cover [H]
8. Wire cleaner [I]
9. Unhook the corona wire [J].



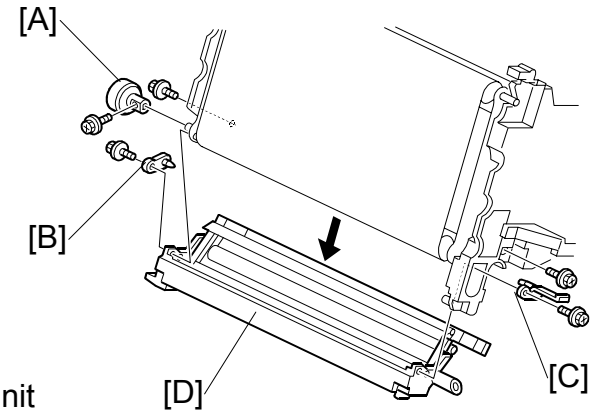
3.6.4 CHARGE CORONA WIRE CLEANER MOTOR

1. Charge corona unit (☛ 3.6.3)
2. Front cover [A] (☞ x 3)
3. Motor [B]



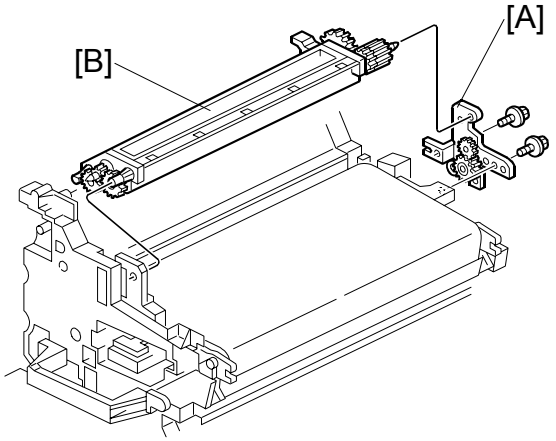
3.6.5 OPC BELT CLEANING UNIT

1. O/B waste toner bottle (☛ 3.6.2)
2. Photoconductor unit (☛ 3.6.1)
3. Charge corona unit (☛ 3.6.3)
4. Drive gear [A] (☞ x 1)
5. Rear brace [B] (☞ x 1)
6. Front brace [C] (☞ x 1)
7. OPC belt cleaning unit [D] (☞ x 2)
   NOTE: Hold up the photoconductor unit while removing the OPC belt cleaning unit.



3.6.6 IMAGE TRANSFER BELT CLEANING UNIT

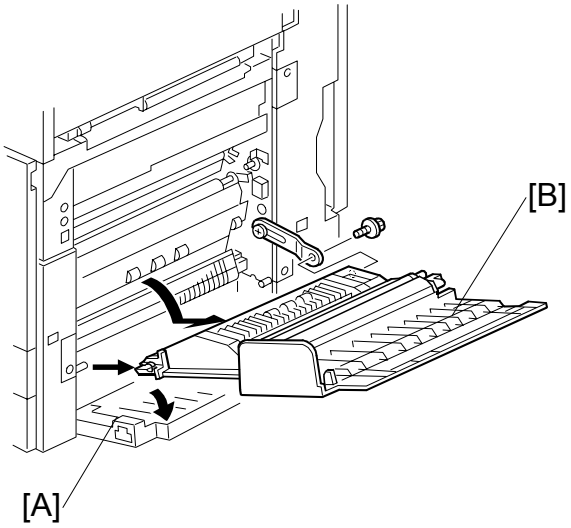
1. Photoconductor unit (☛ 3.6.1)
2. Bracket [A] (☞ x 2)
3. Image transfer belt cleaning unit [B]



3.7 PAPER TRANSFER UNIT

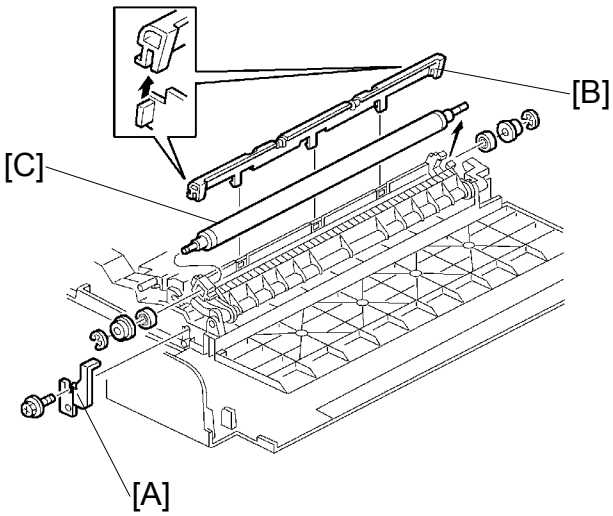
3.7.1 VERTICAL TRANSPORT UNIT

1. Open the right lower cover [A].
2. Right cover [B] (🔩 x 1)



⇒ 3.7.2 TRANSFER ROLLER

1. Brace [A] (🔩 x 1)
2. Guide [B]
   NOTE: To remove the screws, turn the roller unit on its pivot.
3. Transfer roller [C]
   (C x 2, Bushing x 2, Bearing x 2)



3.8 FUSING/PAPER EXIT

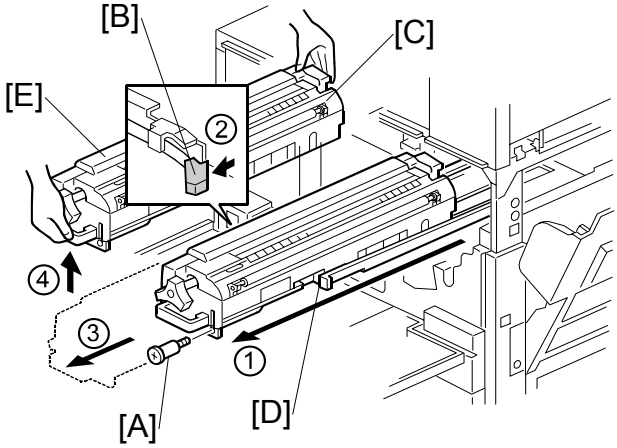
⚠CAUTION

Turn off the main switch and wait until the fusing unit cools down before beginning any of the procedures in this section. The fusing unit can cause serious burns.

3.8.1 FUSING UNIT

NOTE: 1) After removing the fusing unit, see if oil drips from the exit of the oil pipe.
2) Do not turn the main power on with the fusing unit out of the machine if an oil end condition exists. This will clear the oil end counter, and the machine incorrectly detects oil.

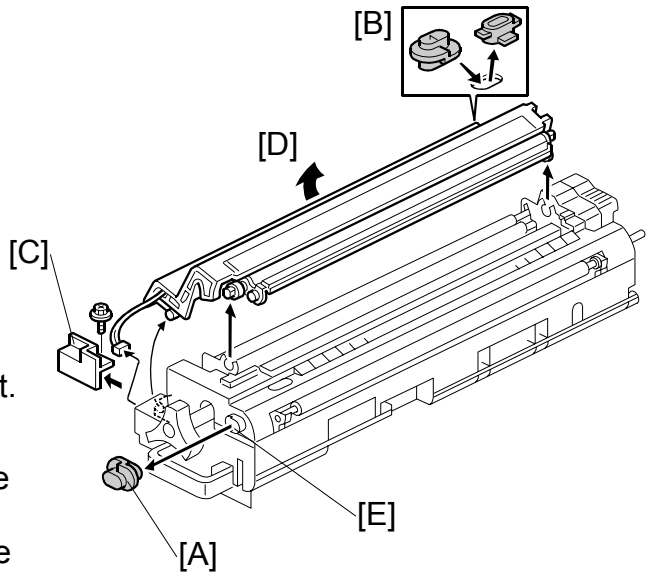
1. Remove the screw [A], and pull out the unit out of the machine.
2. Unhook the bottom stopper [B], and grasp the rear end [C] of the unit.
3. Slide the unit to the end of the base plate [D].
4. Release the unit [E].



3.8.2 OIL SUPPLY UNIT

1. Fusing unit (☛ 3.8.1)
2. Put the fusing unit on a level place.
3. Remove the cap [A] from the fusing unit cover, and put it in the oil supply opening [B].
4. Connector cover [C] (☞ x 1)
5. Oil supply unit [D] (✋ x 1)
   NOTE: Do not touch the oiling felt.

NOTE: When reassembling, install the oil supply unit, remove the cap from the oil supply opening, wipe the cap and the cap holder [E] with waste, and put it on the holder.

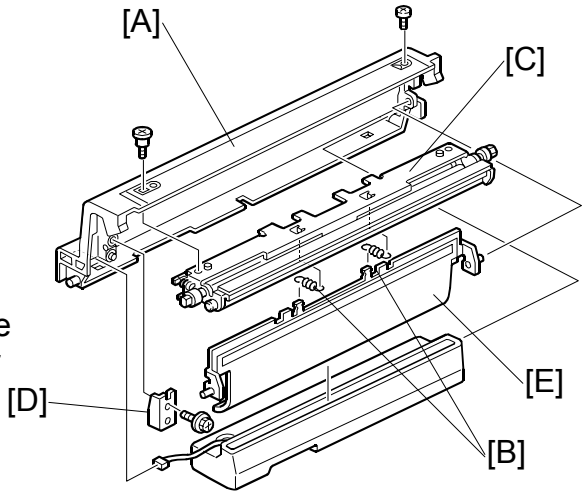


3.8.3 OIL SUPPLY PAD

CAUTION: Empty silicone oil out of the oil supply unit into a vessel or container before beginning the following steps.

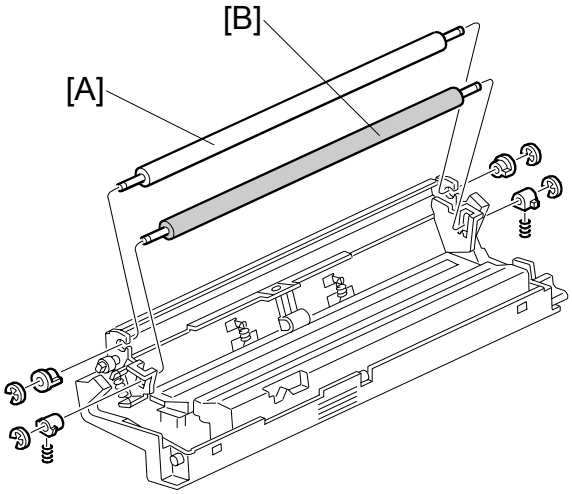
1. Oil supply unit [A] (☛ 3.8.2)
2. Springs [B] x 2
3. Cleaning roller assembly [C] (☞ x 1, Shoulder screw x 1)
4. Stay [D] (☞ x 1)
5. Slide the pad [E] and pull it out.

NOTE: If you cannot put the springs in the places, remove the cleaning roller (☛ 3.8.4).

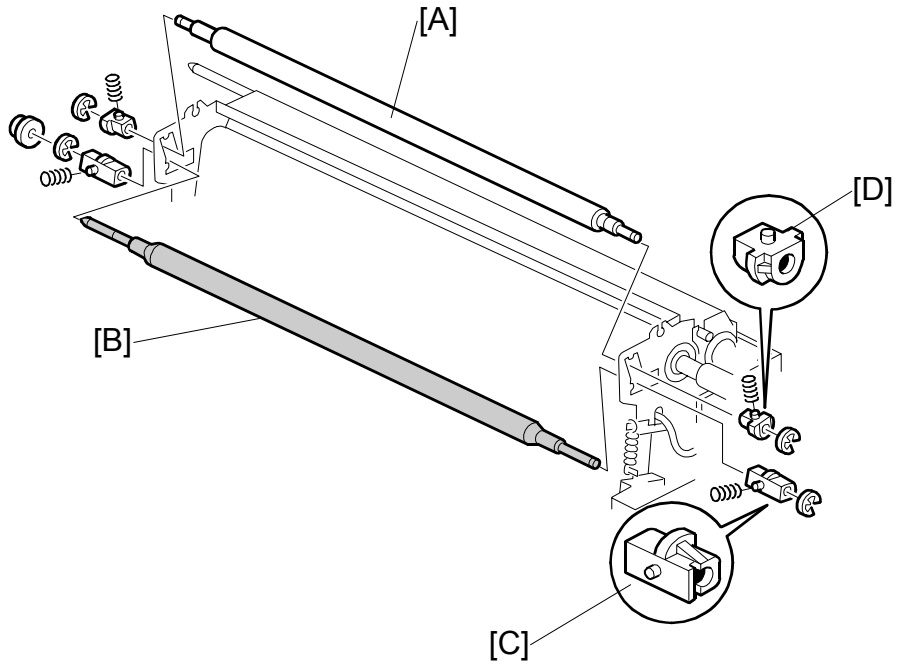


3.8.4 CLEANING ROLLER AND FUSING SPONGE ROLLER

1. Oil supply unit (☛ 3.8.2)
2. Cleaning roller [A] (Bushing x 2, ℂ x 2)
3. Fusing sponge roller [B] (Bushing x 2, ℂ x 2, Spring x 2)



3.8.5 OILING ROLLER AND OIL SUPPLY ROLLER

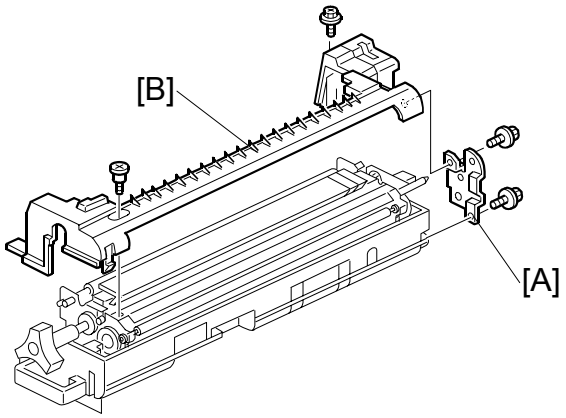


1. Oil supply unit (☛ 3.8.2)
2. Upper cover (☛ 3.8.6)
3. Oil supply roller [A] (Spring x 2, Bushing x 2)
4. Oiling roller [B] (Spring x 2, Bushing x 2)

NOTE: The bushings on the oiling roller [C] are different from those on the oil supply roller [D].

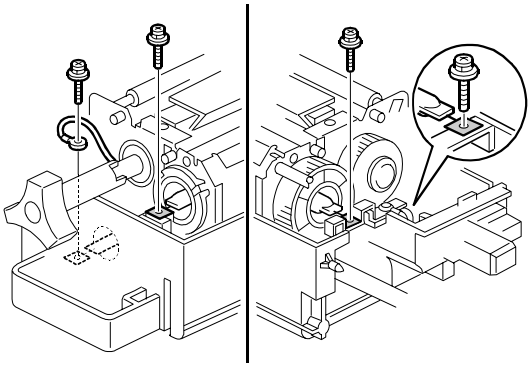
3.8.6 FUSING LAMPS

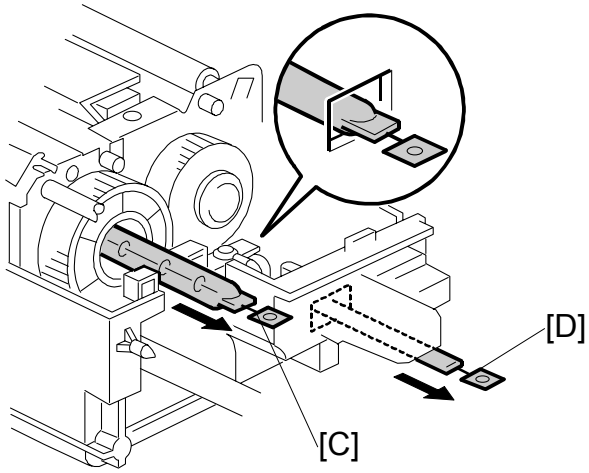
1. Oil supply unit (☛ 3.8.2)
2. Gear bracket [A] (🔩 x 2)
3. Upper cover [B] (🔩 x 1, shoulder screw x 1)



4. Pull out the lamp (350W) [C] (🔩 x 2).
5. Pull out the lamp (770W) [D] (🔩 x 2, Cable x 1).

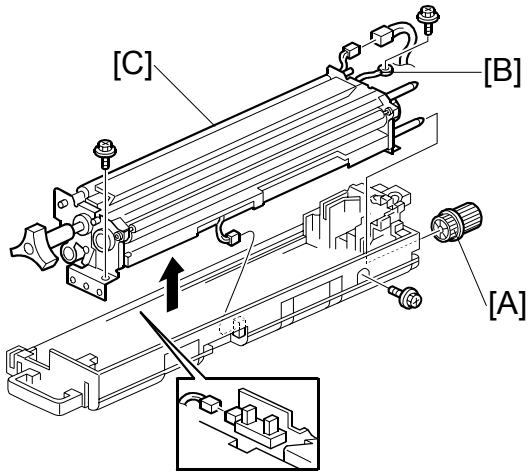
NOTE: "350W" and "770W" are printed on the respective terminals.





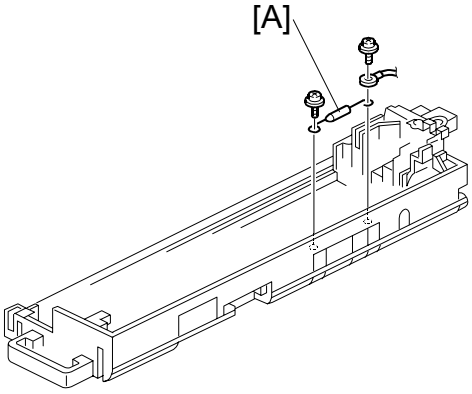
3.8.7 FUSING INNER UNIT

1. Lamps (☛ 3.8.6)
2. Drive gear [A]
3. Hot roller lamp harness terminal [B] (🔩 x 1)
4. Fusing inner unit [C] (🔩 x 2, 🔌 x 3)



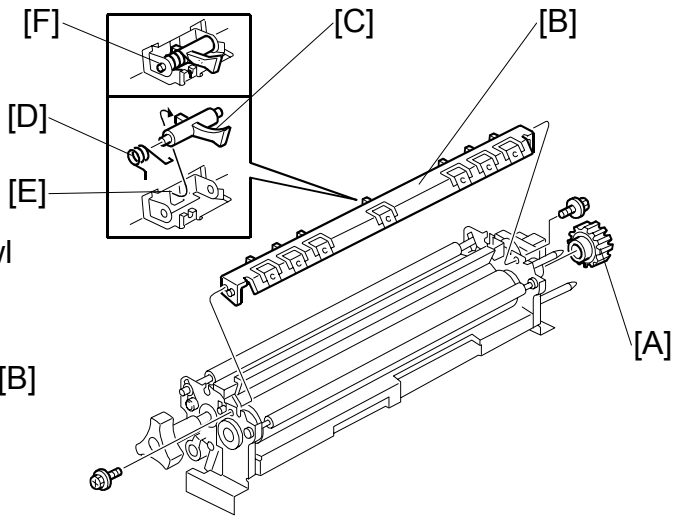
3.8.8 PRESSURE ROLLER THERMOFUSE

1. Fusing inner unit (☛ 3.8.7)
2. Pressure roller thermofuse [A] (🔩 x 2)



3.8.9 HOT ROLLER STRIPPERS

1. Oil supply unit (☛ 3.8.2)
2. Fusing lamps (☛ 3.8.6)
3. Fusing inner unit (☛ 3.8.7)
4. Gear [A]
   NOTE: Remove the gear before removing the stripper pawl assembly; otherwise, the gear may be damaged.
5. Hot roller stripper pawl assembly [B] (Spring x 1, 🔩 x 2)
6. Hot roller stripper pawl [C]

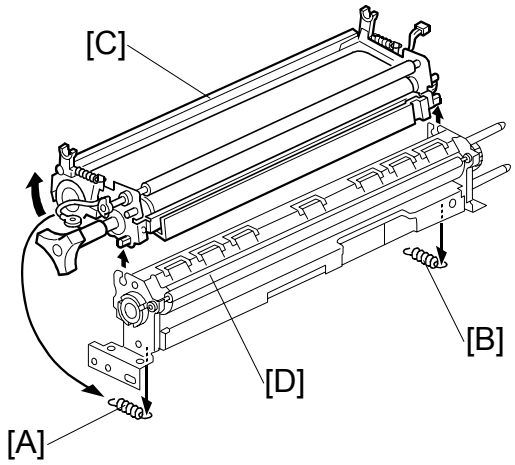


Reassembling

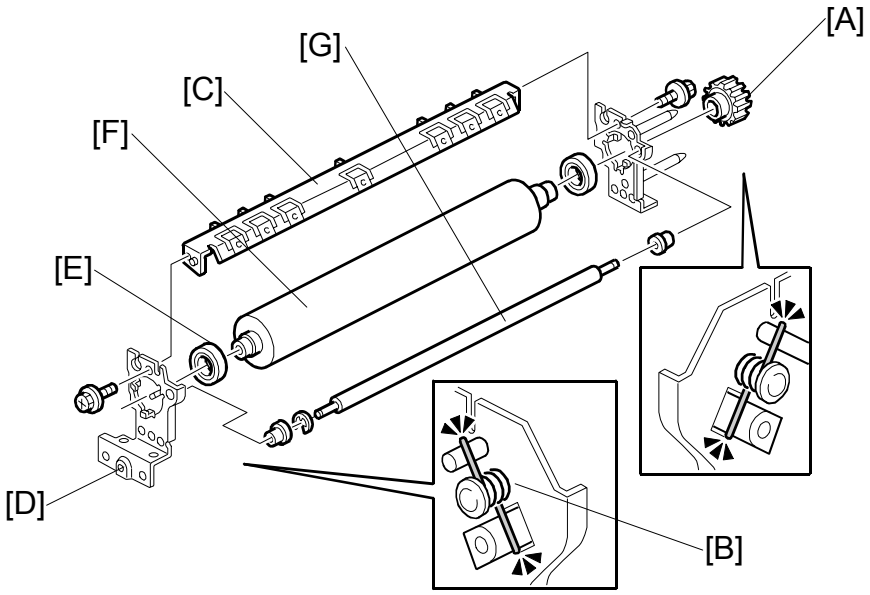
1. Put the spring [D] on the pawl.
2. Put the left end of the pawl in the square opening [E].
3. Put the front and rear ends of the pawl in the holder [F].
4. Confirm that the pawl moves correctly.

3.8.10 FUSING BELT UNIT AND PRESSURE ROLLER UNIT

1. Fusing inner unit (☛ 3.8.7)
2. Springs [A] [B]
3. Separate the fusing belt unit [C] and the pressure roller unit [D].

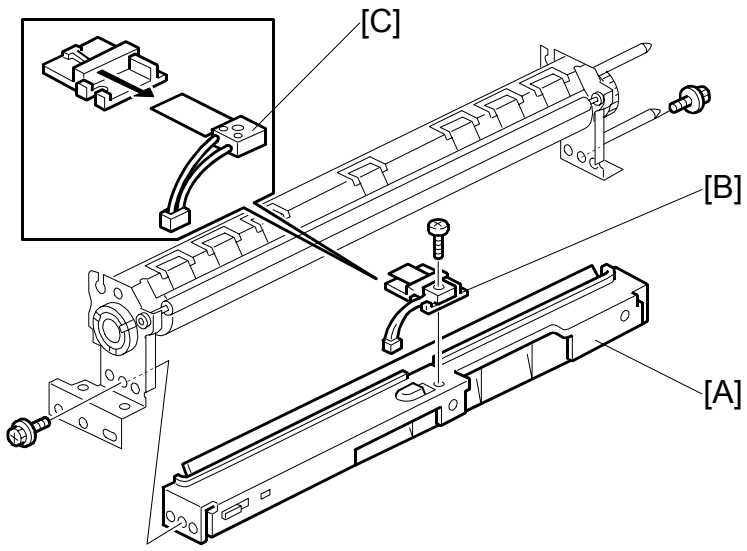


3.8.11 PRESSURE ROLLER, PRESSURE ROLLER GEAR, AND CLEANING ROLLER



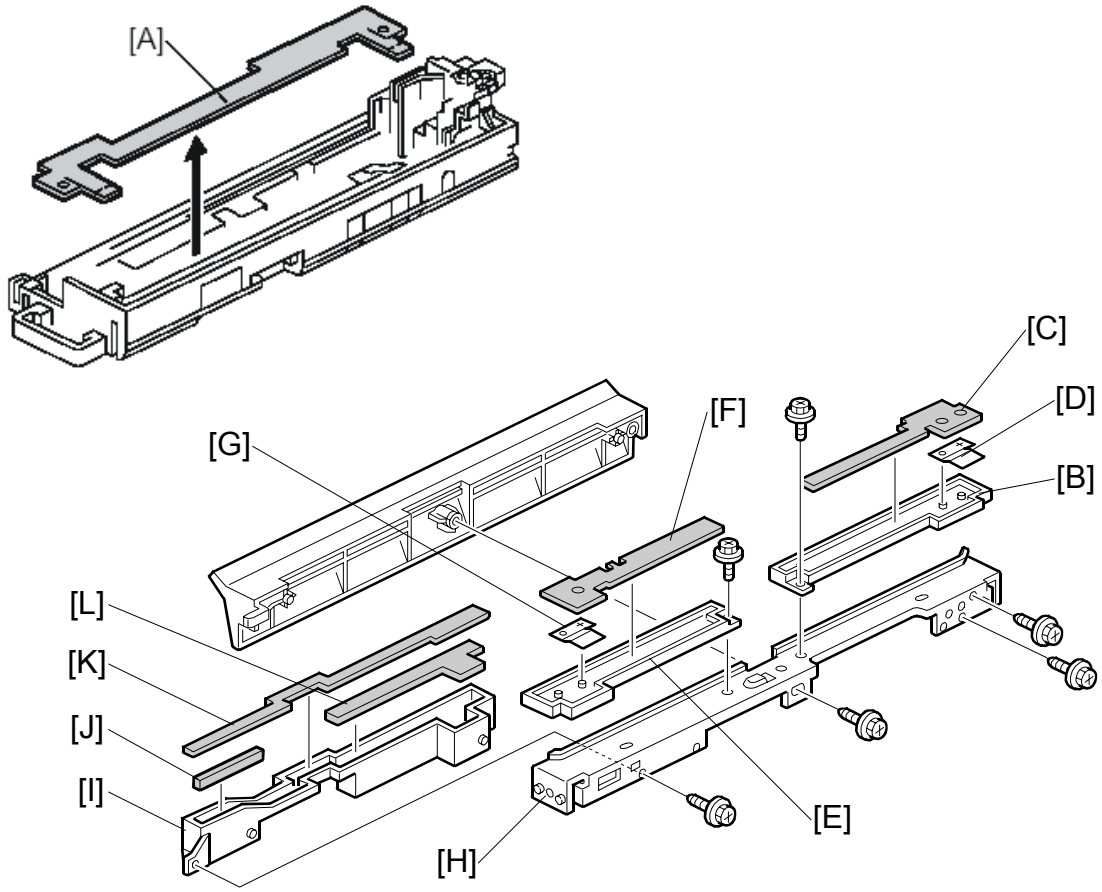
1. Pressure roller unit (☛ 3.8.10)
2. Gear [A]
3. Spring [B] (ℂ x 1)
4. Hot roller stripper assembly [C] (x 2)
5. Front bracket [D] (x 1)
6. Bearing [E]
7. Pressure roller [F]
8. Cleaning roller [G]

3.8.12 PRESSURE ROLLER THERMISTOR



1. Pressure roller unit (☛ 3.8.9)
2. Pressure roller lower stay [A] (☞ x 2)
3. Pressure roller thermistor holder [B] (☞ x 1)
4. Pressure roller thermistor [C]

3.8.13 OIL ABSORBERS



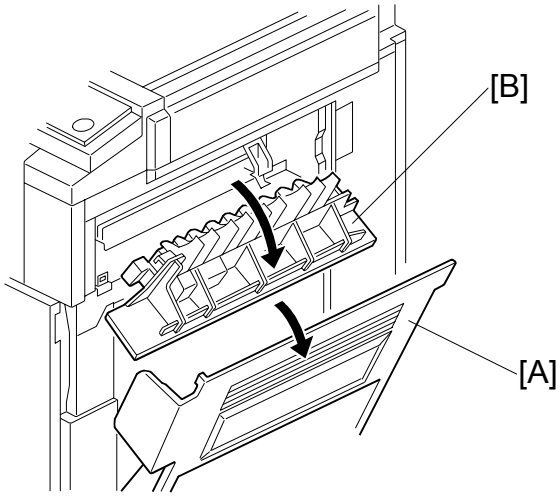
1. Fusing inner unit (☛ 3.8.7)
2. Absorber 1 [A]
3. Pressure roller unit (☛ 3.8.10)
4. Absorber holder [B] (☞ x 1)
5. Absorber 2 [C]
6. Spring [D]
7. Absorber holder [E] (☞ x 1)
8. Absorber 3 [F]
9. Spring [G]
10. Base bracket [H] (☞ x 2)
11. Absorber holder [I] (☞ x 1)
12. Absorber 4 [J]
13. Absorber 5 [K]
14. Absorber 6 [L]

3.8.14 PAPER EXIT/OVERFLOW SENSORS

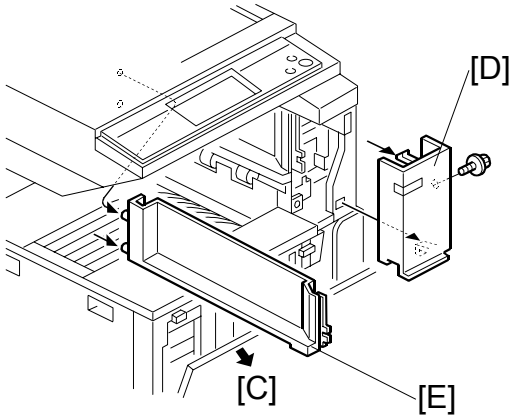
⚠CAUTION

Turn off the main switch and wait until the paper exit unit cools down before beginning any of the procedures in this section. The paper exit unit can cause serious burns.

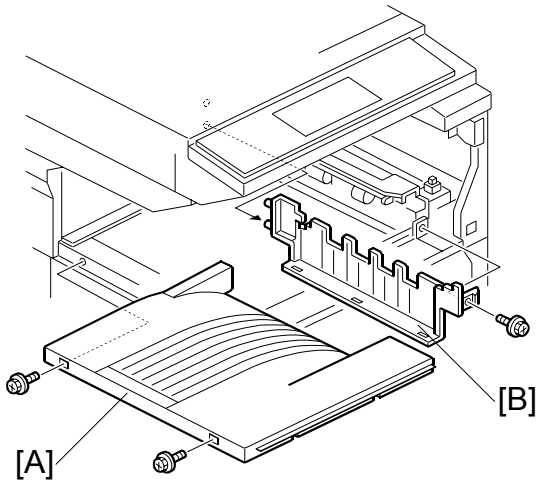
1. Open the right cover [A]
2. Upper right cover [B]



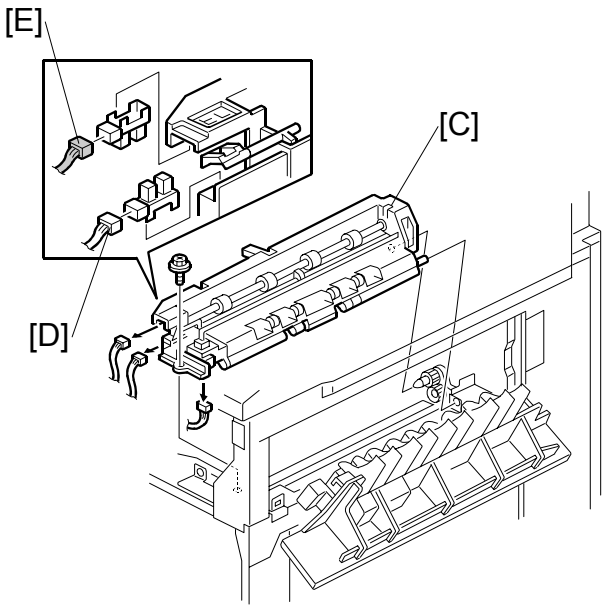
3. Open the front cover [C].
4. Upper front cover [D] (🔩 x 1)
5. Paper exit upper cover [E]



6. Paper exit tray [A] (☞ x 2)
7. Paper exit lower cover [B] (☞ x 1)



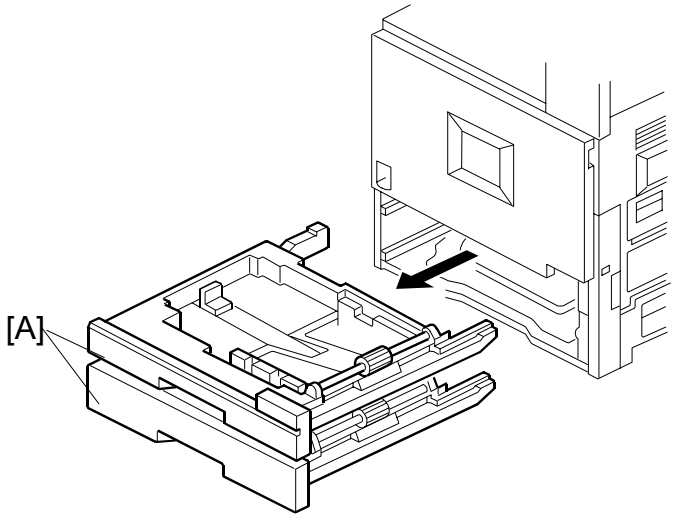
8. Paper exit unit [C] (✋ x 3, ☞ x 1)
   NOTE: Remove 2 connectors before removing the unit. To remove the last connector, remove the unit and turn it over. The connector is on the bottom.
9. Paper exit sensor [D]
10. Paper overflow sensor [E]



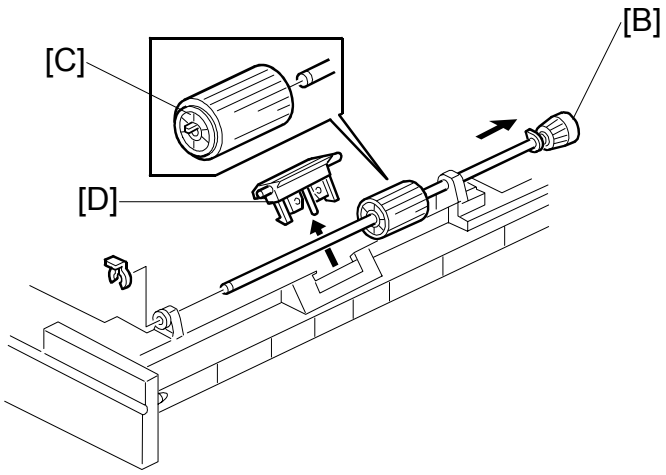
3.9 PAPER FEED AND TRANSPORT

3.9.1 FEED ROLLER AND FRICTION PAD

1. Paper trays [A]

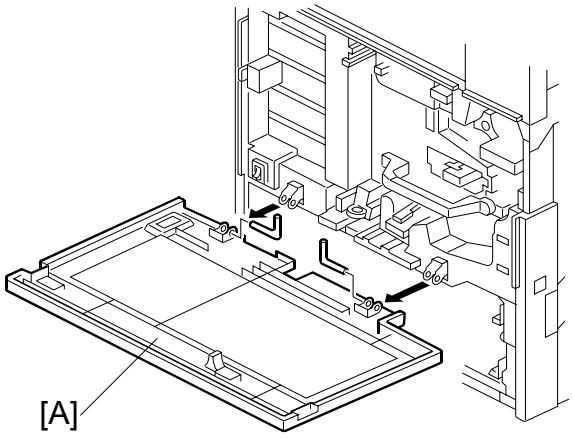


2. Slide out the shaft [B] (🔩 x 1).
3. Feed roller [C] (1 hook)
4. Friction pad [D] (2 hooks)

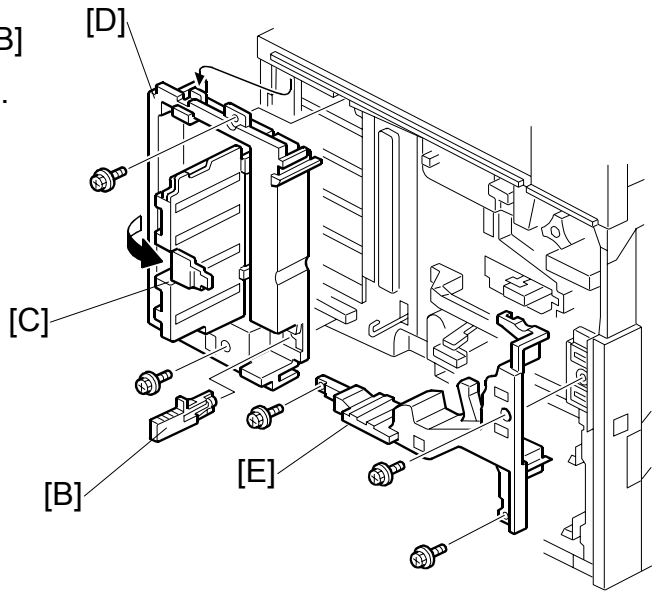


3.9.2 REGISTRATION SENSOR

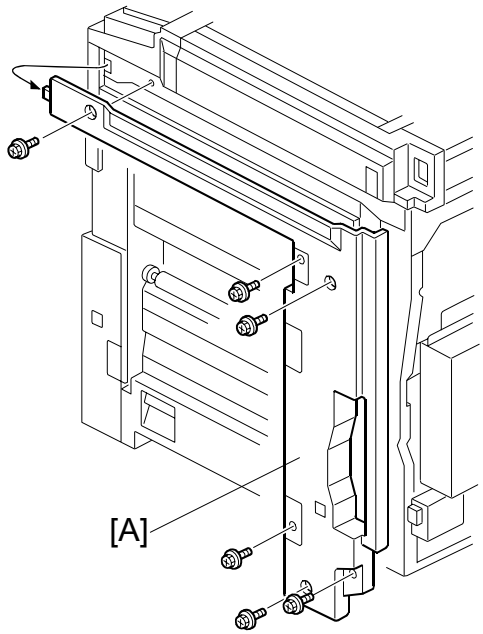
1. Front cover [A] (L-shaped pin x 2)
2. Remove the upper tray.
3. Rear cover, lower rear cover, and lower left cover (☛ 3.4.2)
4. Right cover (☛ 3.7.1)
5. Paper exit tray (☛ 3.8.14)
6. Charge corona unit (☛ 3.6.3)



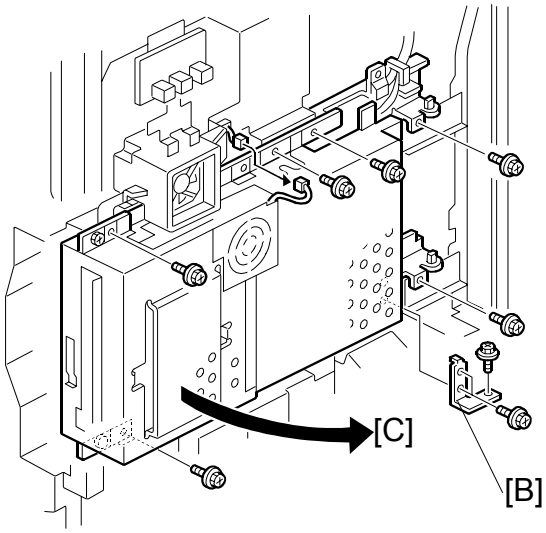
7. Dust shield glass cleaning lever [B]
8. Open the left inner cover door [C].
9. Left inner cover [D] (🔩 x 2)
10. Right inner cover [E] (🔩 x 3)
    NOTE: Pull out the PCU when removing the right inner cover.



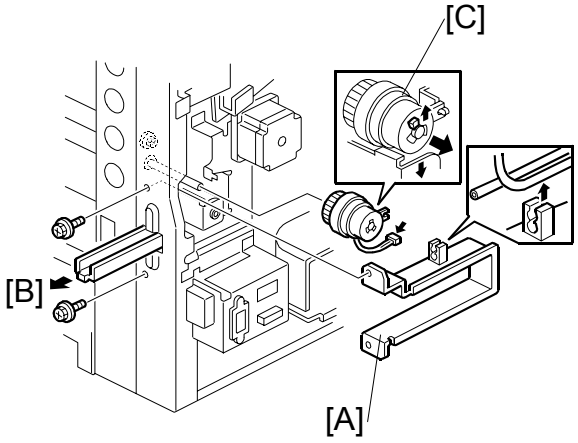
11. Rear right cover [A] (x 6)



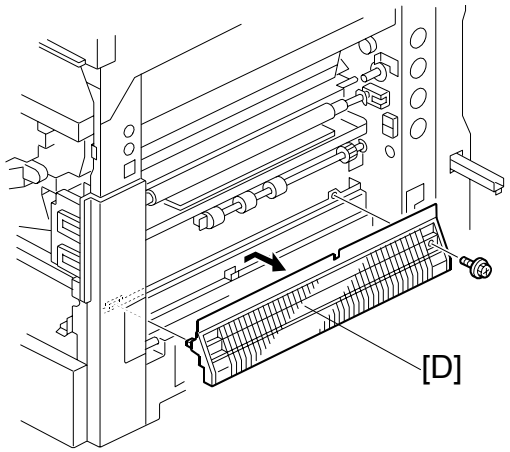
12. Bracket [B] (x 3)
13. Open the controller box [C] (x 1, x 6)



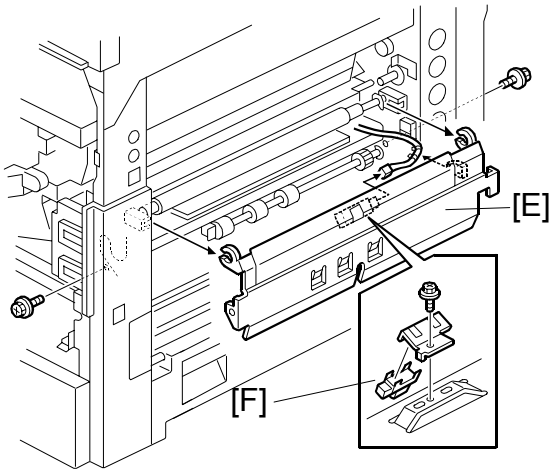
14. Handle guard [A] (☞ x 2)
15. Pull out the handle [B].
16. Loosen the two screws on the paper feed clutch bracket (☛ 3.11.6).
17. Vertical transport clutch [C] (☞ x 1)



18. Transport guide [D] (☞ x 1)

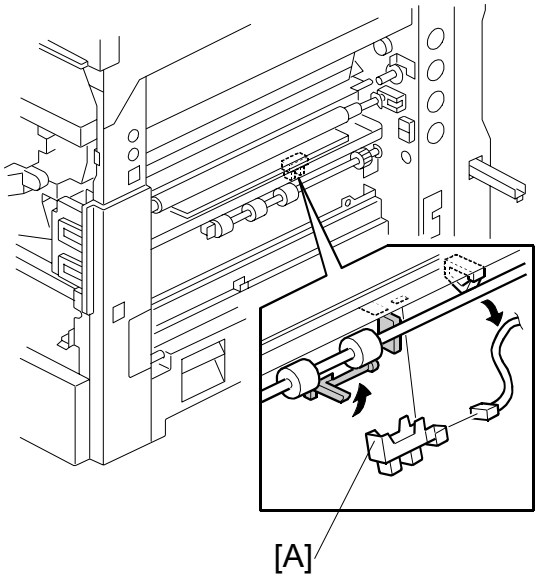


19. While releasing the wire, remove the transport stay [E] (☞ x 2).
    NOTE: You can see the wire clip from the rear of the machine.
20. Registration sensor [F] (☞ x 1, ☞ x 1)



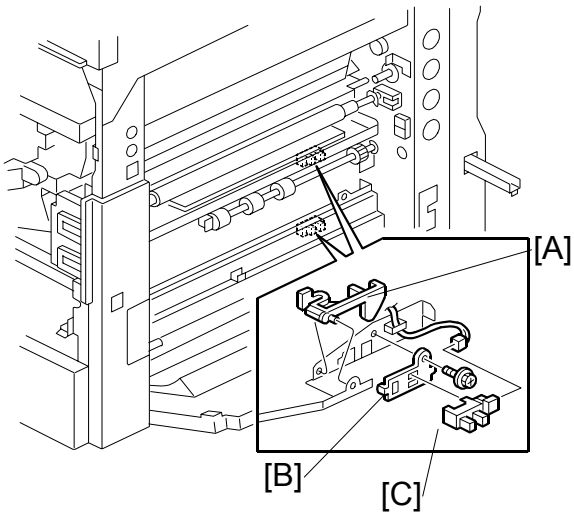
3.9.3 PAPER FEED SENSOR 1

1. Transport stay (☛ 3.9.2)
2. Paper feed sensor 1 [A] (x 1)
   NOTE: Unhook the rear two pawls first, move the feeler, and unhook the front pawl.



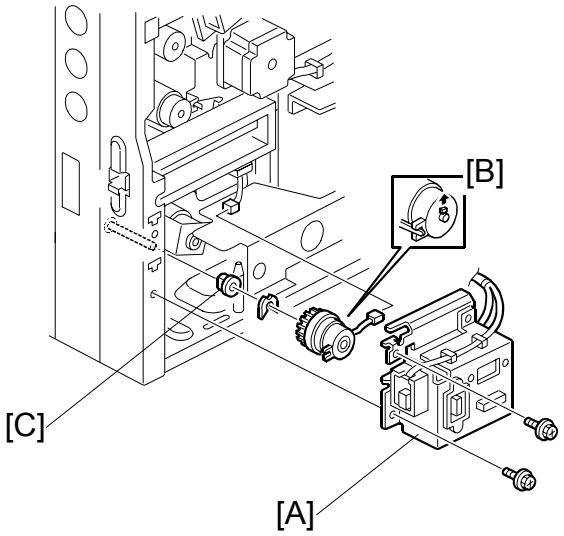
3.9.4 PAPER NEAR-END SENSORS

1. Transport stay (☛ 3.9.2)
2. Feeler [A]
3. Sensor bracket [B] (x 1)
4. Paper near-end sensor [C] (x 1 each)

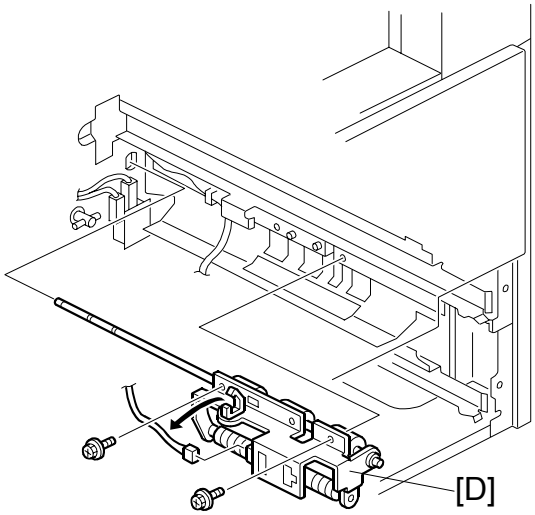


3.9.5 PAPER FEED SENSOR 2

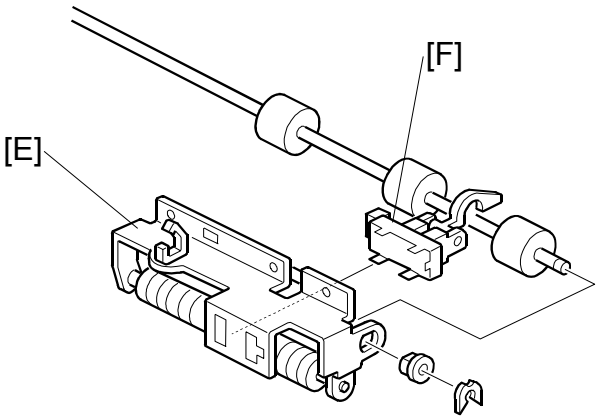
1. Controller box (☛ 3.9.2).
2. Paper trays (☛ 3.9.1)
3. Connector bracket [A] (x 2)
4. Vertical transport clutch [B] (x 1)
5. Bushing [C] (x 1)



6. Roller unit [D] (x 1, x 2)

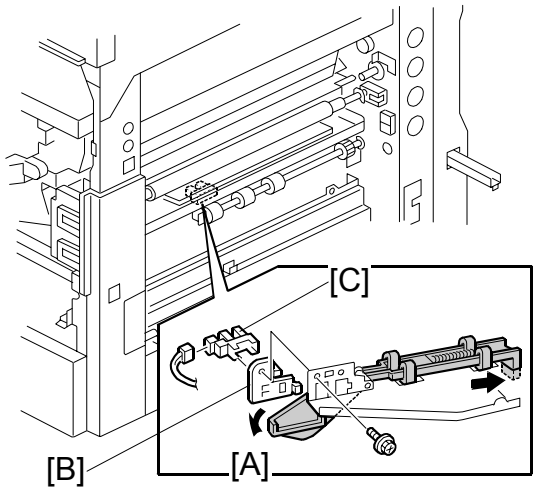


7. Roller bracket [E] (x 1, Bushing x 1)
8. Paper feed sensor 2 [F]



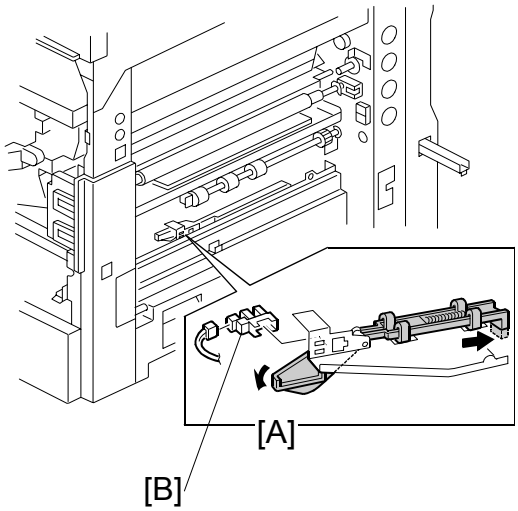
3.9.6 PAPER END SENSOR 1

1. Transport stay (☛ 3.9.2)
2. Lower the feeler [A].
3. Sensor bracket [B] (x 1)
4. Paper end sensor 1 [C] (x 1)



3.9.7 PAPER END SENSOR 2

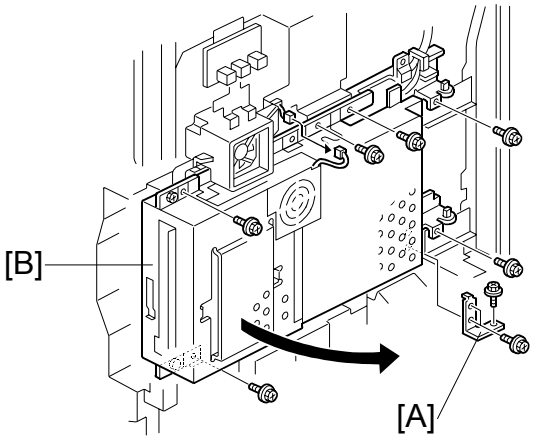
1. Transport stay (☛ 3.9.2)
2. Lower the feeler [A].
3. Paper end sensor 2 [B] (x 1)



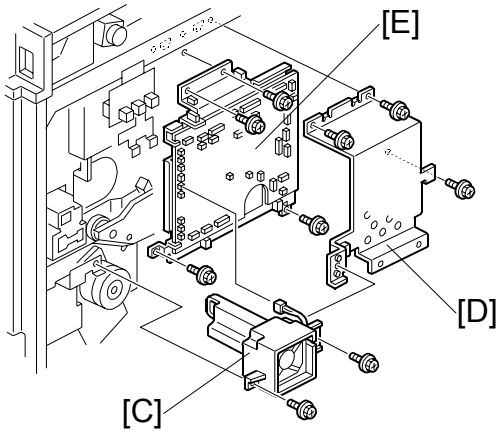
3.10 ELECTRICAL COMPONENTS

3.10.1 EXHAUST FAN AND I/O BOARD

1. Rear cover (☛ 3.4.2)
2. Bracket [A] (☞ x 3)
3. Open the controller box [B] (☞ x 6)

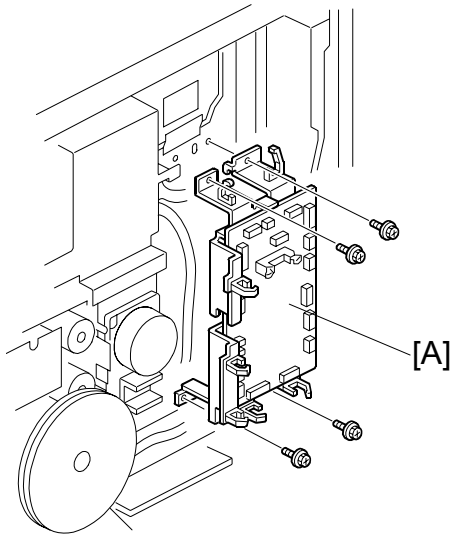


4. Exhaust fan [C] (☞ x 2)
5. I/O board cover [D] (☞ x 3)
6. I/O board [E] (☞ x 29, ☞ x 4)



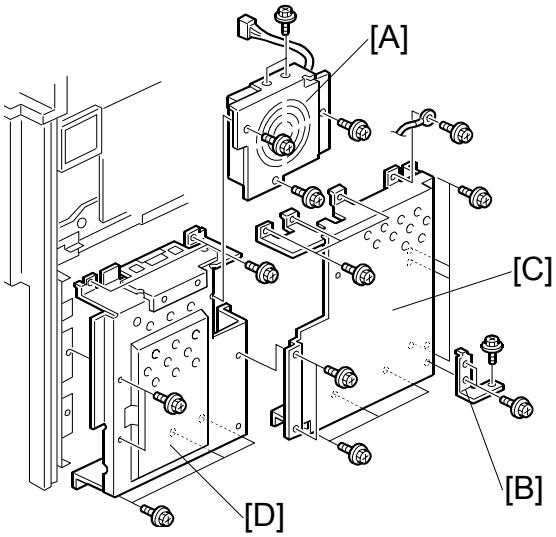
3.10.2 EX I/O BOARD

⇒ 1. Open the controller box (☛ 3.10.1)
2. Ex I/O board [A] (☞ x 14, ☞ x 4)

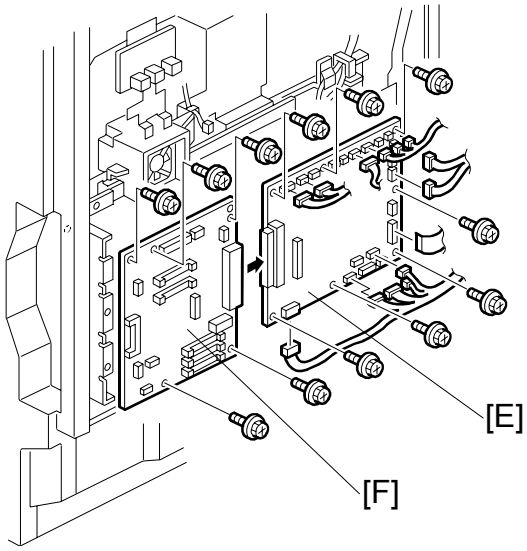


3.10.3 BICU BOARD AND CONTROLLER BOARD

1. Rear cover (☛ 3.4.2)
2. Fan [A] (✋ x 1, 🔩 x 5)
3. Bracket [B] (🔩 x 2)
4. BICU board cover [C] (🔩 x 11)
5. Option component cover [D]



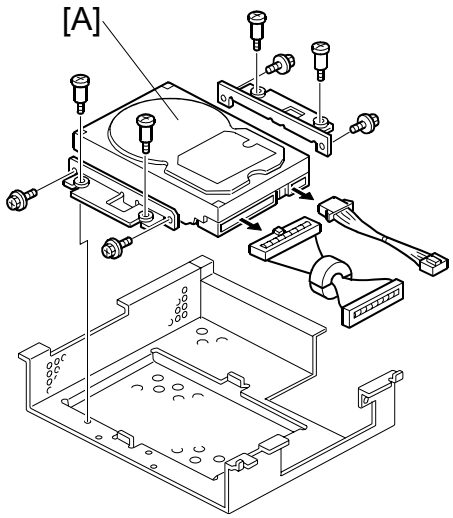
6. BICU board [E] (✋ x 15, 🔩 x 7)
   NOTE: 1) Compare the settings of the dip switches on the old board with the settings on the new board. If they are different, change the settings on the new board to make them identical.
   2) When replacing the controller board only; leave the 15 connectors connected, remove the seven screws, and disconnect the BICU board from the controller board.
7. Controller board [F] (🔩 x 6)
   NOTE: Remove the NVRAM, DIMM, and optional boards from the old controller board and install them on the new one.



3.10.4 HDD

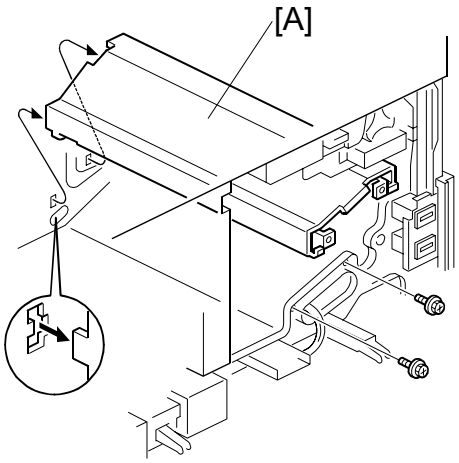
1. Optional component cover (☛ 3.10.3)
2. HDD [A] (🖐 x 2, 🔩 x 8)

After replacing the hard disk, download the preset stamp data from an IC card.

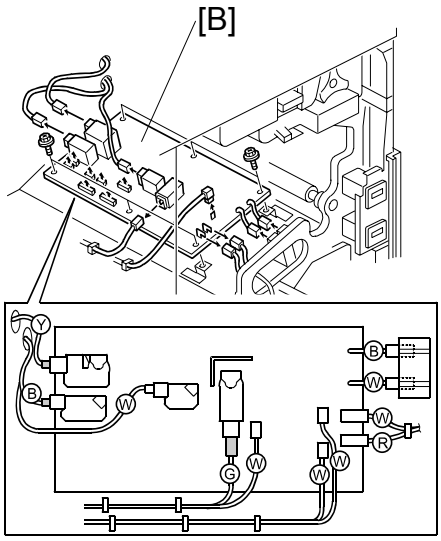


3.10.5 HIGH VOLTAGE SUPPLY BOARD

1. Photoconductor unit (☛ 3.6)
2. Right inner cover (☛ 3.9.2)
3. Photoconductor unit rail [A] (🔩 x 2)



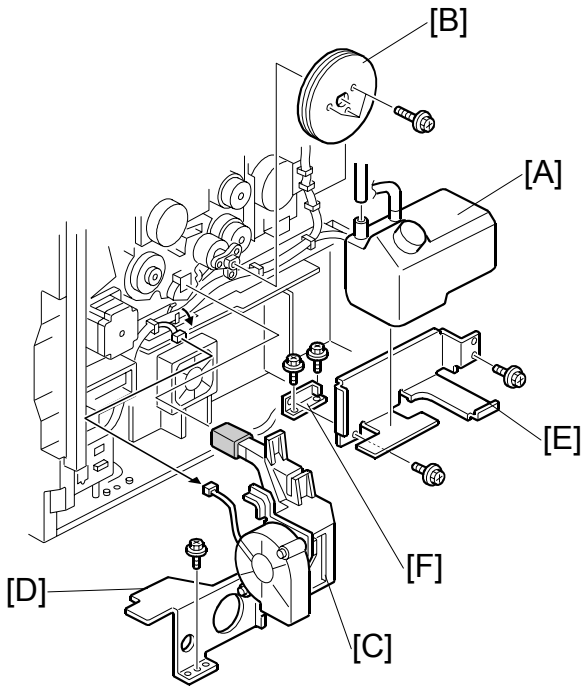
4. High voltage supply board [B] (🖐 x 17, 🔩 x 6)
   NOTE: When reassembling, check that the connectors are correctly set.



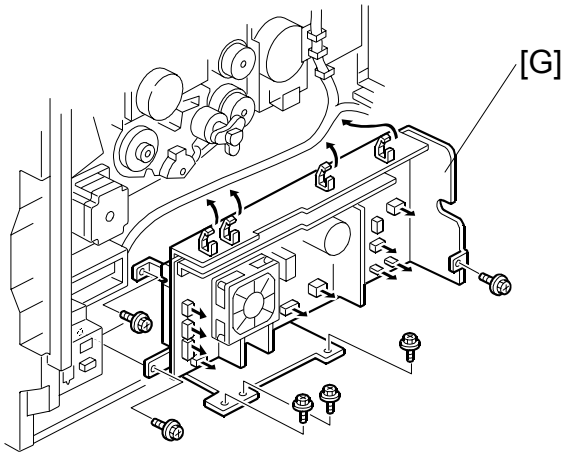
3.10.6 POWER SUPPLY UNIT

NOTE: When having removed the oil pipe from the oil tank, lift the end of the pipe and stick it to the right side of the machine with tape. See if oil does not drip from the pipe.

⇒1. Open the controller box (☛ 3.10.1).
2. Oil tank [A]
3. Flywheel [B] (x 3)
4. Duct [C] with bracket [D] (x 1, x 1)
5. Oil tank holder [E] (x 2)
6. Bracket [F] (x 2)



7. Power supply unit [G] (x 10, x 6)

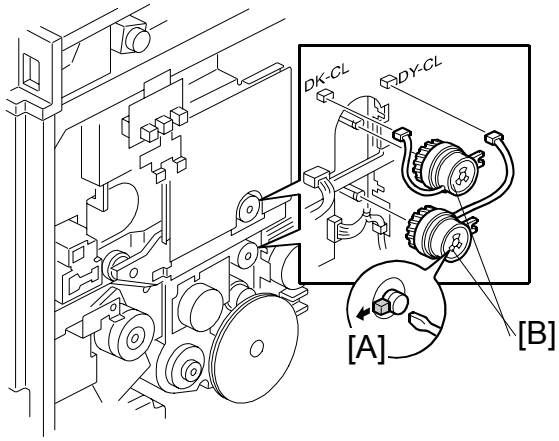


3.11 DRIVE UNITS

3.11.1 DEVELOPMENT CLUTCHES

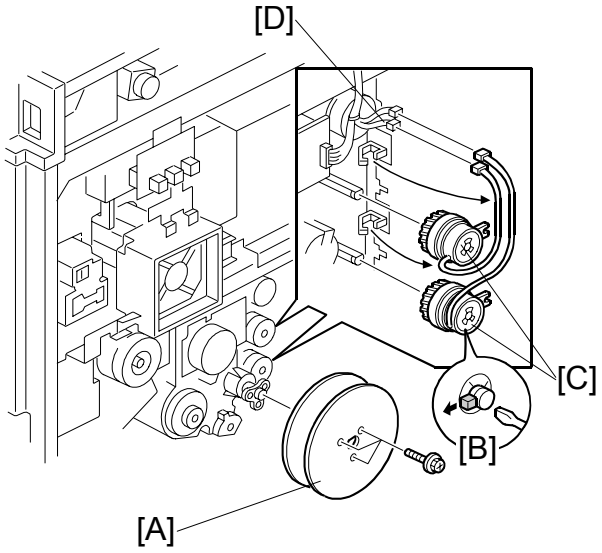
K and Y Development Units

⇒1. Open the controller box (☛ 3.10.1).
2. I/O board cover (☛ 3.10.1)
3. Unhook the locks [A] and pull out the clutches [B] (✋ x 1).
   NOTE: When reassembling, connect the black clutch connector to the DK-CL coupler and the yellow clutch connector to the DY-CL coupler.



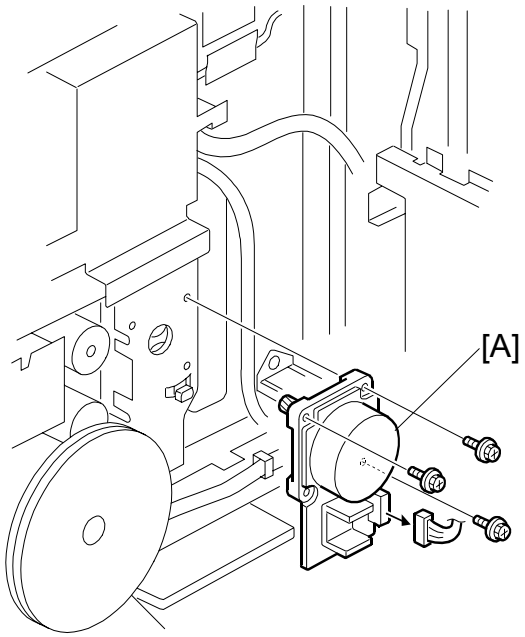
C and M Development Units

1. Flywheel [A] (🔧 x 3)
2. Unhook the locks [B] and pull out the clutches [C] (✋ x 1).
   NOTE: When reassembling, connect the cyan clutch connector to the blue coupler [D].



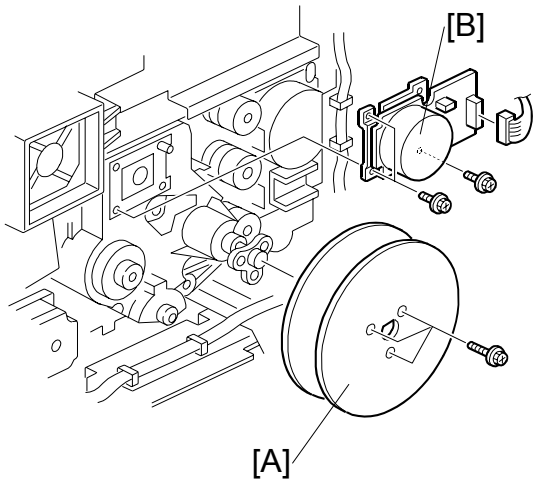
3.11.2 DEVELOPMENT MOTOR

⇒1. Open the controller box (☛ 3.10.1).
2. Remove the screws from the EX I/O board (☛ 3.10.2).
   NOTE: You need not remove the connectors.
3. Development motor [A] (x 1, x 3)



3.11.3 MAIN MOTOR

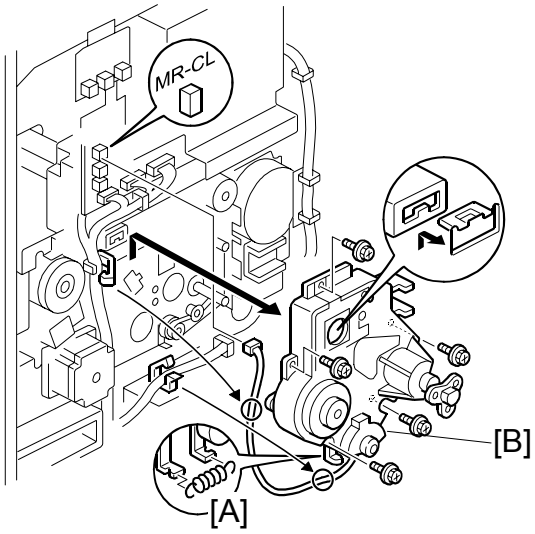
⇒1. Open the controller box (☛ 3.10.1).
2. Flywheel [A] (x 3)
3. Main motor [B] (x 1, x 3)



3.11.4 PCU GEAR BOX

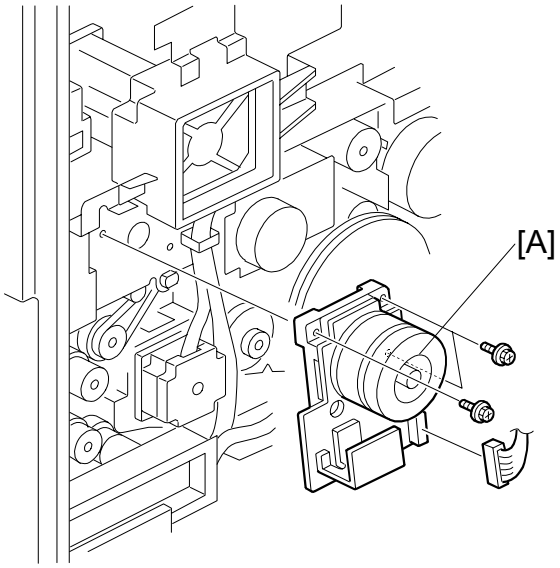
⇒ 1. Open the controller box (☛ 3.10.1).
2. Main motor (☛ 3.11.3)
3. C and M development unit clutches (☛ 3.11.1)
4. Tension spring [A]
5. PCU gear box assembly [B] (🖐 x 1, 🔩 x 5)

NOTE: When reassembling, make sure the tension spring [A] is correctly installed. The spring maintains the tension of the timing belt that transfers the drive power to the gear box.



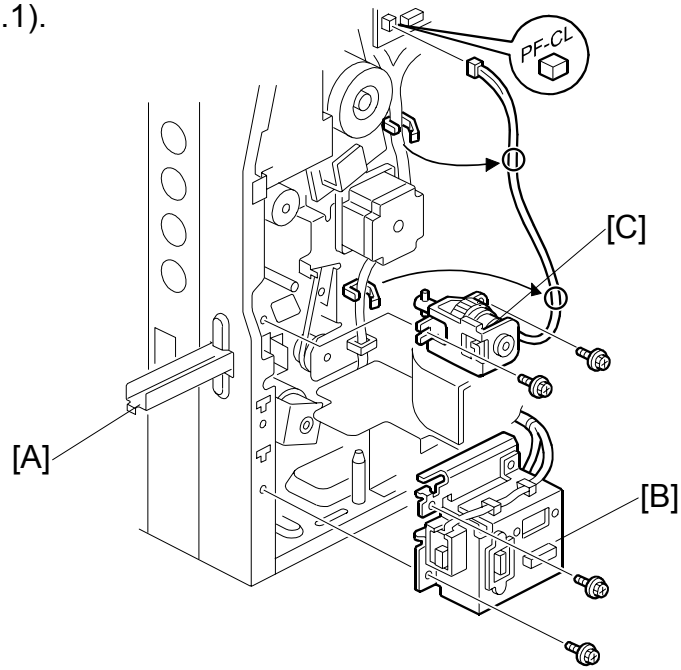
3.11.5 FUSING UNIT MOTOR

⇒ 1. Open the controller box (☛ 3.10.1).
2. Fusing unit motor [A] (🖐 x 1, 🔩 x 3)



3.11.6 PAPER FEED CLUTCH 1

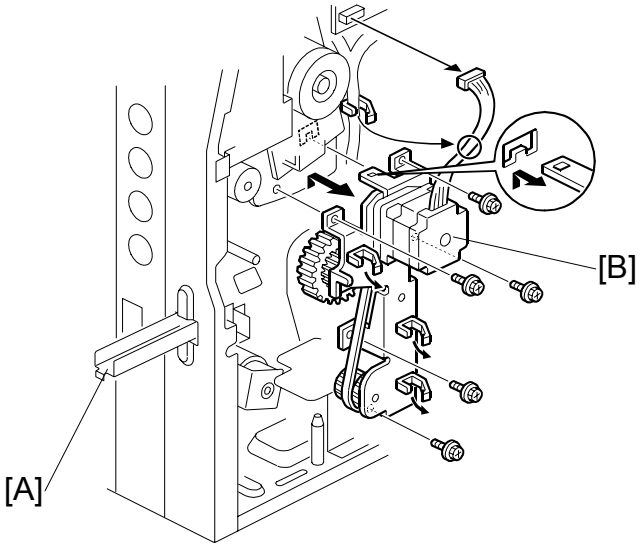
⇒ 1. Open the controller box (☛ 3.10.1).
2. Handle guard (☛ 3.9.2)
3. Pull out the handle [A].
4. Connector bracket [B] (🔩 x 2)
5. Paper feed clutch 1 [C] (🖐 x 1, 🔩 x 2)



3.11.7 PAPER FEED MOTOR

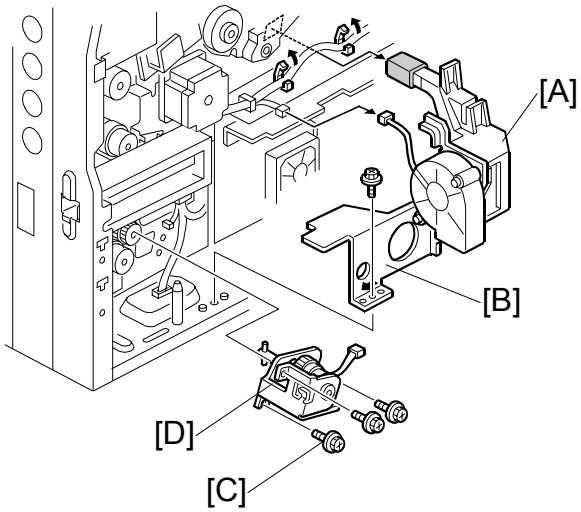
1. Rear cover (☛ 3.4.2)
⇒ 2. Open the controller box (☛ 3.10.1).
3. Handle guard (☛ 3.9.2)
4. Pull out the handle [A].
5. Connector bracket (☛ 3.11.6)
6. Paper feed motor [B] with gears (🖐 x 1, 🔩 x 5)

NOTE: When reassembling, make sure the vertical transport clutch is in position.



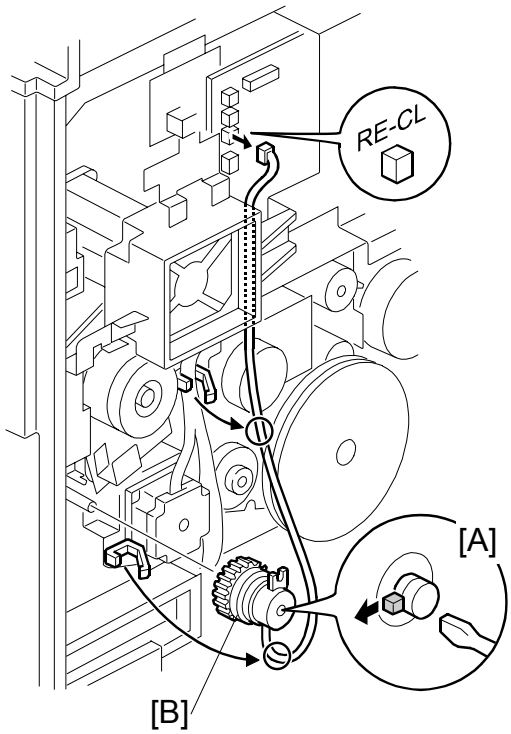
3.11.8 PAPER FEED CLUTCH 2

⇒1. Open the controller box (☛ 3.10.1).
2. Flywheel (🔩 x 3)
3. Duct [A] with bracket [B] (✋ x 1, 🔩 x 1)
4. Pull out the lower tray.
5. Loosen the lower-left screw [C] on the paper feed clutch.
6. Paper feed clutch [D] (✋ x 1, 🔩 x 2)

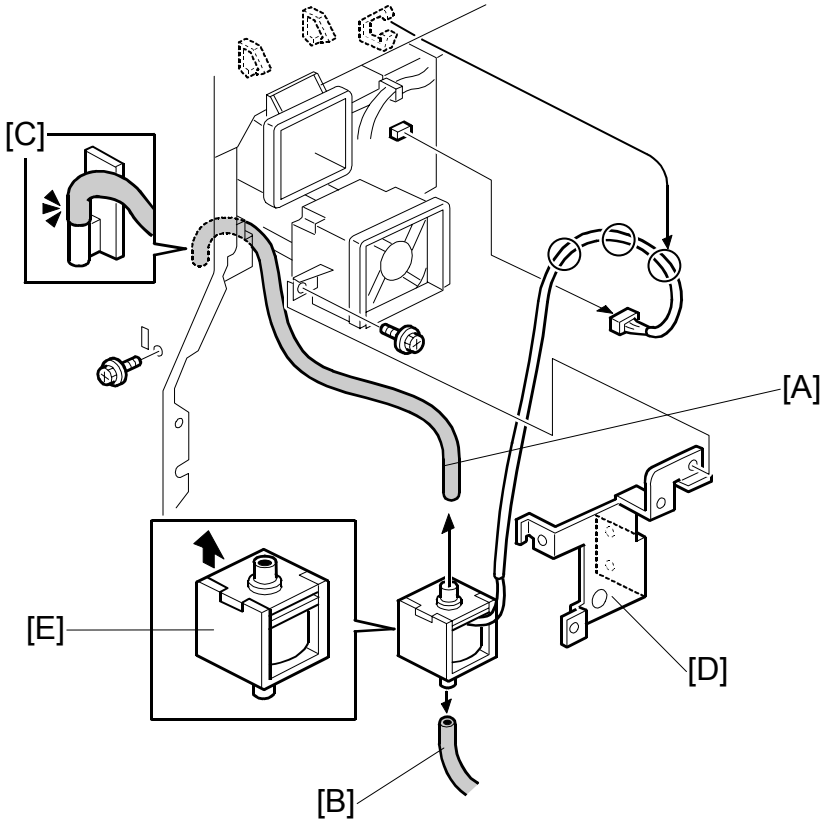


3.11.9 REGISTRATION CLUTCH

1. Loosen the screws on the paper feed clutch 1 (☛ 3.11.6).
2. Unhook the lock [A] and pull the clutch out [B] (✋ x 1).



3.11.10 OIL PUMP



⇒1. Open the control box (☛ 3.10.1)

2. Pipes [A, B]
   NOTE: 1) Keep a piece of waste cloth at hand. Oil may drip from the pipe.
   2) When reinstalling the pump, make sure to attach the upper tube correctly to the oil exit [C]. If not, oil may leak inside the machine.

3. Oil pump bracket [D] (🔩 x 3)

4. Oil pump [E] (🔩 x 2, 🖐 x 1)
   Install the correct way up. There are two tabs at the top of the pump.

3.12 COPY ADJUSTMENT

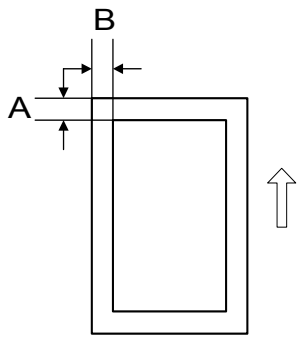
3.12.1 PRINTING

NOTE: 1) Make sure the paper is installed correctly in each paper tray before you start these adjustments.
2) Use the Trimming Area Pattern (SP5-955-1, No.11) to print the test pattern for the following procedures.
3) Set SP 5-955-1 to 0 again after completing these printing adjustments.

Registration - Leading Edge/Side-to-Side

1. Check the leading edge registration for each paper feed station, and adjust them using SP1-001.
2. Check the side-to-side registration for each paper feed station, and adjust them using SP1-002.

Tray	SP mode	Specification
Any paper tray	SP1-001-1	3 ± 2 mm
By-pass feed	SP1-001-9	
Duplex	SP1-001-12	
1st paper tray	SP1-002-2	2 ± 1.5 mm
2nd paper tray	SP1-002-3	
3rd paper tray (optional paper tray 1), or LCT	SP1-002-4	
4th paper tray (optional paper tray 2)	SP1-002-5	
By-pass feed	SP1-002-1	
Duplex, side 2	SP1-002-6	



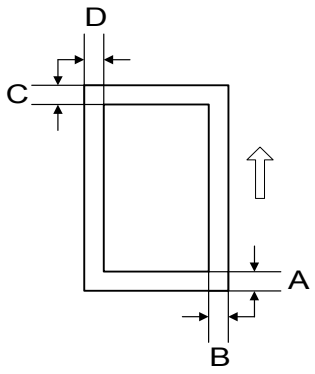
A: Leading Edge Registration
B: Side-to-side Registration

Blank Margin

NOTE: If the leading edge/side-to-side registration cannot be adjusted within the specifications, adjust the leading/back side edge trim margin.

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

	SP mode	Specification
Trailing edge	SP2-101-4	3 ± 2 mm
Front edge	SP2-101-1	2 +2.5/-1.5 mm
Leading edge	SP2-101-3	3 ± 2 mm
Back edge	SP2-101-2	2 ± 1.5 mm



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

Main Scan Magnification

1. Print the single-dot grid pattern (SP5-955-1, No.5).
2. Check the magnification, and adjust the magnification using SP2-100-1 if necessary. The specification is ±1%.

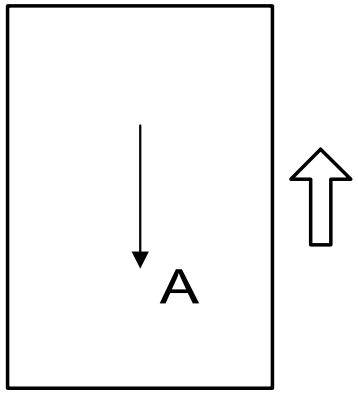
3.12.2 SCANNING

Before doing the following scanner adjustments, perform or check the printing registration/side-to-side adjustment and the blank margin adjustment.

NOTE: Use a C4 test chart to perform the following adjustments.

Scanner Sub-Scan Magnification

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. Use SP4-008 to adjust if necessary.
   Standard: ±1.0%.

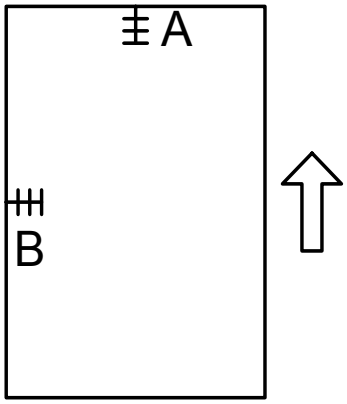


A: Sub-scan magnification

Scanner Leading Edge and Side-to-Side Registration

1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust them with the following SP modes if necessary. Standard: 0 ± 2 mm.

	SP mode
Sub-scan	SP4-010
Main-scan	SP4-011



Main Scan Dot Position Correction

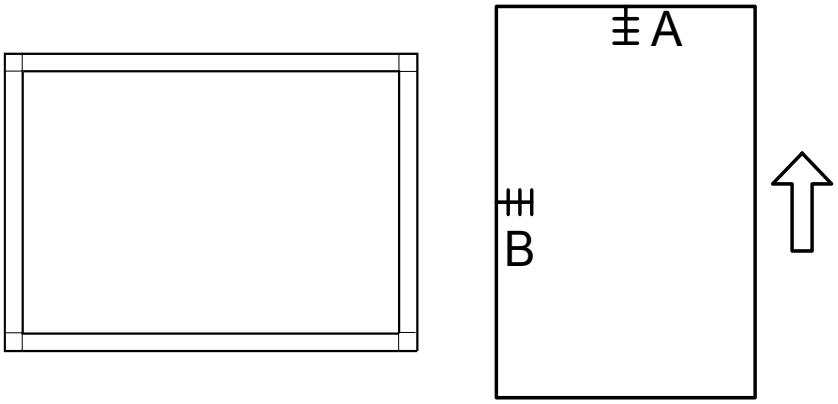
NOTE: Before adjusting the scanner, adjust the printer registration.

1. Enter the Copy SP mode and open SP4-932.
2. Check that each value corresponds to the factory-set value.
3. Touch the *COPY Window* key and copy the C-4 chart in the full-color photo mode.
   NOTE: Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode.
4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the *SP Mode* to return to the SP mode. Adjust the SP settings until the output is acceptable.

SP4-932-1	Picture element correction red left edge
SP4-932-2	Picture element correction red right edge
SP4-932-3	Picture element correction blue left edge
SP4-932-4	Picture element correction blue right edge

3.12.3 ARDF IMAGE ADJUSTMENT

ARDF Side-to-Side and Leading Edge Registration



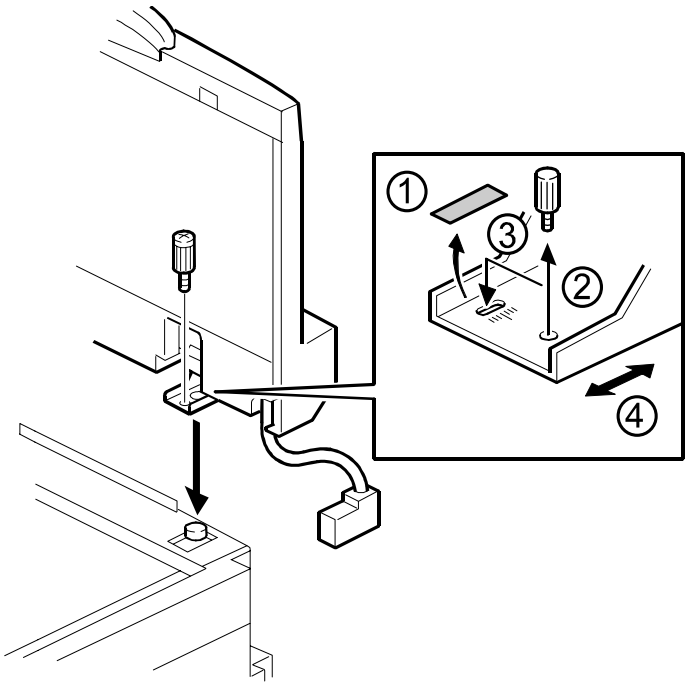
A: Sub-registration
B: Main registration

Make a temporary test chart as shown above using A3/DLT paper.

1. Place the temporary test chart on the ARDF and make a copy from one of the feed stations.
2. Check the registration, and adjust using the following SP modes if necessary.

SP Code	What It Does	Adjustment Range
SP6-006-1	Main Scan Registration	± 10 mm
SP6-006-2	Sub-Scan Registration (Simplex)	± 10 mm
SP6-006-4	Main Scan Registration (Duplex)	± 10 mm

ARDF Skew Adjustment



When making a copy using the ADF and the image is skewed, do the following to fix the skewed image.

NOTE: Before doing the following step, make sure to confirm whether or not the copy images made in platen mode and test patterns are not skewed.

1. Peel off the black tape on the right hinge of the ADF.
2. Loosen the screw that secures the left hinge.
3. Change the position of the screw that secures the right hinge to the long hole.
   NOTE: Do not tighten the screw at this moment.
4. Move the right hinge position to correct the skewed image.
5. Tighten both screws and check the copy image.
6. If it is not fixed, repeat steps 2 to 5.

3.13 COLOR ADJUSTMENT

3.13.1 AUTO COLOR CALIBRATION (ACC)

The machine automatically calibrates the printer gamma curve. the ACC Test Pattern is printed by the UP mode. The machine scans the test pattern and corrects the printer gamma by comparing the ideal setting with the current image density.

The ACC should be performed any time when the customer is not satisfied with the image quality.

The previous settings of the ACC can be loaded with SP5-610-6.

3.13.2 PRINTER GAMMA CORRECTION

NOTE: Normally, the ACC is enough to adjust the color balance to achieve the optimum print output. The printer gamma correction is only required for fine-tuning to meet user requirements.

The printer gamma curve created during ACC can be modified using SP modes. The SP value will be applied to the gamma curve created during ACC.

The gamma data for highlight, middle, shadow areas, and IDmax can be adjusted. The adjustable range is from 0 to 30 (31 steps).

Copy Mode

KCMY Color Balance Adjustment

Adjust only the “Offset” values.

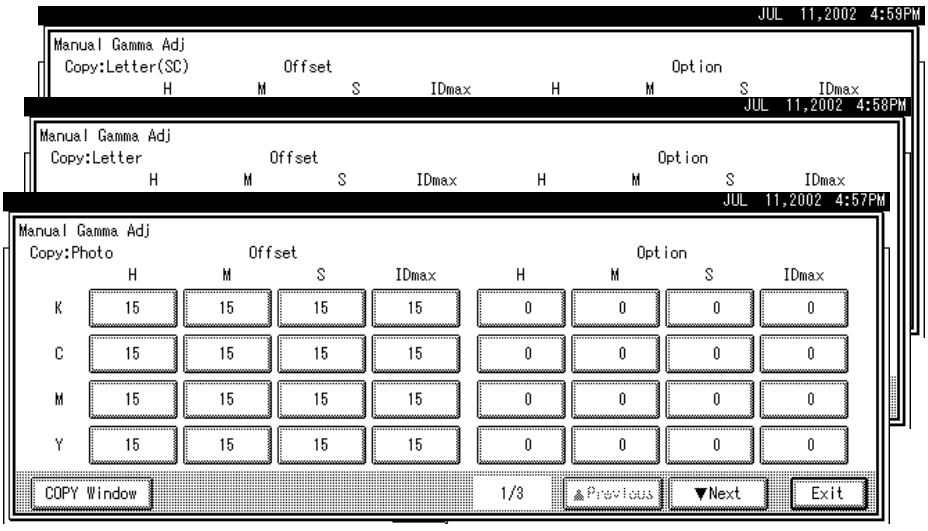
NOTE: Never change the “Option” values (default values are 0).

Highlight (Low ID)	Levels 2 through 5 in the C4 chart 10-level scale
Middle (Middle ID)	Levels 3 through 7 in the C4 chart 10-level scale
Shadow (High ID)	Levels 6 through 9 in the C4 chart 10-level scale
ID max	Level 10 in the C4 chart 10-level scale (affects the entire image density.)
Offset	The higher the number in the range associated with the low ID, middle ID, high ID, and ID max, the greater the density.

There are four adjustable modes:

- Text (Letter) mode: full colour
- Photo mode: full colour
- Text (Letter) mode: single color (SC)
- Photo mode: single color (SC)

SP 4-918 screen: The screen with SC on it is for single colour mode settings. The other two screens are for full colour mode settings.

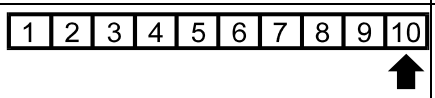
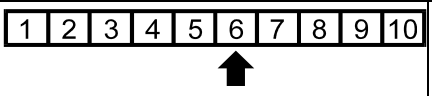
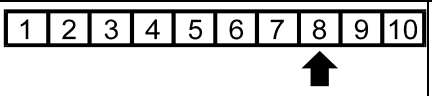
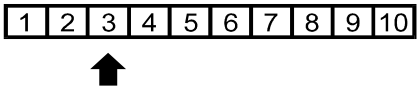
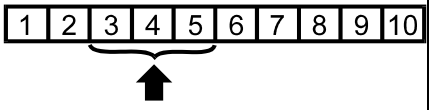


Adjustment Procedure

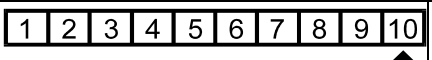
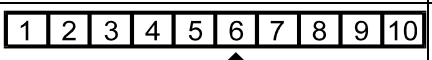
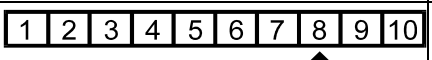
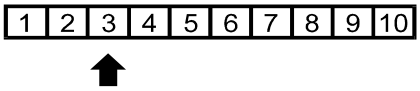
1. Copy the C-4 chart in mode that you are going to adjust.
2. Enter the SP mode.
3. Select “Copy SP”.
4. Enter SP4-918 and select the screen that you are going to adjust.
5. Adjust the offset values until the copy quality conforms to the standard (☛ the tables below).

NOTE: 1) Never change an “Option” value (default value is 0).
2) Adjust the density in order from “ID Max”, “Middle (M)”, “Shadow (S)”, and then “Highlight (H)”.

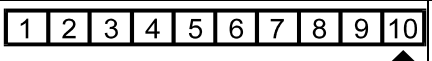
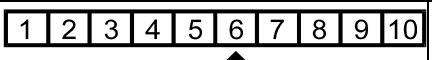
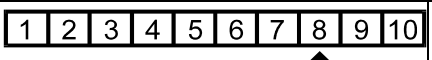
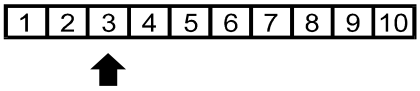
- Photo Mode, Full Colour -

Step	Item to Adjust	Level on the C-4 chart	Adjustment Standard
1	ID max: (K, C, M, and Y)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K, C, M, and Y)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.
5	K Highlight (Low ID) (C,M, and Y) <on the full color copy>		Adjust the offset value so that the color balance of black scale levels 3 through 5 in the copy is seen as gray (no C, M, or Y should be visible). If the black scale contains C, M, or Y, redo step 1 to 4.

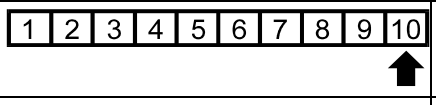
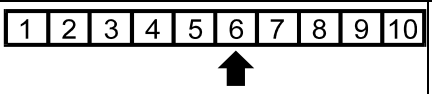
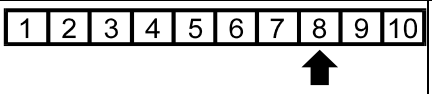
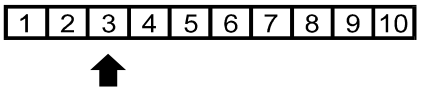
- Photo Mode, Single Colour -

Step	Item to Adjust	Level on the C-4 chart	Adjustment Standard
1	ID max: (K)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.

- Text (Letter) Mode, Full Colour -

Step	Item to Adjust	Level on the C-4 chart (K)	Adjustment Standard
1	ID max: (K, C, M, and Y)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K, C, M, and Y)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.

- Text (Letter) Mode, Single Colour -

Step	Item to Adjust	Level on the C-4 chart (K)	Adjustment Standard
1	ID max: (K)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter that of level 3 on the C-4 chart.

NOTE: After adjusting 'shadow' as explained above, text parts of the test pattern may not be printed clearly. If this happens, check whether the 5 line/mm pattern at each corner is printed clearly. If it is not, adjust the offset value of 'shadow' again until it is.

Printer Mode

There are five adjustable modes selected by printer SP1-102:

- 1800 x 1200 photo mode
- 1800 x 600 text mode
- 1800 x 600 graph mode
- 600 x 600 photo mode
- 600 x 600 text mode

	K	C	M	Y
Highlight	SP1-104-1	SP1-104-21	SP1-104-41	SP1-104-61
Middle	SP1-104-2	SP1-104-22	SP1-104-42	SP1-104-62
Shadow	SP1-104-3	SP1-104-23	SP1-104-43	SP1-104-63
IDmax	SP1-104-4	SP1-104-24	SP1-104-44	SP1-104-64

Adjustment Procedure

1. Do ACC for the printer mode.
2. Turn the main power off and on.
3. Enter SP mode.
4. Select “Printer SP”.
5. Select SP1-102 and select the print mode that you are going to adjust.
6. To review the image quality for these settings, choose SP1-103-1 to print out a tone control test sheet.
7. Adjust the color density with SP1-104 as shown below comparing the tone control test sheet with the C4 test chart.
   NOTE: Adjust the density in order from “ID Max”, “Shadow”, “Middle”, and then “Highlight”.
8. Save the adjusted settings with SP1-105.

Adjustment Reference For Gamma Correction

The following tables show the adjustment reference for gamma correction. The tables show the level of the color scale on the C4 test chart and on the tone control test sheet printed in the printer SP mode.

For example, for K at text mode, grade 12 on the tone control test sheet should be the same as grade 7 on the C4 chart.

Normally, it is not necessary to adjust the gamma data as shown in the table since ACC adjusts the gamma curve automatically. The fine-tuning of color balance by gamma data adjustment will be required only when the result from ACC and Color Calibration does not meet the customer's requirements.

K	**C4 test chart**		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Test sheet	**Text**	-	1	2	5	6	9	12	13	16	-
		Photo/Graph	-	1	2	5	6	9	11	13	16	-

C	**C4 test chart**		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Test sheet	**Text**	-	1	2	3	4	7	9	10	12/ 13	15
		Photo/Graph	-	1	2	3	5	8	9	11	12	14

M	**C4 test chart**		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Test sheet	**Text**	-	1	2	4	5	7	10	12	16	-
		Photo/Graph	-	1	2	5	6	9	11	13	16	-

Y	**C4 test chart**		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	Test sheet	**Text**	-	1	3	6	8	10	12/ 13	16	-	-
		Photo/Graph	-	1	4	7	8	10	13	16	-	-

3.14 SCANNER WHITE LEVEL ADJUSTMENT

Check the scanner white level after the left scale (with the white reference plate), scanner lamp, 1st or 2nd scanner (carriage), or the lens block assembly is replaced. If the white level is not correct, adjust the level.

White Level Check

1. Load the following paper (referred to as “standard paper” in this section) into the paper tray.
   - Hammermill Copy Plus, 20 lbs. (North America)
   - Ricoh Copy paper for Aficio Color, 100 g (Europe)
2. Print out the ACC test pattern (User Tools – Maintenance – ACC).
3. Put the ACC test pattern on the exposure glass.
4. Stack 250 sheets or more of the standard paper on the ACC test pattern.
5. Scan the ACC pattern.
6. Remove the stack of the standard paper and the ACC test pattern from the exposure glass.
7. Put Color Chart C-4 on the exposure glass.
8. Activate the full color, text/photo mode.
9. Copy Color Chart C-4.
10. Check whether any of the coloured patches in column 2 (in the gradation pattern area right below the caption “COLOR CHART C-4”) are printed. Also, check that yellow patch 10 does not contain any other colours.
11. If any of the patches in column 2 is printed, or if yellow patch 10 contains other colours, adjust the white level (☛ White Level Adjustment). If not, adjustment is not required.

White Level Adjustment

1. Perform as instructed in “White Level Check”.
2. Activate the SP mode.
3. Select SP5-990-002 and print out the SP mode data list.
4. Select SP4-902-002 (G_DATA1) and read the value.
5. Compare the value with the values in table 1 (when Hammermill Copy Plus is used) or 2 (when Ricoh Copy paper for Aficio Color is used).
6. Increase or decrease the values in SP4-685-1, 686-1, and 687-1 if necessary.
7. Check the white level as instructed in “White Level Check”.

NOTE: The machine may have some other trouble when this adjustment causes abnormal outputs or when this adjustment is not effective.

Table 1: Hammermill Copy Plus, 20 lbs. (North America)

SP4-902-2 (G_DATA1)	SP4-685-001 (Reference Adjustment: R)	SP4-686-001 (Reference Adjustment: G)	SP4-687-001 (Reference Adjustment: B)	Necessary adjustment
255	+17	+13	+17	Increase the values in SP4-685-1, 686-1, and 687-1.
254	+15	+12	+16	
253	+14	+11	+15	
252	+13	+10	+13	
251	+12	+9	+12	
250	+10	+8	+11	
249	+9	+7	+9	
248	+8	+6	+8	
247 : : 237	±0	±0	±0	No adjustment is required.
236	-8	-6	-8	Decrease the values in SP4-685-1, 686-1, and 687-1.
235	-10	-7	-10	
234	-11	-8	-11	
233	-13	-10	-13	
232	-14	-11	-14	
231	-15	-12	-16	
230	-17	-13	-17	
229	-18	-14	-19	
228	-20	-15	-20	
227	-21	-16	-22	
226	-23	-17	-23	
225	-24	-19	-25	
224	-26	-20	-27	
223	-28	-21	-28	
222	-29	-22	-30	
221	-31	-23	-31	
220	-32	-24	-33	
219	-34	-26	-35	
218	-35	-27	-36	
217	-37	-28	-38	
216	-39	-29	-40	
215	-40	-30	-41	

Example 1: When the value in SP4-902-2 is “255”, add 17 to the value in SP4-685-001, 13 to the value in SP4-686-001, and 17 to the value in SP4-687-001.

Example 2: When the value in SP4-902-2 is “247”, do not change any values in SP4-685-001, SP4-686-001, and SP4-687-001.

Example 3: When the value in SP4-902-2 is “236”, subtract 8 from the value in SP4-685-001, 6 from the value in SP4-686-001, and 8 from the value in SP4-687-001.

Table 2: Ricoh Copy paper for Aficio Color, 100 g (Europe)

SP4-902-2 (G_DATA1)	SP4-685-001 (Reference Adjustment: R)	SP4-686-001 (Reference Adjustment: G)	SP4-687-001 (Reference Adjustment: B)	Remarks
255	+23	+18	+23	Increase the values in SP4-685-1, 686-1, and 687-1.
254	+22	+17	+21	
253	+21	+16	+20	
252	+20	+15	+19	
251	+19	+14	+18	
250	+17	+13	+17	
249	+16	+12	+15	
248	+15	+11	+14	
247	+13	+10	+13	
246	+12	+9	+12	
245	+11	+8	+11	
244	+10	+7	+9	
243	+8	+6	+8	
242 : : 232	±0	±0	±0	No adjustment is required.
231	-9	-7	-8	Decrease the values in SP4-685-1, 686-1, and 687-1.
230	-10	-8	-10	
229	-12	-9	-11	
228	-13	-10	-13	
227	-15	-11	-14	
226	-16	-12	-16	
225	-18	-13	-17	
224	-19	-14	-19	
223	-21	-16	-20	
222	-22	-17	-22	
221	-24	-18	-23	
220	-25	-19	-25	
219	-27	-20	-26	
218	-29	-22	-28	
217	-30	-23	-30	
216	-32	-24	-31	
215	-34	-25	-33	

Example 1: When the value in SP4-902-2 is “255”, add 23 to the value in SP4-685-001, 18 to the value in SP4-686-001, and 23 to the value in SP4-687-001.

Example 2: When the value in SP4-902-2 is “242”, do not change any values in SP4-685-001, SP4-686-001, and SP4-687-001.

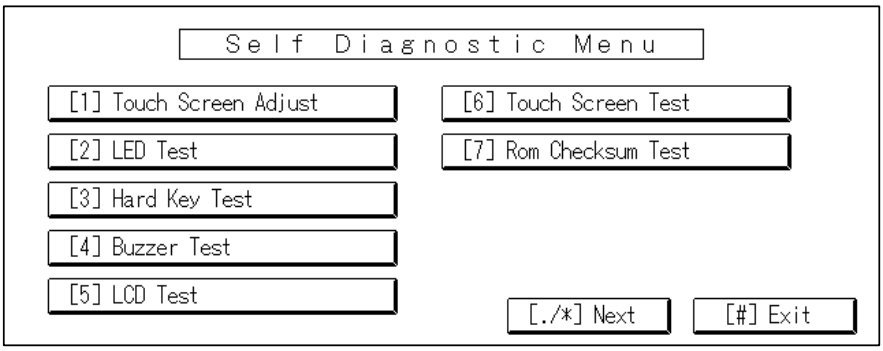
Example 3: When the value in SP4-902-2 is “231”, subtract 9 from the value in SP4-685-001, 7 from the value in SP4-686-001, and 8 from the value in SP4-687-001.

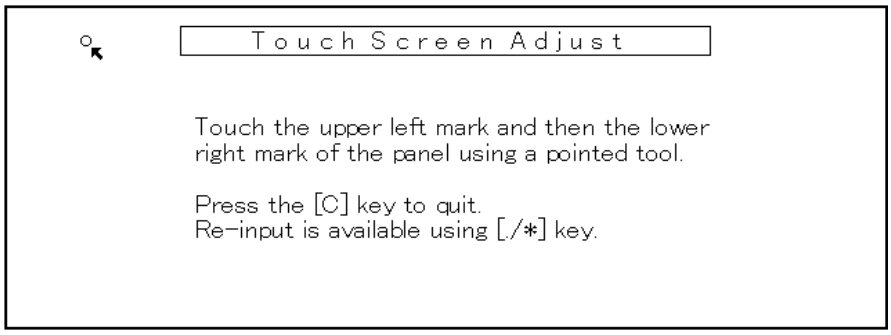
3.15 TOUCH SCREEN CALIBRATION

After clearing the memory, or if the touch screen detection function is not working correctly, follow this procedure to calibrate the touch screen.

NOTE: Do not attempt to use items [2] to [9] on the Self-Diagnostic Menu. These items are for design use only.

1. Press [⚙], press (1)(9)(9)(3), and then press (C/©) 5 times to open the Self-Diagnostics menu.





2. On the touch screen press “Touch Screen Adjust” (or press (1)).
3. Use a pointed (not sharp!) tool to press the upper left mark ⌜.
4. Press the lower right mark ⌟ after it appears.
5. Touch a few spots on the touch screen to confirm that the marker (+) appears exactly where the screen is touched.

   If the + mark does not appear where the screen is touched, press Cancel and repeat from Step 2.
6. When you are finished, press [#] OK on the screen (or press (#)).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

CÓPIA NÃO CONTROLADA

TROUBLESHOOTING

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

4. TROUBLESHOOTING

4.1 SERVICE CALL

4.1.1 SERVICE CALL CONDITIONS

Level	Definition	Reset Procedure
A	Fusing unit SCs displayed on the operation panel. The machine is disabled. The user cannot reset the SC.	Turn the main power switch off then on before entering SP mode. Reset the SC (set SP5-810 to 1), then turn the main switch off then on again.
B	SCs to disable only the features that use the defective item. Although these SCs are not shown to the user under normal conditions, they are displayed on the operation panel only when the defective feature is selected.	Turn the main power switch off and on.
C	SCs that are not shown on the operation panel. They are internally logged.	Logging only
D	The SC is displayed on the operation panel. Turning the operation switch or main power switch off then on resets the SC. The SC is redisplayed if it occurs after the main power switch is turned on again.	Turn the main power switch off and on.

NOTE: 1) All SCs are logged.
2) When an electrical circuit board has a problem, check the connections before replacing the PCBs.
3) When a motor has a problem, check the mechanical load before replacing the motor or sensor.

4.1.2 SC TABLE

No.	Definition	Symptom	Possible Cause
101	D	Exposure lamp error	
		The standard white level is not properly detected when scanning the shading plate. (The shading data peak does not reach the specified threshold.)	• Exposure lamp defective • Lamp stabilizer defective • Exposure lamp connector defective • Standard white plate dirty • Scanner mirror or scanner lens out of position or dirty • SBU defective
120	D	Scanner home position error 1	
		The scanner home position sensor does not detect the on condition during scanning.	• Scanner I/O board or SBU defective • Scanner motor defective • Harness between scanner I/O board and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective
121	D	Scanner home position error 2	
		The scanner home position sensor does not detect the off condition during scanning.	• Scanner I/O board or SBU defective • Scanner motor defective • Harness between scanner I/O board and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective
122	D	Scanner home position error 3	
		The scanner home position sensor does not detect the home position during initialization.	• Scanner I/O board or SBU defective • Scanner motor defective • Harness between scanner I/O board and scanner motor disconnected • Scanner HP sensor defective • Harness between SBU and HP sensor disconnected • Scanner wire, timing belt, pulley, or carriage defective
142	D	White level detection error	
		The white level cannot be adjusted within the target during auto gain control.	• Dirty exposure glass or optics section • SBU board defective • BICU board defective • Exposure lamp defective • Lamp stabilizer defective
161	D	BICU error	
		• The correct value is not input into ASIC1 on the BICU board when the main switch is turned on. • ASICs on the BICU board are not recognized during scanning operation.	• BICU board defective (defective connection between ASICs)

No.	Definition	Symptom	Possible Cause
195	D	Serial number mismatch	
		Serial number stored in the memory is not correct. **NOTE:** Check the serial number with SP5-811-002. If the stored serial number is incorrect, contact your product specialist for details of how to solve the problem.	• NVRAM defective • BICU replaced without original NVRAM
201	D	Polygon motor error	
		• The polygon motor starts operating. → The lock signal is not detected within 20 seconds. • The polygon motor starts operating. → The lock signal is detected within 20 seconds. → After a 3-second waiting time, no lock signal is detected within 20 seconds. • The polygon motor stops operating. → The lock signal is not detected within 20 seconds. • The polygon motor is operating. → The lock signal remains undetected for 0.5 seconds.	• Defective polygon motor • Defective harness
220	D	1st beam synchronization error	
		A polygon motor lock is detected; the LD door is closed; and the LD remains on. → The LD error (1st beam synchronization error) continues for 0.5 seconds.	• Disconnected synchronization detector board • Defective LD unit • Defective BICU
221	D	2nd beam synchronization error	
		A polygon motor lock is detected; the LD door is closed; and the LD remains on. → The LD error (2nd beam synchronization error) continues for 0.5 seconds.	• Disconnected synchronization detector board • Defective LD unit • Defective BICU
230	D	FGATE on error	
		A transfer belt mark is detected. → No FGATE on signal is detected within 1 second.	• Defective BICU
231	D	FGATE off error	
		An FGATE assert signal is detected. → The FGATE negate signal is not detected within 30 seconds.	• Defective BICU
241	D	LD error	
		An LD error continues for 0.5 seconds. (After an LD error is detected, an LD error release is written to the GAVD chip during monitoring.)	• Defective LD unit

No.	Definition	Symptom	Possible Cause
280	D	Image transfer belt mark detection error	
		• An imaging process starts. → No belt mark is detected within 1 revolution. • A color imaging process starts. → A mono color image is transferred. → FGATE becomes active. → No belt mark is detected within 1 revolution. • Thick paper or OHP film is used. → The belt slows down. → No belt mark is detected within 1 revolution.	• Defective BICU • Poor electrical connection between sensor and BICU
282	D	GAVD communication error	
		Data is transferred. → The CPU does not detect the communication signal from GAVD.	• Defective BICU
300	D	Charge corona unit electrical leak	
		The supply to the charge corona unit is continuously output, and the unit is operating at the minimum PWM duty value. → 4.5 Volts (or more) returns for 60 milliseconds.	• Short circuit in the charge corona unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
301	D	Charge corona unit disconnection	
		The supply to the charge corona unit is continuously output. → The unit operates at the maximum PWM duty value for 60 milliseconds.	• Defective PCU installation (OPC belt) • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
302	D	Charge grid electrical leak	
		The supply to the charge grid is continuously output. → The returning voltage exceeds the target by 0.5 Volt or more for 120 milliseconds.	• Defective PCU installation (OPC belt) • Short circuit in the charge grid • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
305	D	Charge corona unit cleaner error	
		• Cleaning starts. → The lock signal is not detected within 30 seconds. • Cleaning starts. → The cleaner starts to turn. → The lock signal is detected within 6 seconds. • The lock signal is detected while the unit is moving away from the home position. → The next lock signal is detected within 6 seconds after the unit has turned toward the home position.	• Defective PCU installation (OPC belt) • Defective cleaner • Incorrect charge corona unit installation • Toner fallen into the cleaner drive mechanism
350	D	Development error 1 (K/Y)	
		A development process starts. → The returning voltage exceeds the target by 0.5 Volt or more for 60 milliseconds.	• Short circuit in the development unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)

No.	Definition	Symptom	Possible Cause
351	D	Development error 2 (C/M)	
		A development process starts. → The returning voltage exceeds the target by 0.5 Volt or more for 60 milliseconds.	• Short circuit in the development unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
352	D	Development motor error	
		• The development motor starts or changes speed. → The motor does not detect a 1-second lock signal within 3 seconds. • The development motor starts. → The lock signal is detected during normal operation. → The lock signal is interrupted for 1 second or more.	• Defective development motor
400	D	1st transfer (image transfer) electric leakage (+)	
		Image transfer starts. → The process operates at the minimum PWM duty value. The returned current exceeds 1.8 V for 180 milliseconds.	• Short circuit in the image transfer unit • Defective image transfer belt • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
401	D	1st transfer (image transfer) electric leakage (–)	
		Image transfer starts. → The negative (–) output is at the maximum PWM duty value for 60 milliseconds.	• Short circuit in the image transfer belt • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
410	D	2nd transfer (paper transfer) electric leakage (+)	
		Paper transfer starts. → The positive (+) output is at the minimum PWM duty value. → The returning voltage stays at 2.7 V or more for 60 milliseconds.	• Short circuit in the paper transfer unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
411	D	2nd transfer (paper transfer) electric leakage (–)	
		Paper transfer starts. → The negative (–) output is at the minimum PWM duty value. → The returning voltage stays at 4.5 V or more for 60 milliseconds.	• Short circuit in the paper transfer unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
412	D	2nd transfer (paper transfer) disconnection (+)	
		Paper transfer starts. → The positive (+) output is at the maximum PWM duty value for 60 milliseconds.	• Right cover not closed • Defective transfer roller contact mechanism • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
420	D	Discharge error (fusing bias)	
		The discharge circuit is operating at the maximum PWM duty value for 60 milliseconds.	• Fusing bias short circuit • Scratched fusing belt • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)

No. Definition		Symptom	Possible Cause
421		Discharge plate error	
		During discharging, the leakage detection signal is low for 60 milliseconds.	• Short circuit in the discharge plate • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
430	D	Transfer belt cleaning error	
		• Cleaning is operating at the maximum PWM duty value for 60 milliseconds.	• Short circuit in the transfer belt cleaning unit • Defective high voltage supply board • Defective harness (BICU - high voltage supply board)
440	D	Main motor error	
		• The main motor starts or changes speed. → The lock signal does not continue for 1 second within 3 seconds. • The main motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second.	• Defective main motor • Too much load of the main motor drive
460	D	Temperature sensor error	
		The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds.	• Defective temp./ humidity sensor • Defective circuit • Defective connector
461	D	Humidity sensor error	
		The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds.	• Defective temp./ humidity sensor • Defective circuit • Defective connector
480	D	ID sensor error	
		The ID sensor is being calibrated (process control, step 1) → While the LED is off, the output voltage is 0.5 V or lower.	• Defective ID sensor • Defective connector
481	D	Transfer belt mark detection error	
		• The main motor is operating; and the lock signal is detected. → The belt mark sensor signal does not change for 120 milliseconds.	• Defective main motor • Image transfer belt out of position • Belt mark blurred or absent
503	B	3rd tray error	
		• The tray lift motor turns on. → The top of the paper stack is not detected for 18 seconds. • The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 7 seconds. → These steps are repeated 4 times.	• Defective paper height sensor • Defective tray lift motor

No. Definition		Symptom	Possible Cause
504	B	4th tray error	
		• The tray lift motor turns on. → The top of the paper stack is not detected for 18 seconds. • The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 7 seconds. → These steps are repeated 4 times.	• Defective paper height sensor • Defective tray lift motor
515	D	Duplex unit communication error	
		• A connection error occurs. • The signal is sent from the copier to the duplex unit every 3 seconds while paper is not transported by the unit. However, the duplex unit does not respond within 5 seconds.	• Defective duplex unit board • Defective BICU • Defective Ex-IOB • Defective connection (Main unit - Duplex unit)
520	D	Fusing unit motor	
		• The motor starts or changes speed. → The lock signal does not continue for 1 second within a 3-second interval. • The motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second.	• Defective fusing unit motor
521	D	Paper feed motor error	
		• The motor starts or changes speed. → The lock signal does not continue for 1 second within a 3-second interval. • The motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second.	• Defective paper feed motor
541	A	Thermistor disconnection (heating roller)	
		The fusing unit starts warm up to the print ready temperature. → The temperature does not reach 7°C for 10 seconds.	• Defective thermistor • Thermistor loose connection • Defective connector
542	A	Fusing warm-up timeout (heating roller)	
		The main switch is turned on or a cover is closed. → The heating roller does not reach the warm-up temperature within 50 seconds.	• Defective lamp (loose connection, thermostat failure, PSU, thermostat) • Incorrect detection (loose thermistor connection, fusing - drawer loose connection)
543	A	Overheat error (heating roller)	
		The heating roller thermistor detects 220°C for 5 seconds.	• Short circuit • Defective BICU board • Defective PSU

No. Definition		Symptom	Possible Cause
544	A	Low temperature error (heating roller)	
		During standby or operation, the heating roller thermistor detects 100 °C or less for 5 seconds.	• Defective lamp (loose connection, thermostat failure, PSU, thermostat) • Incorrect detection (loose thermistor connection, fusing - drawer loose connection)
545	A	Full power error (heating roller)	
		Fusing unit warm-up is complete. → The heating roller stops turning. → The heating roller lamp keeps outputting the maximum power for 30 seconds.	• Thermistor loose connection • Fusing - drawer loose connection
546	A	Unstable temperature (heating roller)	
		The heating roller thermistor detects unstable temperature increases or decreases within 60 seconds.	• Thermistor loose connection • Fusing - drawer loose connection
551	A	Thermistor disconnection (pressure roller)	
		The pressure roller thermistor detects 7°C or lower for 30 seconds.	• Thermistor loose connection • Defective harness • Defective connector
552	A	Warm-up time over (pressure roller)	
		The main switch is turned on or a cover is closed. → The fusing pressure roller does not reach the ready temperature within 200 seconds.	• Defective lamp (loose connection, thermostat failure, PSU, thermostat) • Incorrect detection (thermistor loose connection, fusing - drawer loose connection)
553	A	Overheat error (pressure roller)	
		The pressure roller thermistor detects 165°C for 5 seconds.	• Loose connection • Defective BICU board • Defective PSU
554	A	Low temperature error (pressure roller)	
		During standby or operation, the pressure roller thermistor detects 60°C or less for 5 seconds.	• Defective lamp (loose connection, thermostat failure, PSU, thermostat) • Incorrect detection (thermistor loose connection, fusing - drawer loose connection)
555	A	Full power error (pressure roller)	
		Fusing unit warm-up is complete.→ The fusing pressure roller stops turning. → The pressure roller lamp keeps outputting the maximum power for 200 seconds.	• Thermistor loose connection • Fusing - drawer loose connection
556	A	Unstable temperature (pressure roller)	
		The pressure roller thermistor detects unstable temperature increases or decreases within 60 seconds.	• Thermistor loose connection • Fusing - drawer loose connection
560	D	Zero cross error	
		The main switch is turned on; the fusing relay turns on. → 50 Hz or 60 Hz is not detected within 5 seconds.	• Defective PSU • Incorrect power supply

No.	Definition	Symptom	Possible Cause
570	A	Fusing oil end	
		500 sheets of paper have been output since oil end was detected.	• Insufficient oil (the oil tank in the rear of the machine) • Defective oil pipe • Defective oil pump • Defective oil end sensor
571	A	Fusing oil overflow	
		• The oil overflow sensor detects oil. • When the machine covers are closed, the oil supply unit is not detected. • When the machine covers are closed, the fusing unit is not detected.	• Defective oil end sensor • Defective oil overflow sensor • Defective sensor cable • Oil supply unit not installed
620	D	ADF communication error	
		The ADF has been detected. → A communication error has occurred.	• Loose connection • Defective ADF • Defective BICU board • Defective scanner I/O board • External noise
630	C	CSS communication error	
		The machine tries to communicate with one of the terminals of a relevant service center. → An error signal returns.	• Communication error on the public telephone network (logged only; the machine can still operate)
632	D	MF accounting device error 1	
		The machine sends a data frame. → No normal end signal returns. → This symptom happens three times.	• Defective or broken line between machine and device
633	D	MF accounting device error 2	
		The machine is communicating with the accounting device. → The break signal returns.	• Defective or broken line between machine and device
634	D	MF accounting device error 3	
		A backup RAM error is reported from the accounting device.	• Defective accounting device controller • Defective battery in the accounting device
635	D	MF accounting device error 4	
		A battery voltage error is reported from the accounting device.	• Defective accounting device controller • Defective battery in the accounting device
640	C	Engine-to-controller communication checksum error	
		While the BICU and controller are communicating, a checksum error has occurred.	• Logged only; the machine can still operate
641	D	Engine-to-controller response error	
		The controller has sent a frame with the RAPI protocol, but the engine does not respond.	• Defective controller board • External noise

No.	Definition	Symptom	Possible Cause
670	D	Engine startup error	
		Just after the main power is turned on or the machine is recovering from auto off mode, the engine ready signal assertion fails. Just after the main power is turned on, the engine does not respond.	• Defective controller board
672	D	Controller-to-operation panel communication error at startup	
		After powering on the machine, communication between the controller and operation panel does not begin, or the communication is interrupted after a normal startup.	• Controller stalled • Controller board installed incorrectly • Defective controller board • Operation panel connector loose or defective • Poor connection of DIMM and optional boards on the controller board
685	D	SBU/IPU communication error	
		While data is sent between the scanner and BICU board, a communication error has occurred.	• Defective scanner unit cable • Defective SBU board • Defective BICU board
687	D	PER command error	
		Some image data is transferred. → The controller does not report the necessary memory address.	• Poor connection between BICU and controller • Defective BICU • Defective controller
720	B	Finisher jogger motor error (500-sheet finisher)	
		• The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position. • The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.	• Jogger HP sensor defective • Jogger motor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
722	B	Finisher jogger motor error (1000-sheet finisher)	
		The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position. The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.	• Jogger HP sensor defective • Jogger motor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
724	B	Finisher staple hammer motor error (1000-sheet finisher)	
		Stapling does not finish within 600 ms after the staple hammer motor turned on.	• Staple jam • Stapler overload caused by trying to staple too many sheets • Staple hammer motor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation

No.	Definition	Symptom	Possible Cause
725	B	Finisher stack feed-out motor error (1000-sheet finisher)	
		The stack feed-out belt H.P sensor does not activate within a certain time after the stack feed-out motor turned on.	• Stack feed-out HP sensor defective • Stack feed-out motor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
726	B	Finisher tray lift motor error (1000-sheet finisher)	
		The stack height sensor does not activate within a certain time after the tray lift motor turned on.	• Tray lift motor defective • Stack height sensor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
727	B	Finisher stapler motor error (500-sheet finisher)	
		Stapling does not finish within a certain time after the stapler motor turned on.	• Staple jam • Stapler overload caused by trying to staple too many sheets • Stapler motor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
728	B	Finisher paper stack height error (500-sheet finisher)	
		The stack height detection lever does not return to its home position before going to detect the stack height.	• Stack height lever solenoid defective • Stack height sensor defective • Lever sensor defective • Main control board defective • Defective finisher control board • Defective BICU • Defective IOB • Incorrect installation
730	B	Finisher stapler motor error (1000-sheet finisher)	
		The stapler does not return to its home position within a certain time after the stapler motor turned on. The stapler H.P sensor does not activate within a certain time after the stapler motor turned on.	• Stapler motor defective • Stapler HP sensor defective • Poor stapler motor connection • Defective finisher control board • Defective board • Defective BICU • Defective Ex-IOB • Incorrect installation

No. Definition		Symptom	Possible Cause
731	B	• Output tray motor error (500-sheet finisher) • Exit guide plate motor error (1000-sheet finisher)	
		The tray upper limit sensor does not activate within a certain time after the tray motor turned on (500-sheet finisher). The exit guide plate HP sensor does not activate within a certain time after the exit guide plate motor turned on (1000-sheet finisher).	• Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation 500-sheet finisher • Output tray motor defective • Tray upper limit sensor defective 1000-sheet finisher • Exit guide plate motor defective • Exit guide plate HP sensor defective
732	B	Finisher shift motor error (1000-sheet finisher)	
		Roller shift does not finish within a certain time after the shift motor turned on.	• Shift motor defective • Shift HP sensor defective • Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
740	D	Finisher communication error	
		• A connection error occurs. • The UART reports a communication error. • In cases other than paper transport, after an every-3-second command is sent, the finisher does not respond within 5 seconds.	• Defective finisher control board • Defective BICU • Defective Ex-IOB • Incorrect installation
750	D	1st paper tray unit communication error	
		• A connection error occurs. • The UART reports a communication error. • In cases other than paper transport, after an every-3-second command is sent, the paper tray unit does not respond within 5 seconds.	• Defective paper tray unit control board • Defective BICU • Defective Ex-IOB • Defective connection (Paper tray - main unit)
770	D	Shift tray unit motor error	
		• The machine starts. → The tray motor operates for 2.2 seconds. → The sensor does not detect the operation. • The machine is printing. → The tray motor operates for 2.2 seconds. → The sensor does not detect the operation.	• Defective tray motor • Defective sensor • Defective shift tray connector
791	D	Bridge unit error	
		The machine recognizes the finisher, but does not recognize the bridge unit.	• Defective connector • Defective cable
792	D	Finisher error	
		The machine does not recognize the finisher, but recognizes the relay unit.	• Defective connector • Defective cable • Incorrect installation

No.	Definition	Symptom	Possible Cause
793	D	Interchange unit error	
		The machine recognizes the duplex unit/1-bin tray unit, but does not recognize the interchange unit.	• Incorrect installation • Defective connector • Defective cable
800	B	Startup without video output end error (K)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
801	B	Startup without video output end error (Y)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
802	B	Startup without video output end error (M)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
803	B	Startup without video output end error (C)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
804	B	Startup without video input end error (K)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
805	B	Startup without video input end error (Y)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
806	B	Startup without video input end error (M)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
807	B	Startup without video input end error (C)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
808	B	Startup without video input end error (R)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
809	B	Startup without video input end error (G)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board

No. Definition		Symptom	Possible Cause
810	B	Startup without video input end error (B)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
818	B	Watchdog error	
		While the system program is running, no other programs can run (due to a bus hold or endless loop).	• Defective controller board
819	B	Kernel abnormal end error	
		A HDD error or a software error has occurred, terminating the SCS process, gwinit process, and finally the kernel program. A system process has exhausted the RAM.	• HDD error • Software application error • RAM shortage
820	B	Self-Diagnostic Error: CPU	
		An unexpected exception or interruption has occurred.	• Defective controller board • Software defective
821	B	Self-Diagnostic Error: ASIC	
		The ASIC returned an error during the self-diagnostic test, because the ASIC and CPU timer interrupts are compared and determined to be out of range.	• Defective controller board
822	B	Self-Diagnostic Error: HDD	
		The hard disk drive returned an error during the self-diagnostic test.	• HDD defective • HDD connector defective • Defective controller board
823	B	Self-diagnostic Error: NIB	
		The network interface board returned an error during the self-diagnostic test.	• Network interface board defective • Defective controller board
824	B	Self-diagnostic Error: NVRAM	
		The resident non-volatile RAM returned an error during the self-diagnostic test.	• NVRAM damaged or abnormal • Backup battery has discharged • NVRAM socket damaged
826	B	Self-diagnostic Error: RTC/Optional NVRAM	
		The RTC (real time clock) or optional NVRAM returned an error during the self-diagnostic test.	• RTC defective • NVRAM defective
827	B	Self-diagnostic Error: RAM	
		The resident RAM returned a verify error during the self-diagnostic test.	• Memory malfunction
828	B	Self-diagnostic Error: ROM	
		The resident read-only memory returned an error during the self-diagnostic test.	• Defective controller board • Firmware defective
829	B	Self-diagnostic Error: Optional RAM	
		The optional RAM returned an error during the self-diagnostic test.	• RAM DIMM defective • Defective controller board

No. Definition		Symptom	Possible Cause
835	B	Self-Diagnostic Error: Parallel Interface	
		A loopback test error occurred.	• Loopback connector not detected • IEEE1284 connector defective • Defective controller board
836	B	Self-diagnostic Error: Resident Font ROM	
		The resident font ROM returned an error during the self-diagnostic test.	• Font ROM defective
837	B	Self-diagnostic Error: Optional Font ROM	
		The optional font ROM returned an error during the self-diagnostic test.	• Font ROM defective
838	D	Verification error	
		The verification data of the clock generator is read via the communication bus. → The data contradicts the normal value.	• Defective controller board
850	B	Network I/F abnormal	
		The IP address is incorrect, or the controller cannot accesses the network due to a driver error.	• Incorrect network setting • Defective controller board
851	B	IEEE1394 I/F abnormal	
		The IEEE1394 interface cannot be used, due to a driver error.	• IEEE1394 interface board defective • Defective controller board
853	D	IEEE802 11b card startup error	
		The machine starts up. → The IEEE802 11b card connection board is recognized. → The IEEE802 11b card is not recognized.	• Loose connection between the card and the connection board
854	D	IEEE802 11b card access error	
		The machine has been reading the data from the card. → The machine loses access to the card; the IEEE802 11b card connection board is still recognized.	• Loose connection between the card and the connection board
855	D	IEEE802 11b card error	
		Some illegal data is found in the card.	• Defective card
856	D	IEEE802 11b card connection board error	
		An error is detected in the IEEE802 11b card connection board.	• Defective card connection board
860	C	Startup without HD connection at main power on	
		The hard disk is not detected. (The hard disk is not formatted.)	• Cable between controller and HD loose or defective • HD power connector loose or defective • HD defective • Controller defective
861	C	Startup without HD detection when the power key was pressed	
		The hard disk is not detected.	• Cable between controller and HD loose or defective • HD power connector loose or defective • HD defective • Controller defective

No.	Definition	Symptom	Possible Cause
862	D	Bad sector count at the maximum	
		The hard disk has 100 bad sectors in the image storage area. → More data is read from the hard disk. → SC863 occurs. → The number of bad sectors exceeds the maximum value. **NOTE:** To format the hard disk, use SP5-832-1. Bad sectors may affect quality or reduce productivity. The hard disk should be replaced when it contains bad sectors.	• Data corruption • Defective hard disk
863	B	Startup without HD data lead	
		Data stored on the hard disk is not read correctly.	• Bad sector detected during operation of the HD
864	B	HD data CRC error	
		• During operation of the HD, the HD responded with a CRC error.	• Data transfer from the HD was abnormal.
865	B	HD access error	
		The hard disk returned an error.	• Error detected other that a bad sector error (SC863) or a CRC error (SC864)
870	D	Address book data error	
		The address book in the hard disk is accessed. → An error is detected in the address book data; address book data is not read; or data is not written into the address book. **NOTE:** To recover from the error, do any of the following countermeasures: • Format the address book by using SP5-832-008 (all data in the address book–including the user codes and counters–is initialized) • Initialize the user data by using SP5-832-006 and -007 (the user codes and counters are recovered when the main switch is turned on) Replace the hard disk (the user codes and counters are recovered when the main switch is turned on).	• Data corruption • Defective hard disk • Defective software
900	B	Electronic total counter error	
		The value of the total counter is out of the normal range.	• Defective NVRAM
901	B	Mechanical total counter error 1	
		Mechanical counter 1 is not initialized, or not detected.	• Defective connection • Defective counter
902	B	Mechanical total counter error 2	
		Mechanical counter 2 is not initialized, or not detected.	• Defective connection • Defective counter

No.	Definition	Symptom	Possible Cause
925	D	Net file error	
		The management file for net files is corrupted; net files are not normally read. Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software	• Defective hardware • Data corruption • Defective software
990	B	Software performance error	
		The software attempted to perform an unexpected operation. **NOTE:** When this error occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP7-403. See the data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.	• Software defective • Internal parameter incorrect • Insufficient working memory
991	C	Software continuity error	
		The software attempted to perform an unexpected operation. However, unlike SC990, the process can keep on running.	• Logged only; the machine can continue to operate
992	D	Other system SCs	
		The controller received an unknown SC code from the engine.	• Contact your product specialist.
997	B	Application function selection error	
		The application selected by a key press on the operation panel does not start or ends abnormally.	• Software defective • An option required by the application (RAM, DIMM, board) is not installed.
998	B	Application start error	
		• After switching the machine on, the application does not start within 60 s. (No applications start or end normally.)	• Software defective • An option required by the application (RAM, DIMM, board) is not installed.
999	B	Program download error	
		The download (program, print data, language data) from the IC card does not execute normally. Important Notes About SC999 • This SC is not logged, because it operates primarily in the download mode. • If the machine loses power while downloading, or if for some other reason the download does not end normally, this could damage the controller board or the PCB targeted for the download and prevent subsequent downloading. If this problem occurs, the damaged PCB must be replaced.	• Software defective • An option required by the application (RAM, DIMM, board) is not installed • Board installed incorrectly • BICU defective • Controller defective • IC card defective • NVRAM defective • Loss of power during downloading

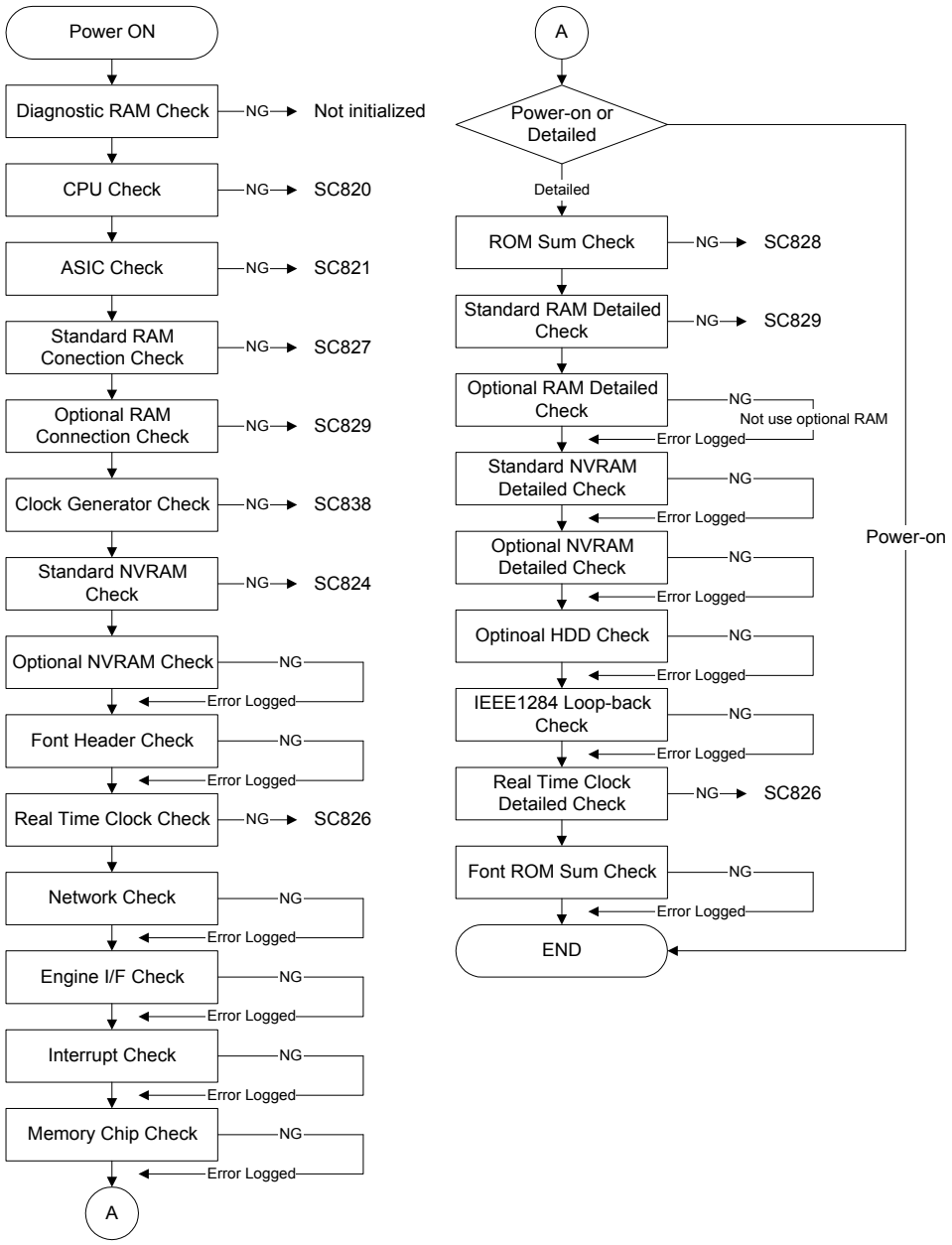
4.2 SELF-DIAGNOSTIC MODE

4.2.1 OVERVIEW

There are three types of self-diagnostics for the controller.

- Power-on self-diagnostics: The machine automatically starts the self-diagnostics just after the power has been turned on.
- Detailed self-diagnostics: The machine does the detailed self-diagnostics by using a loop-back connector (P/N G0219350)
- SC detection: The machine automatically detects SC conditions at power-on or during operation.

The following shows the workflow of the power-on and detailed self-diagnostics.



4.2.2 DETAILED SELF-DIAGNOSTICS

This detailed self-diagnostic test requires a loop-back connector (P/N: G0219350).

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Hold down #, press and hold down *, and then while pressing both keys at the same time, switch on the machine. You will see “Now Loading” on the touch-panel, and prints the diagnostic report after completing the test.
   - Refer to the diagnostics report for the detected errors. The errors detected during self-diagnostics can be checked with SP7-832-001 (Diag. Result).
   - Refer to section 4.2 for details about the error codes.

4.3 IMAGE TEST MODE

4.3.1 OVERVIEW

The SBU, BICU, and LD board have the function that prints out their test pattern. It is useful to find the defective board when the image data problem is occurred.

4.3.2 VPU TEST

The SBU has the VPU test pattern. To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907.

SP4-907-1: VPU Test Pattern: R

SP4-907-2: VPU Test Pattern: G

SP4-907-3: VPU Test Pattern: B

4.3.3 IPU TEST

The BICU board has the IPU test pattern. To make sure the image processing is functioning, output the IPU test pattern with SP4-417.

The BICU board also has the self-check mode with SP4-904-1 or 2.

If no error is detected, the test ends, and the completion code appears in the operation panel display. If an error is detected, the test is interrupted and an error code is displayed. The table below lists the completion and error codes.

SP4-904-1 Register Write/Read Check Result

	Code
Normal end	00
Abnormal end	11 ~ 15

SP4-904-2 Image Path Check Result

	Code
Normal end	00
Abnormal end	21 ~ 24

4.3.4 GAVD TEST

The LD board has the GAVD test pattern. To make sure the printing control is functioning, output the GAVD test pattern with SP5-955 (Test Pattern is displayed).

This test pattern includes the pattern for image adjustment such as registration, blank margin, laser beam pitch, etc.

4.4 ELECTRICAL COMPONENT DEFECTS

4.4.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Fusing exit sensor	324 (I/O board)	Open	A paper jam is detected when paper is fed; and the paper jam is cleared when the paper is removed
		Shorted	A paper jam is detected when paper is not fed.
ID sensor	258 (BICU)	Open	No immediate symptom is seen. (☛ NOTE)
		Shorted	• The machine does not respond. • No immediate symptom is seen. (☛ NOTE)
Image transfer belt mark sensor	307 (I/O board)	Open	SC481 is displayed.
		Shorted	SC481 is displayed.
O/B waste toner bottle full sensor	307 (I/O board)	Open	Bottle full is not detected when the bottle is full.
		Shorted	No symptom is seen.
Oil end sensor	259 (BICU)	Open	No immediate symptom is seen.
		Shorted	The oil pump turns on to pump oil up when there is enough oil.
Oil overflow sensor	259 (BICU)	Open	SC571 is displayed.
		Shorted	SC571 is displayed.
Original length sensor 1	104 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Original length sensor 2	104 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Original width sensor	104 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Paper end sensor 1	406 (High voltage supply)	Open	Paper end is not detected when the tray is empty.
		Shorted	Paper end is detected when the tray is not empty.
Paper end sensor 2	340 (I/O board)	Open	Paper end is not detected when the tray is empty.
		Shorted	Paper end is detected when the tray is not empty.
Paper exit sensor	324 (I/O board)	Open	A paper jam is detected when paper is fed.
		Shorted	A paper jam is detected when no paper is fed.
Paper feed sensor 1	324 (I/O board)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed. Or, a paper jam is detected before paper is fed.

Component (Symbol)	CN	Condition	Symptom
Paper feed sensor 2	340 (I/O board)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed. Or, a paper jam is detected before paper is fed.
Paper near-end sensor 1	406 (High voltage supply)	Open	Paper near end is detected when the tray is full.
		Shorted	Paper full is detected when the tray is almost emptily.
Paper near-end sensor 2	406 (High voltage supply)	Open	Paper end is detected when the tray is not empty.
		Shorted	• Paper full is detected when the tray is almost empty. • Paper near-end is detected when the tray is full.
Paper overflow sensor	324 (I/O board)	Open	Paper overflow is not detected when the paper exit tray is full.
		Shorted	Paper overflow is detected when the paper exit tray is not full.
Platen cover sensor	324 (I/O board)	Open	The original size is not correctly detected.
		Shorted	No symptom
Registration sensor	405 (High voltage supply)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	• A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed. • A paper jam is detected before paper is fed.
Scanner HP sensor	104 (SBU)	Open	SC120 is displayed.
		Shorted	The scanner motor tries to operate for about 40 seconds before SC122 is displayed.
Synchronization detector	502 (LDB)	Open	SC220 is displayed.
		Shorted	The machine does not respond. SC220 is displayed.
T/B waste toner bottle full sensor	307 (I/O board)	Open	Bottle full is not detected when the bottle is full.
		Shorted	Bottle full is detected when the bottle is not full.
Temperature/humidity sensor	257 (BICU)	Open	SC460 is displayed.
		Shorted	SC460 is displayed.

NOTE: An SC condition occurs only when a new PCU is being installed in the machine. During copying, if the ID sensor fails, the image density will be changed.

4.4.2 SWITCHES

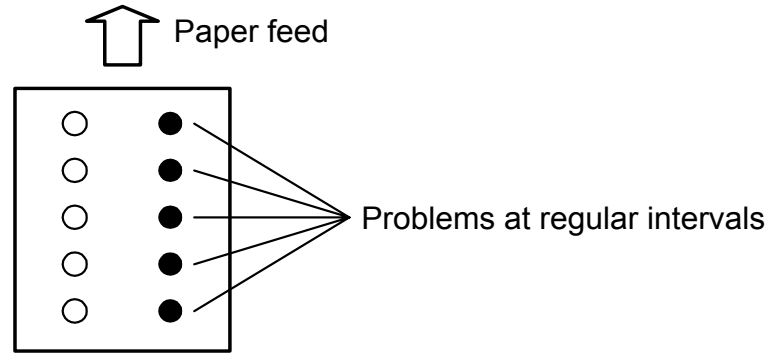
Component (Symbol)	CN	Condition	Symptom
Exit cover switch	324 (I/O board)	Open	The user is prompted to close the exit cover.
		Shorted	No symptom is seen.
Front cover switch	324 (I/O board)	Open	The user is prompted to close the front cover.
		Shorted	No symptom is seen.
Interlock switch	312 (I/O board)	Open	The user is prompted to close the front cover.
		Shorted	No symptom is seen.
O/B waste toner bottle switch	307 (I/O board)	Open	The bottle is not detected when it is installed.
		Shorted	The bottle is detected when it is not installed.
Tray set/paper size switch (tray 1)	308 (I/O board)	Open	The tray is not detected when it is installed.
		Shorted	• The paper tray is detected when it is not installed. • The paper size is incorrectly detected (a paper jam may occur).
Tray set/paper size switch (tray 2)	308 (I/O board)	Open	The tray is not detected when it is installed.
		Shorted	• The paper tray is detected when it is not installed. • The paper size is incorrectly detected (a paper jam may occur).
Right cover switch	324 (I/O board)	Open	The user is prompted to close the right cover.
		Shorted	No symptom
T/B waste toner bottle switch	307 (I/O board)	Open	The bottle is not detected when it is installed.
		Shorted	Bottle full is detected when the bottle is not installed.

4.4.3 BLOWN FUSE CONDITIONS

Fuse	Rating		Symptom when turning on the main switch
	115V	220 ~ 240V	
Power Supply Board			
FU1 (N.A.)	15A/125V	—	No response
FU2	10A/250V	5A/250V	No response
FU8	4A/125V	4A/250V	The machine starts initialization (the sound is heard), but nothing appears on the operation panel.
FU9	6.3A/250V	6.3A/250V	The machine starts program loading, and "Functional Problems" appears on the operation panel with the code "SC901."

4.5 CHECK POINTS FOR IMAGE PROBLEMS AT REGULAR INTERVALS

Image problems may appear at regular intervals that depend on the circumference of certain components. The following diagram shows the possible symptoms (black or white dots at regular intervals).



Colored spots at 54-mm intervals: Development roller
Abnormal image at 68-mm intervals: Transfer roller
Abnormal image at 188-mm intervals: Fusing belt
Abnormal image at 125-mm intervals: Pressure roller in the fusing unit

SERVICE TABLES

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

⇒ 5. SERVICE TABLES

5.1 SERVICE PROGRAM MODE

⚠CAUTION

Do not turn off the main power switch while the power LED (☀⏻) lights or flashes. Doing so may severely damage the hard disk or the memory of the copier. Before turning off the main power switch, press the operation power switch, and wait for the power LED to go out.

NOTE: The main power LED lights or flashes when:
1) the platen cover or ARDF is open
2) the hard disk or memory is accessed
3) the copier is communicating with another device

5.1.1 SERVICE PROGRAM MODE OPERATION

Starting the SP mode

1. Press the clear modes key. 
2. Type “107” at the numeric keypad. 
3. Press the clear/stop key and hold it down until the screen display changes (for about 3 seconds). 
4. Touch “Copy Sp” on the touch screen. **Copy SP**

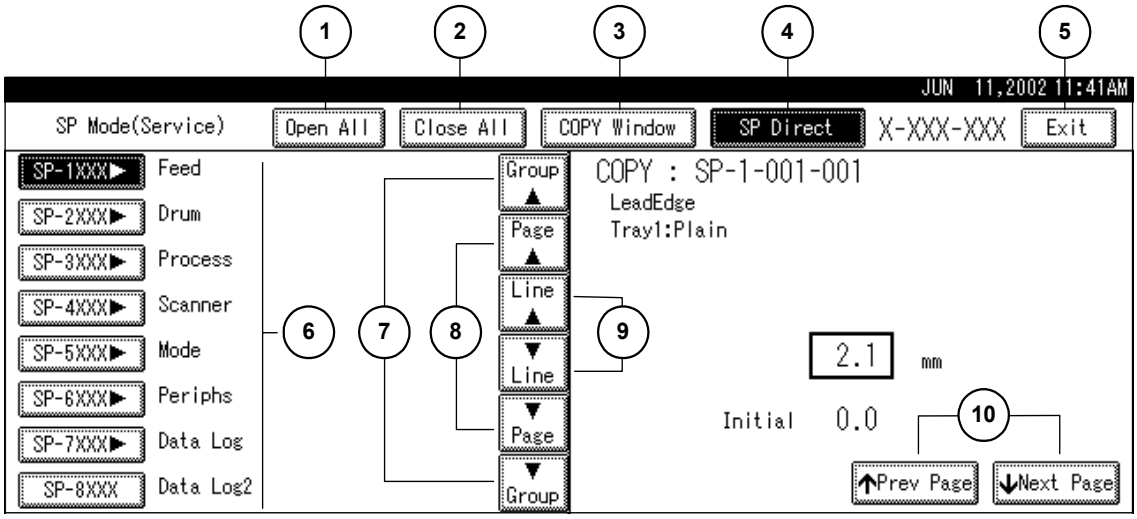
Quitting the SP mode

1. Touch “Exit” on the touch screen until the screen display changes. **Exit**
2. Touch “Exit” on the touch screen until the screen display changes. **Exit**

Service Tables

SP Mode Touch Screen

For details on the SP modes, see section 5.1.2.



① Expands all SP mode menus.

② Collapses all SP mode menus.

③ Opens the copy window (☛ Copy Window for Test Printing).

④ Enables numeric keypad inputs for specifying a SP mode menu. (Type a menu number at the numeric keypad, and press the # key.)

⑤ Quits the SP mode.

⑥ Expands or collapses the menu list of each group.

⑦ Scrolls up or down through the groups.

⑧ Scrolls up or down to the previous or next page.

⑨ Scrolls up or down to the previous or next line.

⑩ Selects the previous or next menu.

Copy Window for Test Printing

1) Touch the “Copy Window” button (☛ SP Mode Touch Screen). The copy window is displayed.
2) Adjust the settings if necessary, and press the ⓐ (start) key to make the test print.
3) Touch the “SP Mode” button (highlighted on the touch screen). The SP mode screen is displayed.

Working on SP Mode Menus

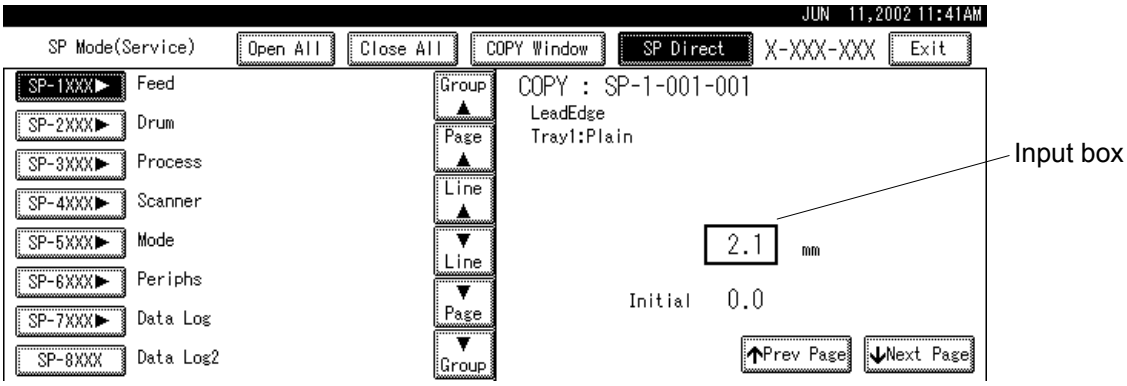
The SP mode menus are classified in three levels.

1. Find the necessary SP mode menu from the “SP Mode Table” (☛ 5.1.2).
2. Select an SP using either of the following two operations:

   1) Using the numeric key pad
      a) Make sure the “SP Direct” button is highlighted. (If not, touch the button.)
      b) Type the SP mode menu number at the numeric key pad.

   2) Using the touch screen
      a) Touch the “Open All” button or the “Group #” button (where the # indicates the group number which the necessary menu belongs to).
      b) Scroll the menu if necessary (☛ SP Mode Touch Screen).
      c) Touch the necessary menu, or touch the “Prev Page” or “Next Page” button to select the menu.

3. Type the necessary values at the numeric key pad. The value in the input box is overwritten.



NOTE: 1) “Initial” indicates the default value.
2) To toggle plus/minus, press the ⓒ (clear/stop) key.

4. Press the ⓗ key. If an out-of-range value has been input in the box, the value is ignored.
   NOTE: If you are prompted to complete the setting, touch “Yes”.
5. Quit the SP mode (☛ Quitting the SP mode).

Service Tables

5.1.2 SP MODE TABLE

In the "Function/[Setting]" column:

- The related pop-up screen name and function name (if any) appear in parenthesis following the function description.
- Comments are in *italics*.
- The setting range is enclosed in brackets, with the default setting written in **bold**.
- An asterisk (*) after the mode number means that this mode's value is stored in the NVRAM. If you do a RAM reset, all these SP modes will be returned to their factory settings.
- **DFU** stands for **D**esign/**F**actory **U**se only. Values marked **DFU** should not be changed.

NOTE: The Service Program Mode is for use by service representatives only, so that they can properly maintain product quality. If this mode is used by anyone other than service representatives for any reason, data might be deleted or settings might be changed. In such case, product quality cannot be guaranteed any more.

SP1-XXX: (Feed)

<table>
<tr><th>1</th><th colspan="2">Mode No.
(Class 1, 2, and 3)</th><th>Function / [Setting]</th></tr>
<tr><td>001*</td><td colspan="3">Lead Edge</td></tr>
<tr><td rowspan="12"></td><td>1</td><td>Tray 1: Plain</td><td rowspan="12">Adjusts the leading edge registration by changing the registration clutch operation timing for each mode.
[–9.0 ~ 9.0 / 0.0 / 0.1 mm/step]
The user mode cannot adjust the settings for thick paper or OHP sheets.
NOTE: When adjusting SP1-001-2 or 3, check SP1-001-1 first. SP1-001-2 and 3 adjust the differences between the leading edge registration positions for the following paper types:
1: Plain paper and thick paper
2: Plain paper and OHP
In the same manner, when adjusting SP1-001-5 or 6, check SP1-001-4 first; and when adjusting SP1-001-10 or 11, check SP1-001-9 first.</td></tr>
<tr><td>2</td><td>Tray 1: Thick</td></tr>
<tr><td>3</td><td>Tray 1: OHP</td></tr>
<tr><td>4</td><td>Tray 2: Plain</td></tr>
<tr><td>5</td><td>Tray 2: Thick</td></tr>
<tr><td>6</td><td>Tray 2: OHP</td></tr>
<tr><td>7</td><td>Tray 3</td></tr>
<tr><td>8</td><td>Tray 4</td></tr>
<tr><td>9</td><td>By-pass: Plain</td></tr>
<tr><td>10</td><td>By-pass: Thick</td></tr>
<tr><td>11</td><td>By-pass: OHP</td></tr>
<tr><td>12</td><td>Duplex</td></tr>
<tr><td>002*</td><td colspan="3">Side-to-Side</td></tr>
<tr><td rowspan="6"></td><td>1</td><td>By-pass</td><td rowspan="6">Adjusts the side-to-side registration by changing the laser main scan start position for each mode.
[–4.0 ~ 4.0 / 0.0 / 0.1 mm/step]
NOTE: When adjusting SP1-002-1, 3, 4, 5, or 6, check SP1-002-2 first. SP1-002-1, 3, 4, 5, and 6 adjust the differences in the side-to-side registrations between each paper tray and tray 1.</td></tr>
<tr><td>2</td><td>Tray 1</td></tr>
<tr><td>3</td><td>Tray 2</td></tr>
<tr><td>4</td><td>Tray 3</td></tr>
<tr><td>5</td><td>Tray 4</td></tr>
<tr><td>6</td><td>Duplex</td></tr>
<tr><td>003*</td><td colspan="3">Paper Buckle</td></tr>
<tr><td rowspan="3"></td><td>1</td><td>Tray: Plain</td><td>Adjusts the amount of paper buckle at the registration roller by changing the paper feed timing.
[–4 ~ 6 / 0 / 1 mm/step]</td></tr>
<tr><td>2</td><td>Tray: Thick</td><td>[–4 ~ 6 / –2 / 1 mm/step]</td></tr>
<tr><td>3</td><td>Tray: OHP</td><td>[–4 ~ 6 / –2 / 1 mm/step]</td></tr>
</table>

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
003*	4	Tray: Small Size	[–4 ~ 6 / **0** / 1 mm/step] *Small Size includes LT long edge feed and smaller.*
	5	By-pass: Plain	[–4 ~ 6 / **0** / 1 mm/step]
	6	By-pass: Thick	[–4 ~ 6 / **–2** / 1 mm/step]
	7	By-pass: OHP	[–4 ~ 6 / **–2** / 1 mm/step]
	8	Duplex	[–4 ~ 6 / **0** / 1 mm/step]
105*	Fusing Temperature		
	1	Heating: Idling	Sets the temperature at which the heating roller starts idling. [100 ~ 180 / **145** / 1°C/step]
	2	Heating: Ready	Sets the temperature at which the heating roller enters the print ready condition. [100 ~ 180 / **155** / 1°C/step]
	3	Heating: Standby	Sets the heating roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Pressure roller: SP1-105-16 [100 ~ 180 / **160** / 1°C/step]
	4	Heating: Plain/1 Color	Sets the heating roller temperature for thin paper in single-color mode. [120 ~ 190 / **155** / 1°C/step]
	5	Heating: Plain/Full Color	Sets the heating roller temperature for thin paper in full-color mode. [120 ~ 190 / **160** / 1°C/step]
	6	Heating: Middle Thick/1 Color	Sets the heating roller temperature for normal plain paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	7	Heating: Middle Thick/Full Color	Sets the heating roller temperature for normal plain paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	8	Heating: Thick/1 Color	Sets the heating roller temperature for thick paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	9	Heating: Thick/Full Color	Sets the heating roller temperature for thick paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	10	Heating: OHP/1 Color	Sets the heating roller temperature for OHP sheets in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	11	Heating: OHP/Full Color	Sets the heating roller temperature for the OHP sheets in full-color mode. [120 ~ 190 / **175** / 1°C/step]
	12	Heating: Duplex/1 Color	Sets the heating roller temperature for duplex printing (both sides) in single-color mode. [120 ~ 190 / **150** / 1°C/step]

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
105*	13	Heating: Duplex/Full Color	Sets the heating roller temperature for duplex printing (both sides) in full-color mode. [120 ~ 190 / **155** / 1°C/step]
	14	Pressure: Idling	Sets the temperature at which the pressure roller starts idling. [30 ~ 100 / **10** / 1°C/step]
	15	Pressure: Ready	Sets the temperature at which the pressure roller becomes ready for printing. [60 ~ 150 / **65** / 1°C/step]
	16	Pressure: Standby	Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3 [60 ~ 150 / **115** / 1°C/step]
	27	Heating: OFFSET +	Sets the heating roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **5** / 1°C/step]
	28	Pressure: OFFSET +	Sets the pressure roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **0** / 1°C/step]
	29	Heat: OFFSET –	Sets the heating roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **5** / 1°C/step]
	30	Pressure: OFFSET –	Sets the pressure roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **0** / 1°C/step]
106	Temperature Display		
	1	Heating Roller	Displays the current temperature of the heating and pressure rollers.
	2	Pressure Roller	
109	Fusing Nip		
	1	Execute Mode	Checks the fusing nip width using an OHP sheet. The OHP sheet stops in the fusing unit for the specified time (☛ SP1-109-2). The nip width should be 9 ± 0.5 mm at front and rear. If this requirement is not met, change the fusing unit.
	2	Stop Duration	Adjusts the stoppage time for the OHP sheet in the fusing unit (☛ SP1-109-1). [0 ~ 100 / **10** / 1 s/step]
905	Pressure Roller Type		
	1	Pressure Roller Type	0: 2.1 mm Type (New)
			1: 1.5 mm Type (Old)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
920	Exit Full Timer		
	1	Exit Full Timer	[10 ~ 60 / **10** / 1 s/step] **DFU**
930	Fusing Oil Add		
	1	Fusing oil add	Forces the oil pump to supply silicone oil up from the oil tank to the tank in the oil supply unit. If the oil end sensor detects oil in the oil supply unit, this SP will not start the pump.
940	LEF Priority–Bypass		
	1	LEF Priority–Bypass	Selects the default paper feed direction of the by-pass tray. [0 ~ 1 / **0** / 1 /step] 0: SEF 1: LEF The machine detects only the width, but detects the size based on this information. If the setting is 0 (SEF): When A4 LEF is placed in the bypass tray, the machine detects this as A3. A4 SEF will be detected as A4. If the setting is 1 (LEF): The machine will detect A4LEF as A4. However, if A4 SEF is placed in the bypass tray, it will be detected as A5.

⇒ *SP2-XXX: (Drum)*

2	**Mode No. (Class 1, 2, and 3)**		**Function / [Setting]**
001*	Charge Bias		
	1	[M]	Adjusts the charge corona unit grid voltage. [300 ~ 800 / **500** / 1 Volt/step] Only effective is SP3-003 is set to 0.
	2	[C]	
	3	[Y]	
	4	[K]	
	5	No Image Area	
	6	Charger Current	Adjusts the charge corona unit current. [400 ~ 800 / **500** / 1 μA/step]
100*	Magnification Adjustment		
	1	Main Scan	Adjusts the magnification in each scan direction. [–12.8 ~ 12.7 / **0** / 0.01%/step]
	2	Sub Scan	
101*	Trim Adjustment		
	1	front	Adjusts the width of the white margin. [0.0 ~ 9.0 / **4.0** / 0.1 mm/step]
	2	back	[0.0 ~ 9.0 / **2.0** / 0.1 mm/step]
	3	lead	
	4	trail	
201*	Develop Bias Adjustment		
	1	[M]	Adjusts the development bias. [0 ~ 500 / **250** / 1 Volt/step] Only effective is SP3-003 is set to 0.
	2	[C]	
	3	[Y]	
	4	[K]	
208	Forced Toner		
	1	[K]	Forcefully supplies toner to the development unit.
	2	[C]	
	3	[M]	
	4	[Y]	
	5	All Color	
213	Toner End Set		
	1	Toner End Set	Specifies how many sheets can be printed after the toner near end message. [0 ~ 255 / **50** / 1 /step] **DFU**
301	Trans Belt Bias		
	1	1 Color: Front	Adjusts the transfer belt current. [30 ~ 140 / **80** / 10 μA/step] *The front side image for 1-color printing*
	2	1 Color: Rear	[30 ~ 140 / **80** / 10 μA/step] *The rear side image for 1-color duplex printing*
	3	2 Colors: First color	[30 ~ 140 / **130** / 10 μA/step] *The first color toner image of 2-color printing*
	4	3 Colors: First color	[30 ~ 140 / **130** / 10 μA/step] *The first color toner image of 3-color printing*
	5	4 Colors: First color	[30 ~ 140 / **75** / 10 μA/step] *The first color toner image of 4-color printing*
	6	2 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner mage of 2-color printing*
	7	3 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner image of 3-color printing*

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
301	8	4 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner image of 4-color printing*
	9	3 Colors: 3rd color	[30 ~ 140 / **130** / 10 μA/step] *The third color toner image of 3-color printing*
	10	4 Colors: 3rd color	[30 ~ 140 / **130** / 10 μA/step] *The third color toner image of 4-color printing*
	11	4 Colors: 4th color	[30 ~ 140 / **130** / 10 μA/step] *The fourth color toner image of 4-color printing*
	12	Print start	[30 ~ 140 / **70** / 10 μA/step] *After the first color toner image*
	13	Print end	[30 ~ 140 / **70** / 10 μA/step] *After the second color toner image*
	14	After 1st Color	[30 ~ 140 / **70** / 10 μA/step] *After the third color toner image*
	15	After 2nd Color	[30 ~ 140 / **70** / 10 μA/step] *After the final color toner image*
	16	After 3rd Color	[30 ~ 140 / **70** / 10 μA/step] *Development start*
	17	After 4th Color	[30 ~ 140 / **70** / 10 μA/step] *Development end*
	18	1 Color: Front: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating the front side image for 1-color printing*
	19	1 Color: Rear: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating the rear side image for 1-color duplex printing*
	20	2 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating an image for 2-color printing*
	21	3 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating an image for 3-color printing*
	22	4 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for the thick paper or OHP before creating an image for 4-color printing*
	23	Power On Recovery	[30 ~ 140 / **70** / 10 μA/step] *Machine start and jam recovery*
303*	Transfer Belt Environment		
	1	Threshold 1	Adjusts the environmental threshold for the transfer belt. [0 ~ 100.0 / **3.5** / 0.1 g/m^3/step] **DFU**
	2	Threshold 2	[0 ~ 100.0 / **19.0** / 0.1 g/m^3/step] **DFU**
304	Transfer Belt Environment		
	1	LL/Image/1 Color/1st	[50 ~ 200 / **85** / 1 %/step] **DFU**
	2	LL/Image/1 Color/1st	[50 ~ 200 / **85** / 1 %/step] **DFU**
	3	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	4	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	5	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	6	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	7	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	8	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
305*	Transfer Belt Start		
	1	Bias On Off	Sets the bias for the image transfer start to on or off. [0 ~ 1 / 1 / 1/step] **DFU** 0: Bias off 1: Bias on
306	Trans Belt First		
	1	1 Color	Adds the transfer current to the first page to improve insufficient transfer of the whole solid image. [3.0 ~ 14.0 / **9.0** / 1/step]
	2	2/3/4 Colors	[3.0 ~ 14.0 / **13.0** / 1/step]
⇒ 310*	1Paper Trans_LL1 (Paper Transfer LL1) LL1: Absolute humidity AH (g/m^3) is $0 < AH \leq 3.5$ The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL1' humidity range (Note: The current for the LL1 range is also affected by SP2-903.) Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. [0 ~ 70.0 / **25.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
	16	Normla/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **12.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
310*	28	Thick/2nd/210-256	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **24.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
⇒ 311*	Paper Trans_LL2 (Paper Transfer LL2) LL2: Absolute humidity AH (g/m^3) is $3.5 < AH \leq 8.0$ The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **27.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **13.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **19.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 312*	Paper Trans_NN1 (Paper Transfer NN1) NN1: Absolute humidity AH (g/m^3) is 8.0 < AH ≤ 14 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN1' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **28.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]
⇒ 313*	Paper Trans_NN2 (Paper Transfer NN2) NN2: Absolute humidity AH (g/m^3) is 14 < AH ≤ 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **29.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
313*	5	Normal/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
⇒ 314*	Paper Trans_HH (Paper Transfer HH). HH: Absolute humidity AH (g/m^3) is > 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'HH' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **30.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
314*	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **36.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **37.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **35.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
320*	Paper Trans_Col (Paper Transfer Correction) The display indicates: Paper Type/Side 1 or 2/Printing mode		
	1	Normal/1st/1 Color	Corrects the electric current for paper transfer. **DFU** [0 ~ 100 / **45** / 1%/step]
	2	Normal/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	3	Normal/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	4	Normal/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	5	Normal/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	6	Normal/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	7	Thick/1st/1 Color	[0 ~ 100 / **45** / 1%/step]
	8	Thick/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	9	Thick/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	10	Thick/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	11	Thick/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	12	Thick/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	13	OHP/1 Color	[0 ~ 100 / **60** / 1%/step]
	14	OHP/2 Colors	[0 ~ 100 / **90** / 1%/step]
	15	OHP/3 Colors	[0 ~ 100 / **100** / 1%/step]
⇒ 321	Paper Transfer Bias of Edge		
	1	Normal/1st/Leading edge	Adjusts the paper transfer current at the paper edges. [10.0 ~ 20.0 / **10.0** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	2	Normal/2nd/Leading edge	
	3	Thick/1st/Leading edge	
	4	Thick/2nd/Leading edge	
	5	OHP/Leading edge	
	6	Normal/1st/Trailing edge	

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
321	7	Normal/2nd/Trailing edge	Adjusts the paper transfer current at the paper edges. [0.0 ~ 1.0 / **0.8** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	8	Thick/1st/Trailing edge	
	9	Thick/2nd/Trailing edge	
	10	OHP/Trailing edge	
322	Paper Transfer Charge		
	1	Leading edge	Adjusts the width at the paper edges where the current specified with SP2–321 is applied. [0 ~ 30 / **30** / 1 mm/step] **DFU** *The values indicate the distance from the paper edges.*
	2	Trailing Edge	
323	Paper Transfer Cleaning		
	1	Cleaning Negative	Adjusts the transfer belt cleaning current. The current is applied before and after printing jobs and during jam recovery. [0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	2	Cleaning Positive	[0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	3	Cleaning Negative Lubrication	[0 ~ 255 / **50** / 0.1 μA/step] **DFU**
331	Print Start Cleaning		
	1	Print Start Cleaning	Enables/disables cleaning before printing jobs. [0 ~ 1 / **0** / 1 /step] **DFU** 0: Disables 1: Enables
400*	Cleaning Bias LL1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $0 < AH \leq 3.5$ (this is the 'LL1' humidity range) **DFU** [0 ~ 2000 / **1200** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1200** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
401*	Cleaning Bias LL2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $3.5 < AH \leq 8.0$ (this is the 'LL2' humidity range) **DFU** [0 ~ 2000 / **1600** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1600** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
402*	Cleaning Bias NN1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 8.0 < AH ≤ 14 (this is the 'NN1' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
403*	Cleaning Bias NN2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 14 < AH ≤ 19 (this is the 'NN2' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
404*	Cleaning Bias HH		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 19 < AH (this is the 'HH' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
500*	Fusing Bias		
	1	Normal/1 Color/1st	Adjusts the fusing bias voltage. **DFU** [1000 ~ 4000 / **3000** / 100 Volt/step]
	2	Normal/1 Color/2nd	[1000 ~ 4000 / **3000** / 100 Volt/step]
	3	Normal/Full Color/1st	[1000 ~ 4000 / **2500** / 100 Volt/step]
	4	Normal/Full Color/2nd	[1000 ~ 4000 / **2500** / 100 Volt/step]
	5	Thick/1 Color/1st	[1000 ~ 4000 / **3000** / 100 Volt/step]
	6	Thick/1 Color/2nd	[1000 ~ 4000 / **3000** / 100 Volt/step]
	7	Thick/Full Color/1st	[1000 ~ 4000 / **2500** / 100 Volt/step]
	8	Thick/Full Color/2nd	[1000 ~ 4000 / **2500** / 100 Volt/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
501*	Fusing Bias Switch		
	1	Fusing Bias Switch	Switches the fusing and discharge pin bias control on or off. [0 ~ 1 / **1** / 1/step] **DFU** 0: Control off 1: Control on
502	Discharge Bias		
	1	H	Adjusts the discharge plate voltage (paper separation from transfer belt). [–4000 ~ –1000 / –**2500** / 100 Volt/step]
	2	L	
801*	Charge Cleaning Interval		
	1	Charge Cleaning Interval	Sets the charge corona unit cleaning interval. [0 ~ 5000 / **600** / 100 counts/step] *See section 6 for details. SP7-925 displays the number of counts since the last cleaning.*
	3	Additional Charge Corona Cleaning Interval	Sets the additional charge corona unit cleaning interval. [0 ~ 5000 / **100** / 100 counts/step] The cleaning is carried out after 600, at job end or after 700 (-3 setting).
802	Charger Cleaning		
	1	Charger Cleaning	Executes a forced charge corona unit cleaning. Set to 1 to start cleaning.
901*	Environment Control		
	1	Environment Control	Switches environment control on or off. [0 ~ 1 / **1** / 1/step] **DFU** 0: Control off (The paper transfer and cleaning bias environments are set to NN1. The image transfer bias environment is set to MM.) 1: Control on
902	Charge Cleaning Status		
	1	Charge Cleaning Status	[0 ~ 9 / **0** / 1/step] 0: Cleaner has stopped 1: Cleaner moving from front to rear 3: Cleaner moving from rear to front (back to the home position)
903	Paper Transfer Adjustment		
	1	LL1: Plain	Specifies the difference from the LL1 paper transfer current (SP2-310). [0 ~ 7.0 / **1.0** / 1 μA/step] *The specified value is subtracted from the value specified by SP2-310 under the following conditions:* The machine is in the LL1 environment. 400 images or less are created after the machine starts.
904	1C Bias Adjustment		
	1	M	Default 50V **DFU**
	2	C	Default 0V **DFU**
	3	Y	Default 0V **DFU**
	4	K	Default 0V **DFU**
905	Paper Transfer Roller Type		
	1	Paper Transfer Roller Type	0: Drum Type (New) 1: Straight Type (Old)

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
912*	Temperature Humidity Display		
	1	Temperature	Displays the temperature measured by the temperature sensor inside the machine. [–127 ~ 127 / **0** / 1°C/step]
	2	Humidity 1	Displays the humidity measured by the humidity sensor inside the machine. [0 ~ 255 / **0** / 1%/step]
	3	Humidity 2	Displays the absolute humidity calculated from the temperature/humidity sensor readings. [0 ~ 65535 / **0** / 0.1 g/m^3/step]
	4	Environment Level ** AH = absolute humidity*	Displays the current humidity level calculated from the absolute humidity. [0 ~ 1 / **0** / 1/step] LL1: 0 < AH ≤ 3.5 LL2: 3.5 < AH ≤ 8.0 NN1: 8.0 < AH ≤ 14 NN2: 14 < AH ≤ 19 HH: 19 < AH
938	OPC Reverse Interval		
	1	[0 ~ 100 / **10** / 10 counts /step] The Main motor rotates the OPC belt backwards for 500 ms at the end of every job, in order to remove foreign particles between the OPC belt and cleaning blade. This does not need to be performed as often. Also, reducing the frequency of OPC belt reverse rotation improves the cleaning blade performance. This SP adjusts the counter for the OPC belt reverse rotation, and is incremented as follows: LT/A4 LEF or smaller: 1, larger than LT/A4 LEF: 2. When this SP reaches its set maximum, reverse rotation is performed for 500 ms at job end. **NOTE**: Requires BICU Firmware v 1.253:01 and controller v 2.01.5.	
939	OPC lubricant interruption (Forced OPC lubrication)		
	1		Enables/disables forced OPC lubrication at a certain interval. **DFU** [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled *The OPC lubrication interval is specified with SP2-942-1*.
940	OPC Lubricant Mode		
	1	OPC Lubricant Mode	Executes a forced OPC lubrication to reduce the friction on the OPC belt. **DFU** The OPC belt and the lubricant brush operate for 2 mins.
941	OPC Lubricant Time		
	1	Interrupt **NOTE**: Requires BICU Firmware v 1.253:01 & controller v 2.01.5.	Determines how long the OPC belt is lubricated for after the end of every job (☛ SP3–940). [0 ~ 30 / **14** / 1 s/step]
	2	No Interrupt	Determines how long the OPC belt is lubricated at the forced lubrication. [0 ~ 60 / **10** / 1 s/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
942	OPC Lubricant Interval		
	1	OPC Lubricant Interval	The machine lubricates the OPC belt and image transfer belt at the interval (number of prints) set with this SP. Incoming print jobs do not interrupt the lubrication. [10 ~ 65535 / **50** / 10/step] **DFU** *Set SP2-939-1 to 1 to execute the forced OPC lubrication.*
944	OPC Lubrication: High Coverage		
	1	Setting	Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5. [0 ~ 1 / **1** / 1 /step] 0: Disables 1: Enables When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing (lubrication time: around 34 seconds).
	2	Image Coverage–1	Specifies standard average coverage condition 1. [50 ~ 800 / **300** / 10 units/step] *OPC lubrication is executed under the following conditions.* After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-4. The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 1.
	3	Image Coverage–2	Specifies standard average coverage condition 2. [50 ~ 800 / **200** / 10 units/step] *OPC lubrication is executed under the following conditions.* After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-5. The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 2.
	4	Sheets–1	[10 ~ 80 / **20** / 1 sheet/step]
	5	Sheets–2	[10 ~ 80 / **40** / 1 sheet/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
950	Start Registration Adjustment		
	1	Start Registration Adjustment 1–K	Color registration adjustment: Adjusts the start timing of imaging for each color. [–3 ~ 3 / **0** / 1 line/step] **DFU** 2 lines = 0.047566 ms (about 85 μm) +: Delays the start timing. –: Advances the start timing. The start timing is adjusted only in plain paper mode, and when one of the following conditions is satisfied: *1) Between the two images on the transfer belt (when two images are developed on the OPC at the same time (☛6.2))* *2) B4 SEF or larger (multi-print job)*
	2	Start Registration Adjustment 1–M	[–3 ~ 3 / **–1** / 1 line/step]
	3	Start Registration Adjustment 1–C	[–3 ~ 3 / **0** / 1 line/step]
	4	Start Registration Adjustment 1–Y	[–3 ~ 3 / **0** / 1 line/step]
	5	Start Registration Adjustment 2–K	[–3 ~ 3 / **0** / 1 line/step]
	6	Start Registration Adjustment 2–M	[–3 ~ 3 / **–1** / 1 line/step]
	7	Start Registration Adjustment 2–C	[–3 ~ 3 / **0** / 1 line/step]
	8	Start Registration Adjustment 2–Y	[–3 ~ 3 / **0** / 1 line/step]
951	Clock Phase Control		
	1	LD 1	Adjusts the clock phase of the LD to reduce the density difference between the left and right sides of the printout when the color misalignment correction (SP2–952–1) is enabled. [0 ~ 8 / **0** / 1 /step] *Do this after installing a new laser unit; see Replacement and Adjustment for details.*
	2	LD 2	
952	Color Misalignment Correction		
	1	Color Misalignment Correction	Selects either color misalignment correction or reduction in density difference between the left and right sides of pages. [0 ~ 1 / **1** / 1 /step] 1: on The data for LD1 and LD2 are switched between the left and right sides of each page. This is done because of the difference in the output of each LD. However, in some cases this correction may cause density differences between sides. 0: off Use this setting if there are density differences between sides.

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 954	New PCU Settings		
	1	PCU Settings	This mode facilitates servicing in the field with individual settings for new and old PCUs. Enabling/Disabling this SP mode will change the settings of all of the SP modes listed in the table below: 0: New *1: Old* **NOTE:** This SP mode is present with Copier Firmware version 1.31:01 or later.

Affected Service Programs When SP 2-954-001 is Set:

SP No.	Description	SP2-954-01	
		0:New	1:Old
		Setting for New	Setting for Old
2-400-008	Cleaning Bias LL1: OPC lubrication time	**1400**	1400
2-401-008	Cleaning Bias LL2: OPC lubrication time	**1400**	1400
2-402-008	Cleaning Bias NN1: OPC lubrication time	**1400**	1400
2-403-008	Cleaning Bias NN2: OPC lubrication time	**1400**	1400
2-404-008	Cleaning Bias HH: OPC lubrication time	**1400**	1400
2-920-01	ITB Cleaning CL OFF Time	**0**	0
2-921-01	ITB Cleaning CL OFF Mode	**0: New PCU**	1: Old PCU
2-922-01	Dev CL ON after Job End	**0: OFF**	1: ON
2-923-01	Lubricant after Toner End	**1: ON**	1: ON
2-924-01	ITB Cleaning Clutch Off/On - Time	**300**	300
2-924-02	ITB Cleaning Clutch Off/On - Number	**2**	0
2-925-01	ITB Cleaning Execution Variable	**20**	20
2-926-01	Cover Ratio Reference (MC)	**1.7**	1.7
2-926-02	Cover Ratio Reference (FC)	**1.7**	1.7
2-927-01	Disable Time (ITB Cleaning)	**3**	3
2-970-05	ITB Cleaning Clutch Off/On Number in Oil removal mode	**2**	0
3-920-02	Lubrication Cleaning Time – 2C/3C/4C	**100**	100

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
970	Oil Removal Mode		
	1	Oil Removal	Enables/disables the settings of SP2–970–2 through 4. [0 ~ 1 / **1** / 1 /step] 0: Disables 1: Enables Oil on duplex copies gets on the transfer belt, and this can cause uneven image density. To remove this oil, printing stops, the PCU turns, and the cleaning unit removes the oil.
	2	Print Interruption	Enables/disables interruption of the oil removal process. [0 ~ 1 / **0** / 1 /step] 0: Disables 1: Enables *If interruption is enabled, the user does not need to wait until the oil removal process ends, but the output image may be poor.*
	3	Number of Continuation	Specifies how many times the oil removal process is repeated. [1 ~ 20 / **5** / 1 /step] *The more times the oil removal is repeated, the better the output images are; but the longer it takes.*
	4	Number of Duplex	Specifies how often the oil removal process is done. The unit is the number of duplex prints. The counter counts down once every narrow (A4 SEF or less) duplex sheet, and counts back up 1 for every other type of sheet. [1 ~ 50 / **10** / 1 /step]

SP3-XXX: (Process)

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001	Process Control		
	1	Execute	Does a forced process control, and displays the result as one of the following codes.
	2	Display	Displays the completion code. 0: Normal termination 103: Error (ID sensor inactive → Defective ID sensor, Defective circuit, Defective BCU board) 104: Error (ID sensor unable to receive light → Defective OPC belt, Dirty OPC belt, Defective ID sensor, Defective circuit, Defective BCU board) 105: Error (ID sensor unable to receive reflection from OPC → Same as "104") 110: Error (Cyan: ID sensor unable to detect correct image) 111: Error (Magenta: ID sensor unable to detect correct image) 112: Error (Yellow: ID sensor unable to detect correct image) 113: Error (Cyan: ID sensor unable to detect correct image) 114: Error (Magenta: ID sensor unable to detect correct image) 115: Error (Yellow: ID sensor unable to detect correct image) 116: Error (Black: ID sensor unable to detect correct image) 118: Error (Black image not detected) 123: Error (Development bias error; Black ID sensor unable to detect correct image) Solutions for codes 110 to 123: Poor connection to the development unit Dirty development bias terminal Abnormal development bias PCU not installed correctly LD unit defective Abnormal charge corona voltage Defective BICU

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
002	Process Control **DFU**		
	1	LED	[0 ~ 255 / **150** / 1 /step]
	2	Bk Out	[0 ~ 0xFFFF / **0** / 1 /step]
	3	Bk Led Off Out	[0 ~ 0xFFFF / **0** / 1 /step]
	4	Color Out	[0 ~ 0xFFFF / **0** / 1 /step]
	5	Color Led Off Out	[0 ~ 0xFFFF / **0** / 1 /step]
	6	ID Sensor Target	[0 ~ 5000 / **1500** / 1 /step]
	7	ID sensor Out Adjustment	[800 ~ 12000 / **1000** / 1 /step]
	10	Bk Vg Control	[0 ~ 1000 / **250** / 1 /step]
	11	Color Vg Control	[0 ~ 1000 / **400** / 1 /step]
	12	Color Vd Control	[0 ~ 1000 / **150** / 1 /step]
	13	gamma M	[–30000 ~ 30000 / **2000** / 1 /step]
	14	gamma C	[–30000 ~ 30000 / **2000** / 1 /step]
002	15	gamma Y	[–30000 ~ 30000 / **2000** / 1 /step]
	16	Gamma K	[–30000 ~ 30000 / **5000** / 1 /step]
	17	Invariable-M	[–3000 ~ 3000 / **150** / 1 /step]
	18	Invariable-C	[–3000 ~ 3000 / **150** / 1 /step]
	19	Invariable-Y	[–3000 ~ 3000 / **150** / 1 /step]
	20	Invariable-K	[–3000 ~ 3000 / **0** / 1 /step]
	21	OPC Target M	[400 ~ 2000 / **600** / 1 /step]
	22	OPC Target C	[400 ~ 2000 / **620** / 1 /step]
	23	OPC Target Y	[400 ~ 2000 / **570** / 1 /step]
	24	OPC Target K	[400 ~ 2000 / **850** / 1 /step]
	25	Charge V Offset M	[100 ~ 600 / **280** / 1 /step]
	26	Charge V Offset C	[100 ~ 600 / **280** / 1 /step]
	27	Charge V Offset Y	[100 ~ 600 / **280** / 1 /step]
	28	Charge V Offset K	[100 ~ 600 / **280** / 1 /step]
	29	ID sensor Target 1M	[0 ~ 5000 / **1400** / 1 /step]
	30	ID sensor Target 1 Color	[0 ~ 5000 / **1400** / 1 /step]
	31	ID sensor Target 1Y	[0 ~ 5000 / **1400** / 1 /step]
	32	ID sensor Target 2M	[0 ~ 1000 / **200** / 1 /step]
	33	ID sensor Target 2 Colors	[0 ~ 1000 / **200** / 1 /step]
	34	ID sensor Target 2Y	[0 ~ 1000 / **200** / 1 /step]
	35	ID sensor Target 2K	[0 ~ 2000 / **1200** / 1 /step]
	36	Color Development Bias	[50 ~ 300 / **100** / 1 /step]
	37	Bk Development Bias	[50 ~ 300 / **50** / 1 /step]
	38	Bias Charge	[0 ~ 1000 / **20** / 1 /step]
	52	Absolute Temperature	[0 ~ 200 / **150** / 1 /step]
	53	Previous Temperature	[0 ~ 100 / **15** / 1 /step]
	54	Timer Counter	[0 ~ 5000 / **1440** / 1 /step]
003*	Lubricant Interval		
	1	Lubricant Interval	Sets the process control interval. [0 ~ 1000 / **200** / 10 sheet/step] 0: Disables automatic process control

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
004*	Environment Change		
	1	Temperature	Sets the temperature/humidity change that triggers process control (process control is done if temperature or humidity has changed by this amount since the previous process control). [0 ~ 100 / **15** / 1°C/step]
	2	Humidity	[0 ~ 100 / **150** / 1 g/m^3/step]
005*	Process control Pre-Rotate		
	1	Process control Pre-Rotate	PCU and development unit idling is done before process control. This value determines the amount of idling rotation. [1 ~ 5 / **1** / 1 turn/step] 1 turn: A3 length
006*	Density Adjustment		
	1	M/A Correction	Select the toner density compensation level for process control. If prints are not dark enough when making multi-print jobs, increasing this value ensures that prints will be darker after the next process control. The default (0) is for no correction. SP3-006-1: Use this one if the density of solid areas is not satisfactory. SP3-006-2: Use this one if the density of highlight areas is not satisfactory. [0 ~ 3 / **0** / 1/step] 0: None 1: Weak 2: Medium 3: Strong The higher the value, the darker the prints will be.
	2	Highlight Correction	
125	Process control/LD: Pre-ACC self-check setting		
	1	ACC self-check setting	Enables/disables process control execution before ACC. [0 ~ 1 / **1** / 1/step] 0: Disabled 1: Enabled
901	LD-POWER		
	1	LD 1	Specifies the LD power. **DFU** [0 ~ 65535 / **716** / 1 /step]
	2	LD 2	

Service Tables

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
910*	Doctor Interval		
	1	Color	If the number of pages in a job exceeds this number, the doctor roller rotates in reverse at the end of the job. [0 ~ 50 / **50** / 1 sheet/step] The value indicates how many sheets are output before the doctor roller is reversed. (Sheet counts are converted into equivalent A4-LEF sheet counts.) The roller is reversed for 16 seconds Reversing the roller removes toner blockages. The sheet count is reset after reverse rotation. The machine waits until the end of the job before reversing the doctor roller. Decrease the value when vertical white lines appear on prints.
	2	Black	[0 ~ 65535 / **50** / 1 sheet/step]
	3	Job end	If at the end of a job, the roller has not been reversed since more than this number of pages, the roller is reversed at the end of the job. [0 ~ 65535 / **20** / 1 sheet/step]
920*	Lubrication Cleaning Time		
	1	Lubrication Cleaning Time	Sets the OPC belt lubrication period. **DFU** [0 ~ 100 / **50** / 1%/step] When 100 is specified, the OPC belt cleaning clutch is always on whenever the OPC is turning, so the OPC gets lubricated. When 50 is specified, the clutch is only on half the time that the motor is on. **Rev. 06/2003** **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.
921*	Lubricant time		
	1	Job end	Specifies the duration of lubrication at the end of jobs. [0 ~ 30 / **20** / 1 /step] **DFU**
	2	Doctor roller reverse operation	Specifies the duration of lubrication during reverse doctor roller rotation. [0 ~ 30 / **20** / 1 /step] **DFU**
922	Lubricant Brush Off		
	1	1 Color	Allows the image transfer belt cleaning clutch off timing to be adjusted. The setting determines the number of seconds after image transfer belt cleaning roller charging that the clutch is turned off. With previous versions, the clutch is always running while the development roller motor rotates. [0 ~ 11 / **6** / 1s /step]
	2	2 Color/3 Color/4 Color **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.	

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
940	Job End Interruption		
	1	Job End Interruption	The OPC belt is lubricated after the end of every job (SP2–941–1). This SP determines whether the lubrication is interrupted when a job arrives at the printer. [0 ~ 1 / **0** / 1 /step] 0: Interrupted 1: Not interrupted
970	Image Area Rate		
	1	M	Specifies the minimum image area (expressed as a percentage of an A4 page) required to maintain optimum development unit condition (☛ Toner Revitalization: SP3–971). [0 ~ 10.0 / **2.0** / 0.1 %/step] *After 20 sheets over a number of small jobs (or after 50 sheets in one job), if the developed area is less than the value of this SP mode, toner is transferred to the image transfer belt and cleaned off. This is performed during the doctor roller reverse rotation.*
	2	C	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	3	Y	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	4	Bk	[0 ~ 10.0 / **3.0** / 0.1 %/step]
971	Toner Revitalization		
	1	Toner Revitalization	Enables/disables the toner revitalization. [0 ~ 1 / **0**/ 1 /step] 0: Disables 1: Enables *Continuous printing with a relatively low coverage ratio (CMYK less than 5% each) tends to reduce the charge potential of the toner, because the toner remains in the hopper for a long time. This can lead to spots on the copy. Toner revitalization removes this defective toner periodically.*
980	1C Idling		
	1	1C Idling	Enables/disables 1-color idling after paper transfer. [0 ~ 1 / **0** / 1 /step] 0: Disables 1: Enables *Set this to 1 if the user complains about diagonal lines in solid areas of prints that only use one toner color (M, C, or Y).*

SP4-XXX: (Scanner)

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
008*	Scanner Sub Scan Magnification		
	1	Scanner Sub Scan Magnification	Adjusts the magnification in the sub scan direction for scanning. [0.0 ~ 1.0 / **0.0** / 0.1 %/step] *Use the key to toggle between + and – before entering the value. The specification is ± 1%. See "Replacement and Adjustment – Copy Adjustment" for details.*
010	Scanner Leading Edge Registration		
	1	Scanner Leading Edge Registration	Adjusts the leading edge registration for scanning in platen mode. [–3.0 ~ 3.0 / **0.0** / 0.1 mm/step] *(–): The image moves in the direction of the leading edge.* *Use the key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment – Copy Adjustment" for details.*
011*	Scanner Side-to-side Registration		
	1	Scanner Side-to-side Registration	Adjusts the side-to-side registration for scanning in platen mode. [–6.0 ~ +6.0 / **0.0** / 0.1 mm step] *(–): The image disappears at the left side.* *(+): The image appears.* *Use the key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment – Copy Adjustment" for details.*
012*	Scanner Blank Margin		
	1	Leading Edge	Adjusts the erase margin at each side for scanning. [0.0 ~ 3.0 / **0.0** / 0.1 mm/step] *Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.*
	2	Trailing Edge	
	3	Left	
	4	Right	
013	Scanner Free Run		
	1	Lamp: OFF	Performs a scanner free run with the exposure lamp on or off. *Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.*
	2	Lamp: ON	
017	Scan		
	1	Shading ON	Performs a scanner free run with shading on or off. Only one scan is made. *Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.*
	2	Shading OFF	
205	Black ADS Level		
	1	Black ADS Level	Adjusts the erased background level for black-&-white ADS. [0 ~ 128 / **64** / 1 /step]
301	APS Data Confirmation		
	1	APS Data Confirmation	Displays the status of the APS sensors and platen/DF cover sensor.

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]	
303	APS Minimum Size Setting			
	1		Selects whether the copier determines that the original is A5 size when the APS sensor cannot detect the size. [0 ~ 1 / **0** / 1 /step] *If "A5 lengthwise" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise. If "Not detected" is selected, "Cannot detect original size" will be displayed.*	
417	IPU Test Pattern			
	1	Prints test patterns from the IPU video data outputs. 0: Scanning Image 1: Checker 2: Oblique Checker 3: Horizontal Gray Scale 4: Vertical Gray Scale 5: RGB YMCK Scale 6: UCR Gray Scale 7: Color Patch 16 Steps 1 8: Color Patch 16 Steps 2	9: Color Patch 64 Steps 10: Checker (YMCK) 11: Patch (YMCK) 12: Banding 1 (Gray) 13: Banding 2 (Gray) 14: Horizontal Gray Scale 2 15: Scanning Image + Checker 16: Scanning Image + Gray Scale *Change to the copy mode display by pressing the Interrupt key, then print the test pattern.*
440	Saturation Adjustment			
	1		Adjusts the colour chroma for the scanner. [0 ~ 5 / **3** / 1 /step] **DFU**	
540	Printer Vector			
	1	R:K	Adjust the vector correction of the filter in the CCD on the SBU unit. [–128 ~ 127 / **0** / 1 /step] *When replacing the SBU, input the data from the data sheet that is included with the spare SBU unit.*	
	2	R:C		
	3	R:M		
	4	R:Y		
	5	Y:K		
	6	Y:C		
	7	Y:M		
	8	Y:Y		
	9	G:K		
	10	G:C		
	11	G:M		
	12	G:Y		
	13	C:K		
	14	C:C		
	15	C:M		
	16	C:Y		
	17	B:K		
	18	B:C		

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
540	19	B:M	Adjust the vector correction of the filter in the CCD on the SBU unit. [–128 ~ 127 / **0** / 1 /step] *When replacing the SBU, input the data from the data sheet that is included with the spare SBU unit.*
	20	B:Y	
	21	M:K	
	22	M:C	
	23	M:M	
	24	M:Y	
628	Gain Adjustment: R		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
629	Gain Adjustment: G		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
630	Gain Adjustment: B		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
685	Reference Adjustment: R		
	1	Reference Adjustment: R	Adjusts the ADC reference voltage. Details are in Replacement and Adjustment. [0 ~ 255 / **136** / 1 /step]
686	Reference Adjustment: G		
	1	Reference Adjustment: G	Adjusts the ADC reference voltage. [0 ~ 255 / **136** / 1 /step]
687	Reference Adjustment: B		
	1	Reference Adjustment: B	Adjusts the ADC reference voltage. [0 ~ 255 / **136** / 1 /step]
688	DF: Density Adjustment		
	1	DF: Density Adjustment	Adjusts the brightness for scanning using the ARDF. [83 ~ 100 / **86** / 1 %/step] *The density when scanning from the DF exposure glass tends to be higher than the density from the main exposure glass. SP4-688 adjusts the density on the DF exposure glass.*
800	DF: Density Correction		
	1	DF: Density Correction: R	Adjusts the red density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
	2	DF: Density Correction: G	Adjusts the green density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
	3	DF: Density Correction: B	Adjusts the blue density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
902	ACC Data Display		
	1	R DATA 1	Displays ACC data. [0 ~ 255 / **0** / 1 /step]
	2	G DATA 1	
	3	B DATA 1	
	4	R DATA 2	
	5	G DATA 2	
	6	B DATA 2	

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
903	Vertical Line Correction		
	1	Vertical Line Correction	Adjusts the strength of the vertical line's correction with sheet through DF. [0 ~ 4 / **0** / 1 /step] 0: No adjustment 1: Low level adjustment 2: Middle-low level adjustment 3: Middle-high level adjustment 4: High level adjustment
904	BICU Board Test		
	1	test 1: register access test	Tests the BICU board *The following are completion codes:* *00: Normal end* *11: JTONE (DFID) error* *12: CPR (DFID) error* *13: IDU (DFID) error* *14: Separation ASIC error* *15: MaCKY error*
	2	test 2: image path test	*The following are completion codes:* *00: Normal end* *21: JTONE (DFID) error, Field memory error* *22: CPR (DFID) error, MaCKY, DFID, Field memory error* *23: JTONE (DFID), Separation error* *24: Separation error, CPR error, MaCKY error, DFID error, Field memory error*
905*	Dither selection		
	1	Dither selection	[0 ~ 255 / **1** / 1 /step] **DFU**
906	Binary Threshold		
	1	Binary Threshold	Specifies the black/white threshold for binary image processing. [0 ~ 255 / **128** / 1 /step] *Lower values increase the proportion of black in the image.*
907	VPU Test Pattern Selection		
	1	select any test pattern: R	[0 ~ 4 / **1** / 1 /step] 0: CCD 1: Black 2: White 3: 15-grade gray scale 4: Vertical line
	2	select any test pattern: G	
	3	select any test pattern: B	
918	Manual Gamma Adjustment		
			Please refer to section 3.13.2
932*	Picture Element Correction		
	1	R: Left	Corrects the left or right side alignment of the red or blue filter on the CCD. [0 ~ 9 / **5** / 1 /step]
	2	R: Right	
	3	B: Left	
	4	B: Right	

Service Tables

SP5-XXX: (Mode)

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]	
009	Set Display Language			
	1	Set Display Language	Selects the language on the display. [1 ~ 16 / **1** / 1 /step] 1: Japanese 2: English (British) 3: English (American) 4: French 5: German 6: Italian 7: Spanish 8: Dutch	9: Norwegian 10: Danish 11: Swedish 12: Polish 13: Portuguese 14: Hungarian 15: Czech 16: Finnish *Turn off and on the main power switch to validate SP5-009.*
024	mm/inch Display Selection			
	1	mm/inch Display Selection	Selects a unit system. North America: [0 ~ 1 / **1** / 1 /step] Europe: [0 ~ 1 / **0** / 0 /step] 0: Millimeters 1: Inches	
045*	Charge Counter Display			
	1	Charge Counter Display	Changes the counter method. The setting can only be changed once. [0 ~ 1 / **0** / 1 /step] 0: Developments 1: Prints	
046*	ROM Update Display			
	1	ROM Update	Enables or disables the ROM Update utility. When enabled, this utility will be displayed in the user program mode. **DFU** [0 or 1 / **1** / –] 0: Enabled 1: Disabled	
104*	A3/11x17 count			
	1	A3/11x17 count	The counters count double for A3/11" x 17". [0 ~ 1 / **0** / 1/step] 0: Normal count 1: Double count	
112	Custom size Setting			
	1	Custom size Setting	Allows/does not allow custom paper sizes. [0 ~ 1 / **1** / 1 /step] 0: Not allowed 1: Allowed	

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
113	Optional Counter Type		
	001	Optional Counter Type	Determines the type of accounting device. [0 ~ 9 / **0** / 1 /step] 0: None 1: Key card (RK2, RK3, RK4) 2: Key card (subtracting) 3: Prepaid card 4: Coin lock 5: MF key card 6: (not used) 7: (not used) 8: Key counter (excluding vendors) 9: Barcode printer
118	Disable copying		
			[0 ~ 1 / **1** / 1 /step] 0: Copying enabled *1: Copying disabled*
121	Counter Up Timing		
	001	Counter Up Timing	Selects the accounting timing. [0 ~ 1 / **0** / 1 /step] 0: Paper feed 1: Paper exit SP5-121 affects only the timing for sending signals to the accounting device. The counters for other units or devices are not affected.
126	F Original Size		
	001	F Original Size	Specifies the type of F-size paper. [0 ~ 2 / **0** / 1 /step] • *0: 8 1/2" x 13" SEF* • *1: 8 1/4" x 13" SEF* • *2: 8" x 13" SEF*
127	APS Mode		
	001	APS Mode	Enables or disables the APS (Auto Paper Selection) mode. [0 ~ 1 / **0** / 1 /step] • *0: Enables* • *1: Disables*
128	Combination (Op. Counter)		
	001	Combination (Op. Counter)	[0 ~ 1 / **0** / 1 /step] **DFU** 0: 1:

Service Tables

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
212	Page Numbering		
	003	Duplex Printout Right/Left Position	Adjusts the positions of page numbers. [–99 ~ 99 / **0** / 1 mm/step]
	004	Duplex Printout High/Low Position	
302	Setting Time		
	001	Setting Time	Sets the clock.
	002	Time zone	Sets the time zone. North America: [–1440 ~ 1440 / **–300** / 1 minute/step] Europe: [–1440 ~ 1440 / **60** / 1 minute/step] *Values indicate the time difference from the Greenwich Mean Time (GMT). "–300" indicates the eastern standard time of Canada and the United States of America. "60" indicates the standard time of the French Republic.*
305	Auto Off Set		
	001	ON/OFF	Determines the auto-off timer adjustment range that is available for SP5-305-2. [0 ~ 1 / **0** / 1/step] 0: 10 minutes to 240 minutes 1: 0 minutes to 240 minutes
	002	Set Timer	Specifies the auto-off timer value. [0 ~ 14400 / **3600** / 1 second/step] *When SP5-305-1 is set to 1, SP5-305-2 has a range of 0 minutes to 240 minutes. 0 means AOF is disabled (the machine never switches itself off).*
401*	Access Control		
	001	Copy: User Code (UC)	Activates/inactivates copy mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use copy mode. To select 1, one or more user codes must be registered.
	002	Copy: Key Counter (KC)	Activates/inactivates the key counter for copy mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs copy mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	003	Copy: Coin Lock (CL)	Activates/inactivates the accounting device for copy mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs copy mode operations.
	011	DS: User Code (UC)	Activates/inactivates document server access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use document server mode. To select 1, one or more user codes must be registered.
	012	DS: Key Counter (KC)	Activates/inactivates the key counter for document server mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs document server operations.
	013	DS: Coin Lock (CL)	Activates/inactivates the accounting device for document server mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs document server operations.
	021	Fax: User Code (UC)	Activates/inactivates fax mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use fax mode. To select 1, one or more user codes must be registered..

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	022	Fax: Key Counter (KC)	Activates/inactivates the key counter for fax mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs fax mode operations.
	023	Fax: Coin Lock (CL)	Activates/inactivates the accounting device for fax mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the fax mode operations.
	031	Scanner: User Code (UC)	Activates/inactivates scanner mode access control using user codes [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use scanner mode. To select 1, one or more user codes must be registered.
	032	Scanner: Key Counter (KC)	Activates/inactivates the key counter for scanner mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs scanner mode operations.
	033	Scanner: Coin Lock (CL)	Activates/inactivates the accounting device for scanner mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the scanner mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	041	Printer: User Code (UC)	Activates/inactivates printer mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use printer mode. To select 1, one or more user codes must be registered. If SP5-401-44 is activated, the user codes can be automatically registered.
	042	Printer: Key Counter (KC)	Activates/inactivates the key counter for printer mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs printer mode operations.
	043	Printer: Coin Lock (CL)	Activates/inactivates the accounting device for printer mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the printer mode operations.
	044	Printer: UC Auto	Activates the auto user code registration function (prints are counted and logged for each user code and the counts can be viewed with SmartNetMonitor). [0 ~ 1 / **1** / 1/step]0: Inactivated 1: Activated
	051	Copy: UC Mono color	Activates/inactivates mono color copying access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make mono color copies. To select 1, one or more user codes must be registered.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	052	Copy: KC Mono color	Activates/inactivates the key counter for mono color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs mono color copy operations.
	053	Copy: LC Mono color	Activates/inactivates the accounting device for mono color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs mono color copy mode operations.
	054	Copy: UC Twin color	Activates/inactivates two-color copying access control using user codes [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make two-color copies. To select 1, one or more user codes must be registered.
	055	Copy: KC Twin Color	Activates/inactivates the key counter for two-color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs two-color copy operations..
	056	Copy: CL Twin Color	Activates/inactivates the accounting device for two-color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs two-color copy mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	057	Copy: UC Full Color	Activates/inactivates full color copying access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make full color copies. To select 1, one or more user codes must be registered.
	058	Copy: KC Full Color	Activates/inactivates the key counter for full color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs full color copy operations.
	059	Copy: CL Full Color	Activates/inactivates the accounting device for full color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs full color copy mode operations.
	061	Printer: UC Color	Activates/inactivates full color printing access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make full color prints. To select 1, one or more user codes must be registered.
	062	Printer: KC Color	Activates/inactivates the key counter for full color printing. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs full color printing operations.
	063	Printer: CL Color	Activates/inactivates the accounting device for full color printing. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs full color print mode operations

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
404	User Code Counter Clear		
	001	User Code Counter Clear	Clears the user code counter.
409	Access code		
	001	Password	Registers/changes the password for the key operator. [0 ~ 99999999 / **0** / 1 /step] *"0" indicates no code has been registered. SP7-810 can be used to clear the key operator password.*
	002	Access Area	Decides which programs require key operator codes. [0 ~ 2 / **0** / 1 /step] 0: None 1: Some key operator user tool settings 2: All user tool programs
501	PM Alarm		
	001	PM Alarm Level	Specifies the PM alarm level. [0 ~ 255 / **0** / 1 /step] 0: Disables the PM alarm 1 ~ 255: Specifies the PM alarm level. *The PM alarm occurs when L x 1000 >= C, where L is the specified level and C is the current PM counter value.*
	002	Original Count Alarm	
504	Jam alarm **Japan Only**		
	1	Jam Alarm	Selects the jam alarm level. [0 ~ 3 / **3** / 1 /step] 0: Z (none) 1: L (6K x 1/4) 2: M (6K x 1/2) 3: H (6K)
	2	Error Alarm	Enables/disables the control call when an unremoved jam occurs. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled An "unremoved jam" is a paper jam that remains unremoved for 15 minutes. If 1 is selected, the machine beeps if an unremoved jam has occurred.
505	Error Alarm **Japan Only**		
	1	Error Alarm	[0 ~ 255 / **40** / 1 /step]

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
507	Supply Alarm **Japan Only**		
	1	Paper Supply Alarm	Turns the supply alarm on or off. [0 ~ 1 / **0** / 1 /step] 0: Off • 1: On
	2	Staple Supply Alarm	
	3	Toner Supply Alarm	
	128	Interval: Others	The machine issues the control call when the number of paper sheets reaches the specified value. [00250 ~ 10000 / **1000** / 1 sheet/step]
	132	Interval: A3	
	133	Interval: A4	
	134	Interval: A5	
	141	Interval: B4	
	142	Interval: B5	
	160	Interval: DLT	
	164	Interval: LG	
	166	Interval: LT	
	172	Interval: HLT	
508	CC call **Japan Only**		
	001	CC201 ON/OFF (Remain of Jam)	Enables/disables alarms for unremoved jams. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled
	002	CC101 ON/OFF (Continuous jam Occurrence)	Enables/disables alarms for consecutive jams. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled
	003	CC202 ON/OFF (Continuous Door Open)	Enables/disables alarms when a cover remains open continuously. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
508	004	CC Call Screening ON/OFF (Low Call Mode)	Selects the alarm mode. [0 ~ 1 / **0** / 1 /step] 0: Normal Mode (CC Auto Call) 1: Reduce Mode (CC Manual Call) When selecting 1 (reduce mode), SP5-508-011 through -023 specify parameters (referred to as "P" in the following descriptions). Alarms occur under the following conditions: Continuous jam: When paper jams occur P times consecutively, where P can be between 2 and 10. The default for P is 5 (☛ SP5-508-012). Continuous door open: When a door is left open for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-013). Unremoved jam: When a paper jam is left unremoved for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-011).
	011	CC201 Interval (Jam Detection: Time Length)	Specifies the unremoved jam timer (☛ SP5-508-004). [3 ~ 30 / **10** / 1 minute/step]
	012	CC101 Frequency (Jam Detection: Time Length)	Specifies the number of consecutive jams (☛ SP5-508-004). [2 ~ 10 / **5** / 1 time/step]
	013	CC202 Interval (Door Open: Time Length)	Specifies the continuous door open timer (☛ SP5-508-004). [3 ~ 30 / **10** / 1 minute/step]
	021	CC201 Beeper Ope (Jam Operation: Time Length)	Selects how the machine handles the unremoved jam alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Beeper If an unremoved jam occurs, a phone call is automatically made when 0 (auto call) is selected. To enable SP5-508-21 through -23, SP5-508-4 must be set to 1.
	022	CC101 Manual Call ON/OFF (Jam Operation: Time Length)	Selects how the machine handles the consecutive jam alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Manual Call
	023	CC202 Manual Call ON/OFF (Door Operation: Time Length)	Selects how the machine handles the continuous door open alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Manual Call

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
610	ACC Factory Setting		
	004	Recall	Recalls the ACC factory settings.
	005	Overwrite	Overwrites the ACC factory settings with the current settings.
	006	Previous Setting	Recalls the previous ACC settings.
611	2nd. Single Color Adj.		
	001	B–C	[0 ~ 100 / **90** / 1 %/step]
	002	B–M	[0 ~ 100 / **60** / 1 %/step]
	003	G–C	[0 ~ 100 / **85** / 1 %/step]
	004	G–Y	[0 ~ 100 / **80** / 1 %/step]
	005	R–M	[0 ~ 100 / **95** / 1 %/step]
	006	R–Y	[0 ~ 100 / **65** / 1 %/step]
801	Memory Clear – Refer to section 5.1.9 for how to use this SP		
	001	All modules	Clears the settings from the NVRAM and initializes the settings. [0 ~ 0 / **0** / 0/step]
	002	Engine Clear	Clears the engine settings. [0 ~ 1 / **0** / 1/step]
	003	SCS/SRM	Clears the system settings. [0 ~ 0 / **0** / 0/step]
	004	IMH Memory Clear	Clears IMH data. **DFU** [0 ~ 0 / **0** / 0/step]
	005	MCS	Clears MCS data. **DFU** [0 ~ 1 / **0** / 0/step] 0: Does not execute 1: Executes
	006	Copier application	Clears the copy settings. [0 ~ 1 / 0 / 1/step]
	007	Fax application	Clears the fax settings. [0 ~ 1 / 0 / 1/step]
	008	Printer application	Clears the user tool settings. [0 ~ 0 / **0** / 0/step]
	009	Scanner application	Clears the scanner settings. *This SP must be performed after installing the printer/scanner option or updating the scanner software.* [0 ~ 1 / 0 / 1/step]
	010	Network application	Clears the net file settings. [0 ~ 1 / 0 / 1/step]
	011	NCS	Clears the network settings. [0 ~ 0 / **0** / 0/step]

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
801	012	IPU	Clears the IPU settings. [0 ~ 1 / 0 / 1/step]
	014	DCS Memory Clear	Clears the DCS settings. [0 ~ 1 / 0 / 1/step]
	015	UCS Memory Clear	Clears the UCS settings. [0 ~ 1 / 0 / 1/step]
802	Free Run		
	1	A4: BANK 2: Bk	Makes a free run test. All mode: Goes through tests 1 to 4. [0 ~ 1 / 0 / 1/step] • *0: No free run* *1: Start a free run test*
	2	A4: TRAY 1: Bk	
	3	A4: By-pass: Bk	
	4	A4: BANK 2: Full Color	
	5	All Mode	
803	Input Check (See section 5.1.4, “Input Check”)		
804	Output Check (See section 5.1.5, “Output Check”.)		
810	SC Reset		
	001	SC Reset	Resets a fusing-related SC. [0 ~ 1 / **0** / 1/step] *Resets a type A service call condition.* ***NOTE:*** *Turn the main switch off and on after using this SP.*
811	Serial Number Display		
	002	Serial Number Display	Displays the machine serial number. [0 ~ 1 / **0** / 1/step]
812*	Service Telephone No. Setting		
	001	Telephone	5-812-1: Service representative telephone number 5-812-2: Service representative fax number 5-812-3: Number for ordering consumables 5-812-4: Telephone number of the sales representative [0 ~ 0 / **0** / 0/step] Both numbers and alphabetic characters can be input.
	002	Facsimile	
	003	Supply	
	004	Operation	
813*	High Voltage SC Sensor		
	001	High Voltage SC Sensor	Activates/deactivates detection of SC conditions for the high voltage power supplies. [0 ~ 1 / **0** / 1/step] 0: Activated 1: Deactivated *The following SCs are affected:* SC300, 301, 302, 350, 351, 400, 410, 411, 412, 413, 420, 421, 430
816	CSS Function **DFU**		
	1	Function Setting	[0 ~ 1 / **0** / 1 /step] 0: Off 1: On
	2	CE Call	
821	CSS-PI Device Code **DFU**		
	1	CSS-PI device code	Selects the PI device code. [0 ~ 4 / **0** / 1 /step] *To validate the setting, turn off and on the main power switch.*

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
822	Document All Clear		
	1	Document All Clear	Clears the management information on stored fax files.
824	NVRAM Data Upload		
	1	NVRAM Data Upload	Use this to copy NVRAM data from the machine to a flash card.
825	NVRAM Data Download		
	1	NVRAM Data Download	Imports data from a flash card to the NVRAM. *When data has been normally imported into the NVRAM, a message appears on the operation panel. After reading the message, turn the main power switch off and on. The data of SP7-007 are not imported through SP5-825.*
828	Network Setting		
	74	Delete Password	Deletes the password.
	75	DNS Server From DHCP	[0 ~ 1 / **0** / 1 /step]
	76	DNS Server 1	Server address
	77	DNS Server 2	Server address
	78	DNS Server 3	Server address
	79	Domain Name (Ethernet)	Domain name
	80	Host Name (Ethernet)	Host name
832	HDD		
	1	HDD Formatting (ALL)	Initializes the hard disk. [0 ~ 0 / **0** / 0 /step] Use this SP mode only for hard disk error recovery.
	2	HDD Formatting (IMH)	
	3	HDD Formatting (Thumbnail)	
	4	HDD Formatting (Job Log)	
	5	HDD Formatting (Printer Fonts)	
	6	HDD Formatting (User Info 1)	
	7	HDD Formatting (User Info 2)	
	8	HDD Formatting (Scanner Mail)	
	9	HDD Formatting (Data for a Design)	
	11	HDD Formatting (Ridoc interface)	

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
833*	Job Log Transfer		
	7	Job Log Transfer	Saves the results of jobs in the job log. [0 ~ 1 / **0** / 1 /step] If this mode is enabled, the results of jobs are written on the HDD. 0: Disabled 1: Enabled
835	File Transfer		
	1	Capture server IP address	Displays/specifies the capture server IP address. [00000000000h ~ FFFFFFFFFF1 / **0** / 1 /step]
	10	Archive: Copier	Validates/invalidates auto-store functions. [0 ~ 1 / **0** / 1 /step] 0: Invalidates 1: Validates
	11	Archive: Fax Send	
	12	Archive: Fax: Receive	
	13	Archive: Printer	
	14	Archive: Scanner	
	20	Server: Copier	Transfers or does not transfer data to servers. [0 ~ 1 / **0** / 1 /step] 0: Not transferred 1: Transferred
	21	Server: Fax Send	
	22	Server Transfer: Fax: Receive	
	23	Server: Printer	
	24	Server: Scanner	
	30	List File: Copier	Selects lists or files. [0 ~ 1 / **0** / 1 /step] 0: Lists 1: Files
	31	List File: Fax: Send	
	32	List File: Fax: Receive	
	33	List File: Printer	
	34	List File: Scanner	
836	Capture Setting		
	001	Capture Function	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/0/1] 0: Disable 1: Enable
	002	Panel Setting	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] 0: Disable 1: Enable The setting for SP5-836- 001 has priority.
	051	Capture Setting: Cancel Document	Deletes the file(s) that could not send to a PC or waiting for sending.

5	Number/Name		Function/[Setting]
836	071	Capture Setting: Resolution Conversion for Color	Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	072	Capture Setting: Resolution Conversion for Copy Text	Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	073	Capture Setting: Resolution Conversion for Copy (Others)	Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	074	Capture Setting: Resolution Conversion for Color Print	Determines the resolution conversion ratio when a color print image document is sent to the Document Server via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	075	Capture Setting: Resolution Conversion for Binary Print	Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	076	Capture Setting: Resolution Conversion for Dither Print (Grayscale processing mode)	Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the File Format Converter. [1~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
836	081	Capture Setting: Format for Color Copy	Determines the image format for Color Copy images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	082	Capture Setting: Format for Copy Text	Determines the image format for Copy Text images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	083	Capture Setting: Format for Copy (Others)	Determines the image format for Copy (other than text) images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	084	Capture Setting: Format for Color Print	Determines the image format for Color Print images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	085	Capture Setting: Format for Binary Print	Determines the image format for Binary Print images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	086	Capture Setting: Format for Dither Print (1200dpi)	Determines the image format for Dither Print images sent to the Document Server via the File Format Converter. [0~3/2/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	091	Capture Setting: Page Quality for JPEG	Determines the quality level of JPEG images sent to the Document Server via the File Format Converter. [5~95/50/1]
839	IEEE1394		
	4	Device Name	Displays the 1394 device name. [Text up to 13 bytes / **NULL** / – /step]
	7	Cycle Master	Validates/invalidates the cycle master function. [0 ~ 1 / **1** / 1 /step] *0: Invalidates* *1: Validates*

5	Number/Name		Function/[Setting
839	8	BCR mode	Select either 'Standard', 'IRM color copy', or 'Always effective'.
	9	IRM 1394a Check	[bit 0 ~ bit 1 / **0** / 1 /step] *bit 0: off* *bit 1: on*
	10	Unique ID	[bit 0 ~ bit 1 / **0** / 1 /step] bit 0: off bit 1: on
	11	Logout	Prevents initiators from logging on or makes initiators log off. [0 ~ 1 / **0** / 1 /step] *0: Prevents the initiators (having already logged on) to log on if they try to log on* *1: Makes initiators (having already logged on) to log off if they try to log on*
	12	Login	Allows/disallows an initiator to exclusively log on. [0 ~ 1 / **0** / 1 /step] 0: Disallows 1: Allows
	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / **8** / 1 /step]
840	IEEE 802.11b		
	6	Channel MAX	Specifies the maximum number of IEEE 802.11b channels. North America: [1 ~ 14 / **11** / 1 /step] Europe: [1 ~ 14 / **13** / 1 /step]
	7	Channel MIN	Specifies the minimum number of IEEE 802.11b channels. [1 ~ 14 / **1** / 1 /step]
	11	WEP Key Select	Selects the WEP key. [00, 01, 10, 11 / **00** / – /step] 00: 1st key 01: 2nd key 10: 3rd key 11: 4th key
841	Toner Name Setting		
	1	Black	Specifies supply names. These appear on the screen when the user presses the Inquiry button in the user tools screen.
	2	Cyan	
	3	Yellow	
	4	Magenta	
842	Net File Analysis Mode Setting		
	1	Net File Analysis Mode Setting	**DFU** Default: 00111111 – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
843	Input Check (Controller)		
	1	Input Check (Controller)	[0x00 ~ 0x07 / **–** / 1 /step] **DFU** Default: 00000001 – do not change

5	Number/Name		Function/[Setting
845	Delivery Server		
	1	FTP Port No.	Specifies the FTP port number. [0 ~ 65535 / **3670** / 1 /step]
	2	IP address	Specifies the distribution server IP address. [0 ~ 0xffffffff / **0x00** / – /step]
	3	Retry Timer	Specifies the distribution retry time. [60 ~ 900 / **300** / 1 /step]
	4	Retry Times	Specifies the distribution retry count. [0 ~ 99 / **3** / 1 /step]
	5	IP (Capture Server)	Specifies the distribution server address. [0 ~ 0xffffffff / **0x00** / 1 /step]
	6	Error Display Time	Specifies the display time of the distribution error. [0 ~ 999 / **300** / 1 /step]
	7	Delivery Option	Selects the distribution option. [0 ~ 1 / **0** / 1 /step] 0: Data goes directly to the connected PC 1: Data goes to the Scan Router server
846	UCS		
	1	Machine ID (Delivery Server)	Specifies the machine ID of the distribution server.
	2	Machine ID Clear (Delivery Server)	Clears the machine ID of the distribution server.
	3	Max Entry	Specifies the maximum entry count. [2000 ~ 5000 / **2000** / 1 /step]
	4	Delivery Server Model	Selects the distribution server model. [0 ~ 4 / **0** / 1 /step] 0: Unknown 1: SG1 (distributed with the copier) 2: SG1 (distributed as a package) 3: SG2 (distributed with the copier) 4: SG2 (distributed as a package)
	5	Delivery Server Capability	Specifies the distribution capability. [0 ~ 255 / **0** / 2 /step]
	6	Delivery Server Retry Timer	[0 ~ 255 / **0** / 1 /step]
	50	All Directory Clear	Initializes all directories.

5	Number/Name		Function/[Setting
847	Net File Mag. Rate		
	001	Copy: Color	Changes the default settings of color copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [1~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	002	Copy: Text	Changes the default settings of copy text image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	003	Copy: Others	Changes the default settings of a copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	004	Print Color	Changes the default settings of color print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	005	Print: Binary	Changes the default settings of binary print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	006	Print: Dither (Grayscale processing mode)	Changes the default settings of dither print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting
847	021	Netfile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by DeskTopBinder V2 sent via the File Format Converter. [5~95 / 50 / 1]
848	Web Service		Sets the 4-bit switch assignment for the access control setting. 0000: No access control 0001: Denies access to Desk Top Binder V2. Has no effect on access and delivery from Scan Router. The lower 4 bits are used.
	001	Access Control: Net file	Net File: Job printed from the document server from a PC using DeskTopBinder V2. DocBox: Document Server Repository: Document Management area on the machine's hard disks
	002	Access Control: Repository	
	003	DocBox Print	
	004	User Directory	
	005	Delivery Input (Lower 4 Bits)	
	006	Fax Control (Lower 4 Bits)	
849	Counter Clear Day		
	1	Indication	Displays the date when the electrical counter was reset to zero.
	2	Display of Counter Clear Day	Allows or does not allow printing the counter clear day on the user counter list. [0 ~ 1 / **1** / 1 /step] 0: Printed 1: Not printed
850	Address Book Function		
	1	Switch Module	Selects which module is responsible for user information management. [0 ~ 1 / **1** / 1 /step] **DFU** 0: SCS 1: UCS *Having changed the setting, turn the main switch off and on to validate it.*
	2	Select Title	Selects the address book index style. [2 ~ 4 / **2** / 1 /step] 2: Style 1 3: Style 2 4: Style 3
852	SMTP/POP		
	001	SMTP Server Name	Input the IP address or host name of the SMTP server. Use up to 127 alphanumeric characters.
	002	SMTP Port Number	Input the port number used when sending e-mail to the SMTP server. [1~65535 / **25** / 1]

5	Number/Name		Function/[Setting
852	003	Authorization	Validates the SMTP function. SMTP (Simple Mail Transfer Protocol) is the protocol for communication between Internet main MTAs (Message Transfer Agents). [0~1 / **0** / 1] 0: OFF: Disables SMTP1 1: ON: Enables SMTP
	004	User Name	Sets the SMTP user name.
	005	Password	Sets the SMTP password.
	006	SMTP Auth. Encryption	Sets encryption method for the transfer password in SMTP validation. [0~2 / **0** / 1] 0: Auto: Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. 1: OFF: Allows two methods for SMTP validation: LOGIN, PLAIN. 2: ON: Allows only one method for SMTP validation: CRAM-MD5.
	007	POP before SMTP	A flag that determines whether the POP server is connected before connecting to the SMTP server. [0~1 / **0** / 1] POP 0: OFF 1: ON Post Office Protocol (POP) servers are computers that receive mail-using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
	008	POP Server Name	Sets the POP server name. Enter up to 127 alphanumeric characters.
	009	POP Port Number	Sets the POP port number. [1 ~ 65535 / 110 / 1]
	010	POP User Name	Sets the POP user name. Enter up to 63 alphanumeric characters.
	011	POP Password	Sets the POP password. Enter up to 63 alphanumeric characters.
	012	POP Auth. Encryption	Sets the encryption method for the password when SP5852-007 (POP Before SMTP) is in use. [0~2 / **0** / 1] 0: Auto: Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. 1: OFF: Allows only normal encryption. 2: ON: Allows only APOP encryption.
	013	Time out Setting for POP	Sets the wait time after POP validation until the SMTP mail is sent. [0~10000/ **300** /1 ms]

5	Number/Name		Function/[Setting
907	Plug and Play		
	1	Plug and Play	Specifies the Plug and Play setting. [0~15 / **0** / 1 /step] Select the required setting from the menu.
913	Switchover Permission Time		
	1	Indication Application	Specifies the switching time from the default application to another application. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the default application.*
	2	Print Application	Specifies the switching time from one application to another. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the running application.*
914	Counter Display		
			Allows/does not allow applications to display their counters. [0 ~ 1 / **0** / 1 /step] 0: Allows 1: Does not allow
919	ACS Mode		
	1	ACS Mode	Selects the ACS mode. **DFU** [0 ~ 1 / **0** / 1 /step] 0: Standard mode 1: High performance mode
954	CSV Password Check		
	1	CSV Password Check	CSV: Copy server (document server) When a document is stored with a password on the copy server, and this document is selected later at the operation panel, this SP determines whether the password is displayed or greyed out. 0: Not displayed 1: Displayed [0 ~ 1 / **0** / 1 /step]
955	Test Pattern		
	1	Pattern	[0 ~ 255 / **0** / 1 /step] See section 5.1.3. for how to use.
	2	Density	[0 ~ 255 / **255** / 1 /step]
966	Document Clear Time		
	1	Document Clear Time	Specifies how many days the document server stores files. [0 ~ 180 / **3** / 1 /step]
970	Debug Serial		
	1	Debug Serial	DFU
971	Touch Panel Correction		
	1	Touch Panel Correction	Displays if the operation panel has been calibrated after an SP5-801 execution. [0 ~ 1 / **0** / 1 /step] 0: Not calibrated 1: Calibrated

5	Number/Name		Function/[Setting
974	Cherry Server Setting		
	1	Cherry Server Setting	Selects the Scan Router server light or full version. [0 ~ 1 / **0** / 1 /step] 0: Light version 1: Professional version
989	Loop Back Test		
	1	Duplex	Executes a loop back test. [0 ~ 1 / **0** / 1 /step] 0: Does not execute 1: Executes
	2	Bank	
	3	Exit Option	
	4	ARDF	
	5	Interchange Unit	
	6	By-pass Tray	
	7	1 Bin Tray	
990*	SMC Print		
	1	All (Data List)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. All: All SP mode settings Non-Default: SP settings that have been changed from the defaults
	2	SP (Mode Data List)	
	3	User Program	
	4	Logging Data	
	5	Diagnosis Report	
	6	Non-Default	
	7	NIB Summary (Configuration page, system log page NVRAM log page)	
	8	Net File Log	
990*	21	Copier UP Data (Copy Management Report)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. All: All SP mode settings Non-Default: SP settings that have been changed from the defaults
	22	Scanner SP	
	23	Scanner UP (Scanner Management Report)	
996	Density Adjustment		
	1	Bk	Adjusts the density. [–3 ~ 3 / **0** / 1 /step] –3: Image becomes lighter 3: Image becomes darker This setting changes the development bias and charge corona voltage to adjust the image density.
	2	Y	
	3	M	
	4	C	

SP6-XXX: (Peripherals)

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
006*	ADF Adjustment		
	1	S-to-S Registration	Adjusts the side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	2	Leading Edge Registration	Adjusts the sub-scan registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	3	Trailing Edge Erase	Adjusts the trail edge erase of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	4	S-to-S Registration (Rear)	Adjusts the rear-side side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	5	Sub-san Magnification	Adjusts the sub-scan magnification of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 %/step]
	6	Orig. Buckling	Enables/disables original buckling during rear side scanning. Disable if the customer is scanning fragile originals. [0 ~ 1 / **1** / 1 /step] 0: Disabled 1: Enabled
	7	Buckle Adjustment	Adjusts original buckling for rear side scanning. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
007	DF Input Check		
	1	Original Set	Displays the signals received from sensors and switches of the ARDF. See section 5.1.4 *Do not check another item before the result is returned.*
	2	Original Width 1	
	3	Original Width 2	
	4	Original Length 1	
	5	Original Length 2	
	6	Orig. Trailing Edge	
	7	Cover Open	
	8	DF Position	
	9	Registration	
	10	Original Exit	
	11	Original Reverse	
008	DF Output Check		
	1	Feed Motor (Forward)	Switches on each electrical component of the ARDF for testing. See section 5.1.5 *Do not start to check another item before ending the test that is in progress.*
	2	Feed Motor (Reverse)	
	3	Trans. Motor (Forward)	
	4	Feed Clutch	
	5	Pick-up Solenoid	
	6	Junction Gate Solenoid	
	7	Stamp Solenoid	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
009	ADF Free Run		
	1	ADF Free Run	Executes an ADF free run. [0 ~ 1 / **0** / 1 /step] 0: End *1: Start*
010	ADF Stamp Position		
	1	ADF Stamp Position	Adjusts the stamp position of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
016	ADF Size Change		
	1	ADF Size Change	Selects the paper size detected by the optional ADF original sensors. North America: [0 ~ 1 / **0** / 1 /step] Others: [0 ~ 2 / **0** / 1 /step] 0: Regular 1: A4/LT 2: 8K/16K *Number 2, "8K/16K", is valid for the models of the following regions: Europe, Asia. When number 2 is selected, the following paper sizes are not detected: A3, B4, A4, B5.*
050	Staple Position		
	1	Staple Position	Adjusts the staple position of the optional finisher. [–3.5 ~ 3.5 / **0.0** / 0.5 mm/step]
117	Finisher Input Check		
	1	Entrance	Displays the signals received from sensors and switches in the finisher. See section 5.1.4
	2	Tray Exit	
	4	Staple Entrance	
	5	Stapler Home Position	
	6	Jogger Fence Home Position	
	8	Feed-out Belt Home Position	
	9	Stapler Tray Paper	
	10	Stapler Rotation Home Position	
	11	Staple	
	14	Staple Sheet	
	17	Exit Plate Home Position	
	18	Tray Shift Home Position	
	21	Stack Height	
	23	Tray Lower Limit	
	35	Paper Limit	
	101	500 Fin Entrance	
	102	500 Fin Exit	
	103	500 Fin Jogger Home Position	
	104	500 Fin Top Cover	
	105	500 Fin Height	
	106	500 Fin Lever	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
117	107	500 Fin Upper Limit	
	108	500 Fin Near Limit	
	109	500 Fin Staple Cover	
	110	500 Fin Stapler Home Position	
	111	500 Fin Staple End	
	112	500 Fin Staple	
	113	500 Fin Stapler Lock	
118	Output Check		
	1	Fin All Off	Switches on each electrical component of the finisher. See section 5.1.5
	2	Upper Transfer Motor	
	3	Lower Transfer Motor	
	4	Exit Motor	
	5	Tray Gate Sol	
	6	Tray Lift Motor	
	7	Jogger Motor	
	12	Stapler Motor	
	13	Staple Hummer	
	15	Stapler Gate Sol	
	16	Pos. Roller Sol	
	18	Feed-out Motor	
	19	Shift Motor	
	22	Guide Plate Motor	
	23	Fin Free Run 1	
	24	Fin Free Run 2	
	101	500 Fin All Off	
	102	500 Fin Main Motor	
	103	500 Fin Jogger Motor	
	104	500 Fin Paddle Sol	
	105	500 Fin Gear Sol	
	106	500 Fin Lever Sol	
	107	500 Fin Tray Motor	
	108	500 Fin Stapler Motor	
	109	500 Fin Free Run 1	
	110	500 Fin Free Run 2	
990	ADF Read Position Adjustment		
	1	ADF Read Position Adjustment	Adjusts the reading position of the ADF. Moves the scanner under the glass to a different position. Use this if there is a scratch on the glass. [–10 ~ 10 / 0 / 0.1 mm/step]

SP7-XXX: (Data Log)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001*	Operation Time		
	1	Operation Time	Displays the main motor operation time. [0000000 ~ 9999999 / **0** / 1 minute/step] *Logging this operation time helps identify the cause of a difficulty by analyzing the correlation between the printing count and the OPC-belt operation time.*
002	Original Counter		
	1	Total Counter	Displays the original counters. [0000000 ~ 9999999 / **0** / 1 /step]
	2	Copier	
	3	Fax	
	4	Document Box	
	5	Scanner	
	6	Others	
003*	Print Counter		
	1	Total	Displays the color counters. [–9999 to 9999999 / **0** / 1/step]
	2	Copy: Black	
	4	Copy: Full Color	
	5	FAX: Black	
	6	FAX: Single Color	
	7	Print: Black	
	8	Print: Full Color	
	10	Development: CMY	10, 11: These SP modes are development counters.
	11	Development: K	
	12	CPY: Single Color	
	13	CPY: Twin Color	
	20	Total Full color	These SP modes are used for the Japanese market only.
	21	Total B/W Single Color	
	22	Total Single Color	
	23	Total B/W	
	24	Copy: Full Color	
	25	Print: Full Color	
	26	Copy: Color	
	27	Copy: B/W	
	28	Print: Color (except for B/W)	These SP modes are print counters. These SP modes are used in all markets.
	29	Print: B/W	
	30	Total: Color	
007*	Other Counter		
	1	Duplex	Displays other counter values. [–9999 ~ 9999999 / **0** / 0 sheet/step]
	2	A3/DLT	
	3	Staple	
101*	Paper Size Counter		
	4	A3	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT (11" x 17")	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
101*	36	LG (8 1/2" x 14")	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	38	LT (8 1/2" x 11")	
	44	HLT (5 1/2" x 8 1/2")	
	47	12 x 18	
	128	Other	
105	Paper type Counter		
	1	Normal	Displays the output counter for each paper type. [0 ~ 999999999 / **0** / 1 /step]
	2	Recycled	
	3	Special	
	4	Color	
	5	Letter head	
	6	Label	
	7	Thick	
	8	OHP	
	9	Others	
106*	Waste Toner Full		
	1	OPC	Displays the waste toner bottle counters. [0 ~ 65535 / **0** / 1 /step]
	2	Belt	[0 ~ 65535 / **0** / 1 /step]
201	Total Scan Counter		
	1	Total Scan Counter	
204*	Paper Tray Counter		
	1	Tray 1	Displays the number of sheets fed from each paper feed station. [0 ~ 9999999 / **0** / 0 sheet/step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Duplex	
205	ADF Total Counter		
	1	ADF Total Counter	Displays the ARDF original count. [0000000 ~ 9999999 / **0** / 1 /step]
206	Staple Counter		
	1	Staple Counter	Displays the stapling count. [0000000 ~ 9999999 / **0** / 1 /step]
209	Punch Counter		
	1	Punch Counter	Displays the punching count. [0 ~ 9999999 / **0** / 1 /step]
301	Copy Counter: Magnification		
	1	Reduce 25% <-->49 %	Displays the copy count for each magnification ratio. [0 ~ 9999999 / **0** / 1 /step]
	2	Reduce 50% <-->99 %	
	3	Full Size	
	4	Enlarge 101% <--> 200%	
	5	Enlarge 201% <--> 400%	
	6	Direct Magnification	
	7	Direct Size Magnification mm (inch)	
	8	Auto Reduce/Enlarge	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
304	Copy Counter: Copy Mode		
	1	Text	Displays the copy count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	T/P (Glossy Photo)	
	3	T/P (Printed Photo)	
	4	T/P (Copied Photo)	
	5	Photo (Glossy Photo)	
	6	Photo (Printed Photo)	
	7	Photo (Copied Photo)	
	8	Generation Copy	
	9	Pale	
	10	Map	
	12	Repeat	
	13	Sort	
	14	Staple	
	15	Series	
	16	Erase	
	17	Duplex	
	18	ADF	
	19	Double Copy	
	20	Duplex Original	
	21	Interrupt Copy	
	22	Combine 1 Side	
	23	Combine 2 Side	
	26	Batch	
	27	SADF	
	28	Mixed Sizes	
	29	Stamp	
	30	Cover Page	
	31	Chapter Page	
	32	Color Balance Adjustment	
	33	Adjust Color	
	34	Copy Quality	
	35	Erase Color	
	36	Convert Color	
	37	Color Background	
305	Copy Counter–Set number		
	1	1 to 1	Displays the multi-page job copy counters. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
306	Job Counter–Copy Mode		
	1	Sort	Displays the job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Staple	
	4	Reserve Copy	
	5	Check Copy	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
320	Document Server–Scan Counter		
	1	Document Server–Scan Counter	Displays the number of pages scanned into the document server. [0 ~ 9999999 / **0** / 1 /step]
321	Document Server–Original Size		
	4	A3	Displays the original count for each paper size when using the document server. [0 ~ 9999999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	128	Others	
323	Document Server–Print Size		
	5	A4 (sideways)	Displays the document server printing count for each paper size. [0 ~ 9999999 / **0** / 1 /step]
	6	A5 (sideways)	
	14	B5 (sideways)	
	38	LT (sideways)	
	44	HLT (sideways)	
	128	Other	
	132	A3 (lengthwise)	
	133	A4 (lengthwise)	
	134	A5 (lengthwise)	
	141	B4 (lengthwise)	
	142	B5 (lengthwise)	
	160	DLT (lengthwise)	
	164	LG (lengthwise)	
	166	HT (lengthwise)	
	172	HLT (lengthwise)	
324	Document Server–Print Job Counter		
	1	Duplex	Displays the document server printing job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Sort	
	3	Staple	
	5	Check Copy	
	6	Print 1st Page	
325	Document Server–Job Count (Page No)		
	1	1-page	Displays document server printing job counts for multi-page jobs.
	2	2-page	
	3	3<-->5 page	
	4	6<-->10 page	
	5	over 11 pages	
326	Document Server–Job Count (File No)		
	1	1 file	Displays document server printing job counts classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	2	2<-->5 files	
	3	6<-->10 files	
	4	Over 11 files	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
327	Document Server–Job Count (Set No)		
	1	1 to 1	Displays document server printing job counts classified by number of outputs. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
328	Document Server–Job Count (Print Mode)		
	8	Sort	Displays document server printing count classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	9	Staple	
	12	Duplex	
	24	Stamp	
	25	Cover Page	
	26	Slip Sheet	
401*	Total SC Counter		
	1	SC Counter	Displays how many times SC codes have been output. [0 ~ 9999 / **0** / 0 time/step]
403	Latest 10 SC Log		
	1	Latest	Displays the latest ten SC codes.
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
502*	Paper Jam Counter		
	1	Paper Jam Counter	Displays the total number of jams detected. [0 ~ 9999 / **0** / 0 /step]
503	Original Jam Counter		
	1	Original Jam Counter	Displays the total original jam count. [0 ~ 9999 / **0** / 0 /step]
504*	Jam by Location		
	1	At Power On	
	3	Tray 1: ON	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / **0** / 0 /step]
	4	Tray 2: Non Feed	
	5	Tray 3: Non Feed	
	6	Tray 4: Non Feed	
	7	Bypass: Non Feed	
	8	1st Relay ON	
	9	2nd Relay: ON	
	10	3rd Relay: ON	
	12	Registration (From Tray)	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
504*	13	Registration (From Duplex)	
	14	Duplex Exit	
	15	Interchange Exit:: ON	
	16	Paper Exit: On	
	17	Bridge Exit: On	
	18	Bridge Relay: On	
	19	Duplex Entrance 1: On	
	20	Duplex Entrance 2: On	
	23	Duplex Exit: On	
	40	Finisher Entrance: On	
	41	Finisher Exit: On	
	58	1st Relay: Off	
	59	2nd Relay: Off	
	60	3rd Relay: Off	
	61	4th Relay: Off	
	63	Registration: Off	
	64	Fusing Exit	
	65	Interchange Exit: Off	
	66	Paper Exit: Off	
	67	Bridge Exit: Off	
	68	Bridge Relay: Off	
	69	Duplex Entrance 1: Off	
	70	Duplex Entrance 2: Off	
	73	Duplex Exit: Off	
	100	Finisher Entrance: Off	
	101	Finisher Exit: Off	
	103	Finisher Staple	
	104	Finisher Stack Feed-out	
	105	Finisher Paper Taking out	
	107	Finisher Drive Error	
	108	Finisher Tray Lift Error	
	109	Finisher Jogger Error	
	110	Finisher Tray Shift Error	
	111	Finisher Stapler Error	
	112	Finisher Stack Feed-out	
	114	Finisher Feed out Error	
	115	Finisher No Response	
505	Original Tray by Location		
	5	Registration Sensor (On Check)	
	6	Relay Sensor (On Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	7	Inverter Sensor (On Check)	Inverter Sensor = Original Reverse Sensor (S10)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
505	55	Registration Sensor (Off Check)	
	56	Relay Sensor (Off Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	57	Inverter Sensor (Off Check)	Inverter Sensor = Original Reverse Sensor (S10)
506*	Jam by Paper Size		
	4	A3	Displays the number of jams according to paper size. [0 ~ 9999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	47	12" x 18"	
	128	Other	
507*	Copy Jam History		
	1	Latest	Displays the latest 10 paper jams. *The information contains the following four lines:* Location code (☛ SP7-504) Paper size (in the ASAP code) Total counter (as of the jam) Date
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
508	Original Jam History		
	1	Latest	Displays the logs of the latest 10 original jams. *The logs are composed of the following four lines:* Location code (☛ SP7-505) Paper size (in the ASAP code) Total counter (as of the jam) Date
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
801	Firmware Version		
			Displays the firmware versions and part numbers if available.
803*	PM Counter		
	1	Number of Development	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] For clearing the counters, see SP7-804.
	2	PCU	
	3	Development: M	
	4	Development: C	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
803*	5	Development: Y.	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] *For clearing the counters, see SP7-804.*
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Bank 1 Feed	
	15	Bank 2 Feed	
	16	Bank 3 Feed	
	17	Bank 4 Feed	
	18	Manual Feed	
	19	Paper transfer unit	
	20	ADF	
804	PM Counter Reset		
	1	Number of Development	Clears the PM counters. [0 ~ 1 / **0** / 1 /step] For displaying the counter, see SP7-803.
	2	PCU	
	3	Development: M	
	4	Development: C	
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Tray 1 Roller	
	15	Tray 2 Roller	
	16	Tray 3 Roller	
	17	Tray 4 Roller	
	18	By-pass Feed	
	19	Paper Transfer Unit	
	20	ADF	
	100	All	
807	SC JAM Counter Clear		
	1	SC Jam Counter Clear	Clears the counters related to SC codes and paper jams. [0 ~ 1 / **0** / 0 /step]
808	Counter All Clear (except total)		
	1	Counter All Clear (except total)	Clears all counters except for SP7-003 and –007. [0 ~ 1 / **0** / 0 /step]

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
810	Access code clear		
	1	Access code clear	Clears the key operator password. *SP7-810 clears the key operator password. After clearing this code, stored data can be accessed without using it.* *To register a new key operator password, use SP5-409-1.*
811	Original Counter Clear		
	1	Original Counter Clear	Clears the original counter.
816	Tray Counter Clear		
	1	Tray 1	Clears the tray counters (SP7-204). [0 ~ 1 / **0** / 0 /step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Tray Duplex	
822	Memory Clear		
	1	Copy Cunter: Magnification Clear	Clears the copy counter (classified by magnification)
825	Electrical Counter Reset		
	1	Electrical Counter Reset	Sets the total counter to “0”. [0 ~ 0 / **0** / 0 /step]
826	MF Error Counter		
	1	Error Total	Displays the MF error counters.
	2	Error Staple	
827	MF Error Counter Clear		
	1	MF Error Counter Clear	Clears the MF error counter.
832*	Diagnostic result		
	1	Diagnostic Result	Displays the result of the diagnostics. Refer to section 4.2 for the error codes. [0 ~ 0 / **0** / 0 /step]
833	Coverage		
	1	Last: M	Displays coverage ratios. [0.00 ~ 100.0 / **0.00** / 0.01 %step] This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper. *Do not use this counter for billing purposes. This is because this value is not directly* proportional to the amount of toner consumed, although of course it is one factor that affects this amount. The other major facors involved include: the type, total image area and image density of the original, toner concentration and developer potential. Last: This is the coverage for the previous sheet. Average: This is the average coverage for each sheet.
	2	Last: C	
	3	Last: Y	
	4	Last: Bk	
	5	Average: M	
	6	Average: C	
	7	Average: Y	
	8	Average: Bk	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
834	Toner Consumed		
	5	M	Displays the coverage ratios, including toner revitalization mode. [0 ~ 9999999 / **0** / 1 /step] *This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).* *Do not use this counter for billing purposes.*
	6	C	
	7	Y	
	8	Bk	
835	ACC Counter		
	1	M	Displays the number of times ACC has been done. [0 ~ 9999999 / **0** / 1 /step]
	2	Y	
	3	C	
	4	Bk	
836	Total Memory Size		
	1	Total Memory Size	Displays the memory capacity.
837	Memory Clear		
	1	Memory Clear	Clears the SP7-304 counter (copy count classified by mode).
838	Memory Clear		
	1	Memory Clear	Clears the SP7-305 counter (job count classified by output count).
839	Memory Clear		
	1	Memory Clear	Clears the SP7-306 counter (job count classified by job count).
840	Memory Clear		
	1	Memory Clear	Clears the SP7-320 counter (document box count).
841	Memory Clear		
	1	Memory Clear	Clears the SP7-321 counter (original count classified by paper size).
842	Memory Clear		
	1	Memory Clear	Clears the SP7-323 counter (print count classified by paper size).
843	Memory Clear		
	1	Memory Clear	Clears the SP7-324 counter.
844	Memory Clear		
	1	Memory Clear	Clears the SP7-325 counter.
845	Memory Clear		
	1	Memory Clear	Clears the SP7-326 counter.
846	Memory Clear		
	1	Memory Clear	Clears the SP7-327 counter.
847	Memory Clear		
	1	Memory Clear	Clears the SP7-328 counter.1
848	Memory Clear		
	1	Memory Clear	Clears all the document server counters, which include: SP7-301_SP7-304_SP7-305 SP7-306_SP7-320_SP7-321 SP7-323_SP7-324_SP7-325 SP7-326_SP7-327_SP7-328

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
850	High Duty Counter		
	1	M	Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours.
	2	C	
	3	Y	
	4	Bk	
901	Assert Information (Assert Information)		
	1	File Name	Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / **0** / 0 /step]
	2	# of Lines	
	3	Location	
904	Waste Toner Full Clear		
	1	OPC	Clears the waste toner bottle full counters. [0 ~ 1 / **0** / 0 /step] 0: Not clears 1: Clears
	2	Belt	
	100	All	
906*	PM Counter-Previous		
	1	PCU	Displays the previous PM counters. [0 ~ 9999999 / **0** / 0 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	ADF	
907	Replace counter		
	1	PCU	[0 ~ 255 / **0** / 1 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
907	12	Filter 2	[0 ~ 255 / **0** / 1 /step]
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	Toner: M	
	20	Toner: C	
	21	Toner: Y	
	22	Toner: Bk	
	23	ADF	
908	Process Control Counter		
	1	Process Control Counter	Displays the process control counter. [0 ~ 9999999 / **0** / 1 sheet/step]
909	Process Control Reset		
	1	Process Control Reset	Resets the process control counter.
913	Oil Counter		
	1	Oil Counter	Displays the oil supply unit counter. [0 ~ 65535 / **0** / 1 sheet/step]
914	Oil Clean Counter Reset		
	1	Oil Clean Counter Reset	Resets the oil cleaner counter.
915	Process Error Log		
	1	Log 1	Displays the latest three process control error logs. *The following are the error codes:* Development unit initial settings errors: • 110: Incorrect image detected by cyan ID sensor • 116: Incorrect image detected by magenta ID sensor • 118: No black image Development bias settings errors: • 113: Incorrect image detected by cyan ID sensor • 114: Incorrect image detected by magenta ID sensor • 115: Incorrect image detected by yellow ID sensor • 123: Incorrect image detected by black ID sensor ID sensor errors: • 103: ID sensor error • 104: ID sensor unable to detect image • 105: OPC belt not detected
	2	Log 2	
	3	Log 3	
920	Machine Counter		
	1	Machine Counter	[0 ~ 0xFFFFFFF / **0** / 1 /step]
921	Machine Counter Clear		
	1	Machine Counter Clear	Clears the machine counter.
922	Toner End Counter		
	1	K Toner	Displays the toner end counter, which indicates the possible print count after a toner near end.
	2	C Toner	
	3	M Toner	
	4	Y Toner	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
923	Toner End Counter Clear		
	1	K Toner	Clears the toner end counter (SP7-922). *The machine goes back to the normal operation mode if the toner end counter is cleared.*
	2	C Toner	
	3	M Toner	
	4	Y Toner	
	100	All	
924	Charger Clean Counter		
	1	Charger Clean Counter	Displays how many times the charge corona wire has been cleaned. [0 ~ 9999999 / **0** / 1 sheet/step] *SP7-926 resets the counter.*
925	Time Counter Display		
	1	Time Counter Display	Displays the current counter of the charge corona unit cleaning interval. *SP2-801 specifies the charge corona unit cleaning interval.*
926	Charger Cleaner Counter Reset		
	1	Charger Cleaner Counter Reset	Resets the charge wire cleaner counter (SP7-924).
927	Timer Counter Clear		
	1		Clears the counter of the charge corona unit cleaning interval. *SP7-927 clears the counter displayed by SP7-925, but does not clear the value specified with SP2-801.*
928	Previous PM Counter Clear		
	1	Previous PM Counter Clear	Clears the previous PM counter (SP7-906).
929	Replace Counter Clear		
	1	Replace Counter Clear	Clears the replace counter.
930	Counter For Designer		
	1	Counter 1 For Designer	**DFU**
	2	Counter 2 For Designer	

SP9-XXX: (Etc.)

9	Mode No. (Class 1, 2, and 3)		Function / [Setting]
904	Discharge Threshold		
	1	Discharge Threshold	[90 ~ 220 / **150** / 0.1 g/m^3/step]

5.1.3 TEST PATTERN PRINTING (SP5-955-1)

1. Enter the SP mode and select SP5-955-1.
2. Enter the number for the test pattern that you want to print and press #. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern	No.	Test Pattern
0	None	23	1 dot Grid Pattern (Reverse order of LD1/2 on)
1	Vertical Line (1-dot)	24	3 lines Grayscale
2	Horizontal Line (1-dot)	25	Horizontal Grayscale – 1
3	Vertical Line (2-dot)	26	Vertical Grayscale – 1
4	Horizontal Line (2 dot)	29	Horizontal Grayscale – 2
5	1 dot Grid Pattern0 – 1	30	Vertical Grayscale – 2
6	1 dot pair Grid Pattern – 1	31	Horizontal Grayscale (600 dpi)
7	Alternating Dot Pattern (1 dot)	32	Vertical Grayscale (600 dpi)
8	Alternating Dot Pattern (2 dot)	35	Horizontal Grayscale with White Line – 1
9	Full Dot Pattern	36	Vertical Grayscale with White Line – 1
10	Black band	38	Horizontal Grayscale with White Line – 2
11	Trimming Area (1 dot)	39	Vertical Grayscale with White Line – 2
12	Trimming Area (2 dot)	40	Horizontal Grayscale with White Line (600 dpi)
13	Argyle Pattern (1 dot)	41	Vertical Grayscale with White Line (600 dpi)
14	Argyle Pattern (2 dot)	43	Blank image
15	Horizontal Cross Stitch	50	Vertical Cross Stitch
16	Checker Flag	51	2 beam
19	Alternating Dot Pattern (4 dot)	52	Trimming Area with Crossed Lines
20	1 dot Horizontal Line (Reverse order of LD1/2 on)	53	1 dot Grid Pattern – 2
21	1 dot Grid Pattern (Reverse order of LD1/2 on)	54	1 dot pair Grid Pattern – 2
22	1 dot pair Grid Pattern (Reverse order of LD1/2 on)		

5.1.4 INPUT CHECK

Main Machine Input Check (SP5-803)

1. Enter the SP mode and select SP5-803.
2. Select an item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

SP5-803 -XXX		Description	Reading	
			0	1
1	Tray 1 Set	Tray 1 set (standard tray)	Set	Not set
2	Tray 1 Paper End	Tray 1 paper end sensor (standard tray)	Paper End	Paper is present
3	Tray 1 Paper Height	Tray 1 paper near-end sensor (standard tray)	Not near end	Near end
4	Tray 1 Paper Size	Tray 1 paper size sensor (standard tray)	(See table 1.)	
5	Tray 2 Set	Tray 2 set (standard tray)	Set	Not set
6	Tray 2 Paper End	Tray 2 paper end sensor (standard tray)	Paper End	Paper is present
7	Tray 2 Paper Height	Tray 2 paper near-end sensor (standard tray)	Not near end	Near end
8	Tray 2 Paper Size	Tray 2 paper size sensor (standard tray)		
9	Registration Sensor		Detected	Not detected
10	Upper Relay	Paper feed sensor	Detected	Not detected
11	Lower Relay	Paper feed sensor	Detected	Not detected
12	Right Cover SW		Closed	Open
13	Exit Sensor		Detected	Not detected
14	Paper Overflow		Full	Not full
15	Exit Cover Switch		Closed	Open
16	Interchange Unit Set		Set	Not set
17	Interchange Exit		Detected	Not detected
18	By-pass Tray Set		Not set	Set
19	By-pass Paper End		Paper End	Paper is present
20	By-pass Paper Size			
21	Fusing Unit Set		Set	Not set
22	Fusing Exit		Paper End	Paper is present
23	Fusing Oil End			
24	Fusing High Temperature			

SP5-803 -XXX		Description	Reading	
			0	1
25	Discharge Bias Leak			
30	Toner End: M	Toner end sensor: M	Not end	End
31	Toner End: C	Toner end sensor: C	Not end	End
32	Toner End: Y	Toner end sensor: Y	Not end	End
33	Toner End: K	Toner end sensor: K	Not end	End
34	Toner Unit: M	Toner cartridge memory chip: M	Not set	Set
35	Toner Unit: C	Toner cartridge memory chip: C	Not set	Set
36	Toner Unit: Y	Toner cartridge memory chip: Y	Not set	Set
37	Toner Unit: K	Toner cartridge memory chip: K	Not set	Set
38	O/B Waste Toner Sensor	OPC belt waste toner sensor	Full	Not full
39	O/B Waste Toner Switch	OPC belt waste toner bottle switch	Set	Not set
40	Belt Mark	Belt mark sensor	Not detected	Detected
41	New PCU Sensor	Not used	-	-
42	T/B Waste Toner Sensor	Transfer belt waste toner sensor	Full	Not full
43	T/B Waste Toner Switch	Transfer belt waste toner bottle switch	Set	Not set
44	LD 5V Cover	Interlock switch	Closed	Open
45	Left Cover		Closed	Open
46	Right Upper Cover		Closed	Open
47	Front Cover		Closed	Open
48	Development Motor Lock	Development motor lock	Locked	Not locked
49	Main Motor Lock	Main motor lock	Locked	Not locked
50	Paper Feed Motor Lock	Paper feed motor lock	Locked	Not locked
51	Polygon Motor Lock	Polygon motor lock	Locked	Not locked
52	1 Bin Set		Set	Not set
53	1 Bin Paper Sensor		Detected	Not detected
60	Duplex Connection	Duplex unit	Not connected	Connected
61	Bank 1 Connection	1st optional paper tray	Not connected	Connected
62	Bank 2 Connection	2nd optional paper tray	Not connected	Connected
63	Finisher Connection	Finisher Connection	Not connected	Connected
64	Bridge Exit		Detected	Not detected
65	Bridge Relay		Detected	Not detected
66	Bridge Set		Set	Not set
67	Bridge Right Cover		Closed	Open
68	Bridge Left Cover		Closed	Open
69	Bank Upper Relay	Relay Sensor 3 (optional paper tray unit)	No paper	Paper present
70	Bank Lower Relay	Relay Sensor 4 (optional paper tray unit)	No paper	Paper present

SP5-803 -XXX		Description	Reading	
			0	1
71	Bank Cover 1	Right cover (vertical guide switch)	Closed	Open
72	Bank Cover 2	2nd optional tray: Right cover (vertical guide switch)	Closed	Open
73	Bank Tray 1 Set	1st optional tray: Set	Not set	Set
74	Bank Tray 2 Set	2nd optional tray: Set	Not set	Set
75	Bank Tray 1 Paper End	1st optional tray: Paper end	Not end	End
76	Bank Tray 2 Paper End	2nd optional tray: Paper end	Not end	End
77	Bank Tray 1 Paper Size	1st optional tray: Paper size	(See table 2.)	
78	Bank Tray 2 Paper Size	2nd optional tray: Paper size		
79	Bank Tray 1 Paper Height	1st optional tray: Paper height	(See table 3.)	
80	Bank Tray 2 Paper Height	2nd optional tray: Paper height		
81	Duplex Entrance	Duplex: Entrance sensor	Not detected	Detected
82	Duplex Exit	Duplex: Exit sensor	Detected	Not detected
83	Duplex Open	Duplex unit open switch	Closed	Open
84	Duplex Cover	Duplex cover sensor	Open	Closed
86	Scanner Home Position	Scanner HP sensor	Detected	Not detected
87	Recycle Counter	Mechanical Counter Set	Set	Not set
88	Counter Set		Set	Not set
89	Key Counter Set		Set	Not set
90	Shift Tray Home Position Sensor		Detected	Not detected
91	Platen Cover Sensor		Detected	Not detected

Table 1: Tray 1 and 2 Paper Size

Switch	North America	Europe/Asia	Value
1000	8 1/2" x 11" SEF	8 1/2" x 11" SEF	00001110
1001	B5 SEF	B5 SEF	00000110
1010	5 1/2" x 8 1/2" LEF	A5 LEF	00001010
1011	11" x 17" SEF	A3 SEF	00000010
1100	A4 SEF	A4 SEF	00001100
1101	B5 LEF	B5 LEF	00000100
1110	8 1/2" x 11" LEF	A4 LEF	00001000
1111	8 1/2" x 14" SEF	B4 SEF	00000000

0: pushed
1: not pushed

Table 2: By-pass Tray Paper Size

Paper Width	Value	Paper Width	Value
A3/11"/12"	01110000	B5/8"	10010000
B4	00110000	A5/5.5"	11010000
A4/8.5"	10110000	B6	11000000

Table 3: Optional Paper Tray Unit Paper Size

Size	North America	Europe/Asia	Code
A3 SEF	Detected	Detected	10000100
B4 SEF	None	Detected	10001101
A4 SEF	None	Detected	10000101
A4 LEF	Detected	Detected	00000101
B5 LEF	Detected	Detected	00001110
A5 LEF	None	Detected	00000110
DLT SEF	Detected	Detected	10100000
LG SEF	Detected	None	10001101
LT SEF	Detected	None	10000101
LT LEF	Detected	Detected	00100110
HLT LEF	Detected	None	00000110

Table 4: Optional Paper Tray Unit Paper Near End

Remaining paper	Paper height sensor 2	Paper height sensor 1	Code
Full	ON	ON	11111111
Nearly full	OFF	ON	11111110
	On	OFF	11111101
Near end	OFF	OFF	11111100

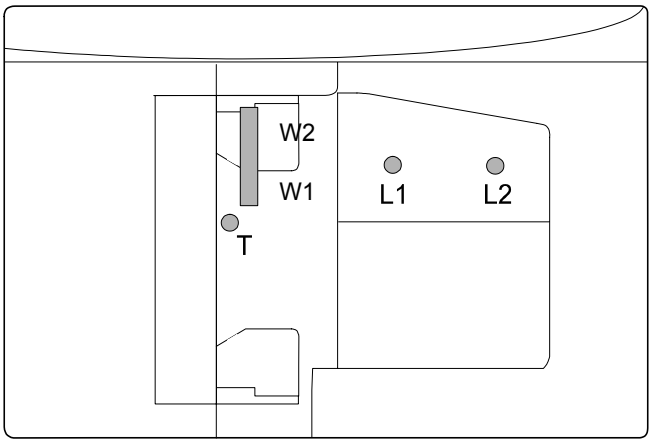
ARDF Input Check (SP6-007)

1. Enter the SP mode and select SP6-007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



No.	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6-117)

1. Enter the SP mode and select SP6-117.
2. Enter the number (1 – 113) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit) at the right side of the screen is valid.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

No.	Description	Reading	
		0	1
1	Entrance Sensor	Activated	Deactivated
2	Tray Exit Sensor	Activated	Deactivated
4	Staple Entrance Sensor	Activated	Deactivated
5	Stapler Home Position Sensor	Activated	Deactivated
6	Jogger Fence Home Position Sensor	Activated	Deactivated
8	Feed-out Belt Home Position Sensor	Activated	Deactivated
9	Stapler Tray Paper	Activated	Deactivated
10	Stapler Rotation Home Position	Activated	Deactivated
11	Staple Sensor	Activated	Deactivated
14	Staple Sheet Sensor	Activated	Deactivated
17	Exit Plate Home Position Sensor	Activated	Deactivated
18	Tray Shift Home Position Sensor	Activated	Deactivated
21	Stack Height Sensor	Activated	Deactivated
23	Tray Lower Limit Sensor	Activated	Deactivated
101	500 Fin Entrance Sensor	Activated	Deactivated
102	500 Fin Exit Sensor	Activated	Deactivated
103	500 Fin Jogger Home Position Sensor	Activated	Deactivated
104	500 Fin Top Cover Sensor	Closed	Opened
105	500 Fin Height Sensor	Activated	Deactivated
106	500 Fin Lever Sensor	Activated	Deactivated
107	500 Fin Upper Limit Sensor	Activated	Deactivated
108	500 Fin Near Limit Sensor	Activated	Deactivated
109	500 Fin Staple Cover Sensor	Closed	Opened
110	500 Fin Stapler Home Position Sensor	Activated	Deactivated
111	500 Fin Staple End Sensor	Activated	Deactivated
112	500 Fin Staple Sensor	Activated	Deactivated
113	500 Fin Stapler Lock Sensor	Locked	Not Locked

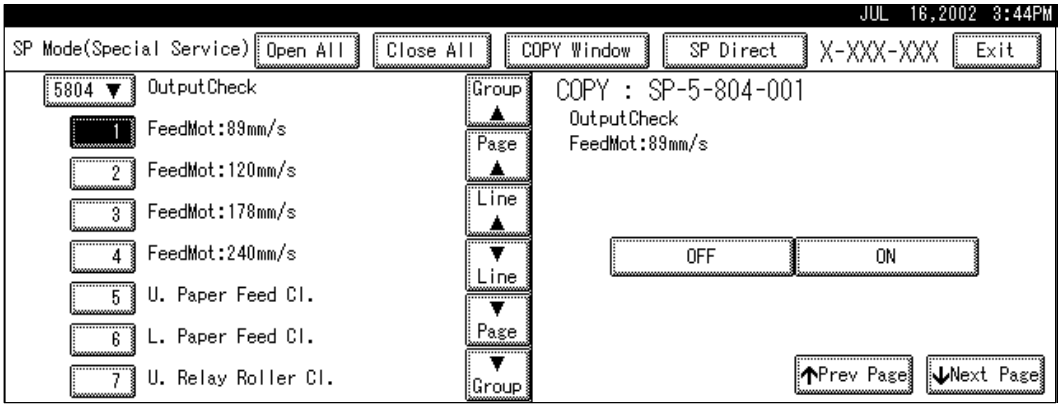
5.1.5 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5-804)

1. Open SP5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. Press *OFF* to end the test.

   NOTE: You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing. Do not keep an electrical component switched *ON* for a long time.



Output Check Table

SP5-804 -XXX		Description
1	Feed Mot: 89 mm/s	Paper feed motor: 89 mm/s
2	Feed Mot: 120 mm/s	Paper feed motor: 120 mm/s
3	Feed Mot: 178 mm/s	Paper feed motor: 178 mm/s
4	Feed Mot: 240 mm/s	Paper feed motor: 240 mm/s
5	Upper Paper Feed Clutch	Tray 1 paper feed clutch
6	Lower Paper Feed Clutch	Tray 2 paper feed clutch
7	Upper Relay Roller Clutch	Tray 1 vertical transport clutch
8	Lower Relay Roller Clutch	Tray 2 vertical transport clutch
9	Transfer Motor: Half Speed	Main motor: 178 mm/s

SP5-804 -XXX		Description
10	Transfer Motor: Low Speed	Main motor: 89 mm/s
11	Regist Clutch	Registration clutch
12	Interchange Upper Gate	Interchange Junction Gate Solenoid 1
13	Interchange Lower Gate	Interchange Junction Gate Solenoid 2
14	By-pass Feed Clutch	By-pass paper feed clutch
15	By-pass Pick-Up Solenoid	By-pass pick-up solenoid
16	Development Clutch: M	Development clutch: M
17	Development Clutch: C	Development clutch: C
18	Development Clutch: Y	Development clutch: Y
19	Development Clutch: K	Development clutch: K
20	Development Motor (Forward)	Development motor
21	Development Motor Half Speed (Forward)	Development motor: Half Speed
22	Development Motor (Reverse)	Development motor: Reverse
23	Development Motor Half Speed (Reverse)	Development motor: Reverse Half Speed
24	Lubricant Clutch	OPC belt cleaning clutch
25	Main Motor (Forward)	Main motor: Regular Speed
26	Main Motor Half Speed (Forward)	Main motor: Half Speed
27	Main Motor (Reverse)	Main motor: Reverse
28	Main Motor Half Speed (Reverse)	Main motor: Reverse Half Speed
29	Polygon Motor	Polygon motor
30	LD On	LD
31	Polygon Motor + LD	Polygon Motor + LD
32	Transfer 2nd Solenoid	Paper Transfer Solenoid
33	T/B Cleaning Clutch	Image transfer belt cleaning clutch
34	T/B Cleaning Solenoid	Image transfer belt cleaning contact solenoid
40	Engine Ready Signal	Engine Ready Signal
41	ID sensor LED	
42	QL	
43	Toner End Led	Toner End LED
44	Charger Bias	Charge corona unit output
45	Development Bias 1	Development Bias: 1
46	Development Bias 2	Development Bias: 2
47	Belt Transfer	Image transfer power supply
48	Paper Transfer: +	Paper transfer bias: +
49	Paper Transfer: –	Paper transfer bias: –
50	T/B Cleaning: +	Image transfer belt cleaning bias: +
51	Discharge: H	Discharge plate power supply: H
52	Discharge: L	Discharge plate power supply: L

SP5-804 -XXX		Description
53	Fuser Main Relay	Fusing Main Relay
54	Fusing Bias	Fusing Bias
55	Scanner Lamp	
100	Bank Upper Feed	1st paper feed clutch (optional paper tray unit)
101	Bank Lower Feed	2nd paper feed clutch (optional paper tray unit)
102	Bank Feed Motor: L	1st paper feed motor (optional paper tray unit)
103	Bank Feed Motor: H	1st Paper feed motor – half speed (optional paper tray unit)
110	Shift Tray Motor: CW	Shift Tray Motor – continuous clockwise
111	Shift Tray Motor: CCW	Shift Tray Motor – continuous counter-clockwise
112	Shift Tray Motor: Run	Shift Tray Motor – shifts once
120	Duplex Reverse Motor (Forward)	Duplex: Inverter motor
121	Duplex Reverse Motor (Reverse)	Duplex: Inverter motor – reverse
122	Duplex Feed Motor (Forward)	Duplex: Transport motor
123	Duplex Feed Motor (Reverse)	Duplex: Transport motor – reverse
124	Duplex Solenoid	Duplex: Inverter gate solenoid
125	Duplex Free Run	Duplex: Free run
130	Bridge Motor: H	
131	Bridge Motor: L	
132	Bridge Gate Sol	
140	Fusing Fan: H	
141	Fusing Fan: L	
142	Dev Fan: H	Development Fan Motor: H
143	Dev. Fan: L	Development Fan Motor: L
144	Cooling Fan: H	Controller Fan Motor: H
145	Cooling Fan: L	Controller Fan Motor: L
146	Ozone Fan: Hi	
147	Ozone Fan: Low	
160	Bridge Cooling Fan: H	
161	Bridge Cooling Fan: L	
162	PSU Fan	
170	Forced Lubricant	The following parts are switched on. O/B cleaning contact clutch T/B cleaning solenoid T/B cleaning contact clutch

ARDF Output Check (SP6-008)

1. Open SP6-008.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description
1	Feed Motor (Forward)
2	Feed Motor (Reverse)
3	Transport Motor (Forward)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6-118)

1. Open SP6-118.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description	No.	Description
	1000-sheet finisher		**500-sheet finisher**
1	Fin All Off	101	500 Fin All Off
2	Upper Transfer Motor	102	500 Fin Main Motor
3	Lower Transfer Motor	103	500 Fin Jogger Motor
4	Exit Motor	104	500 Fin Paddle Sol
5	Tray Gate Sol	105	500 Fin Gear Sol
6	Tray Lift Motor	106	500 Fin Lever Sol
7	Jogger Motor	107	500 Fin Tray Motor
12	Stapler Motor	108	500 Fin Stapler Motor
13	Staple Hummer	109	500 Fin Free Run 1
15	Stapler Gate Sol	110	500 Fin Free Run 2
16	Pos. Roller Sol		
18	Feed-out Motor		
19	Shift Motor		
22	Guide Plate Motor		
23	Fin Free Run 1		
24	Fin Free Run 2		

5.1.6 SMC DATA LISTS (SP5-990)

1. Open SP mode 5-990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All data list
2	SP mode data list
3	UP mode data list
4	Logged data list
5	Self-diagnostics results list
6	Non-Default Data list
7	NIB summary
8	Net file log list (Jobs to be printed from the document server using a PC and the Desk Top Binder software)
21	Copy UP mode list
22	Scanner SP mode list
23	Scanner UP mode list

2. Touch *EXECUTE* on the touch panel
3. Operate according to the instructions on the display.
4. Check that the completion message appears, and touch *Exit.*

5.1.7 ORIGINAL JAM HISTORY DISPLAY

Total Count

SP7-503 displays the number of original jams having occurred in the optional ARDF.

Details on the Most Recent Jams

SP7-508 displays the detailed information on the latest 10 original jams having occurred in the optional ARDF.

SP7-508-		
1	Latest	Information on the latest original jam
2	Latest 1	Information on the 2nd latest original jam
3	Latest 2	Information on the 3rd latest original jam
:	:	:
8	Latest 7	Information on the 8th latest original jam
9	Latest 8	Information on the 9th latest original jam
10	Latest 9	Information on the 10th latest original jam

5.1.8 COPY JAM HISTORY DISPLAY

Total Count

SP7-502 displays the number of copy paper jams having occurred in all paper paths.

Details on the Most Recent Jams

SP7-507 displays the detailed information on the latest 10 copy paper jams having occurred in all paper paths.

SP7-507-		
1	Latest	Information on the latest paper jam
2	Latest 1	Information on the 2nd latest paper jam
3	Latest 2	Information on the 3rd latest paper jam
: :	: :	: :
8	Latest 7	Information on the 8th latest paper jam
9	Latest 8	Information on the 9th latest paper jam
10	Latest 9	Information on the 10th latest paper jam

5.1.9 MEMORY ALL CLEAR (SP5-801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP7-003-1	Print total counter value
SP5-811	Machine serial number
SP5-907	Plug & play brand name and production name setting

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

Using a Flash Memory Card

1. Upload the NVRAM data to a flash memory card (☛ NVRAM Data Upload).
2. Print out all SMC data lists (SP5-990).
   NOTE: Be sure to print out all the lists. If the NVRAM data upload is not completed, it is necessary to manually change the SP mode settings.
3. Open SP5-801.
4. Press the number for the item that you want to initialize. The number you select determines which application software is initialized. Touch 1, for example, if you want to initialize all modules; or select the appropriate number from the table below.

No.	What It Initializes	Comments
1	All modules	Initializes items 2 ~ 15 below.
2	Engine	Initializes all registration settings for the engine and process settings.
3	SCS (System Control Service)/SRAM	Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH (Image Memory handler)	Initializes the registration setting for the image memory handler. (Deletes all image files in the HDD).
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.

No.	What It Initializes	Comments
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	DCS	Initializes the DCS (Delivery & Receive Control Server) settings
15	UCS	Initializes the UCS (User Directory Control Server) settings.

5. Touch *EXECUTE*, and turn the main switch off and on.
6. Download the NVRAM data from a flash memory card (☛ 5.2.2).

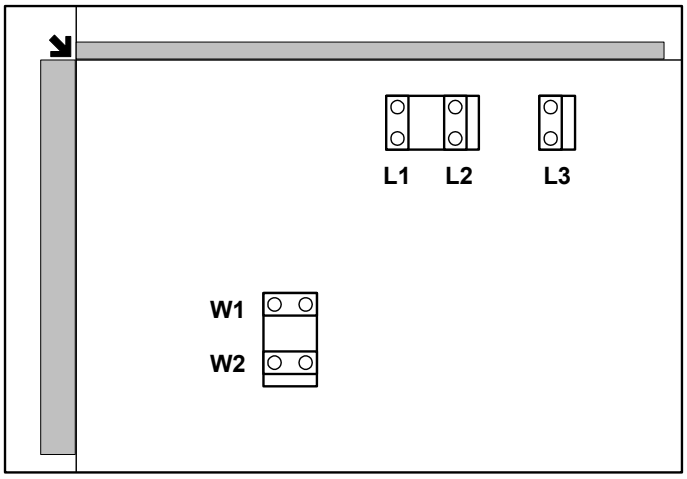
Without Using a Flash Memory Card

If there is no flash memory card, follow the steps below.

1. Execute SP5-990 to print out all SMC data lists.
2. Open SP5-801.
3. Select the number for the item that you want to initialize.
4. Press *EXECUTE* and turn the main switch off and on.
5. Make sure that you do the following:
   - Do the printer and scanner registration and magnification adjustments (☛ "Copy Adjustments" in chapter 3, "Replacement and Adjustment").
   - Do the touch screen calibration (☛ "Touch Screen Calibration" in chapter 3, "Replacement and Adjustment").
   - Referring to the SMC data lists, re-enter all values that have been changed from their factory settings.
   - Do the white level adjustment (☛ Section 3.14 Standard White Density Adjustment)
6. Check the copy quality and the paper paths, and do any necessary adjustments.

5.1.10 APS OUTPUT DISPLAY (SP4-301)

SP4-301 displays a code that indicates the current status of the APS sensors. The table lists the codes and the activated sensors.



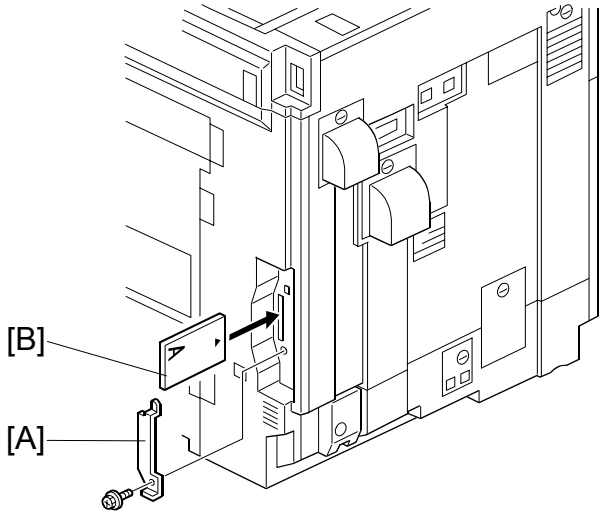
Code	Sensors				
	W1	W2	L1	L2	L3
38	❍	❍	—	—	—
160	❍	❍	❍	❍	❍
164	—	—	❍	❍	❍
166	—	—	❍	❍	—
128	Other combinations				

❍: Activated
—: Deactivated

5.2 PROGRAM DOWNLOAD

5.2.1 FIRMWARE

The procedure is the same for all firmware modules.



1. Turn off the main power switch.
2. Remove the cover [A].
3. Insert the IC card [B] containing the software you wish to download into the card slot of the controller.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions displayed on the operation panel
7. Monitor the downloading status on the operation panel.
   - While downloading is in progress, the panel displays “Writing”. When downloading has been completed, the panel displays “Completed”.
   - The Start key lights red while downloading is in progress, and then lights green again after downloading is completed.

⚠CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the IC card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, perform copier SP5-801-9 (Memory All Clear – Scanner Application).

NOTE: If the download failed, an error message appears on the panel. In this case, download the firmware again using the IC card.
In this condition, if the firmware cannot be downloaded again, do the following:
Controller firmware: Turn on dip switch 1 on the controller board, and switch on. The machine boots from the IC card. Download the new firmware.
Others: Replace the appropriate PCB.

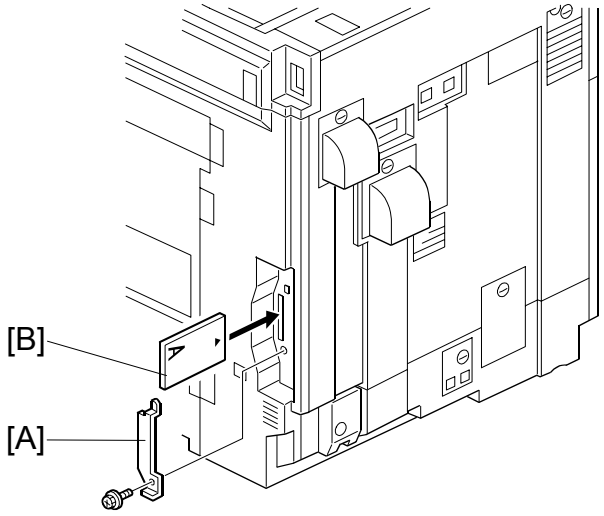
5.2.2 NVRAM DATA UPLOAD/DOWNLOAD

The content of the NVRAM can be uploaded to and downloaded from a flash memory card.

Uploading NVRAM Data (SP5-824)

The data in the NVRAM in the machine can be uploaded to a flash memory card.

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
5. Open SP5-824.
6. Touch *EXECUTE* to start uploading the NVRAM data.
7. Turn off the main switch, and then remove the IC card.



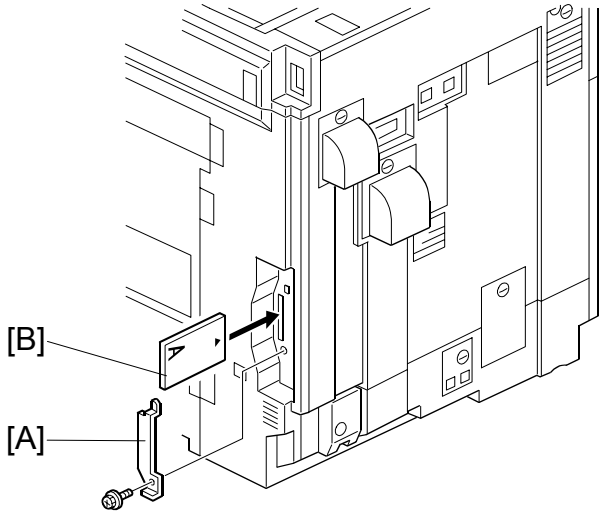
Downloading NVRAM Data (SP5-825)

SP5-825 downloads data from a flash card to the NVRAM inside the machine.

The following data are not downloaded from the flash card:

- Meter charge total counter (SP7-003-1)
- Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (SP7-007).

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
8. Open SP5-825.
5. Touch *EXECUTE* to start download the NVRAM data.
6. Turn off the main switch, and then remove the IC card.



Note that the following errors may occur during downloading:

- If a card is not installed in the card slot and a message tells you that downloading cannot proceed, you cannot execute downloading, even by pressing *EXECUTE.*
- If the correct card for the NVRAM data is not inserted in the card slot, after you press *EXECUTE* a message will tell you that downloading cannot proceed because the card is abnormal and the execution halts.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use either of the following procedures.

Procedure 1

1. Turn the main power switch off and on.
2. Check that “Now loading. Please wait” is displayed and that the copy window opens.

Procedure 2

1. Press and hold down the ⓒ/* and # keys together until the machine beeps (for about 10 seconds).
2. Release both buttons.
3. Check that “Now loading. Please wait” is displayed and that the copy window opens.

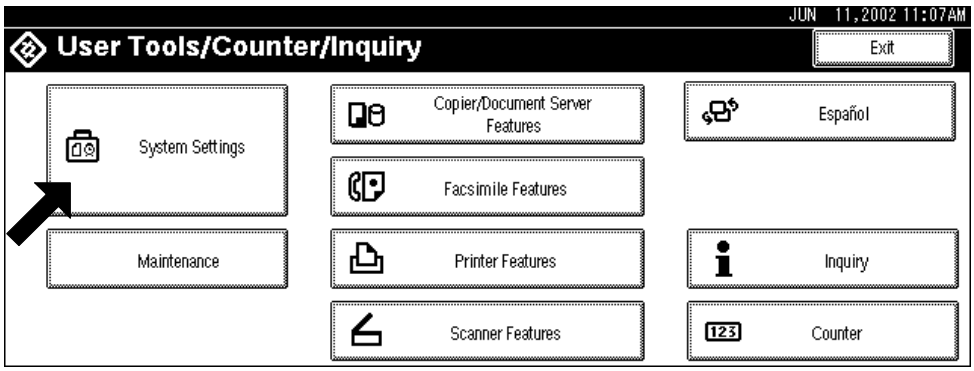
5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

To reset the system settings in the UP mode to their defaults. Use the following procedure.

⇒ 1. Press the User Tools/Counter key (◈/123).

2. Hold down the # key and touch *System Settings*.
   NOTE: Hold down the # key before touching *System Settings*.



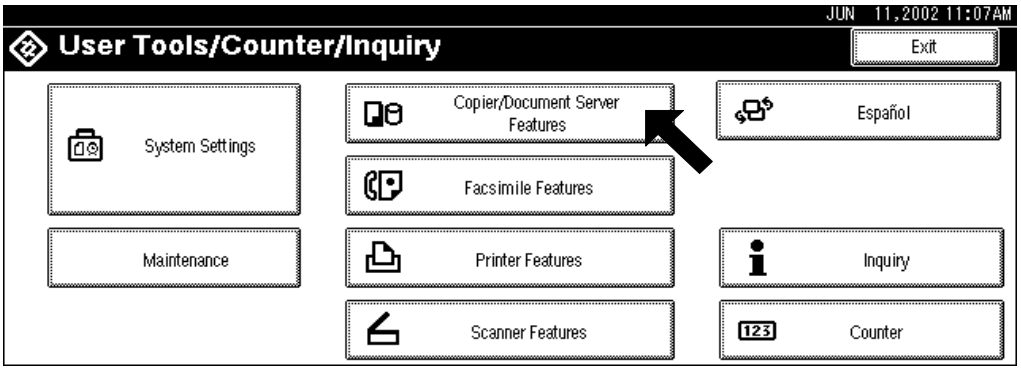
3. When the display asks if you want to reset the system settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.4.2 COPIER SETTING RESET

To reset the copy settings in the UP mode to their defaults, use the following procedure.

⇒ 1. Press the User Tools/Counter key (◈/123).

2. Hold down the # key and then touch *Copier/Document Server Features*.
   NOTE: Hold down the # key before touching *Copier/Document Server Features*.



3. When the display asks if you want to reset the Copier Document Server settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time.

5.5.1 HOW TO ENTER USER TOOLS

UP Mode Initial Screen: User Tools/Counter Display

⇒ To enter the UP mode, press the User Tools/Counter key (◈/123).

System Settings

In the User Tools/Counter display, touch *System Settings*.

Touch a tab to display the settings. If the Next button is lit in the lower right corner, touch it to display more options. Specify the settings, touch *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

Copier/Document Server Features

In the User/Tools Counter display, touch Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, touch Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then touch the tab to display more settings. The screen below shows the Printer Features screen.

Inquiry

In the User/Tools Counter display, touch *Inquiry*.

The following SP mode settings will be displayed.

- Service Telephone Number (SP5-812-1)
- Service Facsimile Number (SP5-812-2)
- Telephone Number for ordering consumables (SP5-812-3)
- Sales Telephone Number (SP5-812-4)
- Toner Type (SP5-841-1~4)

Counter

In the User/Tools Counter display, touch *Counter*.

The following SP mode counters will be displayed.

- Copy Counter (SP5-914)

View the settings, touch Print Counter *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

5.6 DIP SWITCHES

Controller Board: SW2

DIP SW No.	OFF	ON
1	Boot-up from machine	Boot-up from IC card
2	Not used (keep at OFF)	
3		
4		

If the controller firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

BICU Board: SW2

DIP SW No.	Function	OFF			ON		
1	Machine Type	B052 (32 minute B/W)			B051 (24 minute B/W)		
2	Destination	Off:	Off:	Off:	On:	On:	Off:
3		Off: JAN	On: NA	Off: EU	On: AA	Off: TWN	On: CHN
4		Off:	Off:	On:	Off:	Off:	On:
5	Not used	Keep at OFF					
6	Not used						

JAN: Japan, NA: North America, EU: Europe, AA: Asia, TWN: Taiwan, CHN: China

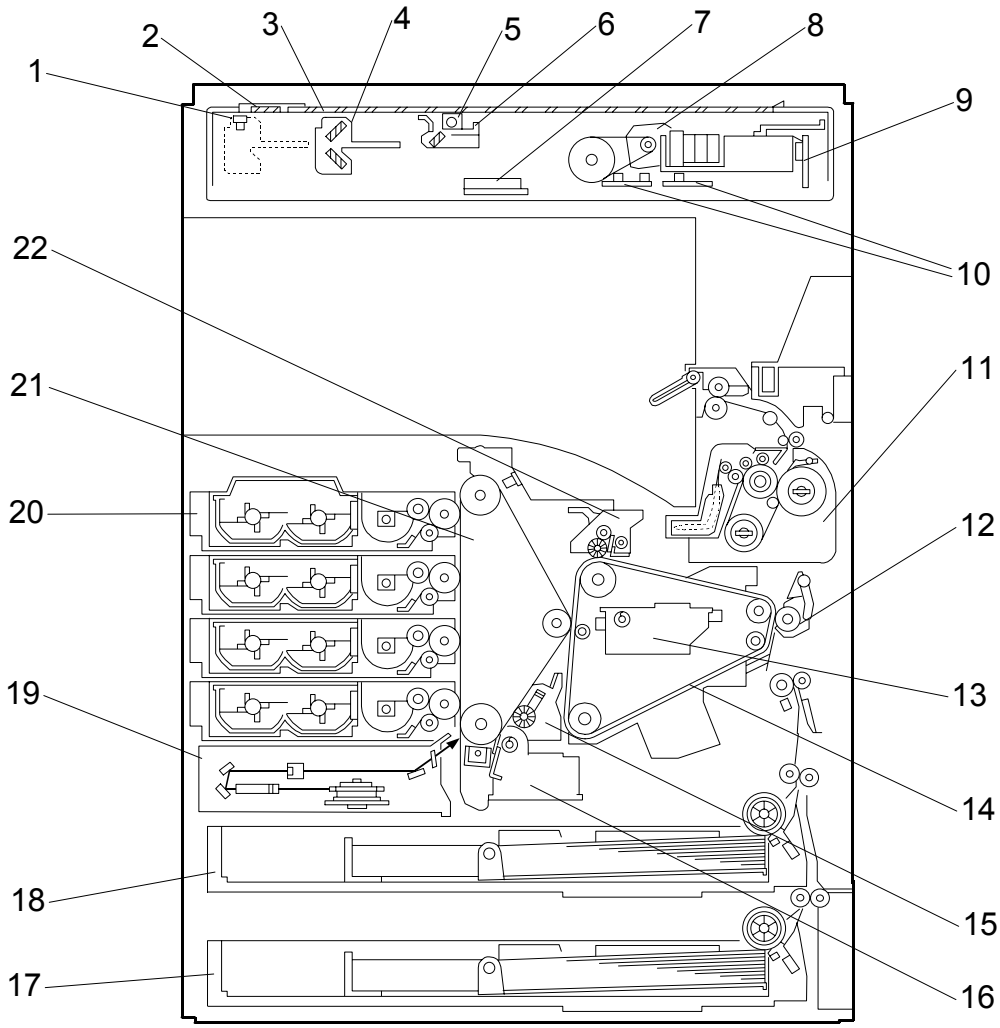
DETAILED SECTION DESCRIPTIONS

CÓPIA NÃO CONTROLADA

6. DETAILED SECTION DESCRIPTIONS

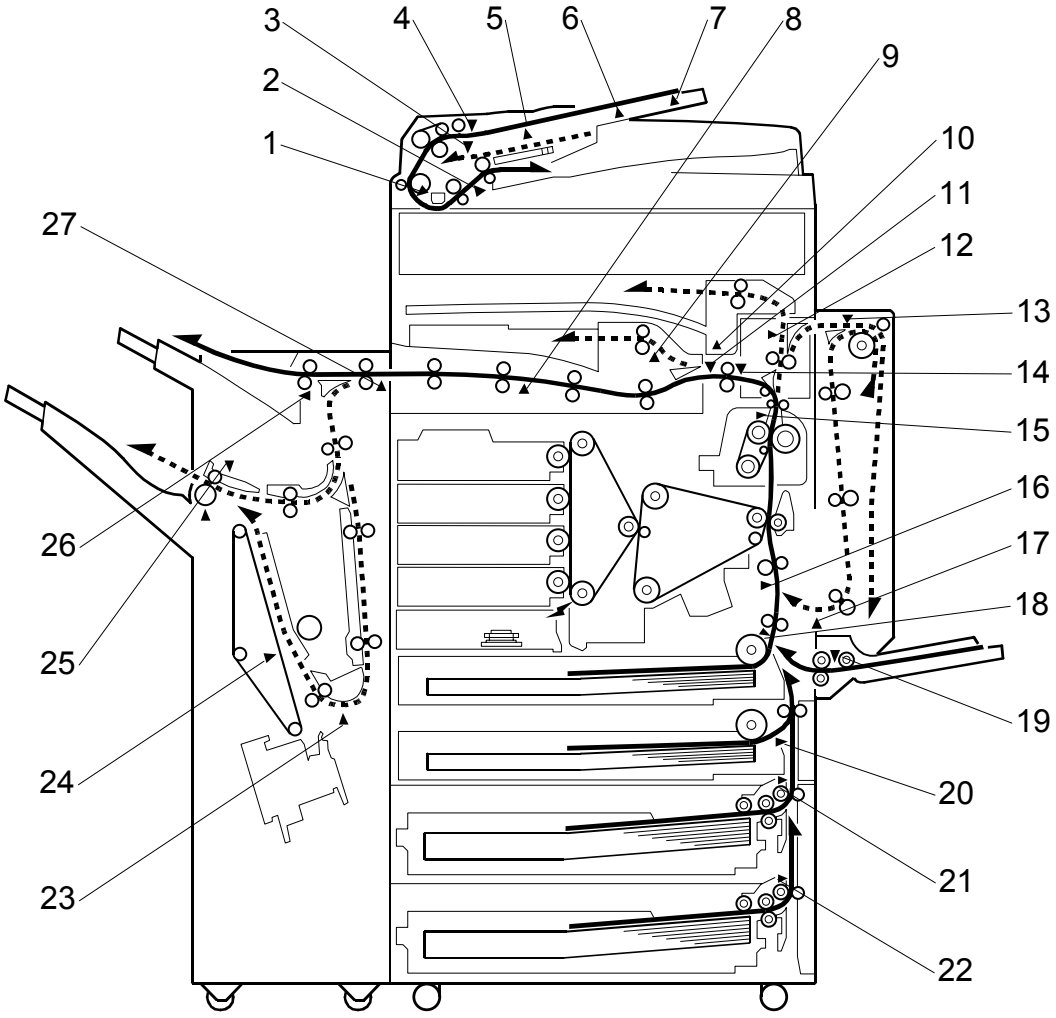
6.1 OVERVIEW

6.1.1 MECHANICAL COMPONENTS



1. Scanner HP sensor
2. ADF exposure glass
3. Exposure glass
4. 2nd carriage
5. Scanner lamp
6. 1st carriage
7. Original width sensor
8. Scanner motor
9. Sensor board unit
10. Original length sensors
11. Fusing unit
12. Paper transfer roller unit
13. Image transfer belt waste toner bottle
14. Image transfer belt unit
15. OPC belt cleaning unit
16. OPC belt waste toner bottle
17. Paper tray 2
18. Paper tray 1
19. Laser optics unit
20. Development unit
21. OPC belt unit
22. Image transfer belt cleaning unit

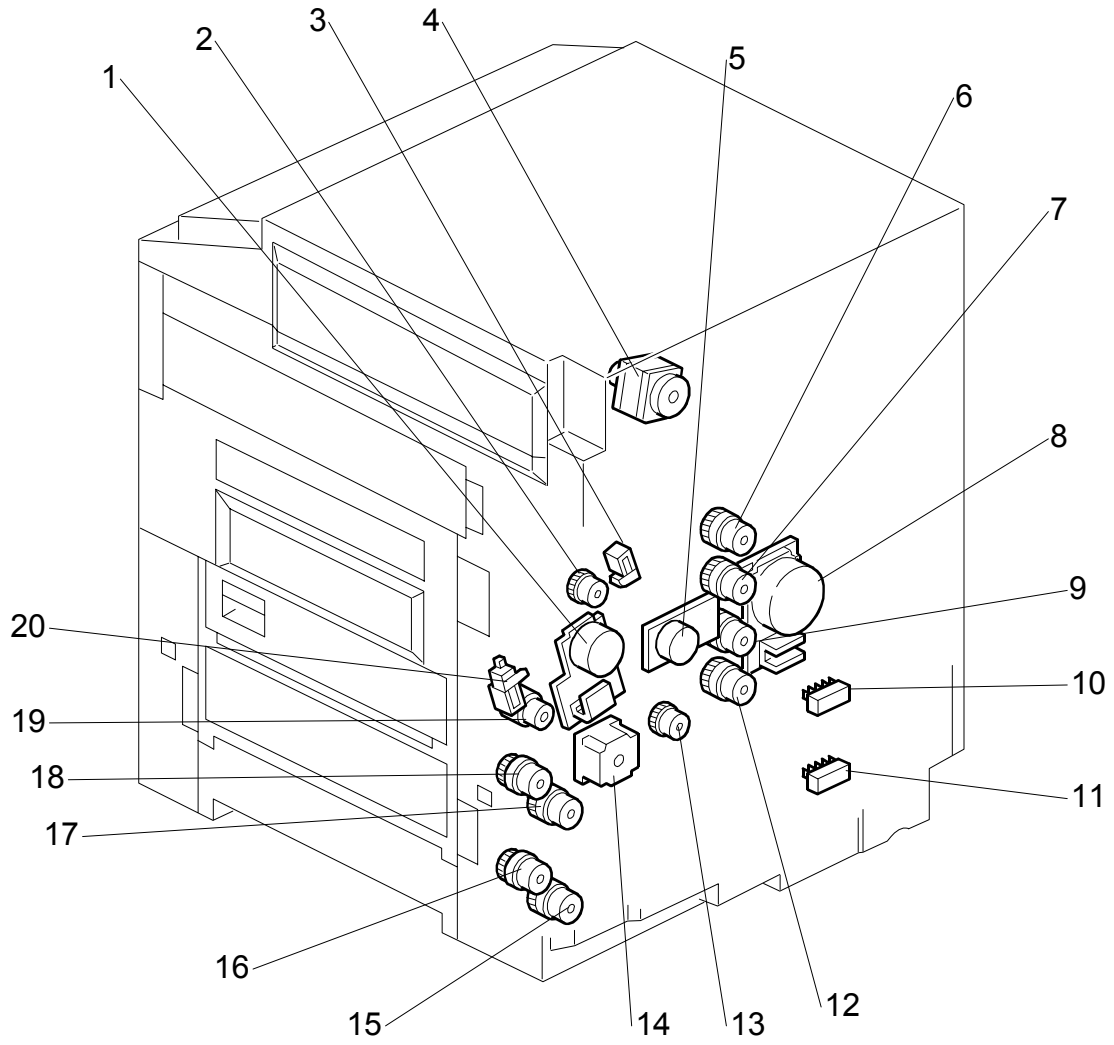
6.1.2 PAPER PATH



1. Registration sensor (ARDF)
2. Original exit sensor (ARDF)
3. Original set sensor (ARDF)
4. Original trailing edge sensor (ARDF)
5. Original width sensor board (ARDF)
6. Original length sensor 1 (ARDF)
7. Original length sensor 2 (ARDF)
8. Relay sensor (Bridge unit)
9. Tray exit sensor (Bridge unit)
10. Paper sensor (1-bin tray)
11. Paper overflow sensor
12. Exit sensor (Interchange unit)
13. Entrance sensor (Duplex unit)
14. Paper exit sensor
15. Fusing exit sensor
16. Registration sensor
17. Exit sensor (Duplex unit)
18. Paper feed sensor
19. Paper end sensor (By-pass tray)
20. Paper feed sensor
21. Relay sensor (Paper tray 3)
22. Relay sensor (Paper tray 4)
23. Stapler tray entrance sensor (Finisher)
24. Stack feed-out belt HP sensor (Finisher)
25. Lower tray exit sensor (Finisher)
26. Paper limit sensor (Finisher)
27. Entrance sensor (Finisher)

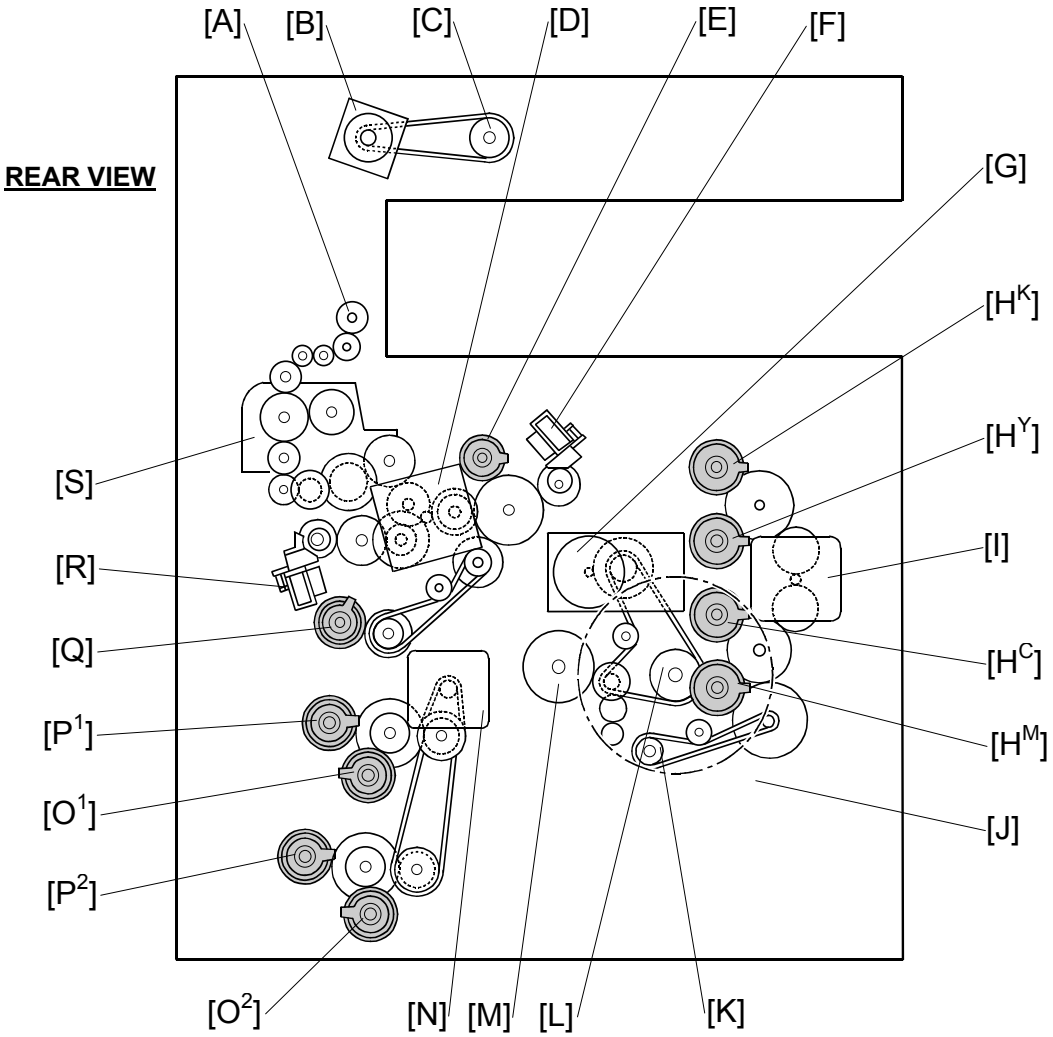
6.1.3 DRIVE COMPONENTS

Layout



1. Fusing unit motor
2. Image transfer belt cleaning clutch
3. Image transfer belt cleaning contact solenoid
4. Scanner motor
5. Main motor
6. Development clutch - K
7. Development clutch - Y
8. Development motor
9. Development clutch - C
10. Paper size switch 1
11. Paper size switch 2
12. Development clutch - M
13. OPC belt cleaning clutch
14. Paper feed motor
15. Paper feed clutch 2
16. Vertical transport clutch 2
17. Paper feed clutch 1
18. Vertical transport clutch 1
19. Registration clutch
20. Paper transfer solenoid

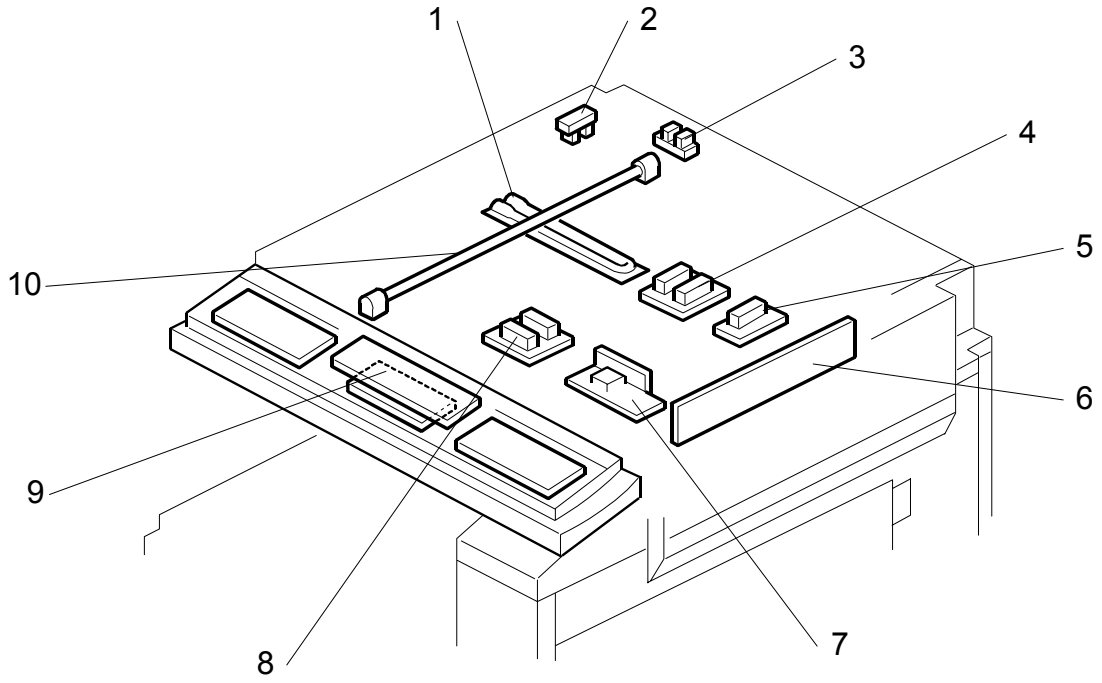
Drive Power Path



Motor (Type)	Drives ...
Scanner [B] (Stepper)	• Scanner motor gear [C]
Development [I] (DC brushless)	• Development clutches [$H^{K,Y,C,M}$] → Development units • OPC belt cleaning clutch → OPC belt cleaning unit
Main [G] (DC brushless)	• OPC belt [L] with the flywheel [J] • Image transfer belt [M]
Fusing Unit [D] (DC brushless)	• Fusing unit [S] • Paper exit unit [A] • Image transfer belt cleaning clutch [E] → Image transfer belt cleaning unit • Registration clutch [Q] → Registration roller • Paper transfer roller • Belt cleaning contact solenoid [F] → Image transfer belt cleaning unit contact mechanism • Paper transfer solenoid [R] → Paper transfer roller contact mechanism • Interchange unit and one-bin tray
Paper Feed [N] (Stepper)	• Paper feed clutch [$O^{1,2}$] → Paper pick-up roller • Vertical transport clutch [$P^{1,2}$]

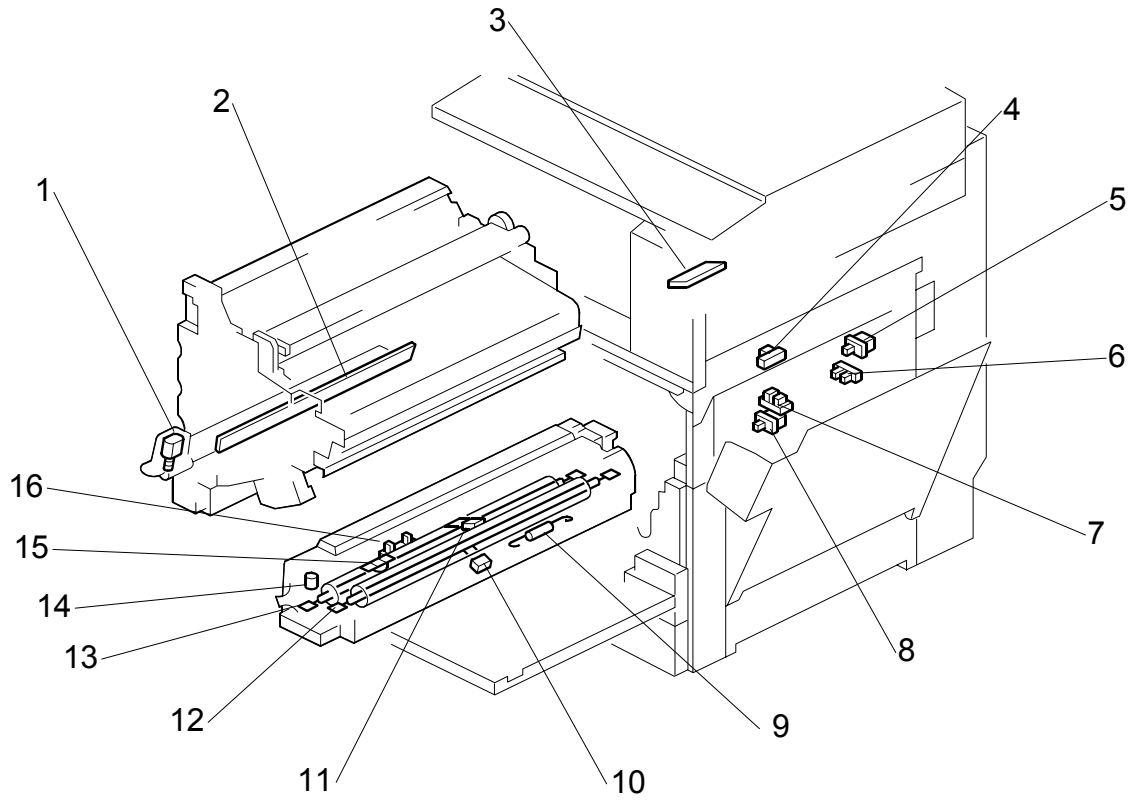
6.1.4 ELECTRICAL COMPONENTS

Scanner Unit



1. Anti-condensation heater
2. Scanner HP sensor
3. Platen cover sensor
4. Original length sensor 1
5. Original length sensor 2
6. SBU (sensor board unit)
7. Lamp stabilizer
8. Original width sensor
9. Operation panel
10. Exposure lamp

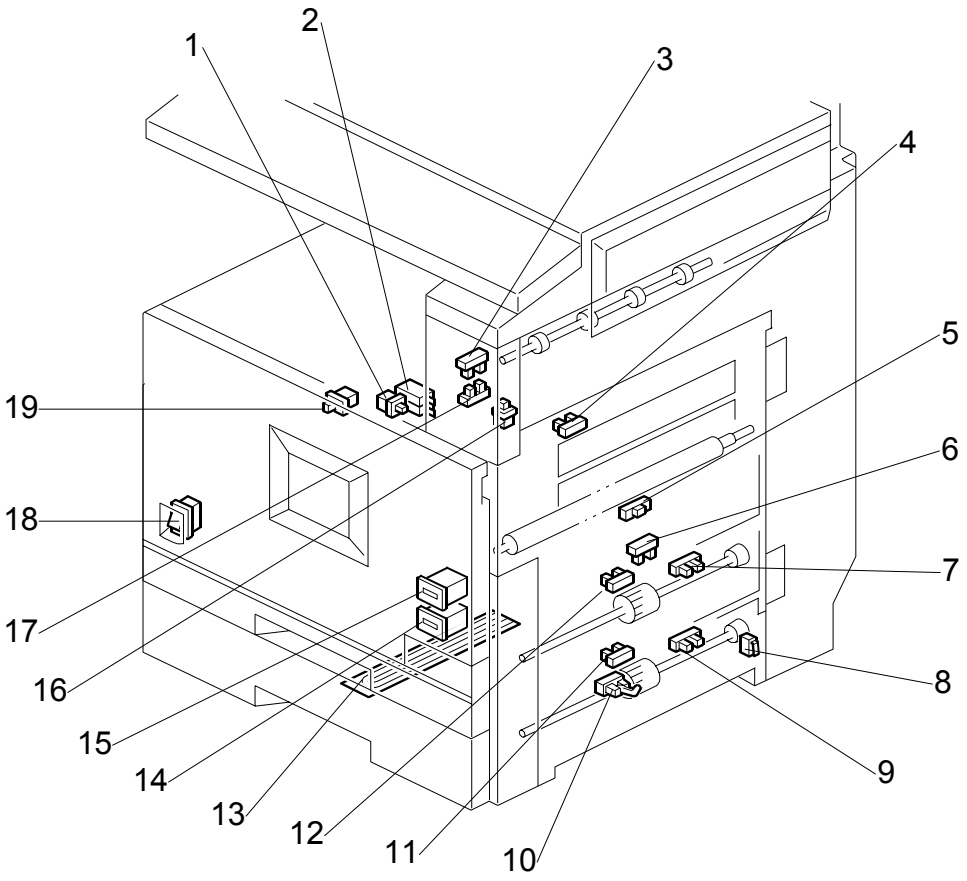
Image Transfer



1. Charge corona wire cleaner motor
2. Quenching lamp
3. ID sensor
4. Belt mark sensor
5. T/B waste toner bottle switch
6. T/B waste toner sensor
7. O/B waste toner sensor
8. O/B waste toner bottle switch
9. Pressure roller thermofuse
10. Pressure roller thermistor
11. Heating roller thermistor
12. Pressure roller fusing lamp
13. Heating roller fusing lamp
14. Oil overflow sensor
15. Heating roller thermostat
16. Oil end sensor

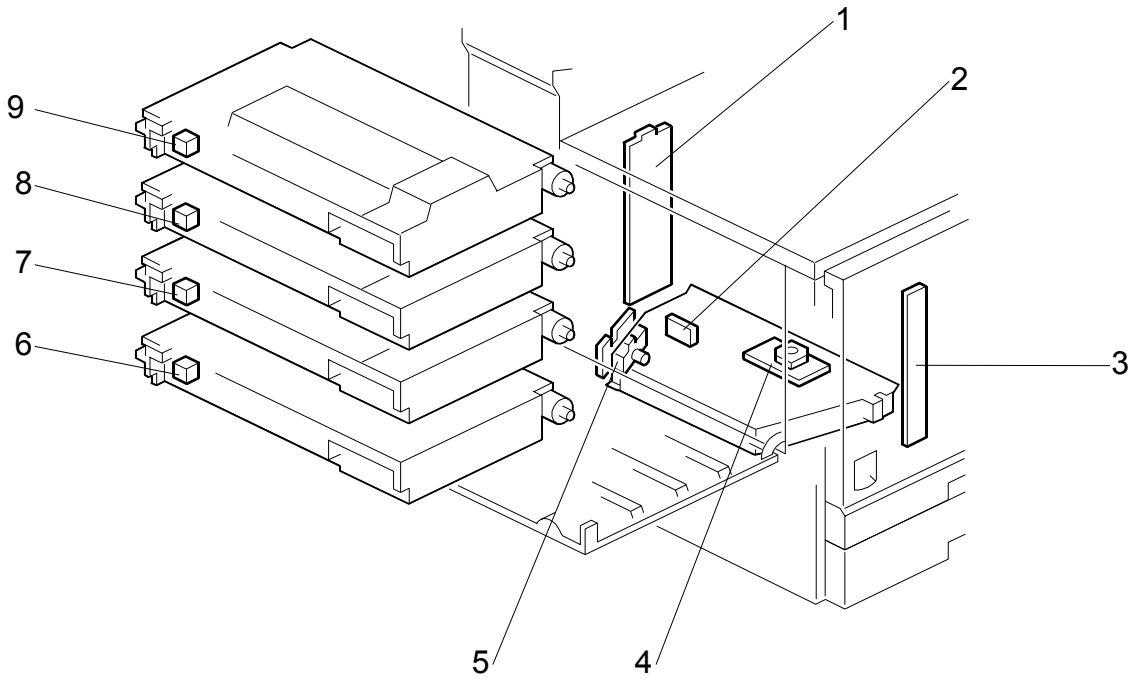
T/B: Image transfer belt
O/B: OPC belt

Paper Path



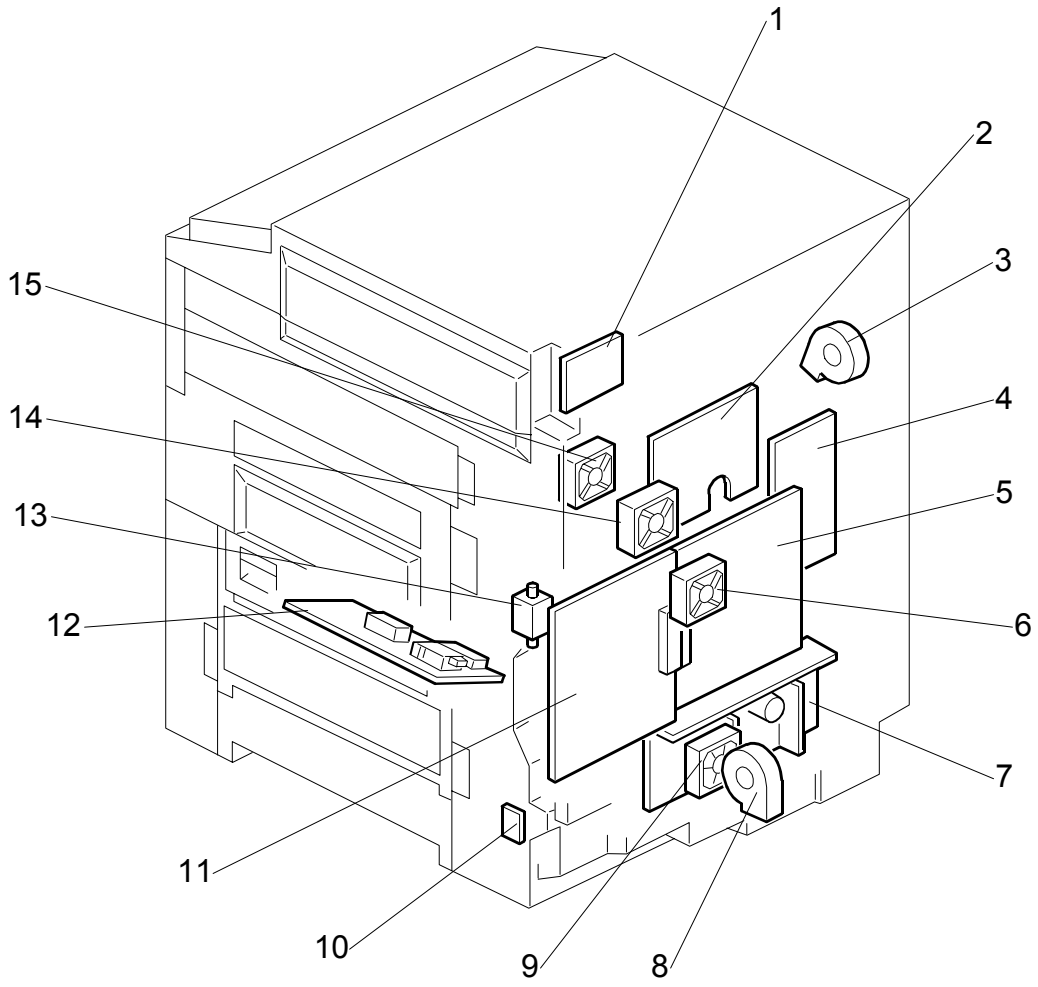
1. Right cover switch
2. Interlock switch
3. Paper overflow sensor
4. Fusing exit sensor
5. Registration sensor
6. Paper feed sensor
7. Paper near-end sensor 1
8. Right lower cover switch
9. Paper near-end sensor 2
10. Vertical transport sensor
11. Paper end sensor 2
12. Paper end sensor 1
13. Tray heater (optional)
14. Mechanical counter 2
15. Mechanical counter 1
16. Exit cover switch
17. Paper exit sensor
18. Main power switch
19. Front cover switch

Development Units



1. Rear development board
2. Laser synch. detection board
3. Front development board
4. Polygonal mirror motor
5. LD unit
6. Memory chip M
7. Memory chip C
8. Memory chip Y
9. Memory chip K

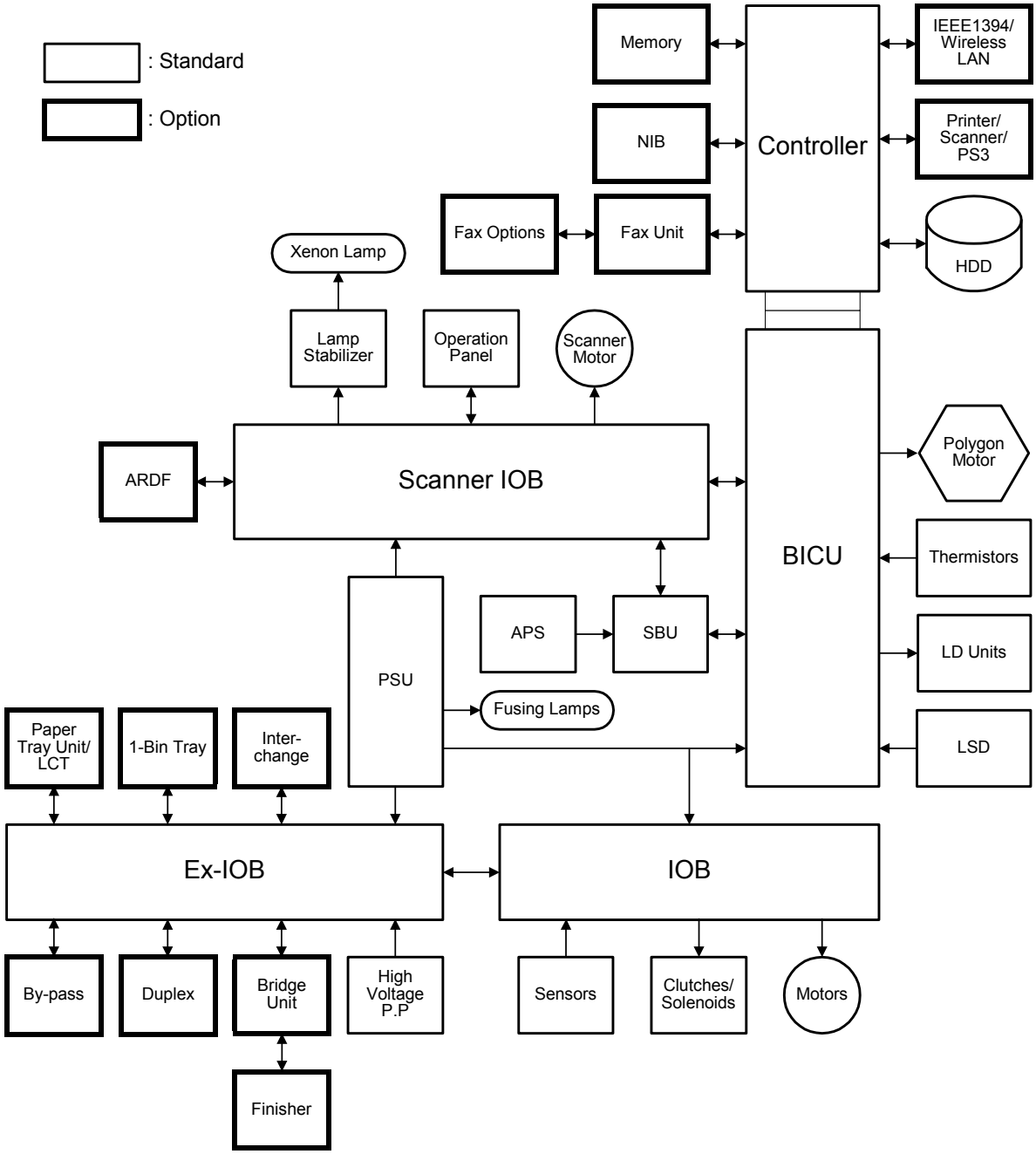
Boards



1. Scanner I/O board
2. I/O board
3. Development fan
4. EX I/O board
5. BICU board
6. Controller fan
7. Power supply unit
8. Ozone fan
9. PSU fan
10. Temperature/humidity sensor
11. Controller board
12. High voltage supply board
13. Oil pump
14. Fusing unit fan
15. Paper exit fan

6.2 BOARD STRUCTURE

6.2.1 BLOCK DIAGRAM



1. **Controller (Main Board)**
   Controls the memory and the fax/scanner/printer options.

2. **BICU (Base Engine and Image Control Unit)**
   This is the scanner and engine control board. It controls the following functions:
   - Engine sequence
   - Timing control for peripherals
   - Image processing control and video control
   - Operation control
   - Drive control for the sensors, motors, and solenoids of the printer and scanner
   - High voltage supply board control
   - Fusing control

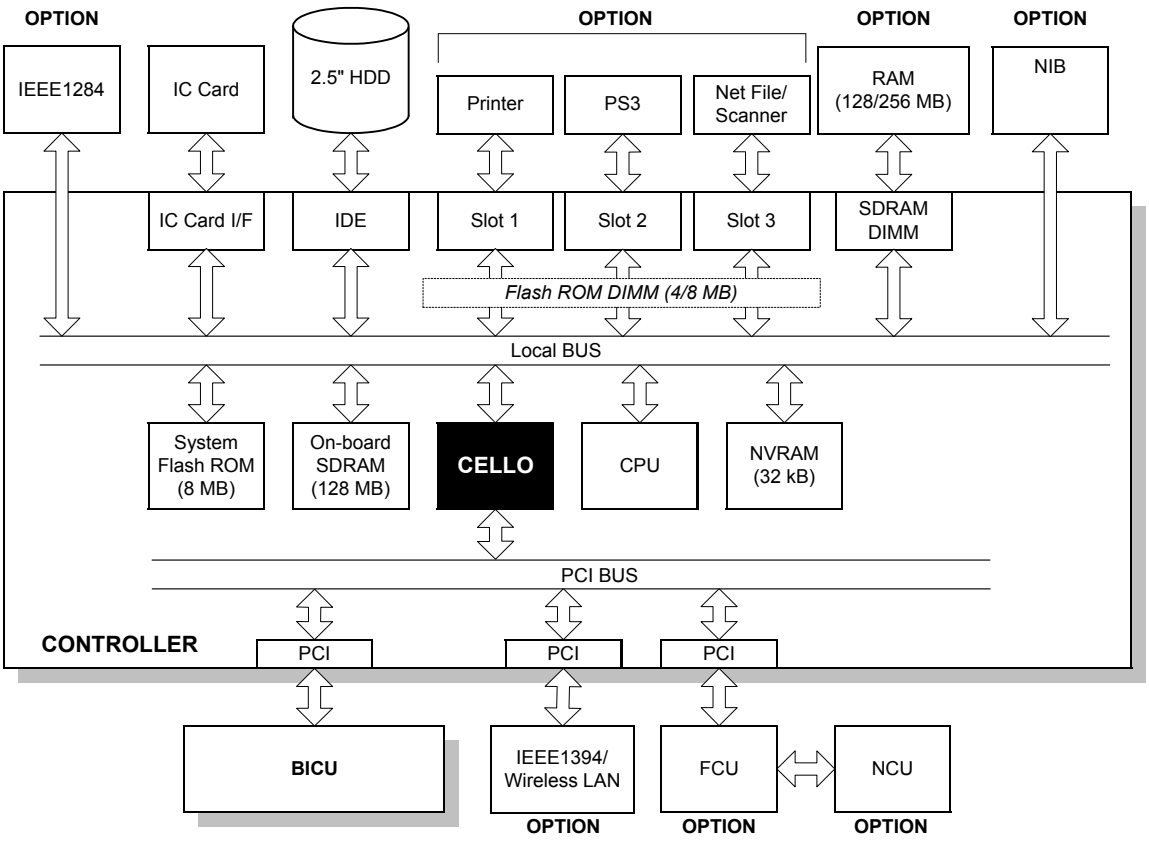
3. **IOB (Input/Output Board)**
   Controls the sensors, motors, clutches, and solenoids of the main unit.

4. **Ex-IOB (Extended Input/Output Board)**
   Handles the serial interfaces with peripherals.

5. **Scanner IOB (Scanner Input/Output Board)**
   Handles the following functions.
   - Serial interfaces with ARDF and operation panel
   - Scanner motor control

6. **SBU (Sensor Board Unit)**
   The SBU converts the analog signals from the CCD into digital signals.

6.2.2 CONTROLLER



The controller uses next generation (GW) architecture, which allows the board to control all applications (copier, printer, scanner, and fax).

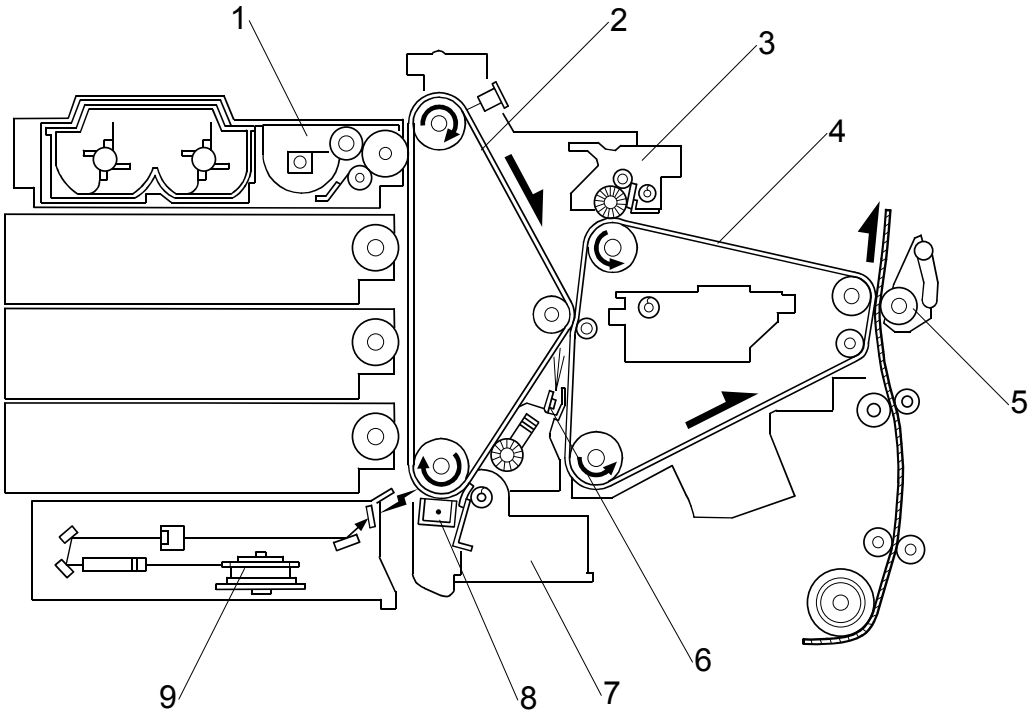
To add an optional printer, scanner, or fax application, install a ROM DIMM on the controller. The fax option, however, requires FCU and NCU installation also.

Systems and application software can be downloaded from the controller's IC Card slot. For details about how to download software from an IC card (☛ 5.2).

1. **CPU:**
   PMC RM526A-250 MHz
2. **CELLO ASIC:**
   This is a dedicated chip developed for use with GW architecture. It controls the following functions: memory, local bus, interrupts, PCI bus, video data, HDD, network, operation panel, IEEE1284, and image processing.
3. **Flash ROM:**
   8MB Flash ROM for the system program
4. **SDRAM (on-board):**
   128 MB SDRAM, expandable with 128 MB or 256 MB optional DRAM.
5. **Flash ROM DIMM Slots:**
   Three slots are provided for three ROM DIMMs. Expansion slots provided for the optional printer/scanner/facsimile, and PostScript 3 applications.
6. **NVRAM:**
   Stores the engine and controller settings
7. **PCI Interface:**
   For installing the FCU board, IEEE1394, and wireless LAN. The IEEE1394, and wireless LAN cannot both be installed on the same machine at the same time.
8. **HDD:**
   Used for the document server. Also used for collation, locked print, sample print, form overlay, and font storage. The hard disk is partitioned as shown below.

Partition	40GB HDD	Function	Comment
Image Local Storage	16,500 MB	Document server	Remains stored even after cycling power off/on.
File System 1	500 MB	Downloaded fonts, forms.	Remains stored even after cycling power off/on.
File System 2	1,000 MB	Job spooling area	Erased after power off.
File System 3	2,000 MB	Work data area	Remains stored even after cycling power off/on.
Image TMP	7,486 MB	Commonly used area for applications	Erased after power off.
	7,200 MB	Copier application	Erased after power off.
	3,440 MB	Printer application	Erased after power off.
	1,000 MB	Scanner application	Erased after power off.
Job Log	10 MB	Job log	Remains stored even after cycling power off/on.
Scanner	1024 MB	For mail	Erased after power off.
Others	840 MB	Debug	Erased after power off.
Total	4100 MB		

6.3 COPY PROCESS



1. Development unit
2. OPC belt
3. Image transfer belt cleaning unit
4. Image transfer belt
5. Paper transfer roller unit
6. Quenching lamp
7. OPC belt cleaning unit
8. Charge corona unit
9. Polygonal mirror

1. **Drum Charge**
   The corona wire gives the drum a negative charge.

2. **Black (K) Image Creation**
   a) Laser Exposure
   The laser diode (LD) emits two laser beams. The laser beams create a latent image on the OPC surface.
   b) Development
   The development roller transfers negatively charged toner to the latent image. The OPC belt surface holds only one toner color at one time.
   c) Image Transfer
   The OPC belt transfers the single-color toner image to the image transfer belt.
   d) Cleaning
   The OPC belt cleaning unit cleans the image transfer belt.

3. **Magenta (M) Image Creation**
   Same as 2 a) through 2 d) above.

4. **Cyan (C) Image Creation**
   Same as 2 a) through 2 d) above.

5. **Yellow (Y) Image Creation**
   Same as 2 a) through 2 d) above.

6. **Paper Transfer**
   The paper transfer roller transfers the combined CMYK toner image to the paper.
   The OPC belt and the image transfer belt can hold two A4-size LEF images on their surfaces. When printing on A4 LEF or smaller paper, the OPC and image transfer belts process two images in one cycle. At this time, two sheets of paper are consecutively output with little interval between them. This speeds up color print output.

7. **Separation**
   The paper is separated from the image transfer belt when the belt curves away from it. A discharge plate assists this process.

8. **Fusing**
   The fusing unit fuses the image to the paper.

9. **Cleaning**
   The image transfer belt cleaning unit cleans the belt.

10. **Quenching**
    The quenching lamp erases any remaining charge on the OPC belt.

6.4 PROCESS CONTROL

6.4.1 OVERVIEW

The copier adjusts the following process control parameters:

- Development bias (V_B)
- Charge corona grid voltage (V_G)

These 2 parameters maintain a consistent gamma for the engine.

NOTE: This copier uses only the ID sensor. (There is no TD or potential sensor.)

6.4.2 PROCESS CONTROL STEPS

Six Steps

Depending on the machine's condition, some or all of the following steps may occur:

①: ID sensor calibration
②: Color development bias initialization (M, then C, then Y)
③: K development bias initialization
④: M, C, Y, and K bias fine adjustment
⑤: Charge grid bias voltage adjustment
⑥: Process control interval counter reset

If the main power is turned off (or the cover opened) during a process control session, the session is aborted. Turning the power on (or closing the cover) restarts the process control session.

When is Process Control Done?

When an event arises, the specified steps are performed.

Event	Condition	Steps
Forced process control	When forced process control is done (engine SP mode 3-001-1)	① → ⑥
Process control regular interval	When more than 200 sheets have been printed upon completion of a job. (The interval can be changed with engine SP3-003-1.)	①, ④, ⑤, ⑥
Power on	When the fusing pressure roller temperature is 60°C or lower immediately after the power is turned on.	①, ④, ⑤, ⑥
Environmental change	When the change in the temperature/humidity sensor output since the previous process control exceeds a certain value. SP3-004 can be used to change the threshold temperature and humidity values.	①, ④, ⑤, ⑥

Event	Condition	Steps
K toner cartridge or K development unit replacement	This is done after clearing the K toner near-end state (i.e., when a new K development unit is added). The machine idles and when the development roller stops for 10 seconds, indicating that idling is over, process control occurs.	①, ③, ④, ⑤
Color development unit replacement	After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs.	① → ⑥
Color toner cartridge replacement	After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs.	①, ④, ⑤, ⑥
24 hours after previous process control	Same as 'power on' process control	①, ④, ⑤, ⑥
PCU replacement	After the PCU counter is reset, it is lubricated (new OPC belt lubricant application mode). Then process control occurs.	① → ⑥

Supplementary Information on Process Control

The following is a brief explanation of process control. This is for your reference. If the information is helpful for understanding the machine in the field, read the following explanation.

Step 1. ID Sensor Calibration

This calibration compensates for changes in the condition of the OPC belt or the ID sensor. The ID sensor detects the light reflected from the bare OPC belt. The LED current is adjusted until the sensor output is correct. The LED current for the color toner detection circuit is adjusted based on the adjustment made for the black toner detection circuit.

Step 2. Initializing Color Development Bias

For each color, the machine makes a solid patch (20x25) of toner on the OPC belt. The ID sensor detects the density of the patch. The laser power for the patch of toner is constant at about 210/255. Each color is calibrated separately (this step has three stages - one for each color). M/A must be the following for areas of maximum image density: 0.65 mg/cm^2, Range:0.40 to 0.90 mg/cm^2. If the detected M/A is different from the target M/A, the development bias is adjusted.

Colour development bias initialisation is not always done. This is to reduce the amount of time taken for process control. Also, in step 4, the current colour development bias values are fine-tuned to correct for any changes in the machine or temperature/humidity since the last full process control.

This step always has to be done when installing a new development unit. The toner amount carried by a development roller varies with each unit. (The toner amount used for a certain development bias is not the same.) Black development bias initialisation (step 3) has to be done more often, because tests have shown that process control errors occur more often if this is not done.

Step 3. Initialising K Development Bias

Similar to the process for color development bias. M/A must be 0.65 mg/cm^2 for areas of maximum image density. Range: 0.40 to 2.0 mg/cm^2

Step 4. Fine-tuning the YMCK Development Biases

The machine makes another solid pattern

Steps 2 and 3 for determining VB (development bias) are not done every process control (see the table: When is the process control done?). Because of this, the solid area density, based on the VB obtained during initialisation, may change as a result of changes inside the machine after a period of use, or because of environmental changes. To suppress these fluctuations, this step fine-tunes VB at regular intervals, or if the environmental conditions change.

The machine adjusts the development bias based on these results.

Step 5. Charge Grid Voltage Adjustment

The machine makes a very low image density pattern (20x25 mm), which consists of a replacing 3 x 3 matrix of pixels on the OPC belt. Two of these pixels are of high intensity (dark), and the others are at zero intensity (LD off, white). The two high intensity pixels are close together.

0	0	0
240	240	0
0	0	0

This is only to give you a rough idea - the exact pixel densities used by this machine are not shown here.

The net effect is to have two dark pixels surrounded by white pixels on all sides, repeated all over the paper.

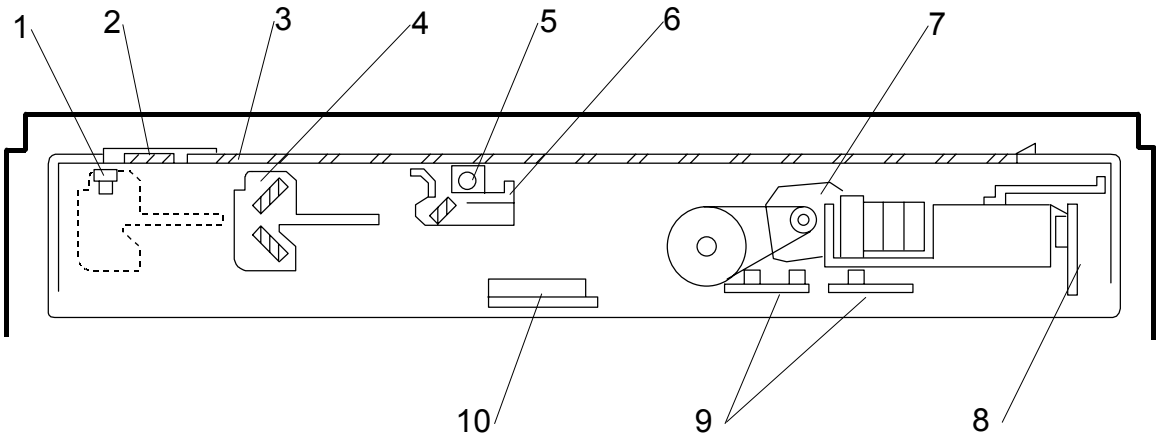
If there is a difference between the target M/A and the detected M/A, the grid voltage is adjusted.

Step 6. Resetting the Process Control Interval Counter

The counter is in the NVRAM on the controller board, and is reset after process control. The counter is not reset after black development unit or black toner cartridge replacement. This is because only a few of the process control steps are done after replacing these components.

6.5 SCANNING

6.5.1 OVERVIEW



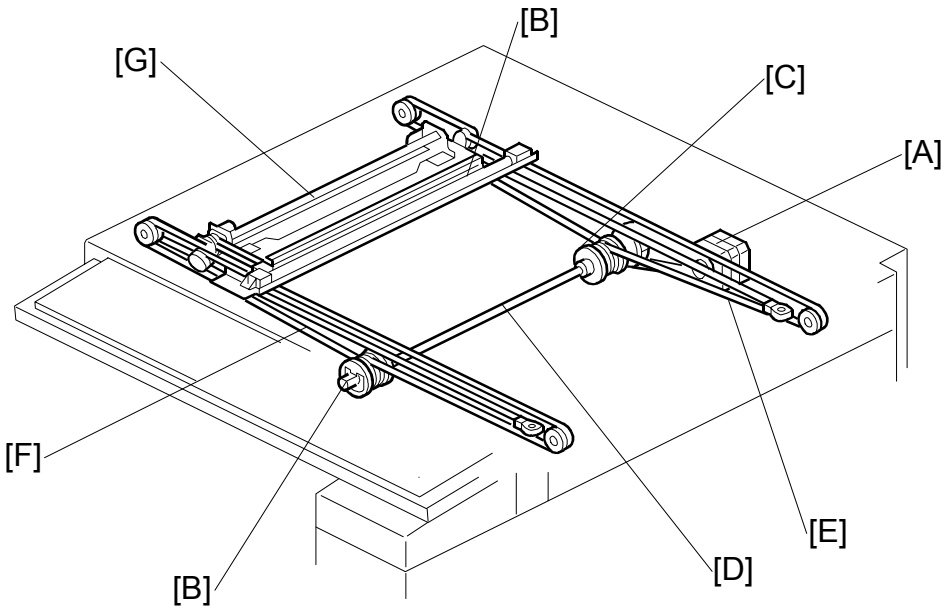
1. Scanner HP sensor
2. ADF exposure glass
3. Exposure glass
4. 2nd scanner (2nd carriage)
5. Scanner lamp
6. 1st scanner (1st carriage)
7. Scanner motor
8. Sensor board unit (SBU)
9. Original length sensors
10. Original width sensor

(☛ CT *Digital Processes – Digital scanning – Basic concepts*)

Book mode: The scanner motor drives the 1st and 2nd scanners. The original is scanned from left to right.

ADF mode: The ADF feeds the original past the ADF exposure glass. The 1st scanner moves under the ADF exposure glass. The original does not stay on the glass, but keeps going to the ADF exit.

6.5.2 SCANNER DRIVE



Scanner drive: Scanner motor [A] ➔ Scanner drive pulley [B and C], and scanner drive shaft [D] ➔ Scanner wires [E and F] ➔ 1st [G] and 2nd [H] scanners

Book Mode

The scanner I/O board controls the scanner motor.

The 1st scanner moves twice as fast as the 2nd scanner.

For reduction/enlargement, the scanning speed depends on the magnification ratio. The returning speed is always the same, regardless of magnification ratio.

Sub-scan magnification is controlled by the scanner motor speed. Main-scan magnification is controlled by image processing on the BICU board.

NOTE: Sub-scan magnification errors can be corrected by changing the scanner-motor speed (☛ SP4-008).

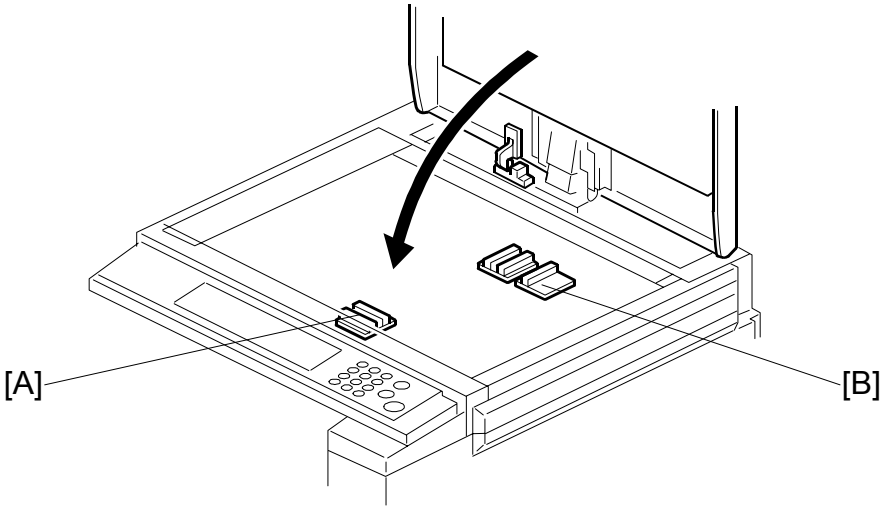
ARDF Mode

The 1st and 2nd scanners stay at their home positions; the scanner HP sensor detects the 1st scanner position, and the 2nd scanner position is linked with that of the 1st scanner.

Sub-scan magnification is controlled by the ADF feed speed. Main-scan magnification is controlled by image processing on the BICU board.

NOTE: Sub-scan magnification errors can be corrected by changing the ADF feed-speed (☛ SP6-006-5).

6.5.3 ORIGINAL SIZE DETECTION



The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length.

The on/off signals received from the sensors are used to detect the original size.

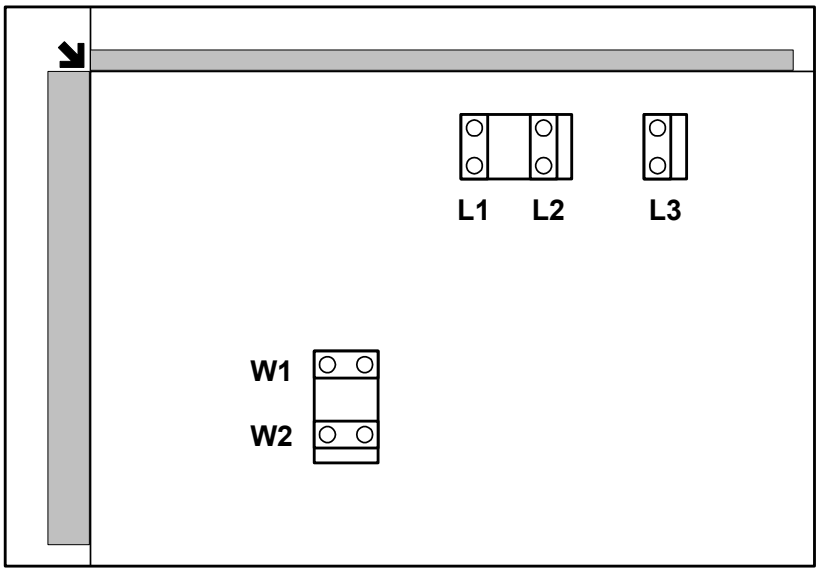
The SBU board checks each sensor signal at the following times:

- Just after the platen cover is closed
- When the start key is pushed, if the platen cover stays open.

When the by-pass tray is used, the machine assumes that the paper is set lengthwise. So, if A4 paper is set sideways on the by-pass tray, the machine assumes it is A3 paper (set lengthwise) and scans the whole A3 area, disregarding the original size sensors. However, when the registration sensor detects that the paper is not A3 but only A4 sideways, paper feed stops and a jam occurs. This is to prevent large amounts of toner transferring from the transfer belt to the transfer roller. (Also see SP 1-940.)

NOTE: Original size detection using the ARDF is described in the manual for the ARDF.

The table (next page) shows the sizes that are detected for various sensor outputs.



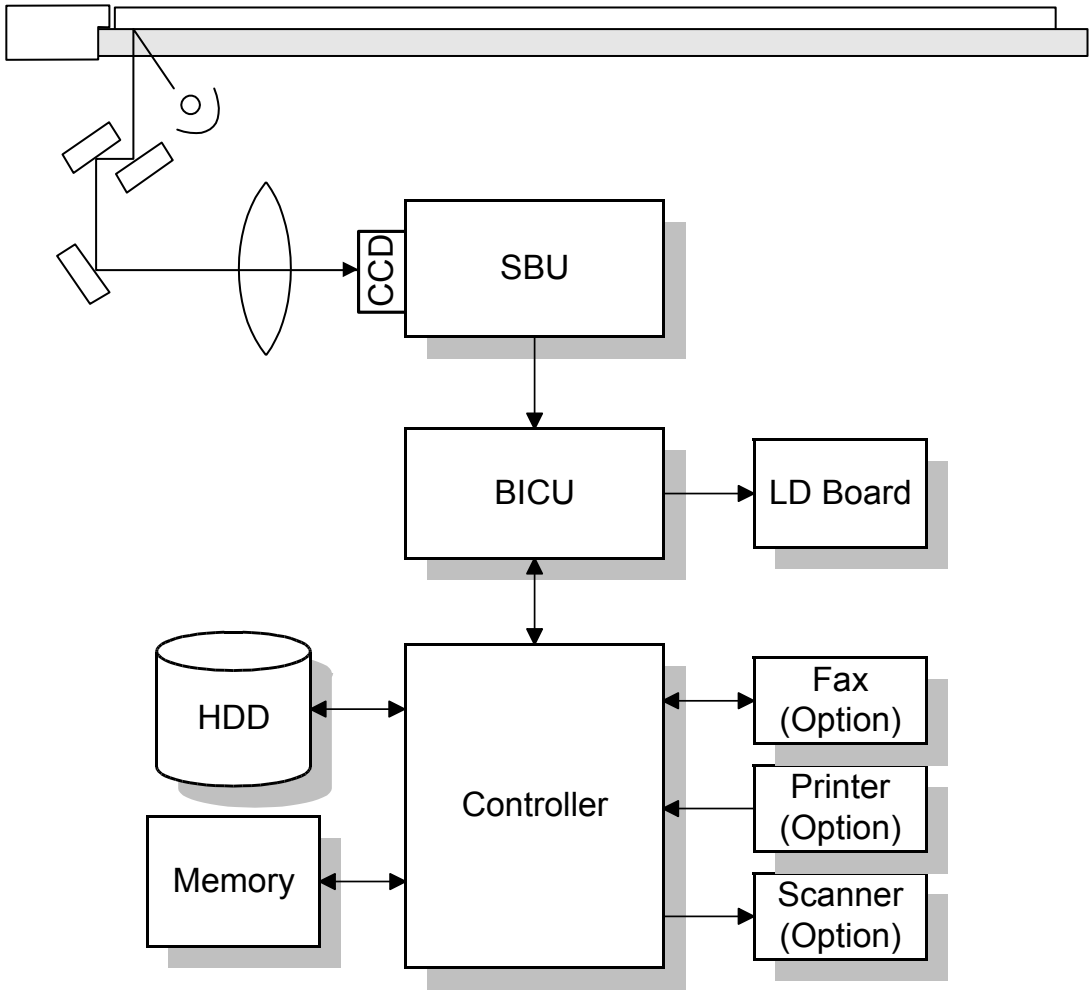
Original Size		Length Sensor			Width Sensor		SP4-301 display
Metric	**Inch**	L3	L2	L1	W2	W1	
A3	11" x 17"	O	O	O	O	O	132
B4	10" x 14"	O	O	O	X	O	141
F4	8.5" x 14" (8" x 13")	O	O	O	X	X	165
A4-L	8.5" x 11"	X	O	O	X	X	133
B5-L		X	X	O	X	X	142
A4-S	11" x 8.5"	X	X	X	O	O	5
B5-S		X	X	X	X	O	14
A5-L, A5-S	5.5" x 8.5", 8.5" x 5.5"	X	X	X	X	X	128

NOTE: L: Lengthwise, S: Sideways, O: Paper present, X: Paper not present

For other combinations, “Cannot detect original size.” is displayed on the operation panel.

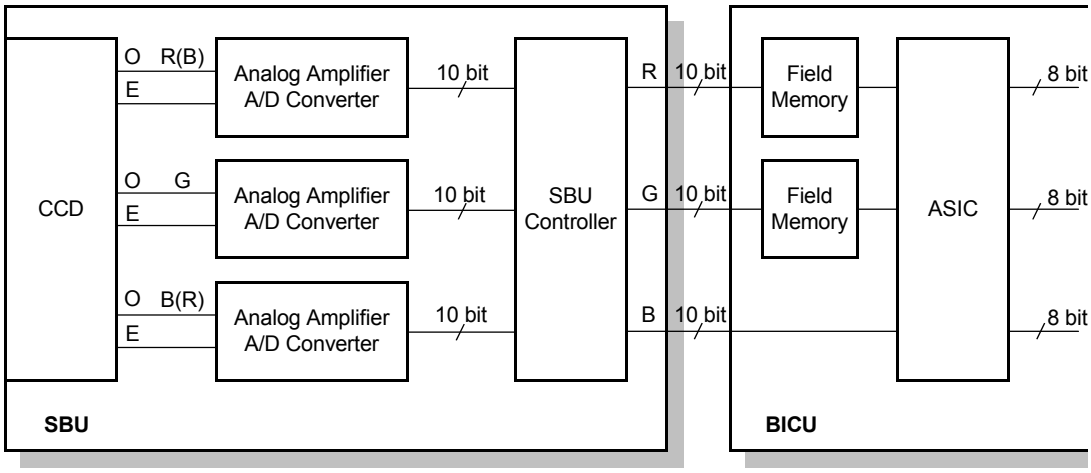
6.6 IMAGE PROCESSING

6.6.1 OVERVIEW



The CCD (Charge-Coupled Device) generates three analog video signals. The SBU (Sensor Board Unit) converts the three analog signals to 10-bit digital signals. It sends these signals to the BICU board. The BICU board processes the image, then the image data is sent to the LD unit.

6.6.2 SBU BLOCK DIAGRAM



Signal Processing

1. Signal Amplification
   - Odd-pixel and even-pixel RGB analog signals from the CCD are amplified.
2. Signal Composition
   - The amplified signals are combined after A/D conversion.

A/D Conversion

- The analog signals (CCD output) are converted to 10-bit (1,024 gradations) digital signals.

White Level Correction

- A white reference plate is scanned before the original is scanned.
- Data is updated before the original is scanned.
- The differences in the white level across the page, including irregularities in the CCD and the optical parts across the main scan, are corrected.

Others

The SBU controller exchanges the R and B signals if originals are scanned through the ARDF.

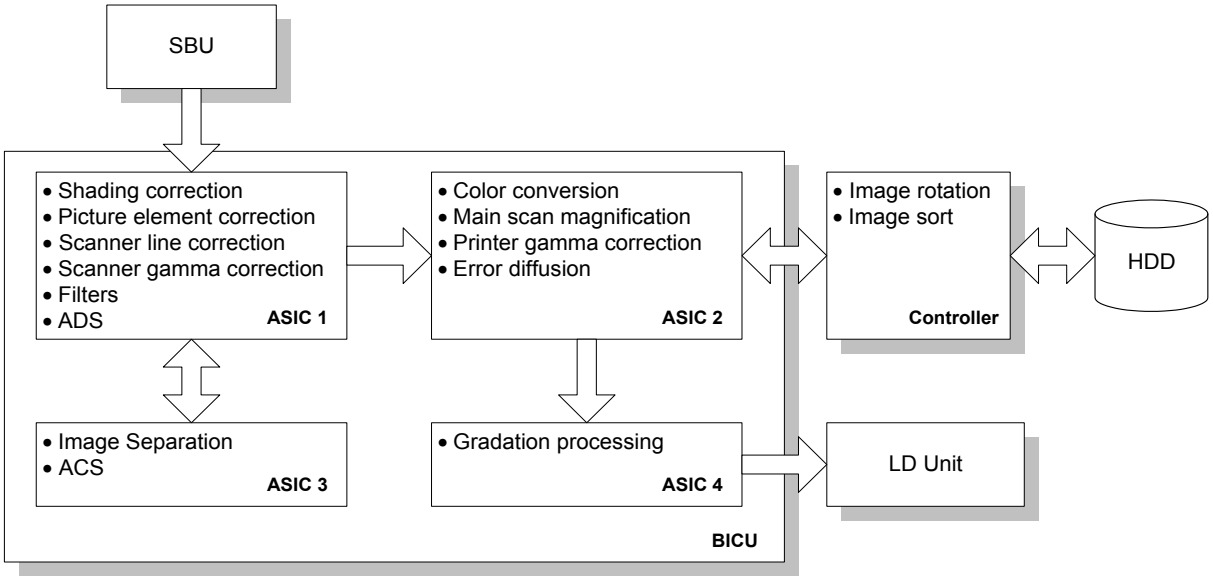
Black Level Correction

- Improves image reproduction for high-density areas.
- Reads the black video level at black elements on the CCD. These pixels are masked off, and should produce a pure black signal.
- This is subtracted from the value of each pixel.
- Calculated for each scan line.
- Corrects the image data for any changes in black level with time, as the machine scans down the page.

VPU Test Mode

To make sure the scanner VPU control is functioning, output the VPU test pattern with SP4-907 (for more details, see chapter 4, “Troubleshooting”).

6.6.3 IMAGE PROCESSING



Shading Correction

Auto shading compensates for the possible differences in the light emission level at the edge and center of a scanned image caused by the scanner lens, or the differences among the CCD pixels.

Picture Element (Dot Position) Correction

Picture element correction includes

1) the completion of the scan line correction process
2) the correction of the time when the CCD is not perpendicular to the light

- The green CCD line is taken as the standard.
- Both ends of the red and blue lines are adjusted to match the standard.

NOTE: To adjust the vertical line correction level, use SP4-932.

Scan Line Correction

R, G, and B CCD lines are spaced 4 scan lines apart (8 lines total) when 100% magnification is used.

- Scan line correction synchronizes these signals by storing each line in memory.
- The difference between the R, G and B signals depends on the magnification ratio.
- If this calculation does not result in an integer, the corrected data is set to the closest integer, but further correction is needed (☛ “Picture Element Correction”).

Scanner Gamma Correction (RGB Gamma Correction)

The RGB video signals from the CCD are sent to the ASIC1 chip on the BICU board. This signal is proportional to the intensity of light reflected from the original image (Fig. 1). Scanner gamma correction inverts the video signals. The shading circuit converts the signal from 10-bit to 8-bit.

- The ASIC1 chip converts the signal levels as shown in Fig. 2.
- This improves the accuracy of RGB to CMY color conversion (conversion is done later in the image process).
- The same table is used for R, G, and B signals.

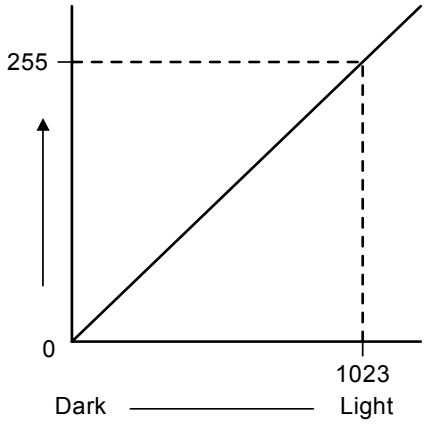


Fig. 1

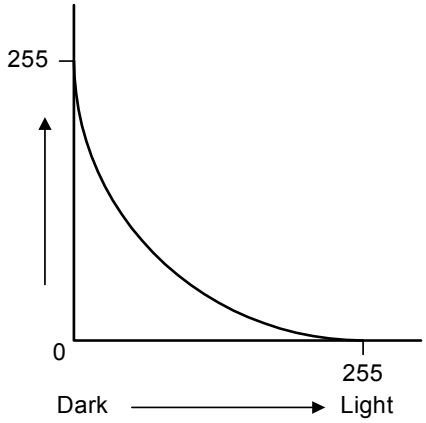


Fig. 2

Filtering

Appropriate software filters are applied to the RGB video signals.

- Varies depending on the results of auto text/photo separation (or on the selected original mode).
- RGB smoothing is applied to photo areas
- Edge emphasis applied to text areas.

Background Density Control

- Removes low ID image signals (background) that are less than a certain threshold.
- The threshold depends on the color mode (single color or full color).

Users can select a different threshold for each mode.

ADS (Auto Image Density Selection)

- Full color mode
  1) Refers to the RGB data taken from the entire original.
  2) Calculates a threshold for removing the background based on this data.
- Black and white mode
  1) Determines the peak white level.
  2) Peak level data is taken for each scan line.
  3) Removes the peak white level from the image. This produces a white background.
  4) Also uses the peak white level to determine the white reference value for A/D conversion.
  5) Background density is adjusted before data is input to the A/D converter.

Image Separation

The original image is classified into the text and photo (dot screen) areas.

Edge Separation

- Used to locate text and line diagrams
- Locates areas of strong contrast.
- Looks for continuity of black or colored pixels.
- Looks for continuity of white pixels around black or colored pixels.
- Only uses data from the green CCD.

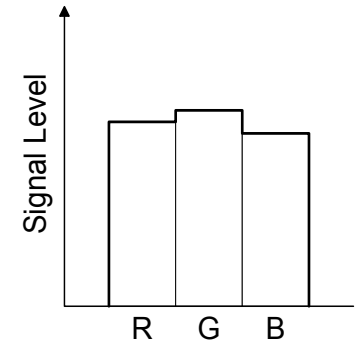
Dot Screen Separation

- If white pixels are not detected around non-white pixels, it is a dot screen area.

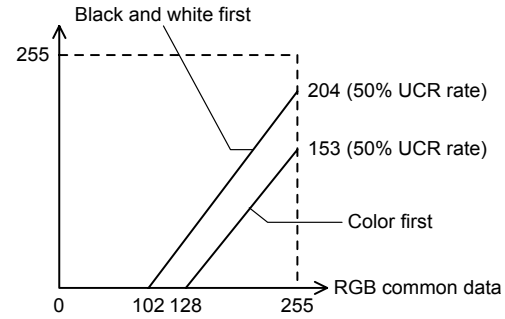
Colored Text Separation

- Identifies whether the text area's pixels are black or color.
- Based on:
  1) Differences among the RGB maximum signal levels.
  2) Output levels of the RGB video signals.

ACS (Auto Color Selection)



RGB signal after scanner γ correction



The auto color selection function determines if an original is black/white or color. Black copy mode or full color mode is automatically selected.

Selection is made based on the difference between the RGB signal levels.

RGB video signals are compared.

If the maximum difference among RGB signals is within a certain range, the original is considered black and white.

Color Conversion

Transparency for each color toner is not ideal. Color conversion compensates for the differences between the ideal and actual characteristics. A matrix converts the RGB video signals into CMYK video signals while the original is scanned once.

Conversion Matrix

The following color conversion table is an example of the results from the matrix operation.

- Simple color copying.
- No special modes applied.
- To represent green, the yellow and cyan toners are used in a 1:1 ratio.

Color Conversion Table

Original Color / Toner	K	R	Y	G	C	B	M	W
Y	1	1	1	1	0	0	0	0
M	1	1	0	0	0	1	1	0
C	1	0	0	1	1	1	0	0
K	1	0	0	0	0	0	0	0

Main Scan Magnification

While the machine changes the scanner speed to reduce or enlarge the original in the sub-scan direction, the ASIC2 chip on the BICU board handles reduction and enlargement in the main scan direction.

- Scanning and laser writing are done at a fixed pitch (CCD elements cannot be squeezed or expanded).
- Imaginary points are calculated, corresponding to a physical enlargement or reduction.
- Image density is then calculated for each of the imaginary points based on the image data for the nearest two true points.
- The calculated data then becomes the new (reduced or enlarged) image data.

NOTE: The actual calculations for main scan magnification use the polynomial convolution method. This mathematical process is beyond the scope of a service manual and will not be covered here.

Printer Gamma Correction

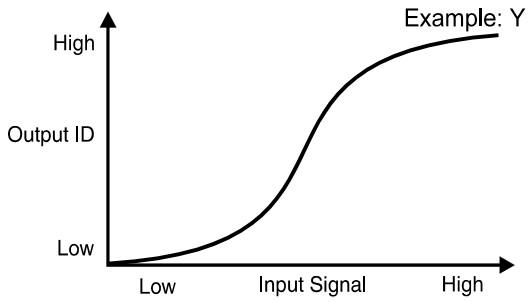


Fig. 1

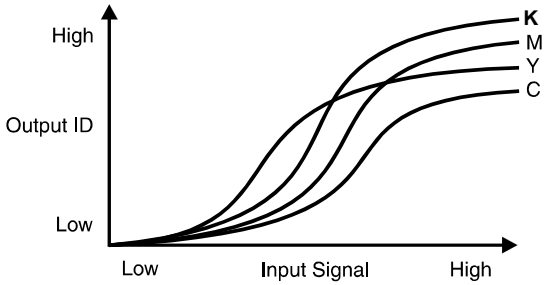


Fig. 2

Ideally, the gamma curves for Yellow, Magenta, Cyan, and Black should be identical, as shown in figure 1. However, slight variations in the electrical components can result in varying gamma curves, as shown in figure 2.

- Printer characteristics are much more variable than the scanner. Printer gamma needs re-calibration and adjustment from time to time.
- The Auto Color Calibration (ACC) procedure compensates for any discrepancies in color reproduction.
- ACC makes new gamma curves for each color in each mode (text, photo, and black text).
- After ACC, the gamma curve for each color can be adjusted with service programs (SP4-909 to SP4-918).
- 4 different modes:
  1) ID max.
  2) Shadow (High ID)
  3) Middle (Middle ID)
  4) Highlight (Low ID)
- If the previous gamma curve was better, it can be recalled.
- Factory settings can be loaded using SP5-610-4.
  NOTE: If the factory settings have been overwritten, this will return the new values, not the actual settings made in the factory. This is deliberate, since some drift is expected. After a time, the original factory settings may no longer be suitable.
- Factory settings can be overwritten by the current gamma settings using SP5-610-5.

ID Max.
This mode adjusts the total image density as shown in figure 3.

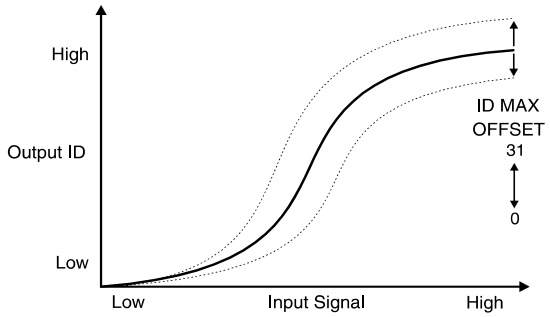


Fig. 3

Shadow (High ID)
The High ID mode adjusts the image density between Level 6 and Level 9 of the color gradation scale on the C-4 test chart (figure 4).

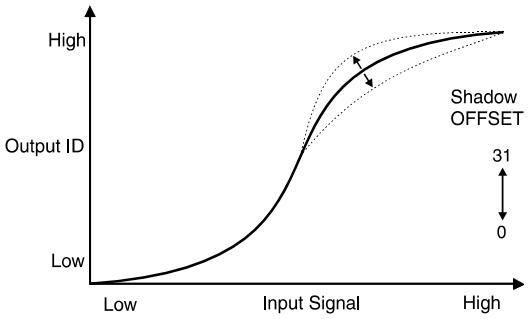


Fig. 4

Middle (Middle ID)
The Middle ID mode adjusts the image density between Level 3 and Level 7 of the color gradation scale on the C-4 test chart (figure 5).

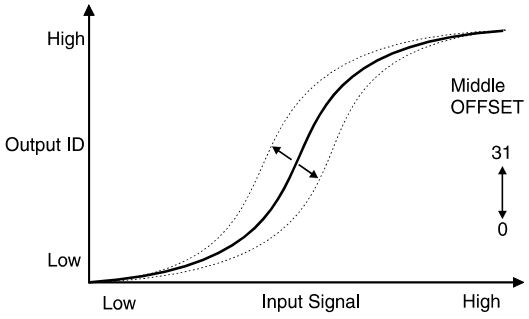


Fig. 5

Highlight (Low ID)
The Low ID mode adjusts the image density between Level 2 and Level 5 of the color gradation scale on the C-4 test chart (figure 6).

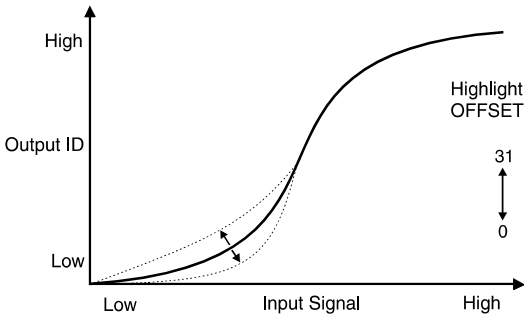
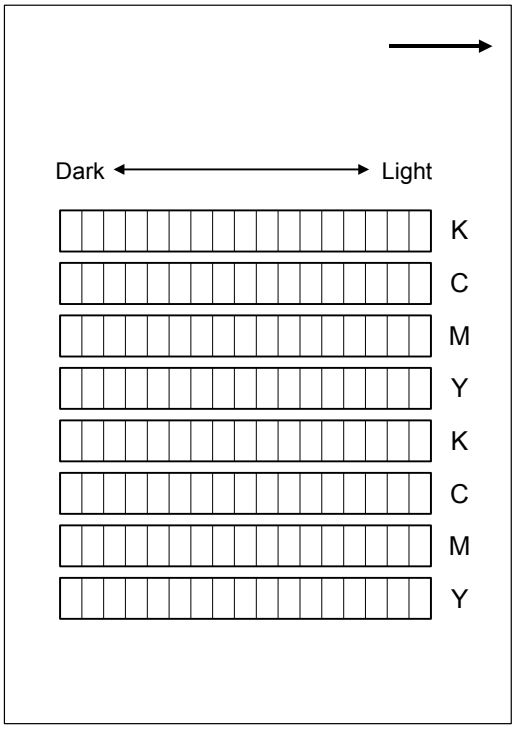


Fig. 6

Detailed Descriptions

Auto Color Calibration Test Pattern

The test pattern has eight 17-step gradation scales for each color (CMYK), including background white, for Text and Photo modes.



ACC automatically calibrates the printer gamma curve. The user starts the ACC process.

1. The user prints an ACC Test Pattern.
2. The user places the test pattern on the exposure glass.
3. The copier makes 8 scans to read each color scale.
4. The copier corrects the printer gamma by comparing the ideal settings with the current image density.
5. The copier combines the corrected gamma curve with the Shadow, Middle, and Highlight values currently in memory.
6. The copier then calculates the ID max (amplitude of the gamma curve) based on data from the ACC scan.
7. The corrected printer gamma curves can be adjusted further using SP modes (SP4-909 to SP4-918).

Error Diffusion

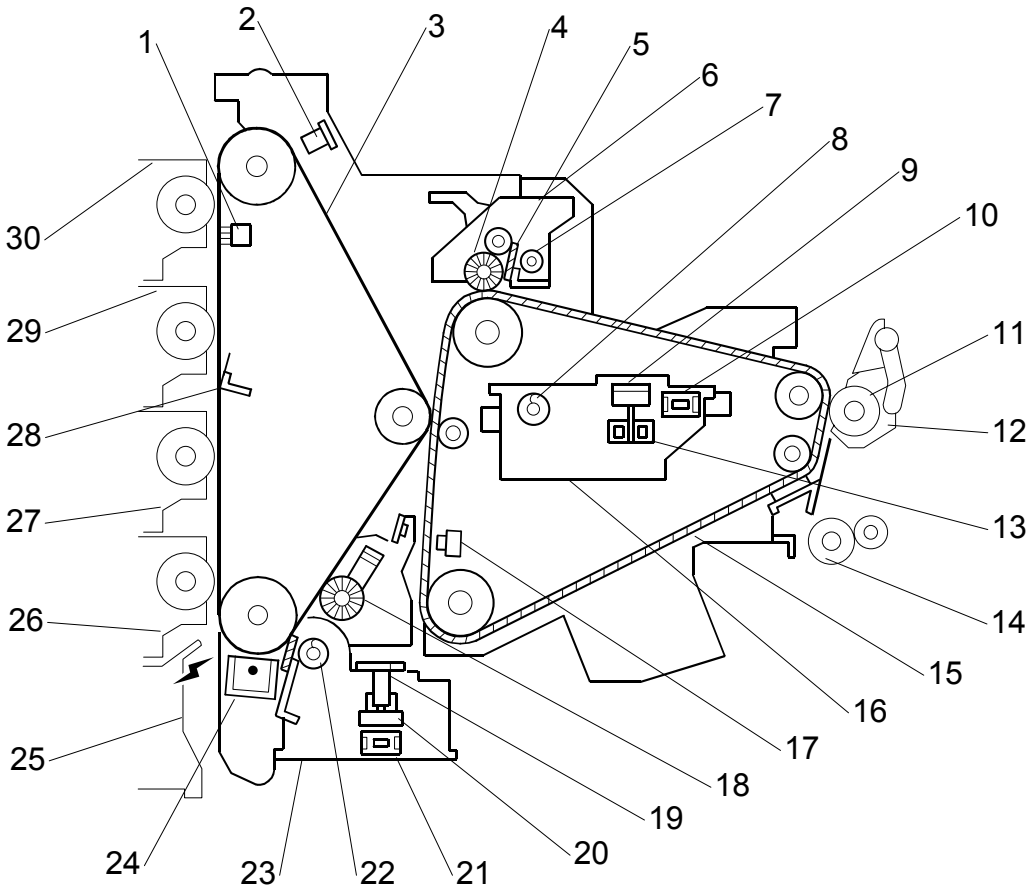
Error diffusion reduces the difference in contrast between light and dark areas of a halftone image. Each pixel is corrected using the difference between it and the surrounding pixels. The corrected pixels are then compared with an error diffusion matrix.

ASICs on the BICU Board Test

You can check the ASIC for the image processing on the BICU board with the SP mode menu, SP4-904-1 or 2.
(☛ “4. Troubleshooting” for details)

6.7 PHOTOCONDUCTOR UNIT (PCU)

6.7.1 OVERVIEW



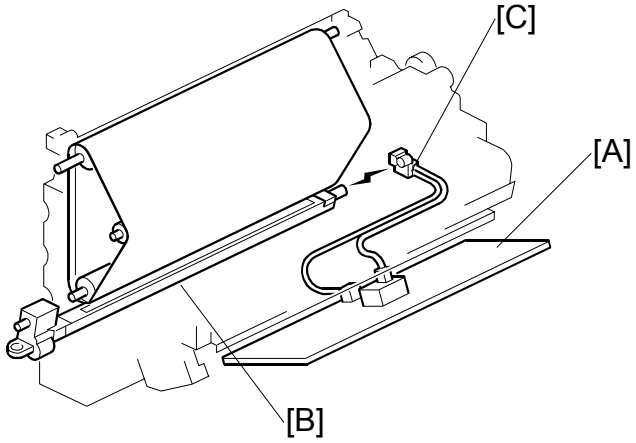
1. Ground brush
2. ID sensor
3. OPC belt
4. Bias brush
5. Image transfer belt cleaning blade
6. Image transfer belt cleaning unit
7. T/B toner collection auger 1
8. T/B toner collection auger 2
9. T/B waste toner sensor feeler
10. Waste toner bottle switch
11. Paper transfer roller
12. Paper transfer roller unit
13. T/B waste toner bottle full sensor
14. Registration roller
15. Image transfer belt
16. Image transfer belt waste toner bottle
17. Image transfer belt mark sensor
18. OPC belt cleaning brush
19. O/B waste toner sensor feeler
20. O/B waste toner bottle full sensor
21. O/B waste toner bottle switch
22. O/B toner collection auger 1
23. OPC belt cleaning unit
24. Charge corona unit
25. Laser optics unit
26. M development unit
27. C development unit
28. OPC belt support
29. Y development unit
30. K development unit

Detailed Descriptions

6.7.2 CHARGE CORONA UNIT

Power Supply

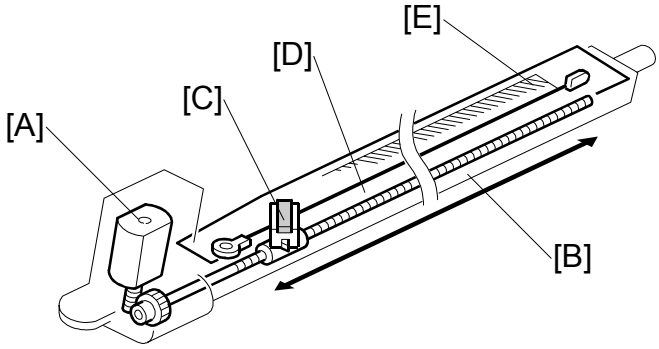
[A]: High voltage supply
[B]: Charge corona unit
[C]: Harness



High voltage supply [A] ➔ Harness [C] ➔ Charge corona unit [B] (negative charge)
(☛ CT Photocopying Processes – Charge – Corona Charge – Scorotron Method)

Grid and Wire Cleaning

[A]: Motor
[B]: Screw
[C]: Wire cleaner
[D]: Corona wire
[E]: Grid



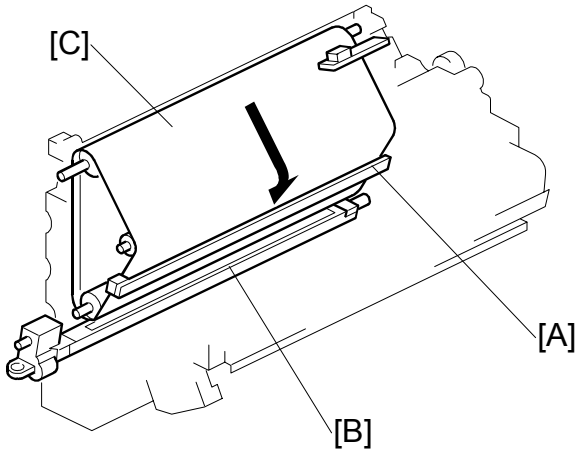
The motor [A] drives the bottom screw [B], which moves the wire cleaner [C] forward or backward. The cleaner cleans the grid [E] and corona wire [D].

The cleaning feature is activated after 600 development counts (default), at the end of the job. However, if 1000 counts is reached in the middle of a job, the printing process is interrupted and the wire is cleaned. The counter counts up as shown in the table.

	Black & White	Color
A4 (LT) LEF (or smaller)	1 count	4 counts
Others	2 counts	8 counts

NOTE: 1) The counter always increases as shown in the table. These values are not adjustable.
2) To set the counter, use SP2-801 (☛ 5.2.2).

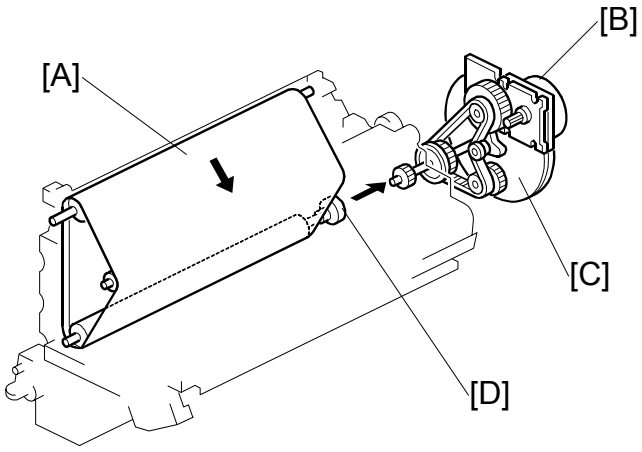
Quenching



[A]: Quenching lamp
[B]: Charge corona unit
[C]: OPC belt

(☛ CT Photocopying Processes – Quenching)

6.7.3 OPC BELT DRIVE



[A]: OPC belt
[B]: Main motor
[C]: Fly wheels
[D]: Bottom shaft

Main motor [B] ➔ Gear ➔ Timing belt ➔ Bottom shaft [D] ➔ OPC belt [A]

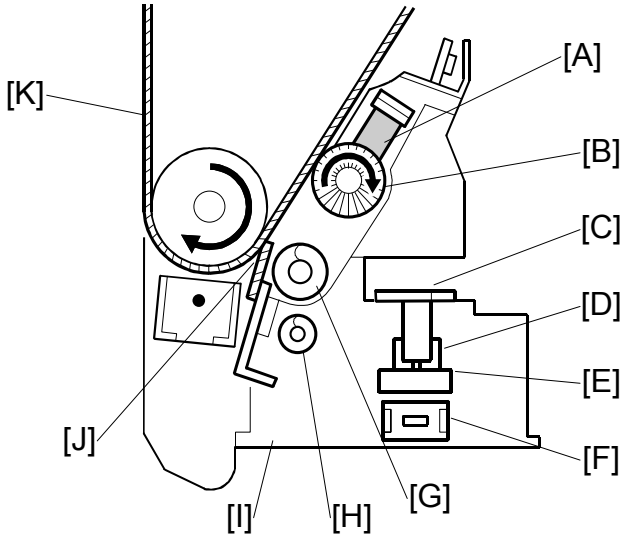
The flywheels [C] ensure that the OPC belt moves smoothly.

NOTE: The OPC belt and transfer belt contact each other. If you wish to inspect the OPC belt by turning it, you must also turn the transfer belt at the same time to avoid damaging the surfaces of the belts.

Detailed Descriptions

6.7.4 OPC BELT CLEANING UNIT

[A]: Lubricant bar
[B]: Cleaning brush
[C]: Feeler link (on the frame)
[D]: Waste toner bottle full sensor (on the frame)
[E]: Waste toner feeler
[F]: Waste toner bottle switch (on the frame)
[G]: Toner collection auger 1
[H]: Toner collection auger 2
[I]: Waste toner bottle
[J]: Cleaning blade
[K]: OPC belt



Bottle Detection

The waste toner bottle switch [F] is on the frame, behind the OPC belt cleaning unit. When the unit is installed, it pushes the switch, which indicates the bottle is in place.

Waste Toner Collection

The cleaning brush [B] and the cleaning blade [J] removes the toner remaining on the OPC belt [K] surface. (☛ CT Photocopying Processes – Cleaning – Counter Blade + Brush)

Toner collection auger 1 [G] moves this toner to the front side, where it is collected in the waste toner bottle [I].

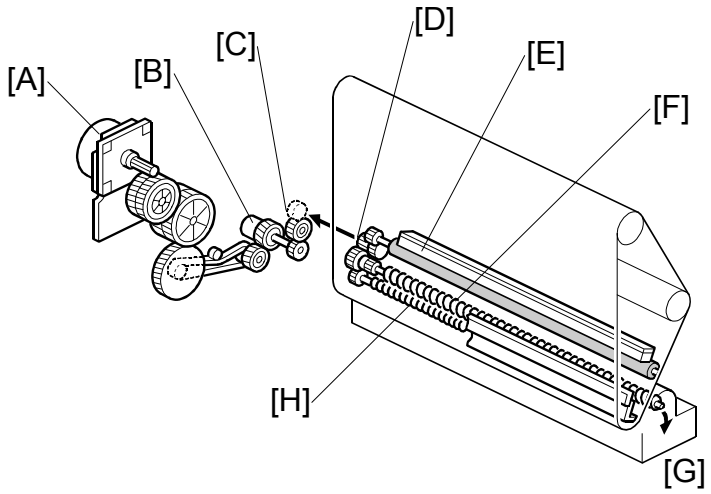
Toner collection auger 2 [H] levels the toner in the bottle.

The waste toner feeler [E] at the rear of the bottle is gradually lifted as the toner level in the bottle rises. When the feeler pushes the feeler link [C], the waste toner full sensor [D] is activated and the machine detects that the bottle is full.

When the bottle becomes full, a message appears on the operation panel. The machine can make 100 more prints, then further printing is disabled.

The bottle has a cap on the waste toner outlet. Empty the bottle when you visit the customer.

Drive



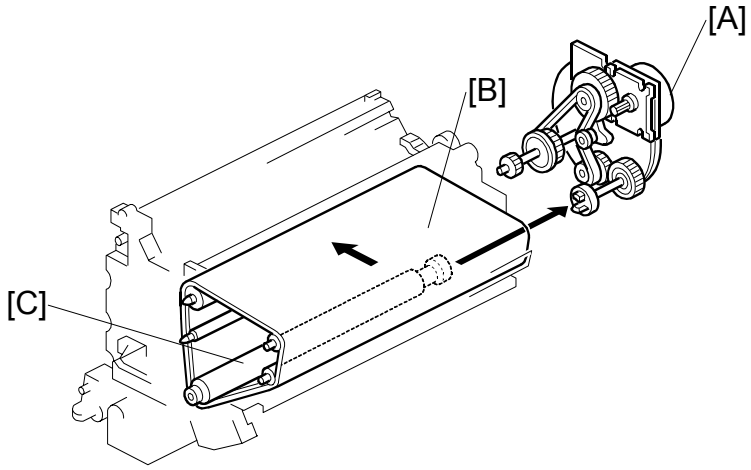
[A]: Development motor
[B]: OPC belt cleaning clutch
[C]: Gear
[D]: Gear
[E]: Cleaning brush
[F]: Toner collection auger 1
[G]: Opening for waste toner
[H]: Toner collection auger 2

Development motor [A] ➔ Gear ➔ Timing belt ➔ OPC belt cleaning clutch [B] ➔ Gears [C, D] ➔ OPC belt cleaning unit (including the brush and toner collection augers)

The clutch cuts the drive to the cleaning unit when the development motor reverses (this is done at intervals to prevent toner blockages in the development unit).

6.7.5 IMAGE TRANSFER BELT UNIT

Drive



[A]: Main motor
[B]: Image transfer belt
[C]: Bottom shaft (rubber coated)

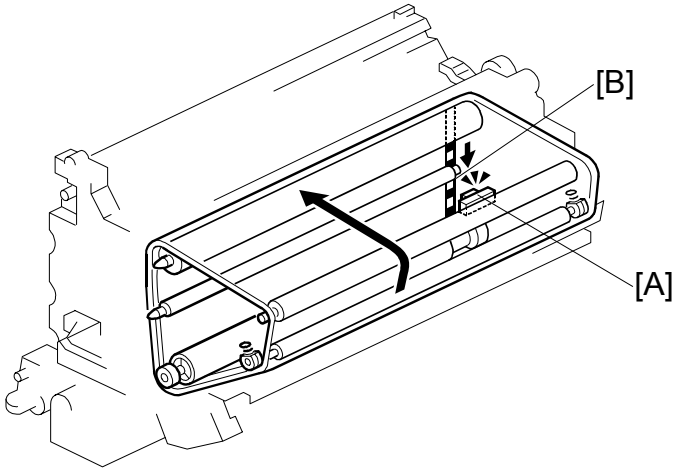
Main motor [A] ➔ Gears & timing belt ➔ Bottom shaft [C]

The bottom shaft can drive the transfer belt because of the friction between the belt [B] and the rubber coating on the shaft [C].

NOTE: The transfer belt and OPC belt contact each other. If you wish to inspect the transfer belt by turning it, you must also turn the OPC belt at the same time to avoid damaging the surfaces of the belts.

Belt Mark Detection

[A]: Belt mark sensor
[B]: Mark

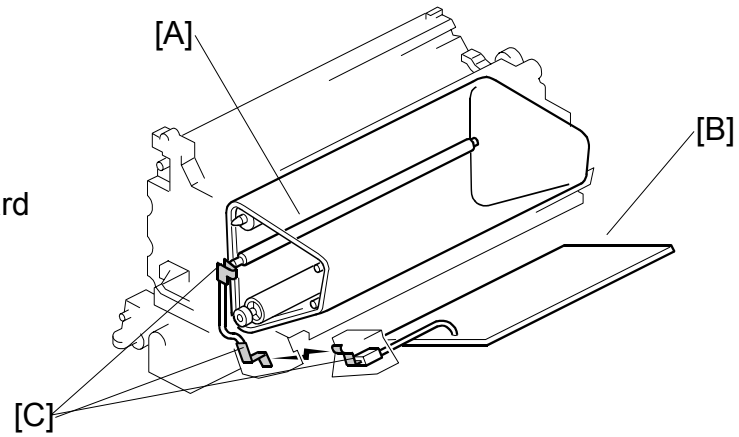


The belt mark sensor is a reflective photosensor.

To exactly synchronize the four mono-color toner images on the image transfer belt, the belt mark sensor [A] monitors the belt speed. The sensor detects the light reflected by the marks [B] at the rear end of the belt (25 marks per rotation; mark frequency: 21 mm). The sensor output is used to control the belt speed.

Transfer Roller

[A]: Transfer roller
[B]: High voltage supply board
[C]: Terminal plates



The transfer roller [A] attracts toner from the OPC belt to the image transfer belt by using a positive charge.

The terminal in the middle of the PCU contacts the terminal on the transfer roller shaft when the image transfer belt unit is installed in the PCU.

The current is adjusted based on environmental temperature and humidity.

6.7.6 IMAGE TRANSFER BELT CLEANING UNIT

[A]: Cleaning blade
[B]: Toner collection auger 1
[C]: Image transfer belt
[D]: Toner conduit
[E]: Waste toner sensor feeler
[F]: Waste toner bottle switch
[G]: Actuator
[H]: Waste toner full sensor
[I]: Waste toner bottle
[J]: Transfer roller
[K]: Toner collection auger 2
[L]: Cleaning brush
[M]: Lubricant bar
[N]: Cleaning roller

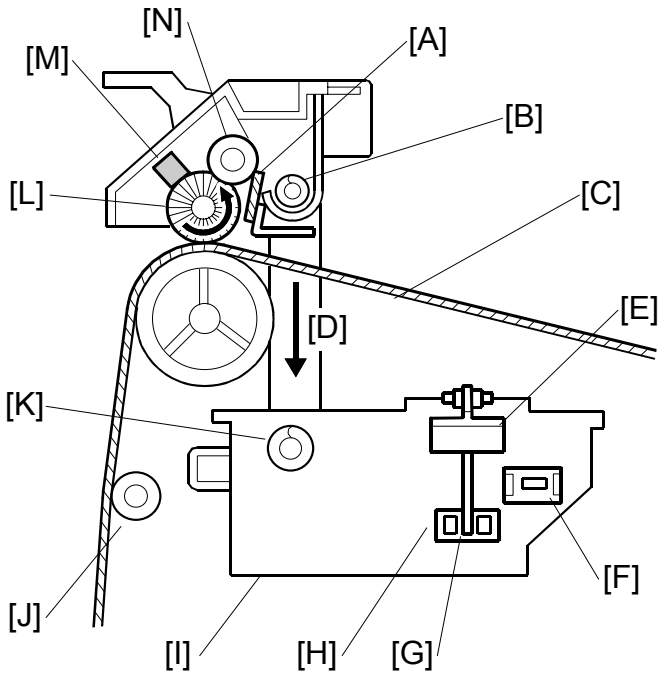


Image Transfer Belt Cleaning

Cleaning roller [N] is positively charged, and transfers this charge to the cleaning brush [L].

The cleaning brush attracts residual toner from the image transfer belt [C]. This toner is attracted to the cleaning roller, where it is removed by the cleaning blade [A].

Waste Toner Collection

The toner removed by the cleaning blade is transported by the toner collection auger 1 [B] to the rear, where it falls into the toner bottle [I] through the toner conduit [D].

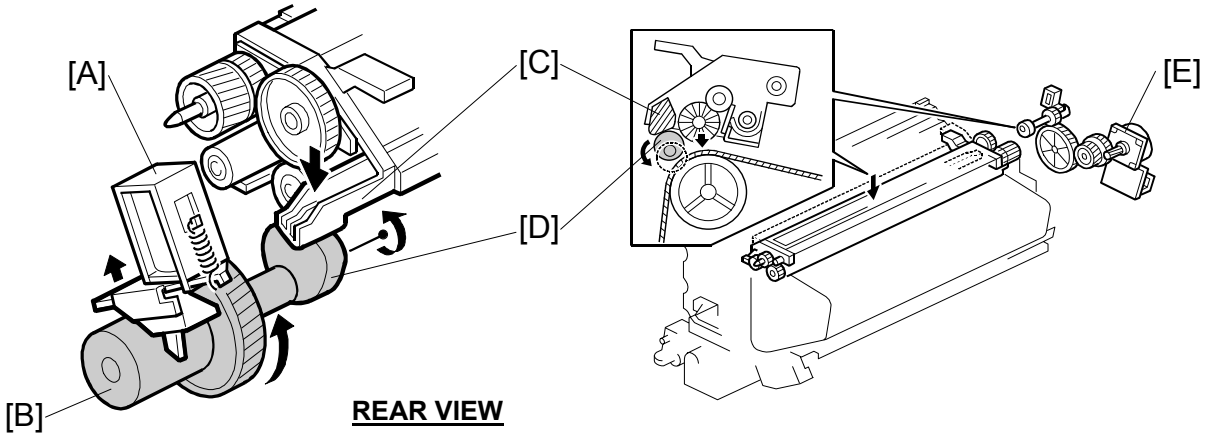
Toner collection auger 2 [K] levels the toner in the bottle.

There is a shutter on the top of the waste toner bottle. While out of the unit, the shutter is kept closed by a spring attached to it. When it is put back in the unit, a hook on top of the shutter is caught by the image transfer belt unit, and the shutter opens.

Set Switch and Full Sensor

When the bottle is full, a message appears on the operation panel. After this, 100 more prints can be output. Then the machine stops and printing is disabled.

Contact Mechanism



[A]: Image transfer belt cleaning contact solenoid
[B]: Half-turn clutch
[C]: Lever
[D]: Cam
[E]: Fusing unit motor

The fusing unit motor [E] drives the image transfer belt cleaning unit and the contact mechanism.

When the toner images are being transferred from the OPC belt to the image transfer belt, the image transfer belt cleaning unit must be kept away from the belt. The unit contacts the belt only while cleaning the belt.

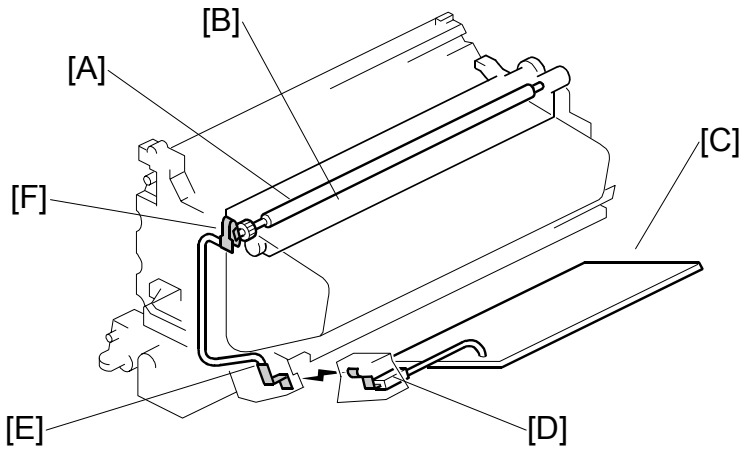
NOTE: During standby mode, the cleaning unit is away from the image transfer belt.

When the image transfer belt cleaning contact solenoid [A] is off, it catches a hook on the surface of the half-turn clutch [B]. As a result, the high point of the cam pushes the lever [C], and the cleaning unit is away from the transfer belt.

When the solenoid activates, the hook is released, drive from the motor is transferred from the gear to the clutch, the cam [D] makes half a turn, the lever drops, and the cleaning unit contacts the transfer belt

Power Supply

[A]: Cleaning brush
[B]: Cleaning roller
[C]: High voltage supply
[D]: Contact spring
[E]: Contact spring
[F]: Contact spring

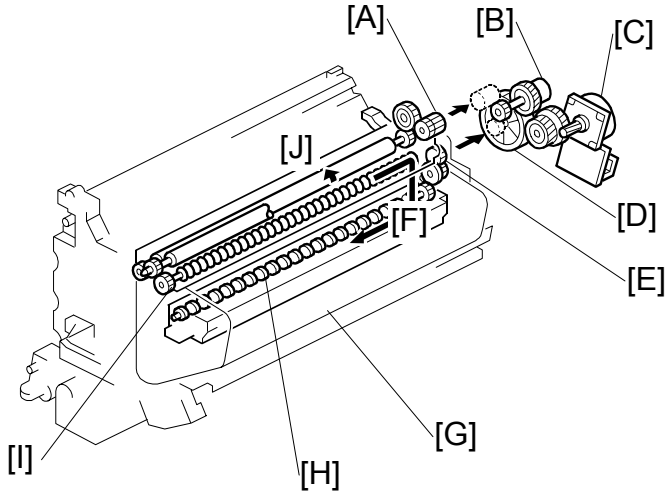


The cleaning roller [B] charges the cleaning brush, and attracts toner from it.

The high voltage supply [C] supplies positive charge to the cleaning roller via the harness and contact springs (leaf springs) [D, E, and F].

Drive

[A]: Gear 1
[B]: Image transfer belt cleaning clutch
[C]: Fusing unit motor
[D]: Drive gear
[E]: Gear 2
[F]: Toner path
[G]: Image transfer belt
[H]: Toner collection auger 1
[I]: Toner collection auger 2
[J]: Turning direction of the cleaning brush



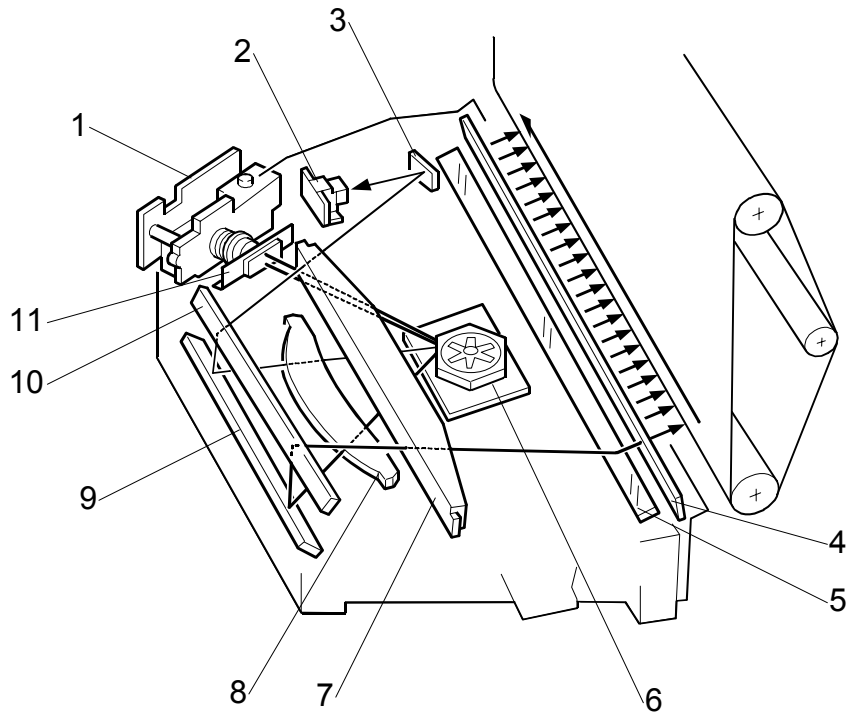
Fusing unit motor [C] ➔ drive gear [D] ➔ gears [A] and [E] ➔ cleaning brush [J] and toner collection augers [H and I]

The clutch [B] controls the on/off timing of the mechanism.

Detailed Descriptions

6.8 LASER EXPOSURE

6.8.1 OVERVIEW



1. LD Unit
2. Synchronization Detector
3. Synchronization Detector Mirror
4. Dust Shield Glass
5. 3rd Mirror
6. Polygon Mirror Motor Unit
7. W-Toroidal lens (WTL)
8. Fθ Lens
9. 1st Mirror
10. 2nd Mirror
11. Cylindrical Lens

6.8.2 POLYGON MIRROR MOTOR UNIT

Speed

The polygon mirror motor rotates at about 21,024 rpm.

6.8.3 SYNCHRONIZATION DETECTOR

The synchronization detector is on the rear side of the laser optics housing unit.

The synchronization detector simultaneously checks 2 laser beams.

6.8.4 LD UNIT

Two laser diodes in the LD unit emit 2 main-scan laser-beams. Having two lasers speeds up image creation. It also allows the polygon motor to operate at a lower speed, which cuts down noise emission and makes the motor last longer.

The LD unit does not need any adjustment when replaced.

6.8.5 LD SAFETY SWITCH

Front Door

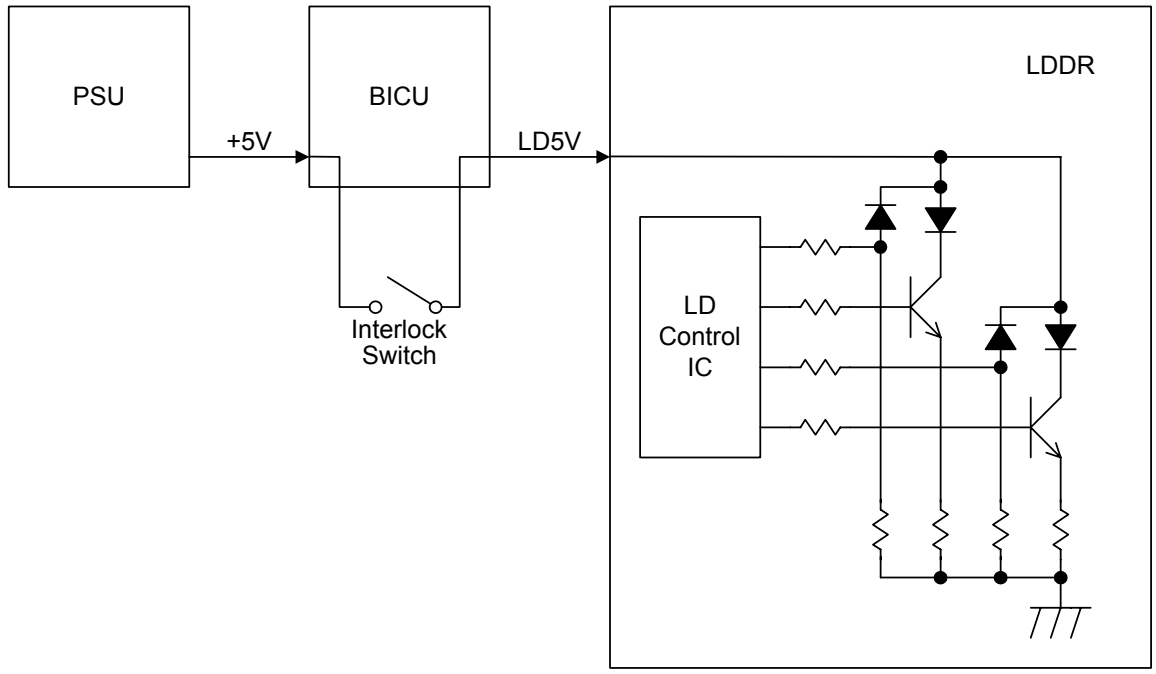
The LD safety switch is the interlock switch. This switch is on the upper end of the front cover. This switch is linked to the following covers:

Front cover
Right cover

The switch prevents laser emission if any of the above covers is opened.

Circuit

The LD safety switch is on the 5V circuit leading to the LD unit. Between the switch and the unit, the line has 2 contacts on the front door and on the right door (series circuit). When either of the covers is opened, the power supply is interrupted, preventing laser emission.



Operation Panel Display and Switch Mechanism

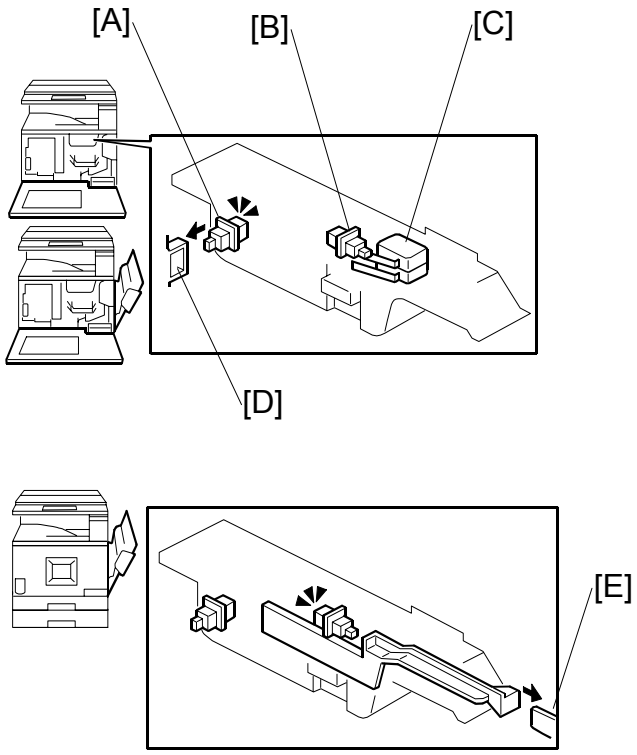
The front cover switch [A], right cover switch [B], and interlock switch [C] detect the positions of the front and right covers. When either or both covers are open, the message, “Open Cover”, appears with an illustration indicating which covers are open.

The tables show the switch patterns and detected cover positions.

Front cover switch	Off
Right cover switch	On
Interlock switch	Off
→ Front cover open	

Front cover switch	Off
Right cover switch	Off
Interlock switch	Off
→ Front and right covers open	

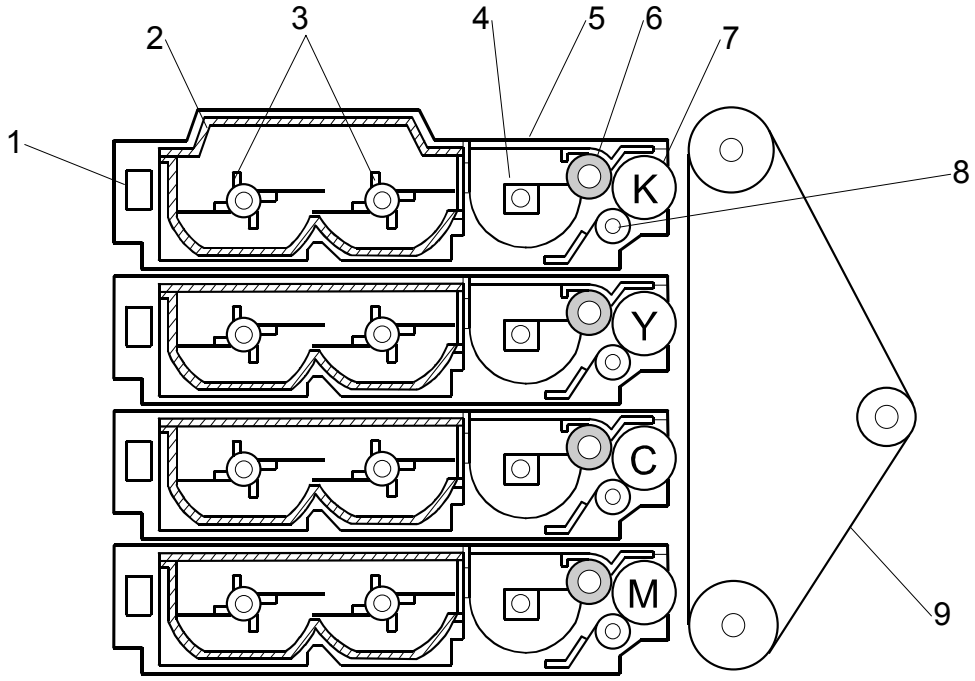
Front cover switch	On
Right cover switch	Off
Interlock switch	Off
→ Right cover open	



[A]: Front cover switch
[B]: Right cover switch
[C]: Interlock switch
[D]: Actuator (front cover)
[E]: Actuator (right cover)

6.9 DEVELOPMENT

6.9.1 OVERVIEW



K: black, **Y**: yellow, **C**: cyan, **M**: magenta

1. Memory chip
2. Toner cartridge
3. Toner cartridge agitators
4. Development agitator
5. Development unit
6. Toner supply roller
7. Development roller
8. Doctor roller
9. OPC belt

☛ CT: Development – Mono-component Development – Double Development Roller Process

The development units operate in the following order: K → M → C → Y

6.9.2 DEVELOPMENT UNIT

Replacing Units

Recovery: Each new development unit spare part contains a starter toner cartridge. When the machine detects the memory chip on the new starter cartridge, it will clear the development unit end condition. The memory chip on a normal toner cartridge cannot clear the development unit end condition.

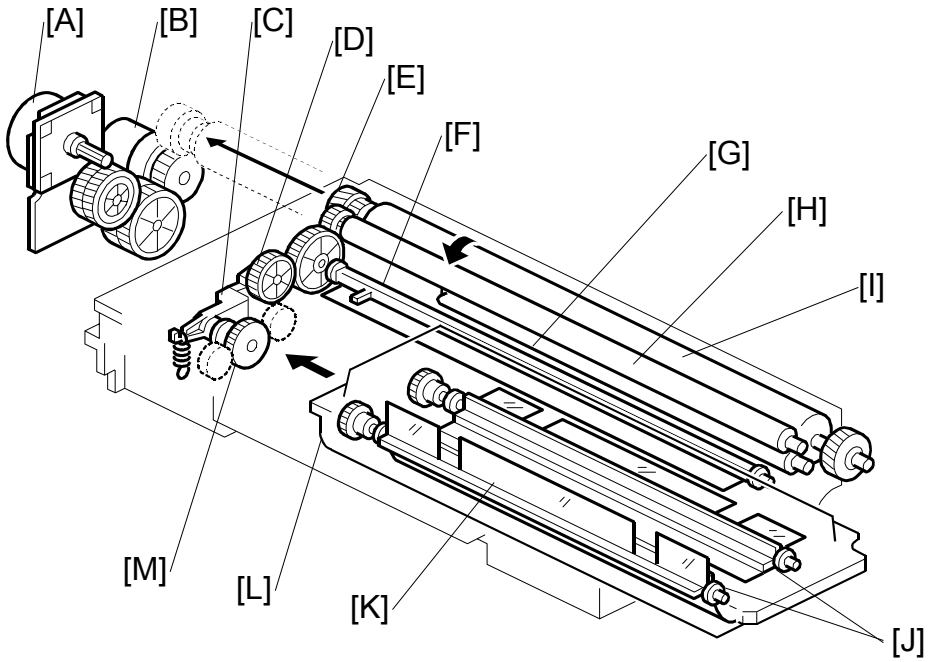
A starter toner cartridge has more paddles on the toner cartridge agitators than a normal toner cartridge does. This is to transport toner more quickly from the cartridge into the toner hopper.

When a development unit has to be replaced, use a starter toner cartridge in the development unit even if toner remains in the used normal toner cartridge. After the toner in the starter toner cartridge is all used up, the normal toner cartridge can be loaded into the development unit.

Memory Chip

Each toner cartridge contains a memory chip, which contains information on whether the cartridge is “new” or “not new”.

6.9.3 TONER SUPPLY MECHANISM



[A]: Development motor
[B]: Development clutch
[C]: Lever
[D]: Cam (built into the gear)
[E]: Development roller gear
[F]: Development unit agitator
[G]: Doctor roller
[H]: Toner supply roller
[I]: Development roller
[J]: Toner cartridge agitators
[K]: Mylar sheet
[L]: Toner cartridge
[M]: Toner cartridge agitator gear

Drive

Development motor [A] → development clutch [B] → lever [C] → agitators [J].

Development motor [A] → development clutch [B] → development roller gear [E] → development roller [I]

Rollers and Agitators

Each toner cartridge contains two toner cartridge agitators [J]. They are equipped with several mylar sheets [K], which agitate the toner and send it to the development unit agitator [D]. The development unit agitator agitates the toner and sends it to the toner supply roller [H].

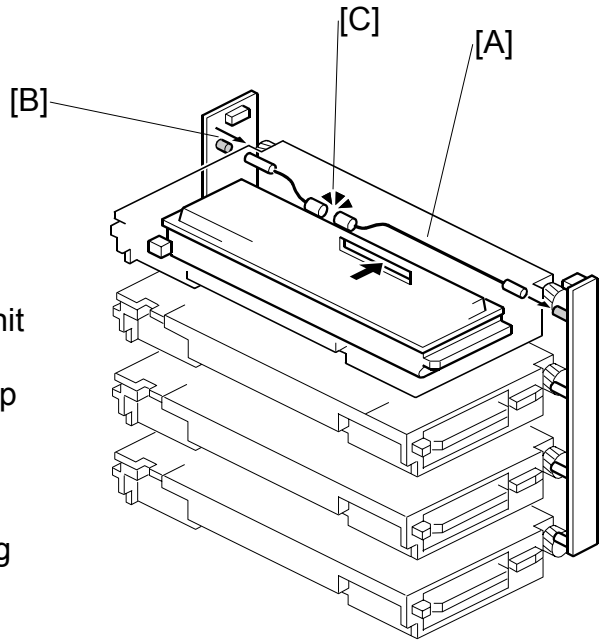
Toner cartridge agitators:	Evenly mixes the toner in the cartridge, and sends it to the development unit
Development agitator:	Evenly mixes the toner in the development unit, and sends it to the toner supply roller
Toner supply roller [H]:	Supplies the development roller with toner
Development roller:	Transfers the toner to the OPC
Doctor roller [G]:	Regulates the amount of the toner on the development roller

Shutter

Each toner cartridge has a shutter on its right side. The shutter is pushed open when the cartridge is installed in the development unit, and closed when removed from the unit.

6.9.4 TONER END DETECTION

Mechanism



[A]: Optic fiber
[B]: Light emission
[C]: Gap

An optic fiber [A] in each development unit detects toner end. Light is emitted from the rear end [B] of the unit. There is a gap [C] in the optic fiber.

When the development unit is filled with toner, the toner breaks the light path through the gap. When the unit is running out of toner, the light path is not broken.

Toner Near-End Detection

The machine uses two methods simultaneously: pixel count, and toner end sensor. If either of these methods detects near-end, the machine indicates near-end.

Near-End by Pixel Count

The machine counts how many pixels have been printed with each toner cartridge. When there are 500 prints remaining until the estimated toner end condition, toner near-end is indicated.

Near-End by Toner End Sensor

- If the toner end sensor output drops to toner end level, counter 1 is set to 1.
- If the above condition (counter 1 is 1) is detected twice accumulated 14 seconds while the development clutch is activated, counter 2 is set to 1.
- If the above condition (counter 2 is 1) is detected twice continuously, the machine enters the toner supply mode after the job.

The above detection is carried out while the development clutch is activated.

Toner supply mode after the job:

- The development unit with the almost-empty cartridge idles for 40 s.
- Then, it idles again for another 20 s.
- During this 20 s period, the toner end sensor is checked every 10 ms. If a low toner condition is not detected during this 20 s period, the machine returns to standby mode after idling all development units for 90 s.
- However, if a low toner condition was detected during that 20 s period, the machine indicates toner near-end.

Toner End Detection

When any one of the following conditions occurs, toner end is indicated.

1. If near-end was detected by pixel count:
   The remaining pixel count reaches 0.
2. If near-end was detected by toner end sensor:
   Either 100 developments or 100 prints at 5% coverage are made since near-end was detected.
3. If near-end was detected by pixel count, and later it was detected by toner end sensor again before toner end:
   Either the remaining pixel count reaches 0, or 100 developments or 100 prints at 5% coverage are made since near-end by toner end sensor was detected.

Toner End Recovery

When the machine detects a new toner cartridge, it drives the development unit for that cartridge for about 3 minutes.

During this time, the development clutch is repeatedly activated for 10 s and deactivated for 1 s.

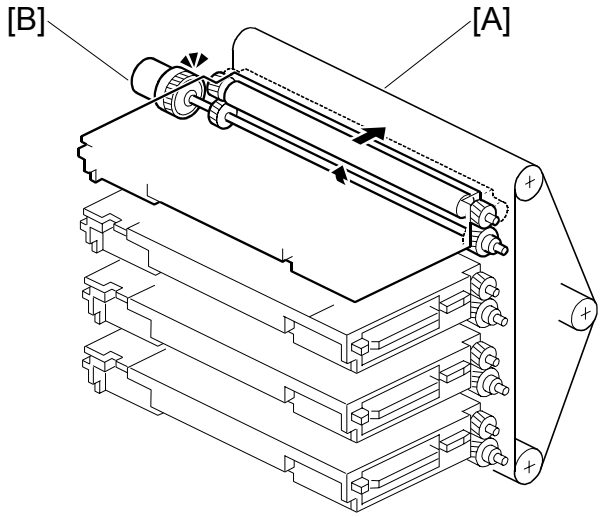
The machine checks the toner end condition every 20 s. The end and near-end conditions are cleared if the sensor detects sufficient toner. However, if the sensor does not detect sufficient toner after 5 minutes of development unit drive, the toner end condition remains and a new cartridge must be added.

6.9.5 DEVELOPMENT UNIT CONTACT MECHANISM

Mechanism

Each development unit has an independent clutch. When a development clutch turns on, a gear under the development unit moves the development unit into contact with the OPC belt. When the clutch turns off, two springs (one at the front and one at the rear) detach the development unit from the OPC belt.

☛ CT Color Processes – Color Development – Fixed Position Development Systems – Similar to Example 2: Model G033



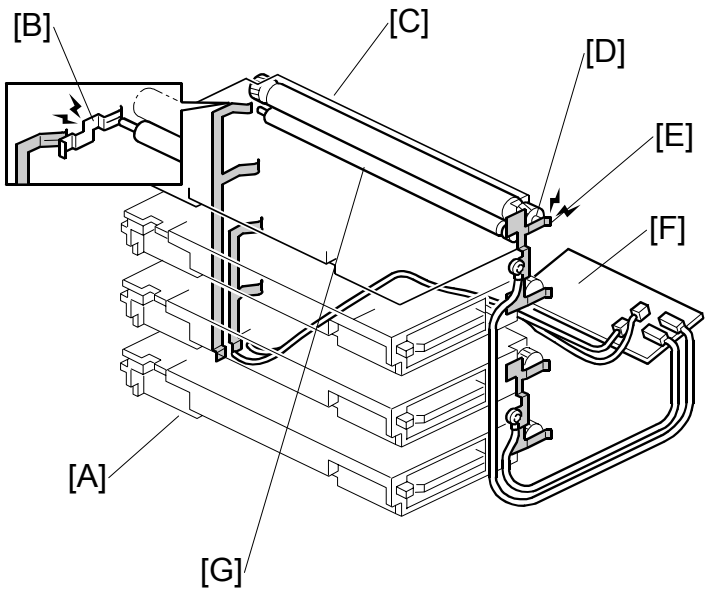
[A]: OPC belt
[B]: Development clutch

Reverse Rotation

The gears reverse at intervals to prevent toner from clumping.

6.9.6 POWER SOURCE

[A]: Development unit
[B]: Rear-side terminal
[C]: Development roller
[D]: Bias terminal
[E]: Harness terminal
[F]: High voltage supply
[G]: Doctor roller



Development, Toner Supply, and Doctor Rollers

When a development unit [A] comes into contact with the OPC belt, the bias terminal [D] comes into contact with the harness terminal [E]. Then, a negative charge is supplied to the unit.

The negative charge on the doctor roller is the same size as the charge on the development roller and toner supply roller.

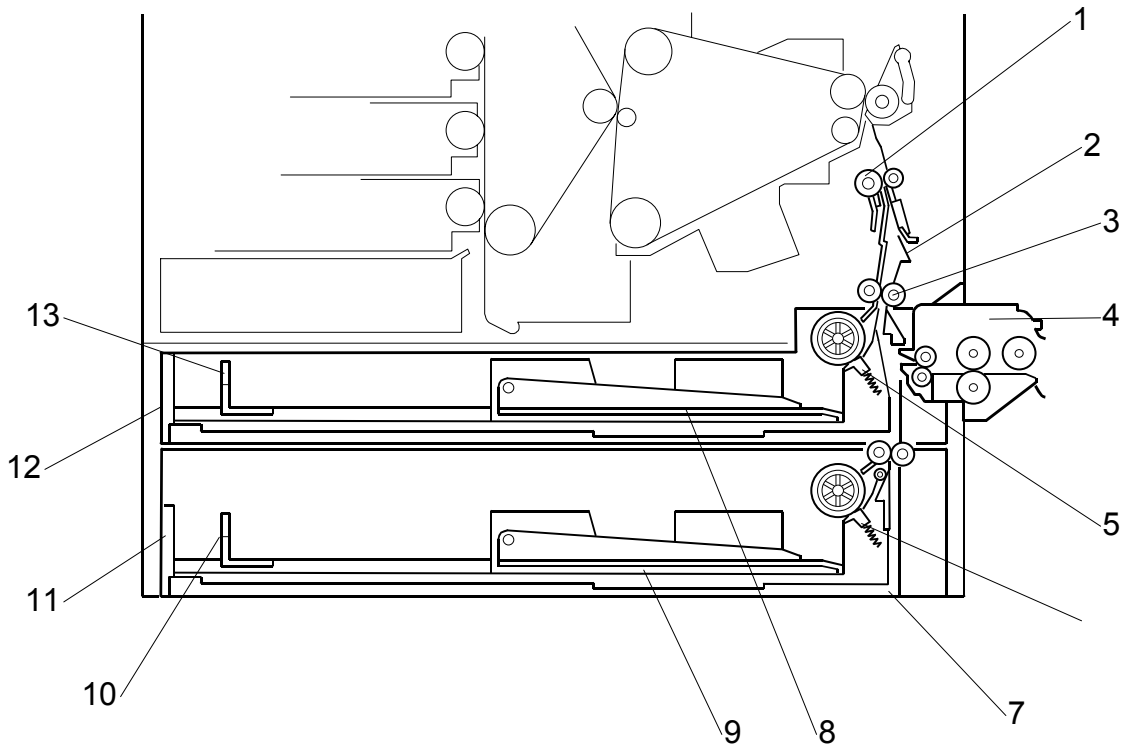
Doctor Roller

The doctor roller [G] restricts the amount of toner on the development roller [C]. The high voltage supply [F] applies a charge to the doctor roller through the rear-side terminal cable [B]. This charge is the same as the charge applied to the development roller. However, the development roller charge is applied through a different terminal [E].

☛ CT Mono-component Development – Toner Metering Blade (similar principle)

6.10 PAPER FEED

6.10.1 OVERVIEW



1. Registration roller
2. Path from duplex unit
3. Vertical transport roller
4. By-pass tray
5. Friction pad with spring (Tray 1)
6. Friction pad with spring (Tray 2)
7. Path from optional paper tray
8. Base plate (Tray 1)
9. Base plate (Tray 2)
10. Paper end fence (Tray 2)
11. Tray 2
12. Tray 1
13. Paper end fence (Tray 1)

The table lists the main and optional paper stations.

Tray	Number	Main/Optional
Standard tray	2	Main unit
By-pass tray	1	Optional unit
Paper tray unit	2	
LCT	1	

Transport Speed

Until the registration roller, the paper travels at 240 mm/s. This high initial speed ensures that the first output time is as short as possible.

From the registration roller to the exit, the paper travels at the following speeds:

178 mm/s (plain paper)
89 mm/s (thick paper or OHP films)

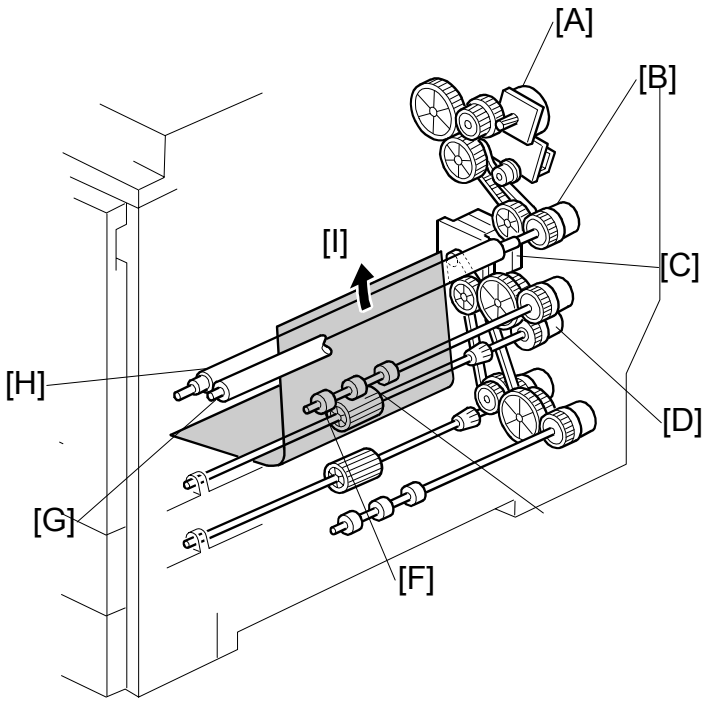
Friction Pad

☛ CT Handling Paper – Paper Feed – Paper Feed Methods – Friction Pad

NOTE: Replace the roller and pad as a unit (not separately).

6.10.2 DRIVE MECHANISM

[A]: Fusing unit motor
[B]: Registration clutch
[C]: Feed motor
[D]: Feed clutch
[E]: Feed roller
[F]: Vertical transport roller
[G]: Idle roller
[H]: Registration roller
[I]: Paper



Feed and Vertical Transport

The feed motor [C] drives the feed roller [E] and the vertical transport roller [F].

The action of the feed roller is controlled by the feed clutch [D].

Registration

The fusing unit motor [A] drives the registration roller [H], under the control of the registration clutch [B].

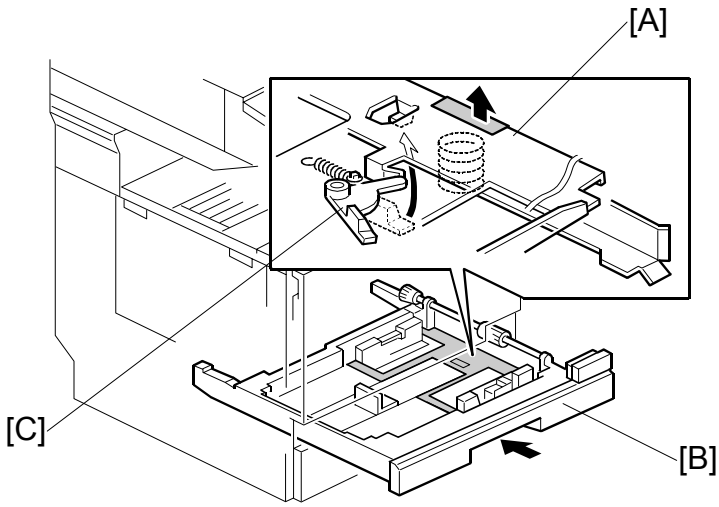
The idle roller [G] facing the registration roller does not have any drive gears. It turns with the paper [I].

6.10.3 PAPER LIFT

Lift Mechanism

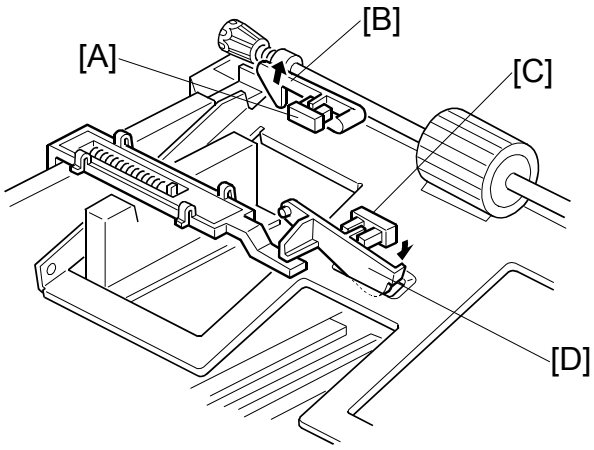
The spring under the bottom plate [A] presses the plate upward. When you press the bottom plate as far down as possible, the hook on lever [C] holds the plate. The lever releases the bottom plate when it is pressed by the protruding part on the right tray rail; this happens when the tray [B] is completely pushed into the machine.

[A]: Bottom plate
[B]: Tray
[C]: Lever



Paper End/Near-End Detection

[A]: Paper near-end sensor
[B]: Paper near-end sensor feeler
[C]: Paper end sensor
[D]: Paper end sensor feeler

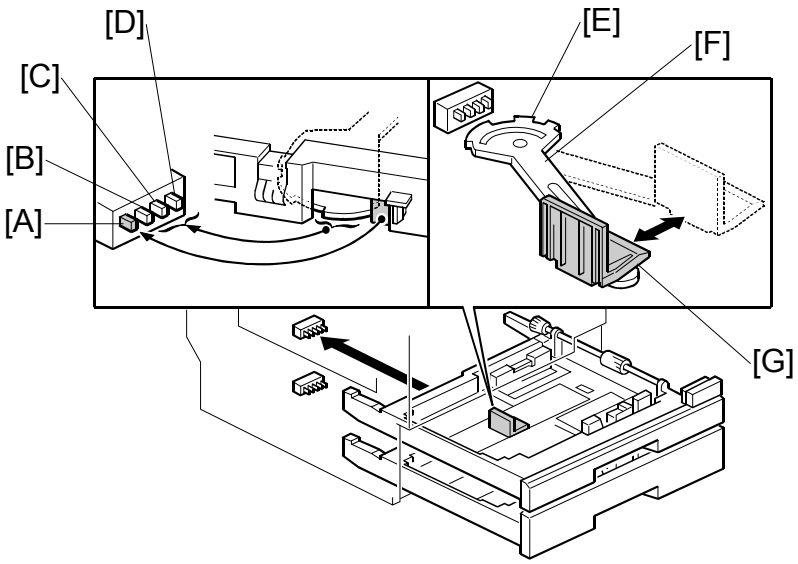


The bottom plate gradually rises as paper is fed. The bottom plate position is checked with the near-end sensor feeler [B]. The sensor [A] is actuated when about 50 sheets are left in the tray, and the paper near-end message appears on the operation panel.

When paper runs out, the paper end sensor feeler [D] drops into the cutout in the bottom plate. This actuates the sensor [C], and the paper end message appears on the operation panel.

6.10.4 PAPER SIZE DETECTION

Mechanism



[A]: Tray set switch
[B]: Paper size switch
[C]: Paper size switch
[D]: Paper size switch
[E]: Actuator
[F]: Lever
[G]: End fence

The end fence [G] moves the lever [F], which moves a different set of notches on the actuator [E] into contact with the paper size switches [B]~[D].

When you put the tray in the main unit, the rear fence of the tray and the actuator activate the switches; from this the machine detects the presence of the tray, and the paper size.

Switch Pattern

When the tray is pushed into the machine, the leftmost switch [A] is always activated by the rear fence of the tray; this switch detects the presence of the tray. The combination of the other 3 switches [B]~[D] detects the paper size.

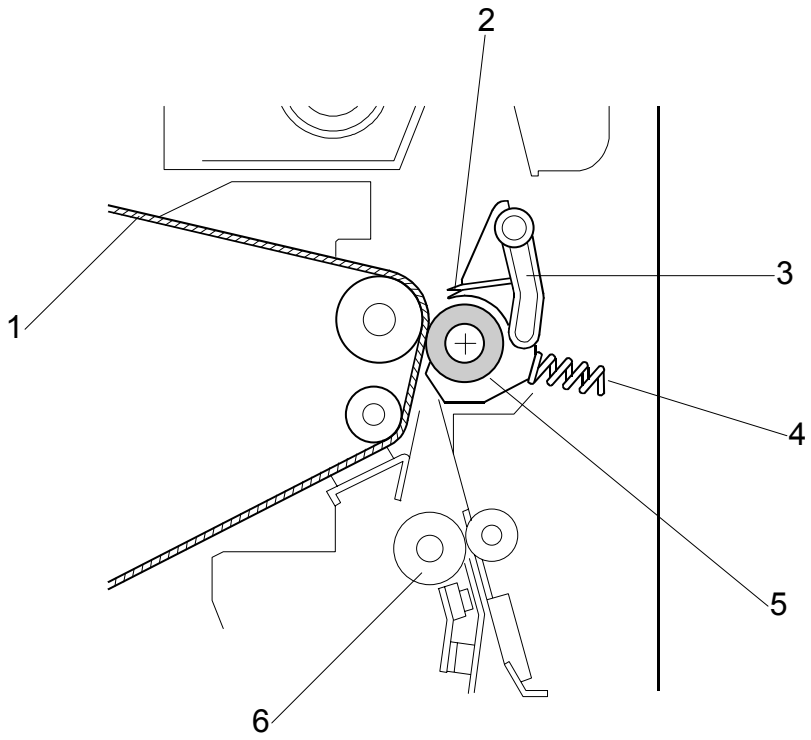
Auto Detection		Switch*			
North America	**Europe/Asia**	**[A]**	**[B]**	**[C]**	**[D]**
DLT SEF	A3 SEF	On	Off	On	On
LG SEF	B4 SEF	On	On	On	On
A4 SEF		On	On	Off	Off
LT SEF		On	Off	Off	Off
B5 SEF	10.5" x 7.25" SEF	On	Off	Off	On
LT LEF	A4 LEF	On	On	On	Off
B5 LEF		On	On	Off	On
—	A5 LEF	On	Off	On	Off
(No tray)		Off	Off	Off	Off

* On: Pushed Off: Not pushed

NOTE: 1) For the input check table, ☛ 5.2.2.
2) Other paper sizes are not detected. Use the System Settings - Tray Paper Settings - Tray Paper Size user tool to set paper sizes.

6.11 PAPER TRANSFER AND SEPARATION

6.11.1 OVERVIEW



1. Image transfer belt
2. Discharge plate
3. Separation lever
4. Spring
5. Paper transfer roller
6. Registration roller

Jammed Paper Release

When you open the right cover, the units release the paper. This mechanism helps quickly clear paper jams.

Image Transfer and Paper Separation

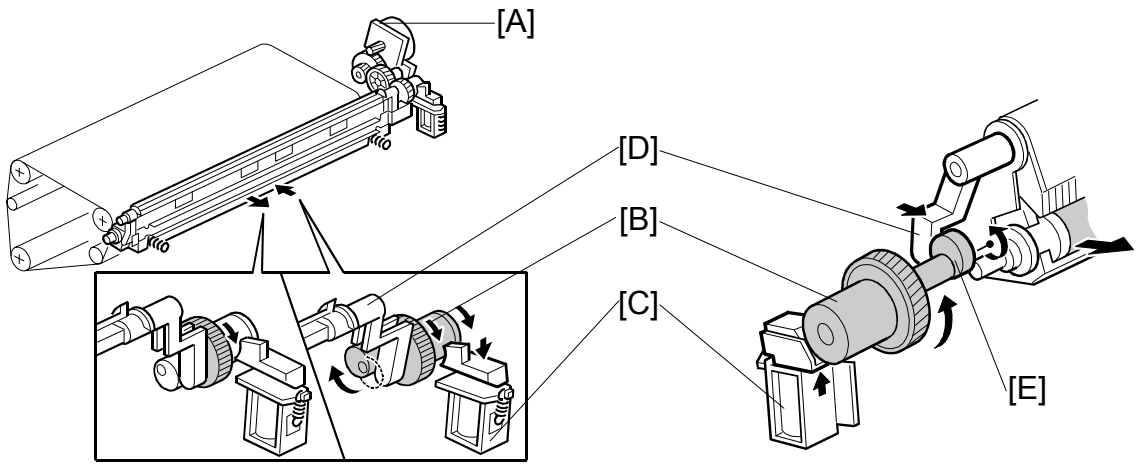
☛CT Photocopying Processes – Image Transfer and Paper Separation – Transfer Roller + Discharger – Example 2: Models A172/A199

The current is adjusted based on paper weight and environmental temperature and humidity.

A user tool specifies the paper weights. If “Plain” is selected, then another user tool defines when the paper is “normal” or “> 90 g/m^2, 24lb”.

- “Plain” means normal or > 90 g/m^2, 24lb.
- “Thick” means paper heavier than 105 g/m^2 (28 lb).

6.11.2 CONTACT/SEPARATION MECHANISM



[A]: Fusing unit motor
[B]: Half-turn clutch
[C]: Paper transfer solenoid
[D]: Contact/separation lever
[E]: Cam

Timing

When transferring toner to paper, the paper transfer roller unit contacts the image transfer belt. At other times during printing, the unit stays away from the image transfer belt. After printing, the unit contacts the belt and stays there.

NOTE: During standby mode, the unit stays away from the image transfer belt.

Mechanism

Fusing unit motor [A] → Gear → Paper transfer solenoid [C] → Cam [E] → Contact/separation lever [D] → Paper transfer roller unit movement

The fusing unit motor [A] drives the mechanism. (It also drives the paper transfer roller).

The cam [E] is controlled by the half-turn clutch [B] and the paper transfer solenoid [C].

When the solenoid is off, it catches a hook on the surface of the half-turn clutch [B]. As a result, the high point of the cam pushes the contact/separation lever [D], and the paper transfer roller unit is away from the belt.

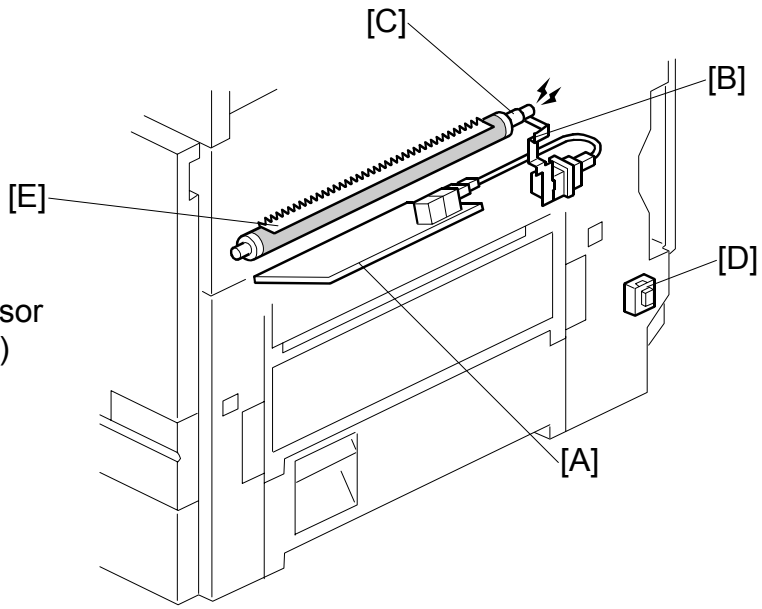
When the solenoid is activated, the hook is released, so the half-turn clutch makes a half-turn—the unit moves to the right and contacts the image transfer belt.

6.11.3 POWER SUPPLY

Circuit

High voltage supply [A] → Terminal [B] → Paper transfer roller shaft [C]

[A]: High voltage supply
[B]: Terminal
[C]: Paper transfer roller shaft
[D]: Temperature-humidity sensor (inside the rear-right cover)
[E]: Discharge plate (negative charge)



Paper Transfer Roller Bias

Normally, a constant current is applied to the paper transfer roller shaft [C].

The current varies with paper type, size, and thickness as well as humidity.

Discharge Plate

The discharge plate [E] discharges the remaining charge on the paper going past the paper transfer roller. This helps the paper separate from the image transfer belt.

Temperature/Humidity Control

The temperature-humidity sensor [D] is inside the rear-right cover. The sensor output is used to control the current for the paper transfer roller.

The temperature and humidity can be read with SP2-912.

Roller Cleaning

The paper transfer roller is cleaned at the following times:

- After the user clears a paper jam
- After the user closes the front cover
- Just after the main power has been switched on
- While the doctor roller is reversing. This is done every 50 prints (SP3-910), to remove toner blockages in the development unit; if the 50-print interval expires in the middle of a job, it is done at the end of the job.

After paper passes the paper transfer roller, the paper transfer solenoid releases the paper transfer roller from the image transfer belt.

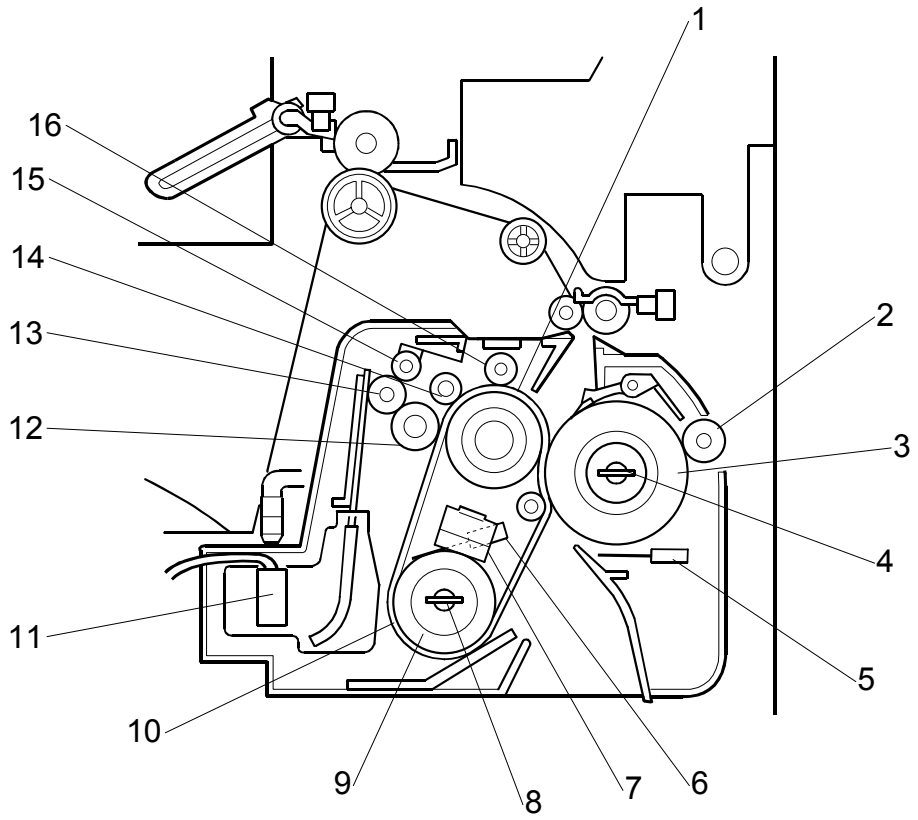
Then, a certain time after the trailing edge of the paper passes the registration sensor, the following steps occur:

1) The paper transfer solenoid turns on again, and the paper transfer roller contacts the image transfer belt.
2) A negative charge is applied to remove toner stuck to the paper transfer roller.
3) Positive and negative charge is applied alternately to remove any toner that is still stuck to the paper transfer roller.

Toner removed from the paper transfer roller goes back to the image transfer belt, where it is removed by the image transfer belt cleaning unit.

6.12 IMAGE FUSING AND PAPER EXIT

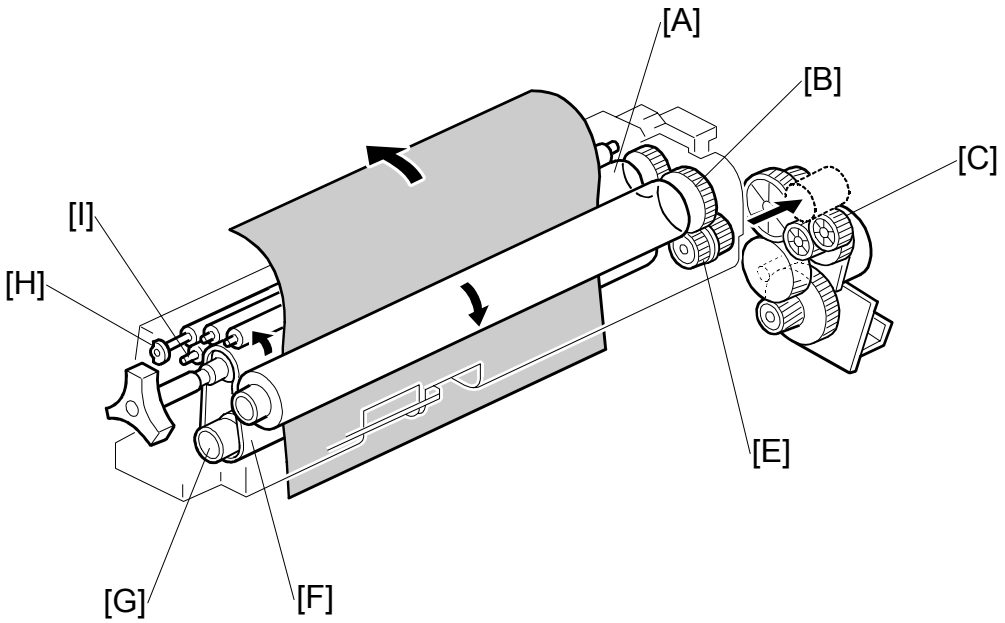
6.12.1 OVERVIEW



1. Hot roller
2. Metal cleaning roller
3. Pressure roller
4. Pressure roller fusing lamp
5. Pressure roller thermistor
6. Heating roller thermistor
7. Thermostat
8. Heating roller fusing lamp
9. Heating roller
10. Fusing belt
11. Oil overflow sensor
12. Oiling roller
13. Oil supply roller
14. Fusing sponge roller
15. Spring roller
16. Metal cleaning roller

The fusing unit divides into two subunits: the fusing subunit and the oil supply subunit.

6.12.2 DRIVE



[A]: Hot roller
[B]: Pressure roller gear
[C]: Cover disengage-ment gear
[D]: Fusing unit motor
[E]: Drive gear
[F]: Fusing belt
[G]: Heating roller
[H]: Oil supply roller
[I]: Oiling roller

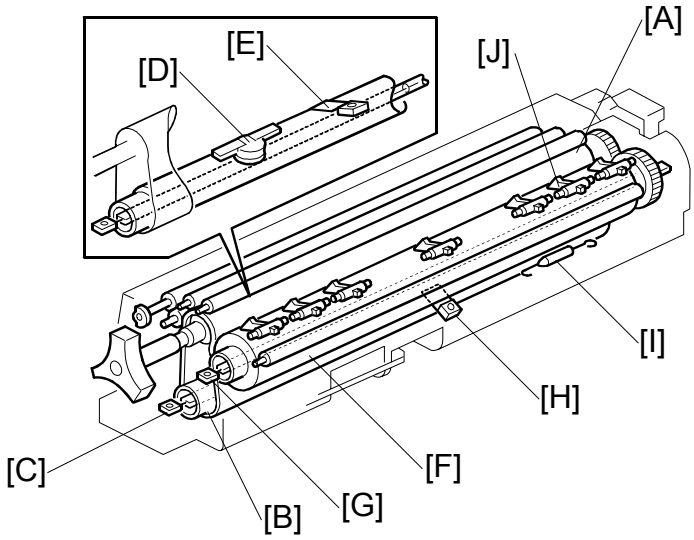
The fusing unit motor [D] drives the fusing unit through gears [C] and [E].

The hot roller [A] turns the fusing belt [F] as a result of the friction between the two.

When the right cover is open, gear [C] moves away, which allows jammed paper to be removed from the fusing unit and exit easily.

6.12.3 FUSING UNIT COMPONENTS

[A]: Fusing belt
[B]: Heating roller
[C]: Lamp (770 W)
[D]: Thermostat
[E]: Thermistor
[F]: Pressure roller
[G]: Lamp (350 W)
[H]: Thermistor
[I]: Thermofuse
[J]: Pawl



Fusing Belt

This machine uses a fusing belt [A]. The paper goes between the fusing belt and the pressure roller [F].

Heating Roller Lamp

The center of the heating roller [B] contains a lamp (770 W) [C]. The thermostat [D] and thermistor [E] control the temperature of the roller surface. The machine cuts power to the lamp when it detects 220°C. The thermostat cutoff point is 200°C.

Pressure Roller Lamp

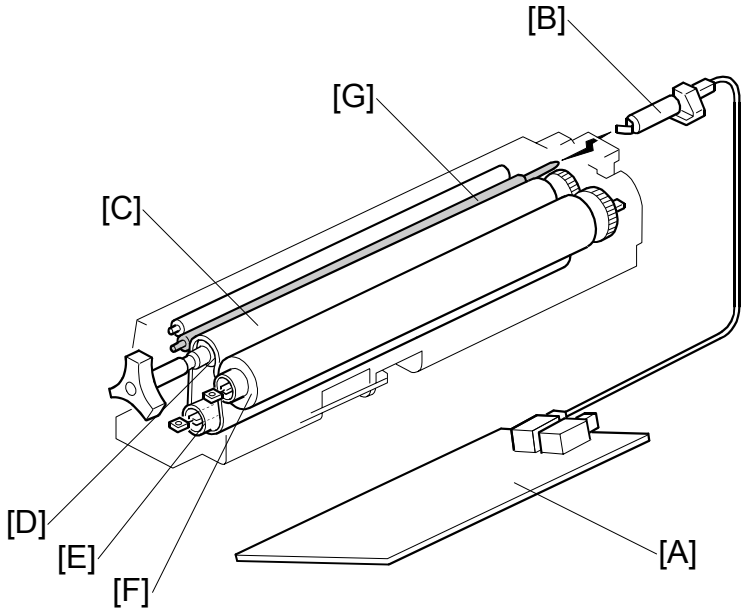
The center of the pressure roller [F] contains a lamp (350 W) [G]. The thermistor [H] and thermofuse [I] control the temperature of the roller surface.

The temperature of the surface of the pressure roller reaches to 250 °C when the pressure roller temperature rises gradually or it reaches 300 °C when it rises rapidly. Normally, the machine cuts the lamp power when the thermistor detects 220 °C.

Pressure Roller Pawls

The pawls [J] above the pressure roller help prevent paper jams.

[A]: High voltage supply
[B]: Terminal
[C]: Fusing belt
[D]: Hot roller
[E]: Heating roller
[F]: Pressure roller
[G]: Oiling roller



Fusing Bias

The high voltage supply [A] provides the fusing bias. The fusing bias is a negative voltage that quenches static electricity created on the belt [C] and rollers [D]~[F] by the paper. This prevents the belt and rollers from attracting dust and dirt.

Fusing Unit SCs

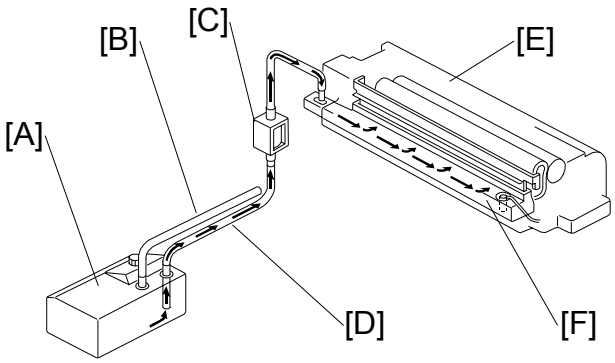
If a thermistor/thermostat problem occurs, a fusing unit SC may be displayed on the operation panel. Fusing unit SCs disable the machine (☛ 4.1.1). To reset fusing unit SCs, use SP5-810 (☛ 5.1.2).

6.12.4 OIL SUPPLY

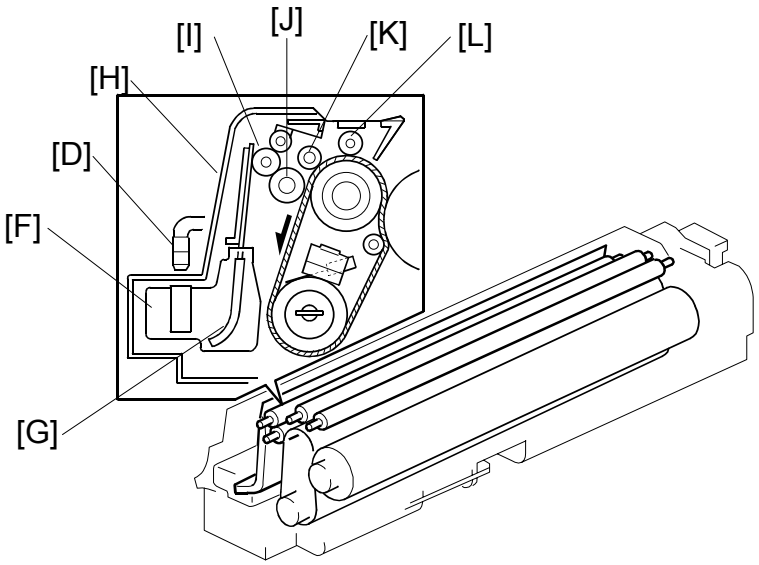
Oil Supply

☛CT Photocopying Processes – Fusing – Oil Supply

[A]: Oil tank
[B]: Air inlet
[C]: Oil pump
[D]: Oil pipe
[E]: Fusing unit



[F]: Oil reservoir
[G]: Felt
[H]: Oil supply unit
[I]: Oil supply roller
[J]: Oiling roller
[K]: Fusing sponge roller
[L]: Metal cleaning roller



The technician adds oil to the oil tank [A] in the bottom-left corner inside the rear cover.

The oil pump [C] pumps oil along the oil pipe [D] to the oil reservoir [F] in the oil supply unit.

The air inlet [B] equalizes the pressure inside the oil tank [A].

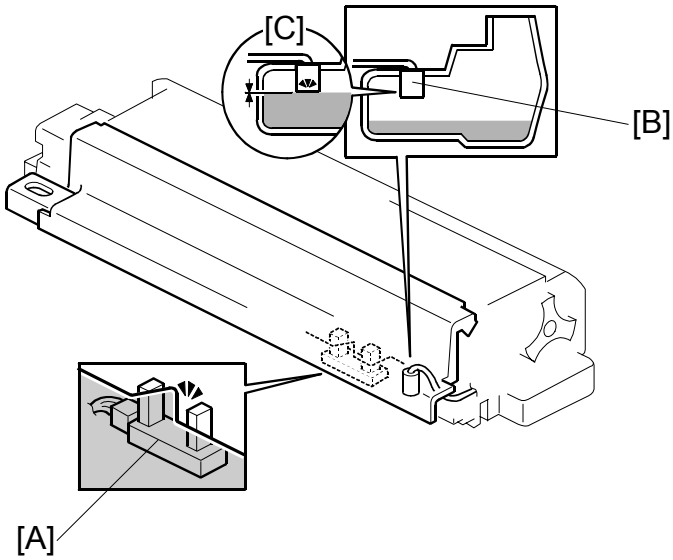
The oil goes to the fusing belt as follows:

- Oil tank [A] ➔ Oil pipe [D] (oil pump [C]) ➔ Oil reservoir [F] ➔ Felt [G] ➔ Oil supply roller [I] ➔ Oiling roller [J]

The fusing sponge roller [K] removes excess oil from the fusing belt. The metal cleaning roller [L] removes foreign substances from the belt.

Oil Supply

[A]: Oil end sensor
[B]: Oil overflow sensor



The oil end sensor [A] controls the supply of oil from the oil tank in the bottom of the machine, via the oil pump, to the reservoir in the oil supply unit.

The oil end sensor detects oil by emitting a beam through the protruding part of the tank bottom (the bottom is transparent).

When oil is detected, the pump does not supply oil up from the lower tank. So, the reservoir is normally less than half full (maximum capacity: 70 grams).

When oil has been used up so that the level in the reservoir falls below the sensor, the sensor detects oil end. Then, the oil pump turns on to pump oil up from the oil tank, until the oil end sensor detects oil.

- If the oil end sensor fails, the oil overflow sensor [B] detects when the reservoir is full [C], and the pump stops (SC571 will be generated, and the machine must be repaired). This failsafe measure prevents oil flooding inside the machine.

Oil End Detection and Recovery

If the oil tank at the bottom of the machine has no oil in it, the following occurs:

1) The oil pump operates for 50 milliseconds and waits for 150 milliseconds. If the oil end condition still exists, this step is repeated. If the sensor still does not detect oil, this step can be repeated up to 150 times (total maximum time taken: 30 seconds).
2) If oil is still not detected, the pump stops for 30 seconds.
3) The oil pump repeats steps 1 and 2 until oil is detected. The pump can repeat these steps up to 9 times. So, the machine can pump for up to 9 minutes if oil is not detected ([30 seconds + 30 seconds] x 9).
4) If oil is still not detected, the oil end counter starts. This counts the pages fed through the fusing unit. Every 100 pages, the oil pump operates again for 50 seconds to try to get oil into the fusing unit.
5) When the counter goes up to 50, the operation panel indicates oil near end (the counter is not reset).
6) When the counter goes up to 500, the code “SC 570” appears on the display, and printing stops.
7) To clear the oil end condition, a technician adds some oil to the oil tank in the bottom of the machine and clears the SC code (this is a Level A code). Then, the oil pump resumes steps 1 through 3.
   NOTE: Do not switch the machine on with the fusing unit out of the machine if an oil end condition exists. This will clear the oil end counter, and the machine incorrectly detects oil.
8) If the oil end condition is cleared, the procedure ends. If not, the code “SC 570” appears again.

6.12.5 TEMPERATURE CONTROL

The table lists default settings and variable ranges for temperature control.

External temperature (*1)			More than 15°C ~ less than 30°C		15°C or lower		30°C or higher	
Roller			Heating	Press.	Heat.	Press.	Heat.	Press.
Fusing idling start (*2)			145	10	145	10	145	10
Print ready (*3)			165	70	*Heat.: +5 Adjustable with SP1-105-27 Press.: +0 Adjustable with SP1-105-28*		*Heat.: –5 Adjustable with SP1-105-29 Press.: +0 Adjustable with SP1-105-30*	
Ready (standby mode)			175	120				
Energy saver		Panel off 1	175	120				
		Panel off 2	165	115				
		Low power mode	140	100				
		Auto off mode	Room temp.	Room temp.				
Printing	Normal paper	Mono color	150	Lamp off				
		Full color	170	Lamp off				
	'>90 g/m2, 24 lb (*4)	Mono color	160	Lamp off				
		Full color	180	Lamp off				
	Thick	Mono color	170	Lamp off				
		Full color	175	Lamp off				
	OHP	Mono color	170	Lamp off				
		Full color	180	Lamp off				
	Duplex (*5)	Mono color	155	Lamp off				
		Full color	165	Lamp off				
Variable range (*6)			100 ~ 190	30 ~ 200	0 ~ +20		0 ~ –20	

*1: External temperature is measured (temperature/humidity sensor) when the main switch is turned on and when a job start signal is received.

*2: The pressure and heating rollers start idling.

*3: Fusing idling stops when both roller temperatures reach the print ready condition. The printer can process jobs when the rollers reach this temperature during warm-up.

*4: A user tool specifies the paper type in each tray (plain, thick, or OHP). If 'plain' is selected, then another user tool defines whether the paper in the tray is 'normal' or '>90 g/m2, 24 lb'. (☛ 5.2.2). '>90 g/m2, 24 lb' means '*greater than or equal to* 90 g/m2, 24 lb'.

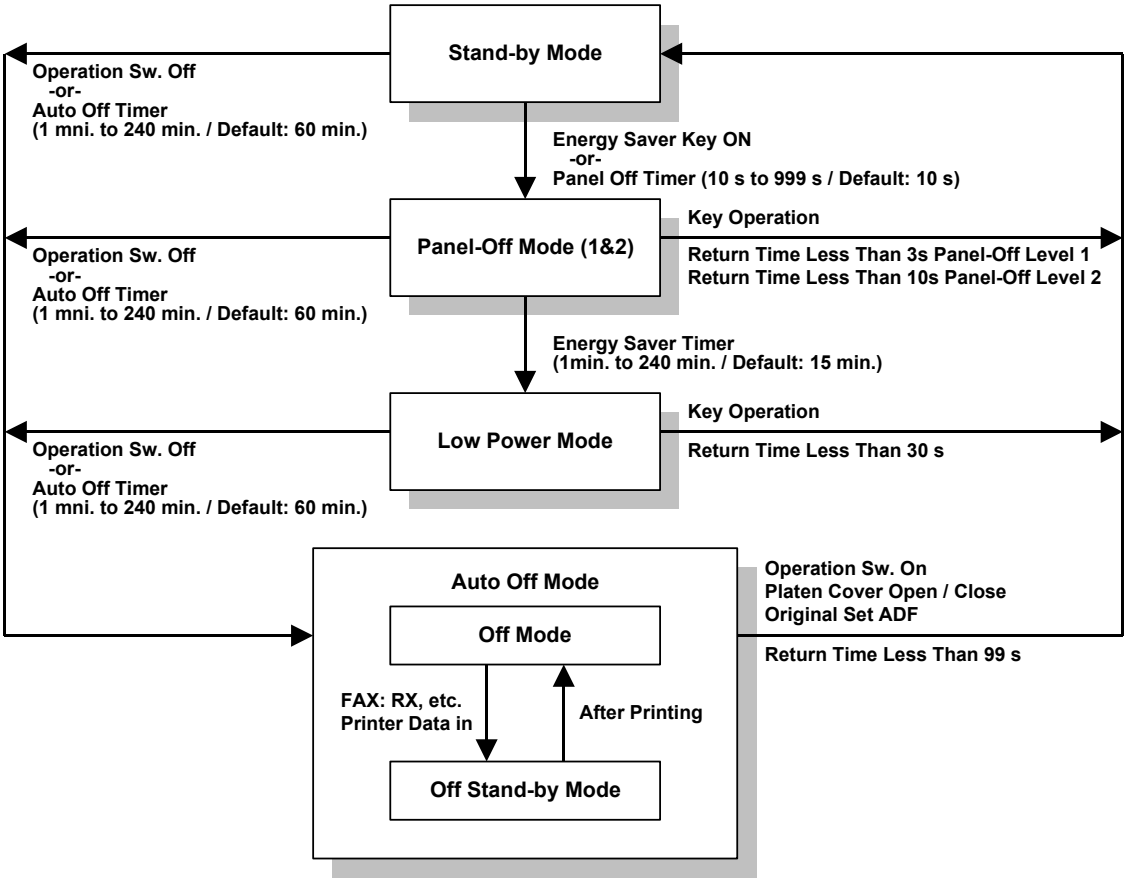
- 'Thick' means paper heavier than 105 g/m^2 (28 lb).

*5: Both sides of the paper are processed with the same roller temperatures.

*6: Use SP1-105 to adjust the default fusing temperatures (☛ 5.2.2).

6.12.6 ENERGY SAVER MODES

Overview



When the machine is not being used, the energy saver function reduces power consumption by decreasing the fusing temperature.

This machine has three types of energy saver mode as follows.

1) Panel-off mode (1 & 2)
2) Low power mode
3) Auto Off mode

These modes are controlled by the following UP and SP modes.

- Panel off timer: User Tools – System Settings – Key Operator Tools – Panel Off Level
- Panel off level (1 or 2): User Tools – System Settings – Timer Setting – Panel Off Timer
- Energy saver timer: System Settings – Timer Setting – Energy Saver Timer
- Auto off timer: User Tools – System Settings – Timer Setting – Auto Off Timer
- Auto off disabling (SP mode): Set SP5-305 to "disable." This disables the auto off mode.

Panel Off Mode

Entering the panel off mode

The machine enters the panel off mode when one of the following is done.

- The panel off timer runs out.
- The Clear Mode/Energy Saver Key is held down for one second.

If the value specified in the panel off timer is larger than the value specified in the energy saver timer, the machine goes into the low power mode without going into the panel off mode. A similar thing happens when the value in the panel off timer is larger than that in the auto off timer. To make the panel off mode effective, specify a value smaller than the values in the energy saver timer and auto off timer.

What happens in panel off mode

Panel off mode has 2 levels. The operator can select level 1 or level 2 with a UP mode (default: level 2).

When the machine is in the panel off mode, each of the fusing lamps are kept at the temperatures indicated in the table at the bottom of the page, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED. The fusing lamp temperature for Panel Off Mode 1 is the same as for Stand-by Mode.

If the controller receives an image print out command from an application program (e.g. to print incoming fax data or to print data from a PC), the temperature of each fusing lamp rises to print the data.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The return time from the panel off mode is about 3 seconds (level 1) or 10 seconds (level 2).

Mode	Operation Switch	Energy Saver LED	Fusing Temperature	+24V	System +5V
Panel off	On	On	Level 1 Heating roller: 175°C Pressure roller: 120°C Level 2 Heating roller: 165°C Pressure roller: 115°C	On	On

Low Power Mode

Entering the low power mode

The machine enters the low power mode when the energy saver timer runs out.

What happens in low power mode

When the machine enters the low power mode, the fusing lamps are kept at the temperatures indicated in the table, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the controller receives an image print out command from an application program (e.g. to print incoming fax data or to print data from a PC), the temperature of each fusing lamp rises to print the data.

Return to stand-by mode

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The return time from the low power mode is about 30 seconds.

Mode	Operation Switch	Energy Saver LED	Fusing Temperature	+24V	System +5V
Low power	On	On	Heating roller: 140°C Pressure roller: 100°C	On	On

Auto Off Mode

There are two Auto Off modes: Off Stand-by mode and Off mode. The difference between Off Stand-by mode and Off mode is the machine's condition when it enters the Auto Off mode.

Entering off stand-by and off modes

The machine enters the Off Stand-by mode or Off Mode when one of the following is done.

- The auto off timer runs out.
- The operation switch is pressed to turn the power off.

If one or more of the following conditions exists, the machine enters Off Stand-by mode. If none of these conditions exist, the machine enters the Off Mode.

- Error or SC condition
- An optional G4 unit is installed
- Image data is stored in the memory
- During memory TX or polling RX
- The handset is off hook
- An original is in the ADF
- The ADF is open

Off Stand-by mode

The system +5V is still supplied to all components. When the machine detects a ringing signal or receives a stream of data for a print job, the +24V supply is activated and the machine automatically prints the incoming message or executes the print job.

Off Mode

The system +5V supply also turns off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, off-hook signal, or receives a print job, the machine returns to the Off Stand-by mode and the system +5V and +24V supplies are activated.

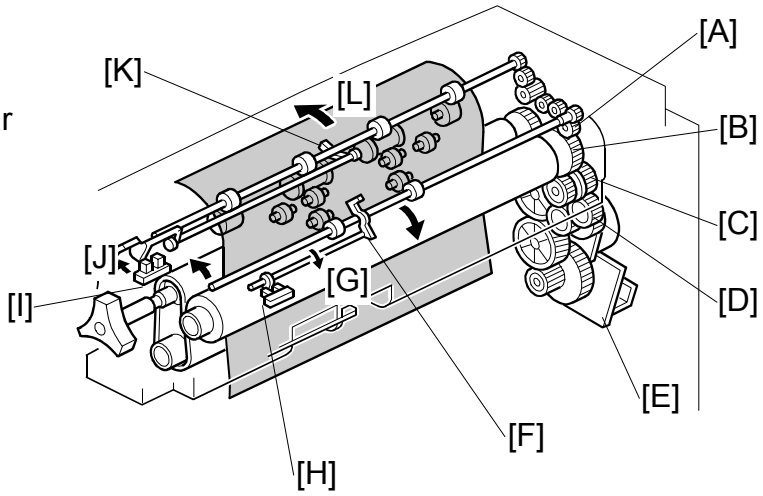
Returning to stand-by mode

The machine returns to stand-by mode when the operation switch is pressed. The return time is about 99 seconds.

Mode	Operation Switch	Energy Saver LED	Fusing Lamp	+24V	System +5V	Note
Off Stand-by	Off	Off	Off (On when printing)	On	On	
Off	Off	Off	Off	Off	Off	+5VE is supplied

6.12.7 PAPER EXIT

[A]: Interface gear
[B]: Pressure roller gear
[C]: Drive gear (fusing unit)
[D]: Cover disengagement gear
[E]: Fusing unit motor
[F]: Fusing exit sensor feeler
[G]: Turning direction of the fusing exit sensor feeler
[H]: Fusing exit sensor
[I]: Paper exit sensor
[J]: Turning direction of the paper exit sensor feeler
[K]: Paper exit sensor feeler
[L]: Paper



Drive

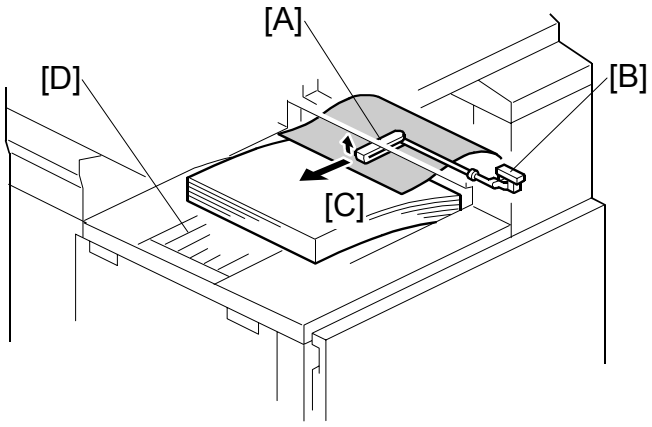
Fusing unit motor [E] ➔ gear [D] ➔ fusing unit drive gear [C] ➔ pressure roller gear [B] ➔ gear [A] ➔ exit rollers.

Paper Jam Detection

The fusing exit sensor [H] and the paper exit sensor [I] detect paper jams.

6.12.8 PAPER OVERFLOW DETECTION

[A]: Feeler
[B]: Paper overflow sensor
[C]: Paper
[D]: Tray



When the paper overflow sensor [B] is deactivated, the machine detects that the paper stack height exceeded the limit and stops printing.

SPECIFICATIONS

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

SPECIFICATIONS

1. GENERAL SPECIFICATIONS (MAIN UNIT)

Configuration: Desktop

Print Process: 2 laser beam & dry electrostatic transfer system

Original Type: Sheet/Book/object

Original Size: Max: A3/11"x17"

Copy Paper Size:

Max:	A3/11" x 17"
Min:	A6 SEF (100 x 148 mm)/8.5" x 5.5"
Custom size:	Width: 100 ~ 297 mm (3.9" ~ 11.5") Length: 148 ~ 432 mm (5.8" ~ 17")

*Printable area is 297 x 432 mm (11.7" x 17").

Paper Weight (excluding by-pass tray): 64 to 105 g/m^2, 17 lb. to 28 lb.

Printing Speed (A4/8.5" x 11" LEF):

Model		Plain Paper	Thick	OHP
U-C1a	Color	8 cpm	4 cpm	2 cpm
	Black & White	24 cpm	6.5 cpm	3.2 cpm
U-C1b	Color	10 cpm	4 cpm	2 cpm
	Black & White	32 cpm	6.5 cpm	3.2 cpm

Paper Capacity:

Main	250 sheets x 2 tray
Paper tray unit (Option)	500 sheets x 2 trays
By-pass (Option)	100 sheets
LCT (Option)	1,000 sheets x 2

*Maximum capacity is 2,600 sheets.

Copy Tray Capacity:

A4/LT or smaller:	Up to 500 sheets
B4 or larger:	Up to 250 sheets

First Copy Time (A4/8.5" x 11" LEF):

Color:	18 seconds
Black & White:	7.8 seconds

Warming-up Time: Approx. 99 seconds

No. of Continuous Copies: 1 to 100

Memory: 128 MB, expandable with extra 128 MB or 256 MB

Hard Disk: 40 GB

Reproduction Ratios: 5 Enlargement & 7 Reduction

	A4/A3 version	LT/DLT Version
Enlargement	400, 200, 141, 122, 115%	400, 200 155, 129, 121%
Full Size	100%	100%
Reduction	93, 82, 75, 71, 65, 50, 25%	93, 85, 78, 73, 65, 50, 25%

SPECIFICATIONS

Zoom:	25% to 400% in 1% steps (Platen mode) 25% to 200% in 1% steps (ADF mode)
Scanning System:	3-line 1-chip CCD sensor (600 dpi)
Light Source:	1 xenon lamp
Photoconductor:	OPC belt
Charging:	Corona wire with grid plate
Print System:	Two laser beam, 600 dpi
Development System:	Mono component toner
Transfer:	Image transfer: Transfer belt with bias roller Paper transfer: Roller
Separation:	Discharge pin
Fusing:	Heating rollers and fusing belt
Cleaning:	OPC belt: Blade Image transfer belt: Cleaning brush
Quenching:	Lamp
Toner Supply:	Cartridge

Power Source:

	Voltage	Frequency	Amperage
NA	120 V	60 Hz	12 A
EU & Asia	220 to 240 V	50/60 Hz	8 A

Power Consumption:

	Mainframe only	Full System
Maximum:	Less than 1.5 kW	Less than 1.5 kW
Copying:	Approx. 700 W	Approx. 900 W
Warm-up:	Less than 1.5 kW	Less than 1.5 kW
Stand-by:	Less than 200 W	Less than 200 W
Energy Saver/ Auto Off:	10 W	10 W

NOTE: Full system: ARDF + 1 bin tray + Paper Tray Unit + Duplex Unit + Bridge Unit +1000-sheet Finisher

Noise Emission:

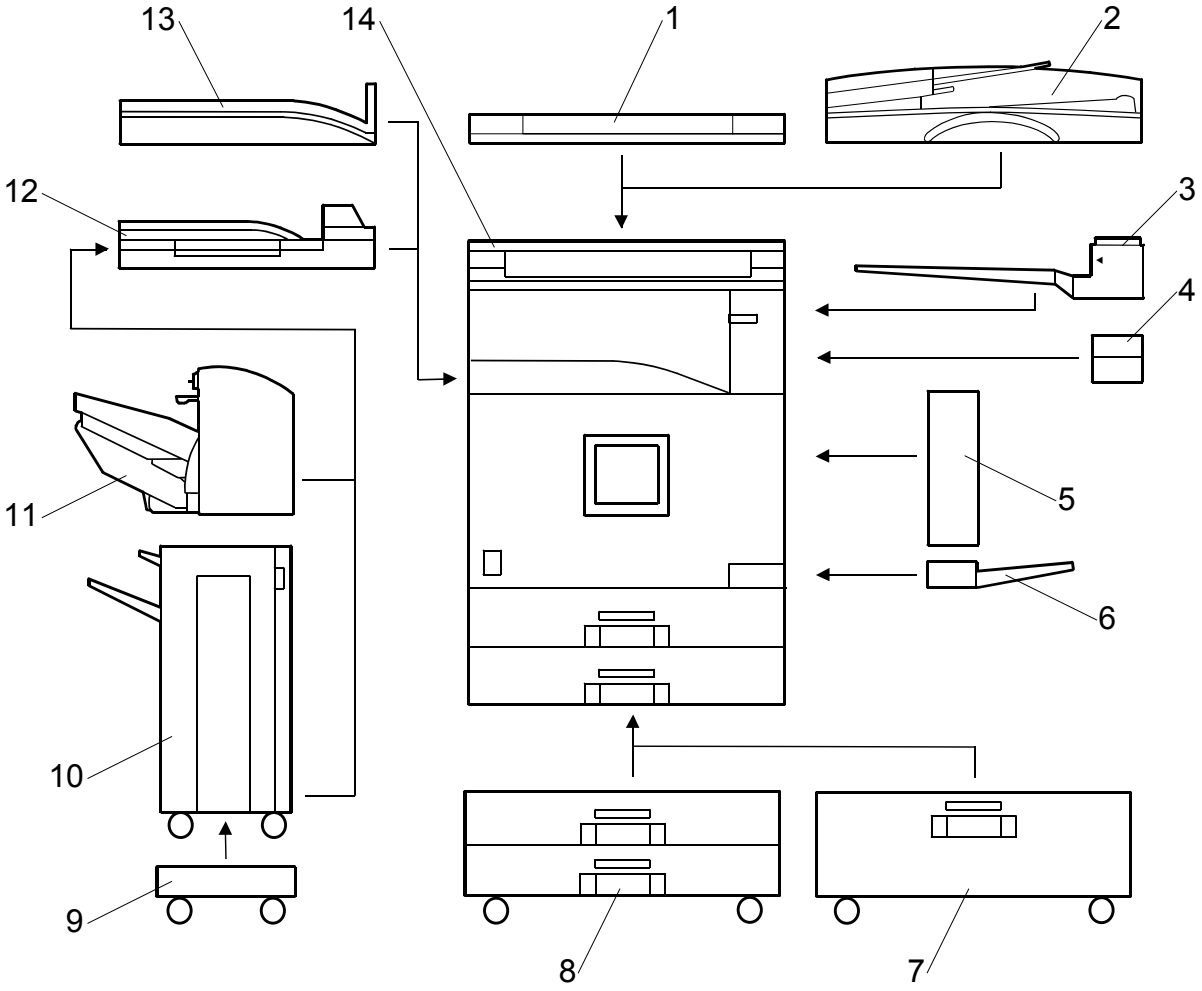
	Mainframe only	Full System
Stand-by:	Less than 45 dB (A)	Less than 50 dB (A)
Copying:	Less than 67 dB (A)	Less than 70 dB (A)

NOTE: Full system: ARDF + 1 bin tray + Paper Tray Unit + Duplex Unit + Bridge Unit +1000-sheet Finisher

Dimensions (W x D x H):	550 x 670 x 781 mm (21.65" x 26.37" x 30.74")
Weight:	Less than 80 Kg (176 lb)

2. MACHINE CONFIGURATION

2.1 SYSTEM COMPONENTS



Version	Item	Machine Code	Common with	No.
Copier	Main Frame 8 cpm color/24 cpm black and white	B051		14
	Main Frame 10 cpm color/32 cpm black and white	B052		14
	ARDF (Optional)	B386	B022/B027	2
	Platen Cover (Optional)	B484		1
	Paper Tray Unit (Optional)	B456		8
	LCT (Optional)	B457		7
	1-bin Tray (Optional)	B480		3
	Shift Tray (Optional)	B510		13
	Duplex Unit (Optional)	B509		5
	By-pass Tray (Optional)	B490		6
	Interchange Unit (Optional)	B481		4
	Bridge Unit (Optional)	B482		12
	1000-sheet Finisher (Optional)	B408		10
	Adjustment Table (Optional)	B488		9
	500-sheet Finisher (Optional)	B458		11
	128 MB Memory (Optional)	G331	G071	
	256 MB Memory (Optional)	G332	G071	
	Key Counter Bracket (Optional)	B508		
Fax	Fax Option (Optional)	B502		
	G3 Interface Unit (Optional)	B506		
	ISDN (Optional)	B504		
	JBIG (Optional)	A892	B022/B027	
	Handset (Optional)	B433	B022/B027	
Printer/ Scanner	Printer Unit (Optional)	B463		
	Printer/Scanner Unit (Optional)	B529		
	PS3 (Optional)	B522		
	IEEE1394 (Optional)	G336		
	Wireless LAN (Optional)	B515		
	Media Link Board (Optional)	B519		

2.2 OPTIONAL EQUIPMENT

ARDF

Original Size:	Standard sizes Single-sided mode: A3 to A5, DLT to HLT Double-sided mode: A3 to A4, DLT to LT Non-standard sizes (Single-sided mode only) Max. width 297 mm Min. width 105 mm Max. length 1,260 mm Min. length 128 mm
Original Weight:	Single-sided mode: 52 to 128 g/m^2, 14 to 34 lb Double-sided mode: 52 to 105 g/m^2, 14 to 28 lb
Table Capacity:	30 sheets (80 g/m^2)
Original Position:	Center
Separation:	FRR with feed belt
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	25 to 200 % (Sub scan direction only)
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	50 W
Dimensions (W x D x H):	550 x 470 x 110 mm
Weight:	10 kg

Bridge Unit

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 to 135 g/m^2, 16 lb to 42 lb
Power Source:	DC 24 V, 5 V (form the copier/printer)
Dimensions (W x D x H):	413 x 435 x 126 mm
Weight	3.0 kg (6.6 lbs)

By-pass Tray Unit

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 90 to 305 mm (3" to 12") Length: 148 to 457.2 mm (5.83" to 18")
Paper Weight:	60 g/m^2 to 163 g/m^2, 16 lb to 43.6 lb
Dimensions (W x D x H):	310 x 380 x 275 mm
Weight:	3 kg (6.6 lbs)

Duplex Unit

Paper Size:	Standard sizes A5 lengthwise to A3 HLT to DLT Non-standard sizes Width: 140 to 297 mm Length: 182 to 432 mm
Paper Weight:	64 g/m^2 to 105 g/m^2, 20 lb to 28 lb
Tray Capacity:	1 sheet
Power Consumption:	40 W
Power Source:	DC 24 V, 5 V
Dimensions (W x D x H):	90 x 495 x 452 mm
Weight:	6 kg

Interchange Unit

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m^2 to 135 g/m^2, 16 lb to 36 lb
Power Consumption:	10 W
Dimensions (W x D x H):	117 x 447 x 92 mm
Weight:	1.6 kg

LCT

Paper Size:	A4 sideways/LT sideways
Paper Weight:	60 g/m^2 to 128 g/m^2, 16 lb to 34 lb
Tray Capacity:	2,000 sheets (80 g/m^2, 20lb)
Remaining Paper Detection:	5 steps (100%, 75%, 50%, 25%, Near end)
Power Source:	DC 24 V, 5 V (from copier/printer)
Power Consumption:	30 W (Max.)/25 W (Ave.)
Weight:	25 kg (55 lbs)
Size (W x D x H):	540 x 600 x 270 mm

Paper Tray Unit

Paper Feed System:	FRR
Paper Height Detection:	4 steps (100%, 50%, Near End, and Empty)
Capacity:	500 sheets x 2 trays
Paper Weight:	60 to 128 g/m^2 (16 to 34 lb.)
Paper Size:	A3 SEF to A5, DLT SEF to HLT
Power Source:	DC 24V, 5V (from the main frame)
Power Consumption:	Less than 30 W
Dimensions (W x D x H):	540 x 600 x 270 mm
Weight:	25 kg (33 lb.)

Shift Tray Unit

Paper Size:	Standard Size: A5 lengthwise to A3 HLT lengthwise to DLT Non-standard Size: Paper Width: 90 to 297 mm Paper Length: 148 to 432 mm
Paper Weight:	60 to 105 g/m², 16 to 28 lbs.
Tray Capacity:	125 sheets (80 g/m², 20 lbs.): B4 or larger 250 sheets (80 g/m², 20 lbs.): A4 or smaller
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	17 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 410 mm x 120 mm

1-Bin Tray Unit

Paper Size:	Standard Size: A5 Lengthwise to A3 HLT Lengthwise to DLT Non-standard Size: Paper Width: 90 to 297 mm Paper Length: 148 to 432 mm
Paper Weight:	60 ~ 105 g/m², 16 ~ 28 lbs.
Tray Capacity:	125 sheets (80 g/m², 20 lbs.)
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	0.5 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 435 mm x 120 mm

500-Sheet Finisher

Paper Size:	A3, B4, A4, B5 sideways (Metric) DLT, LG, LT (Inch)
Paper Weight	52 to 128 g/m^2, 14 to 34 lb.
Staple Capacity:	30 sheets (80 g/m^2, 20 lb)
Stack Capacity (Maximum):	500 sheets (A4/LT or smaller: 80 g/m^2, 20 lb.) 250 sheets (A3, B4, DLT and LG: 80 g/m^2, 20 lb.)
Stapling Positions:	1
Staple Replenishment:	Cartridge (3,000 staples/cartridge)
Power Source:	DC 24 V, 5 V (from the copier/printer)
Power Consumption:	40 W
Weight:	8.3 kg (18.4 lbs.)
Dimensions (W x D x H):	350 x 490 x 230 mm

1000-sheet Finisher

Upper Tray

Paper Size: A3 to A6
DLT to HLT

Paper Weight: 60 to 157 g/m^2 (16 to 42 lb)

Paper Capacity: 250 sheets (A4 sideways/LT sideways or smaller: 80 g/m^2, 20lb)
50 sheets (A3, B4, DLT, LG: 80 g/m^2, 20 lb)

Lower Tray

Paper Size: No staple mode:
A3 to B5
DLT to HLT
Staple mode:
A3, B4, A4, B5
DLT to LT

Paper Weight: No staple mode: 60 to 157 g/m^2 (16 ~ 42 lb)
Staple mode: 64 to 90 g/m^2 (17 ~ 24 lb)

Stapler Capacity: 30 sheets (A3, B4, DLT, LG)
50 sheets (A4, B5 sideways, LT)

Paper Capacity: No staple mode:
1,000 sheets (A4/LT or smaller: 80 g/m^2, 20 lb)
500 sheets (A3, B4, DLT, LG: 80 g/m^2, 20 lb)
Staple mode:
(80 g/m^2, 20 lb, number of sets)

Set Size	**2 to 9**	**10 to 50**	
Size		10 to 30	31 to 50
A4/LT sideways B5 sideways	100	100 to 20	100 to 20
A4/LT Lengthwise	100	50 to 10	50 to 10
A3, B4, DLT, LG	50	50 to 10	—

Staple positions: 1 Staple: 2 positions (Front, Rear)
2 Staples: 2 positions (Upper, Left)

Staple Replenishment: Cartridge (5,000 staples/cartridge)

Power Source: DC 24 V, 5 V (from the copier/printer)

Power Consumption: 50 W

Weight: 25 kg (55.2 lbs)

Dimensions (W x D x H): 527 x 520 x 790 mm (20.8" x 20.5" x 31.1")

CÓPIA NÃO CONTROLADA

FIRMWARE HISTORY

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

FIRMWARE HISTORY

1. MAIN MACHINE FIRMWARE MODIFICATION HISTORY

- If no firmware history data is present in the table below, then no data was available at the time of this service manual's printing.
- Please check the http://tsc.ricohcorp.com website for current firmware downloads.
- Accessory firmware modification history is provided in the appropriate accessory section of the service manual.

MAIN MACHINE FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	FIRMWARE LEVEL	SERIAL NUMBER	FIRMWARE VERSION

CÓPIA NÃO CONTROLADA

B502
FAX UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

FAX UNIT B502

TABLE OF CONTENTS

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

1. INSTALLATION

1.1 FAX UNIT

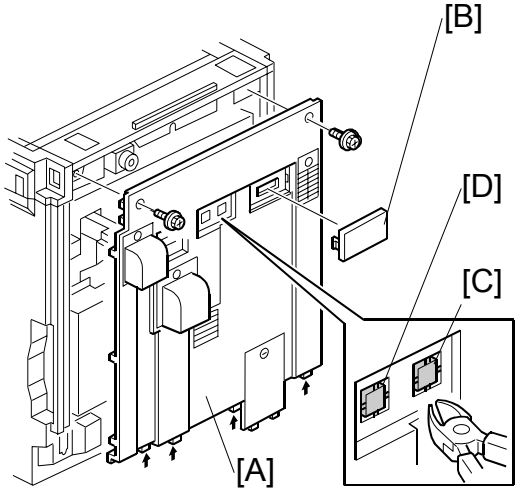
⚠CAUTION

Before installing this fax unit,

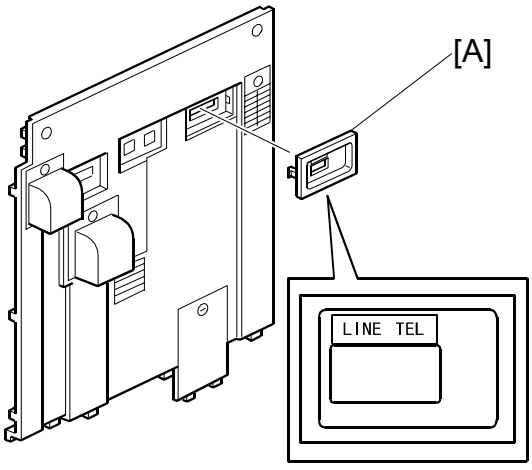
1) Print out all data in the printer buffer if there is an optional printer installed.

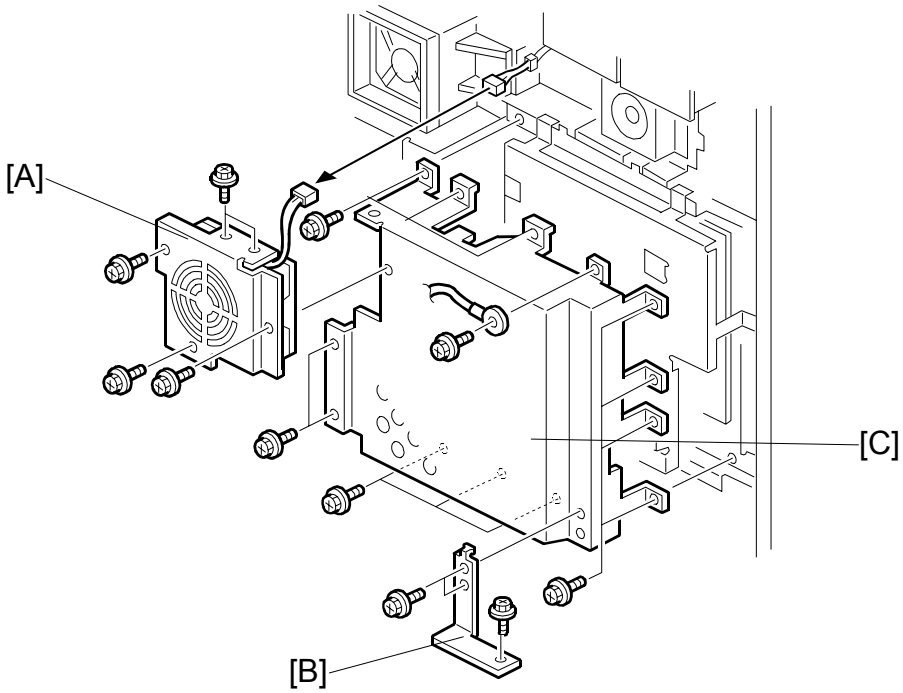
2) Turn off the main switch and disconnect the power cord and the network cable.

1. Remove the rear cover [A] (🔩 x 2).
2. Remove the connector cover [B].
3. When installing *G3 Interface Unit Type 1232*, cut away the right connector shield [C] and file the edges smooth.
4. When installing *ISDN Option Type 1232*, cut away the left connector shield [D] and file the edges smooth.



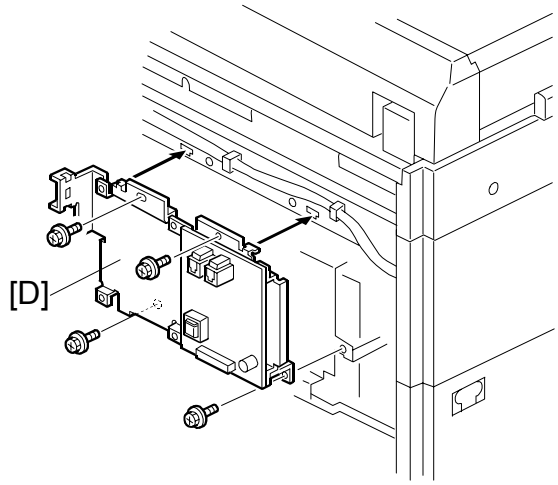
5. Install the jack cover [A].



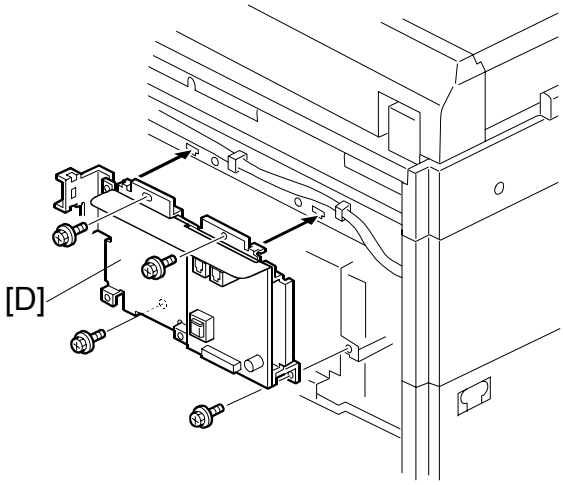


6. Remove the fan with the bracket [A] (☞ x 5, ☞ x 1).
7. Remove the ground bracket [B] (☞ x 3).
8. Remove the BCU cover [C] (☞ x 13).

U.S. VERSION

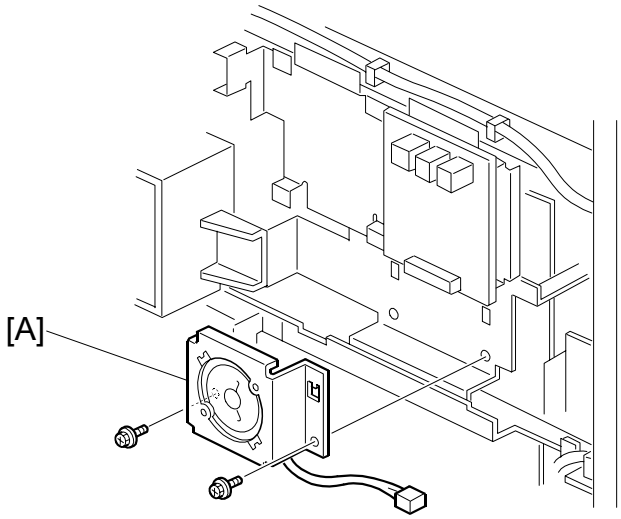


NON-U.S. VERSION

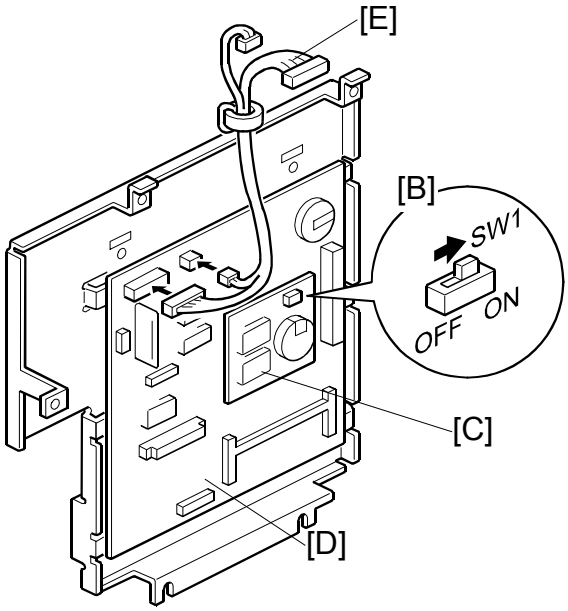


9. Attach the NCU [D] (☞ x 4).

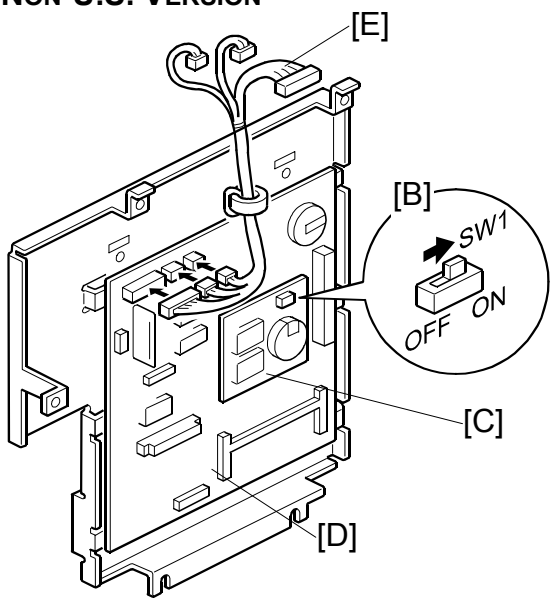
10. Attach the speaker [A] (🔩 x 2).



U.S. VERSION

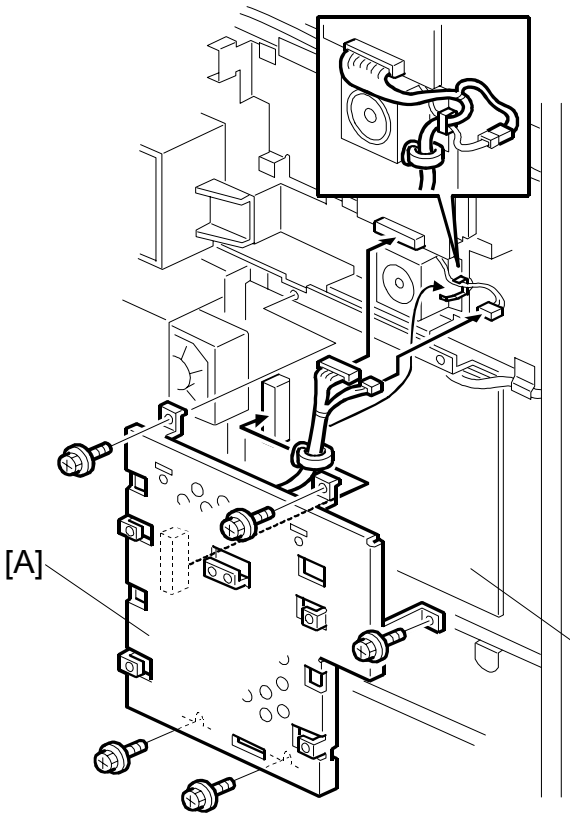


NON-U.S. VERSION

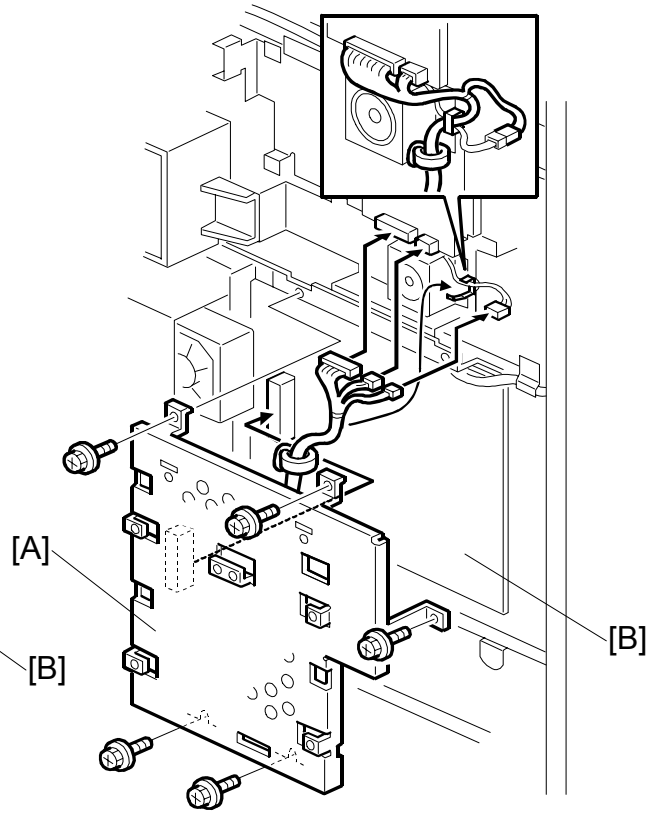


11. Turn the MBU battery switch (SW1) [B] on.
    NOTE: The MBU [C] is on the FCU [D].
12. Connect the harness [E] to the FCU (🤏 x 2 for the U.S. version, 🤏 x 3 for the non-U.S. version).
    NOTE: Connect the blue connector to the blue socket.

U.S. VERSION

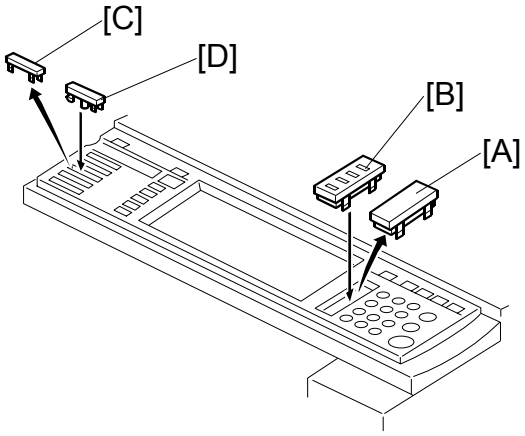


NON-U.S. VERSION

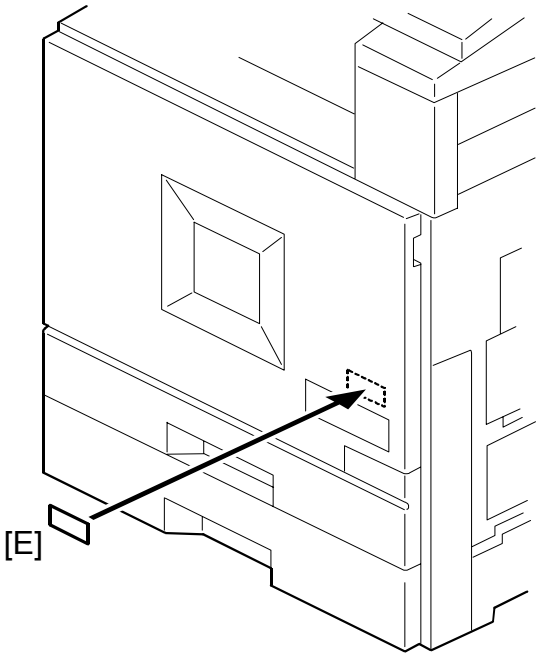


13. Connect the FCU [A] to the BiCU [B] and install it in the copier (🔩 x 5).
14. For the U.S. version, connect one connector to the NCU and the other one to the speaker connector. For the non-U.S. version, connect two connectors to the NCU and the other one to the speaker.
15. Reattach the BCU cover, the fan with the bracket, and the ground bracket.
    NOTE: When reassembling, use caution not to damage harnesses and electrical circuits.

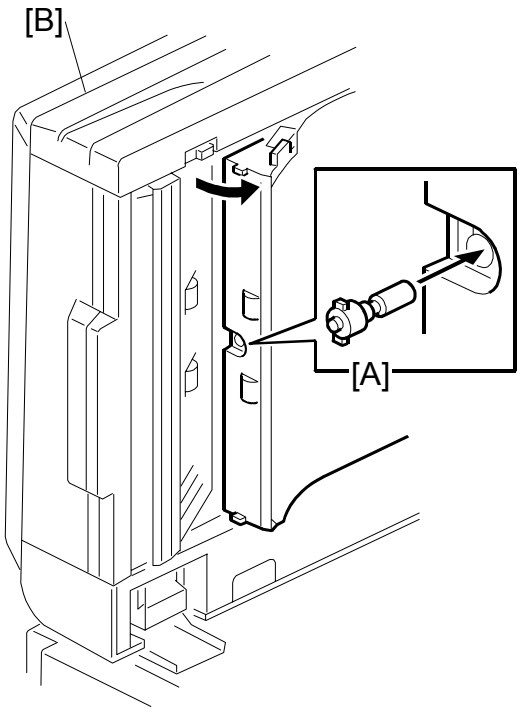
16. Replace the dummy keypad [A] with the fax keypad [B].
17. Replace the third key-slot cover [C] with the fax key [D].



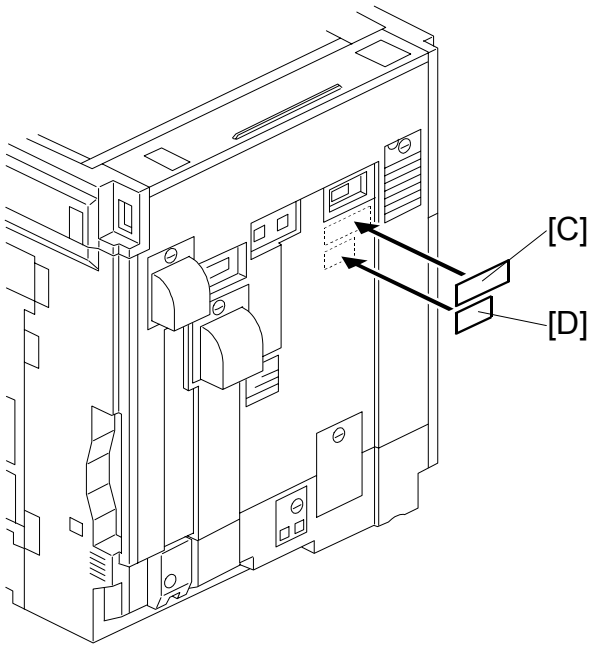
18. Attach the decal (*SUPER G3*) [E] to the front cover.



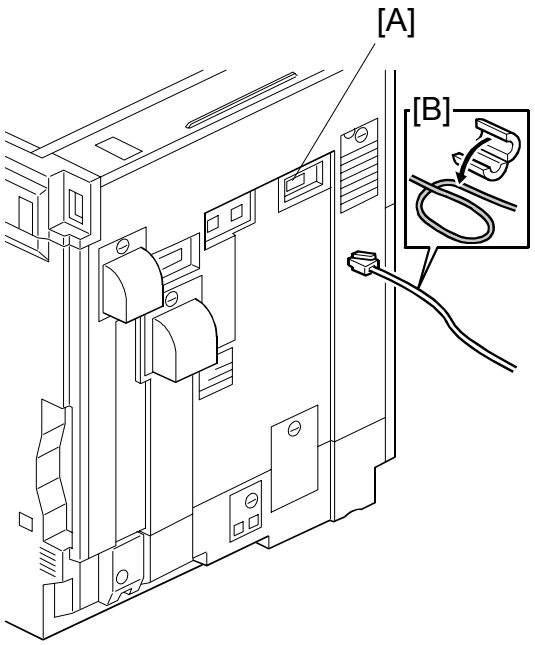
19. Install the stamp cartridge [A] if the ARDF [B] has been installed.



20. Reattach the rear cover (🔩 x 2).
21. Attach the FCC decal [C] and serial number decal [D].
    NOTE: The FCC decal is for the U.S. and Canada only.



22. Connect the telephone line to the *LINE* jack [A].
    NOTE: For the European and Asian models, attach the ferrite core [B] to the telephone line.
23. Put the power plug into the outlet and turn the main switch on.
    NOTE: Make sure that the outlet is grounded.



24. Wait until the following messages are displayed:
    Function Problems
    Functional problems with facsimile.
    Data will be initialized.
25. Touch “OK” on the screen. The initialization starts.
26. Make sure that the date and time are correctly set.

1.2 FAX UNIT OPTIONS

1.2.1 G3 INTERFACE UNIT

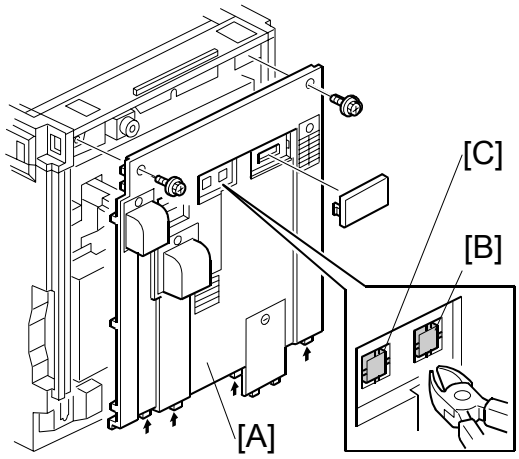
⚠CAUTION

Before installing this optional unit,

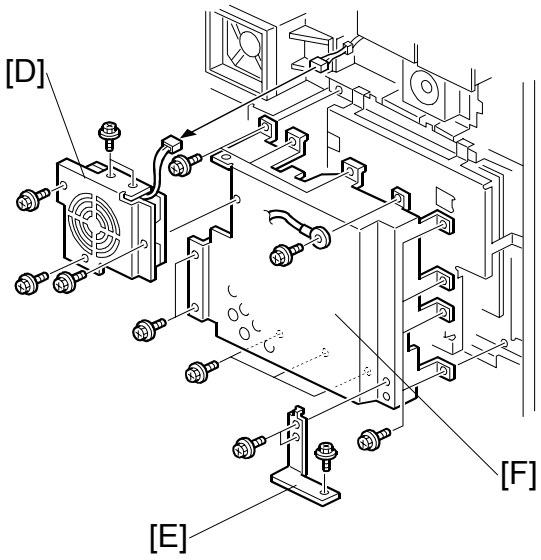
1) Print out all data in the printer buffer if there is an optional printer installed.

2) Turn off the main switch and disconnect the power cord and the network cable.

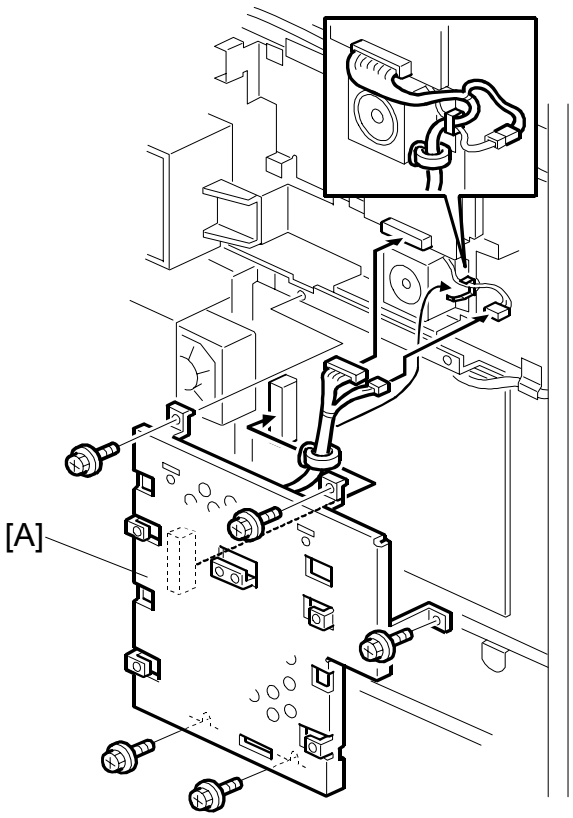
1. Remove the rear cover [A] (🔩 x 2).
2. Remove the right connector shield [B].
3. When installing *ISDN Option Type 1232*, cut away the left connector shield [C] and file the edges smooth.



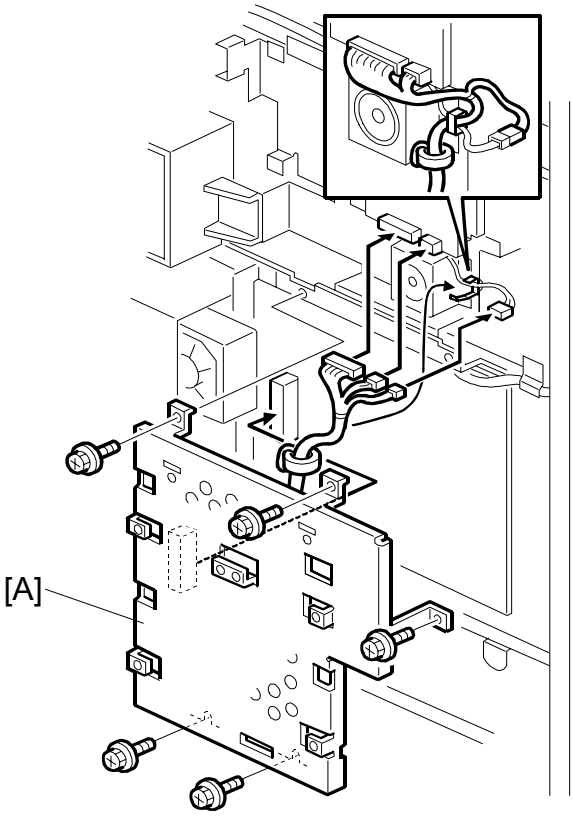
4. Remove the fan with the bracket [D] (🔩 x 5, 🖐 x 1).
5. Remove the ground bracket [E] (🔩 x 3).
6. Remove the BCU cover [F] (🔩 x 13).



U.S. VERSION

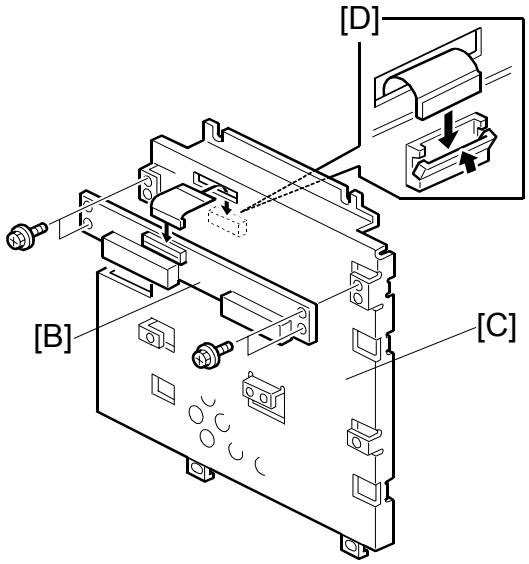


NON-U.S. VERSION

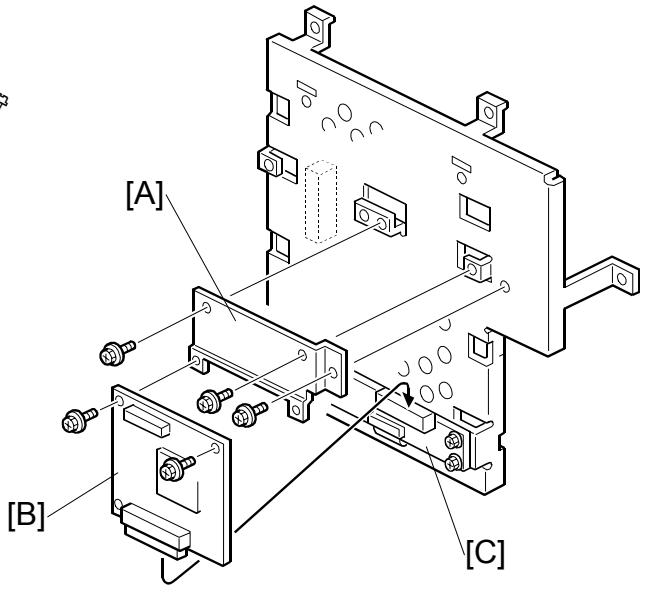


7. Remove the FCU [A] (✋ x 2 for the U.S. version/✋ x 3 for the non-U.S. version, 🔩 x 5).

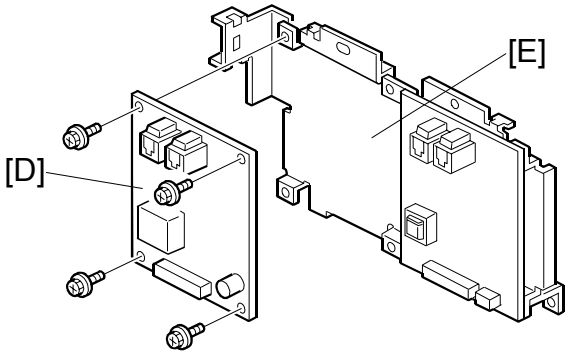
8. Attach the CCU interface [B] to the FCU bracket [C] (🔩 x 4).
   NOTE: The *G3 Interface Unit Type 1232* package contains one CCU interface, and so does the *ISDN Option Type 1232* package. When installing the two optional units at once, only one of the two interfaces is necessary.
9. Connect the flat cable [D] to the blue side outside.



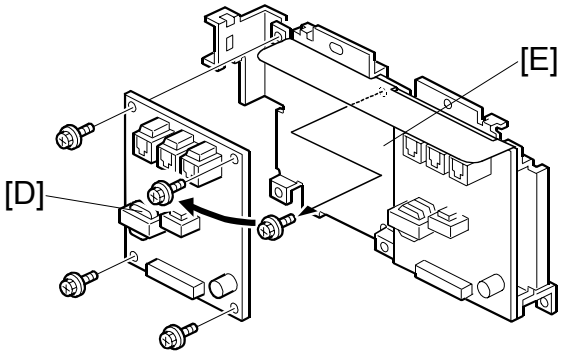
10. Attach the G3 bracket [A] (🔩 x 3).
11. Connect the SG3-D [B] to the CCU interface [C] and secure it (🔩 x 2).



U.S. VERSION



NON-U.S. VERSION



12. Attach the NCU [D] to the NCU bracket [E] (🔩 x 4).
    NOTE: On the NCU bracket of the non-U.S. version, a mylar sheet is attached with two screws. Remove the left screw, and use it to install the NCU.

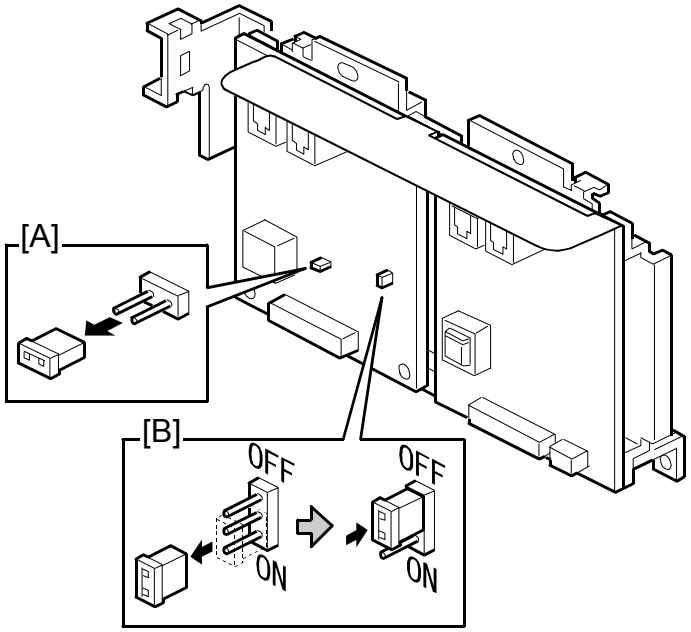
13. Set up the jumper switches [A and B] on the NCU.

NOTE: NOTE: European/Asian models only (non-U.S. version: B503-27)

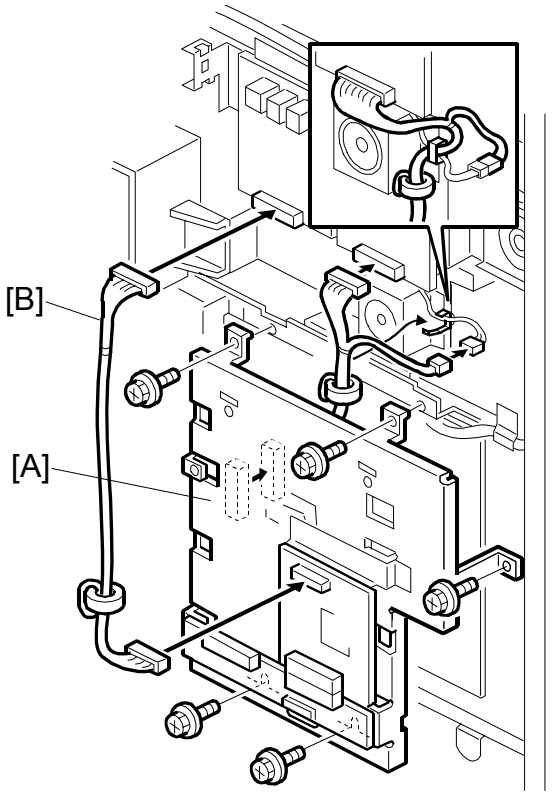
		TB1 [A]	**TB2** [B]
Default		ON	ON
Region/ Country	Hong Kong	OFF	OFF
	Hungary	ON	ON
	Poland	ON	ON
	Czech Republic	ON	ON
	Israel	ON	ON
	South Africa	ON	ON
	Regions/countries where the CTR21 standard is valid	ON	ON
	Other	ON	OFF

TB1 ON: Keep the jumper attached (factory setting). OFF: Remove the jumper.
TB2 ON: Keep the jumper at ON (factory setting). OFF: Move the jumper to OFF.

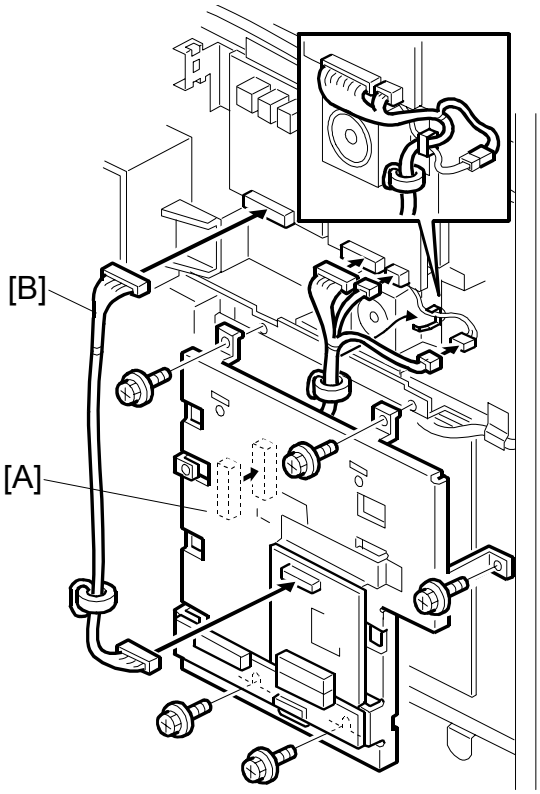
NOTE: You must change the country code in both system switch 0F and NCU parameter CC (service function 08-0).



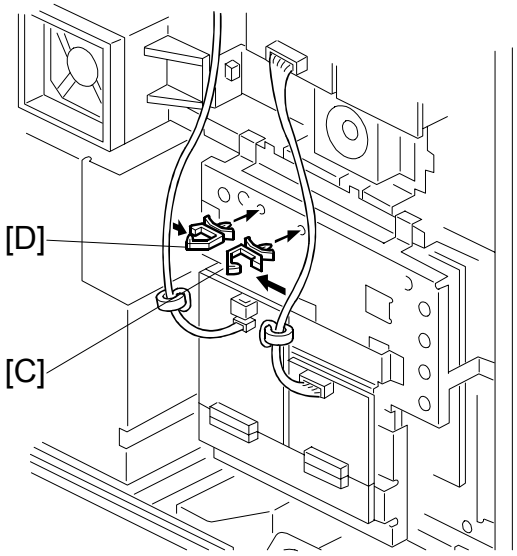
U.S. VERSION



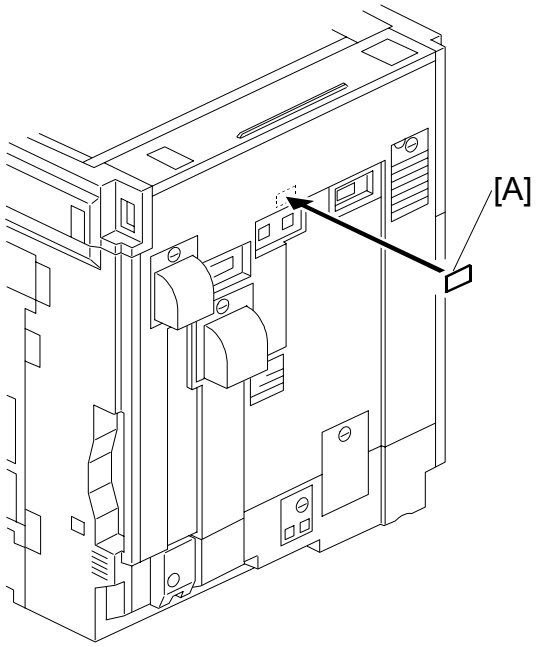
NON-U.S. VERSION

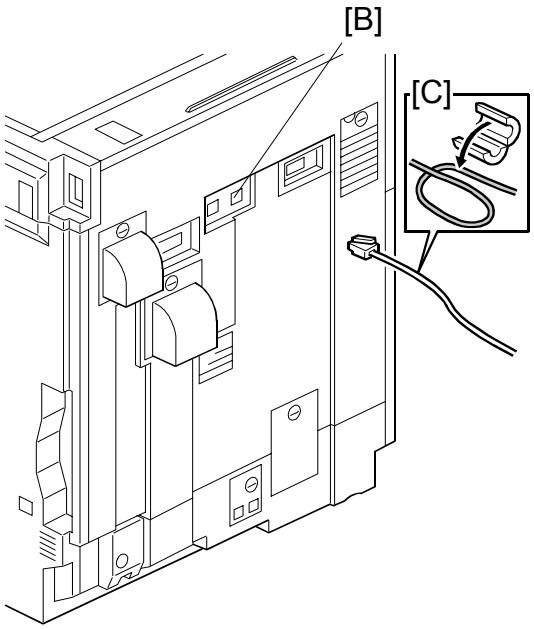


14. Attach the FCU [A] to the copier and connect the connectors (☞ x 4 for the U.S. version/☞ x 5 for the non-U.S. version).
15. Connect the harness [B] to the SG3-D and the NCU.
    NOTE: The ferrite core is near the lower connector.
16. Attach the cable clamp [C].
    NOTE: When installing both *G3 Interface Unit Type 1232* and *ISDN Option Type 1232*, attach the G3 clamp [C] to the right side and the ISDN clamp [D] to the left side.
17. Reattach the BCU cover, the fan with the bracket, and the ground bracket.
    NOTE: When reassembling, use caution not to damage harnesses and electrical circuits.



18. Reattach the rear cover (☞ x 2).
19. Attach the FCC decal [A] right above the *LINE 2* jack.
    NOTE: The FCC decal is for U.S. and Canada only.





20. Connect the telephone line to the *LINE 2* jack [B].
21. Attach the ferrite core [C] to the telephone line.
22. Put the power plug into the outlet and turn the main switch on.
    NOTE: Make sure that the outlet is grounded.
23. Start the service mode and set bit 1 of communication switch 16 to “1” (SP1-104-023).
24. Turn the main switch off and on.
25. Print out the system parameter list and check that “SG3-D” is listed as an option (SP6-101).
26. Set up and program the items required for PSTN-2 communications.
27. Turn the main switch off and on.

1.2.2 ISDN OPTION

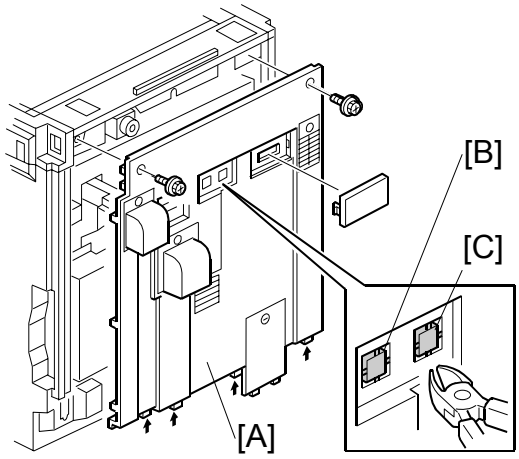
⚠CAUTION

Before installing this optional unit,

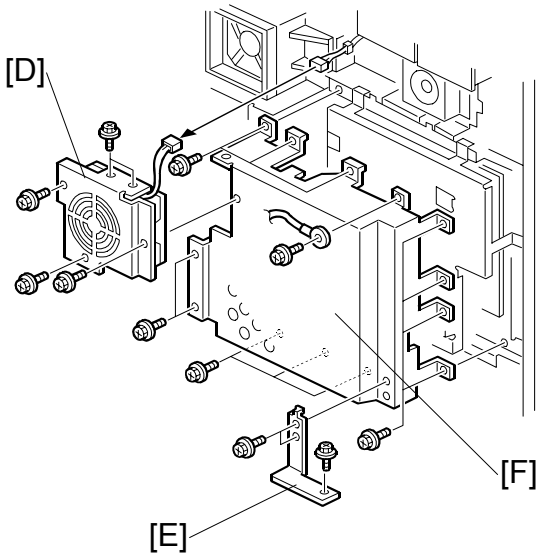
1) Print out all data in the printer buffer if there is an optional printer installed.

2) Turn off the main switch and disconnect the power cord and the network cable.

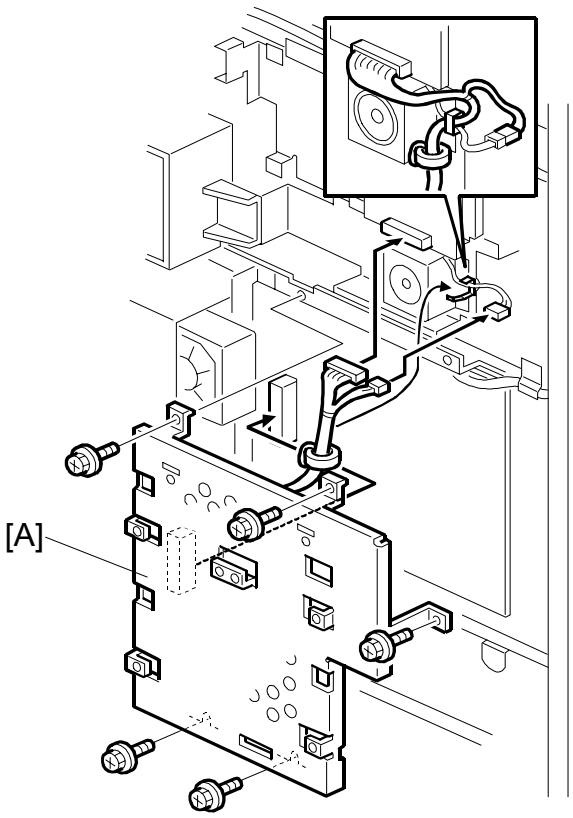
1. Remove the rear cover [A] (☞ x 2).
2. Remove the left connector shield [B].
3. When installing *G3 Interface Unit Type 1232,* cut away the right connector shield [C] and file the edges smooth.



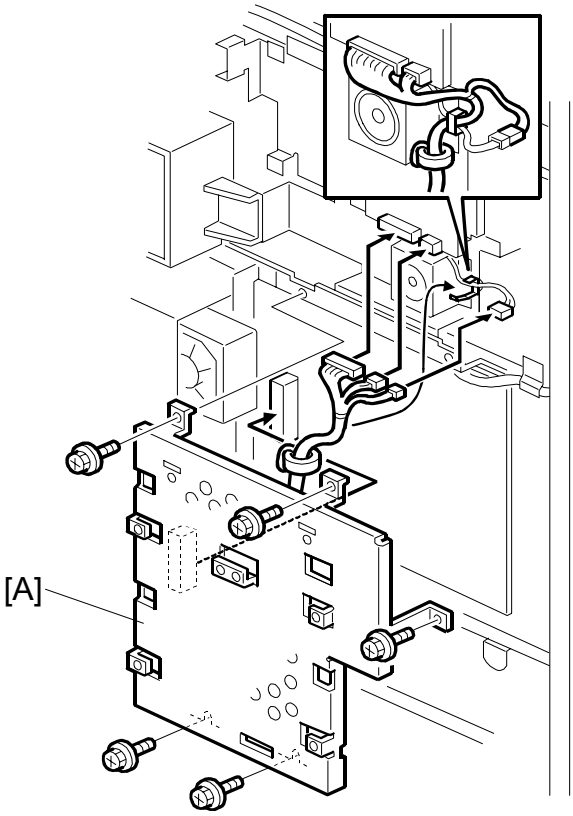
4. Remove the fan with the bracket [D] (☞ x 5, ☞ x 1).
5. Remove the ground bracket [E] (☞ x 3).
6. Remove the BCU cover [F] (☞ x 13).



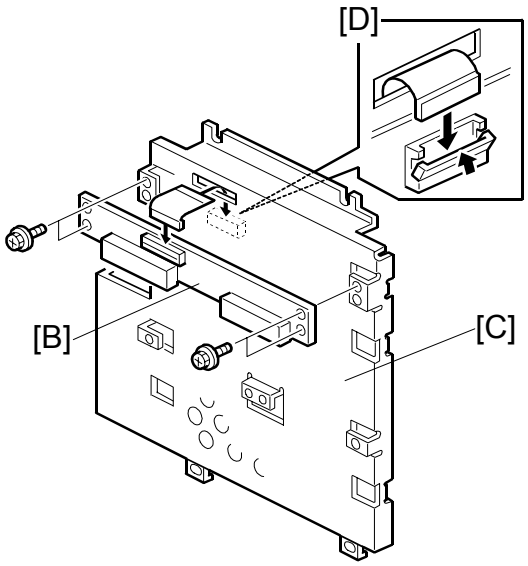
U.S. VERSION



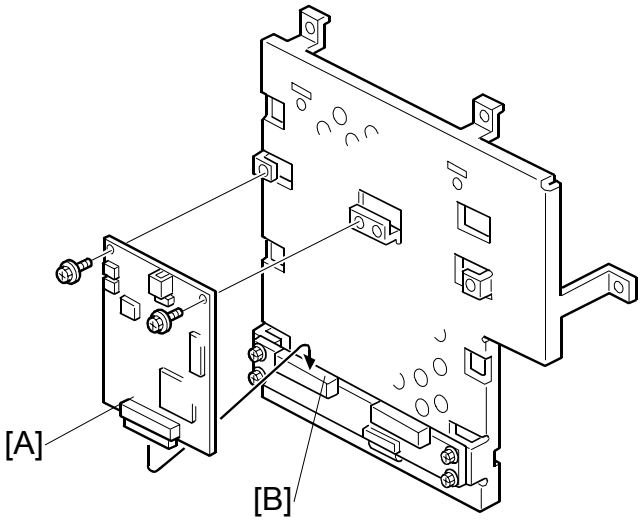
NON-U.S. VERSION



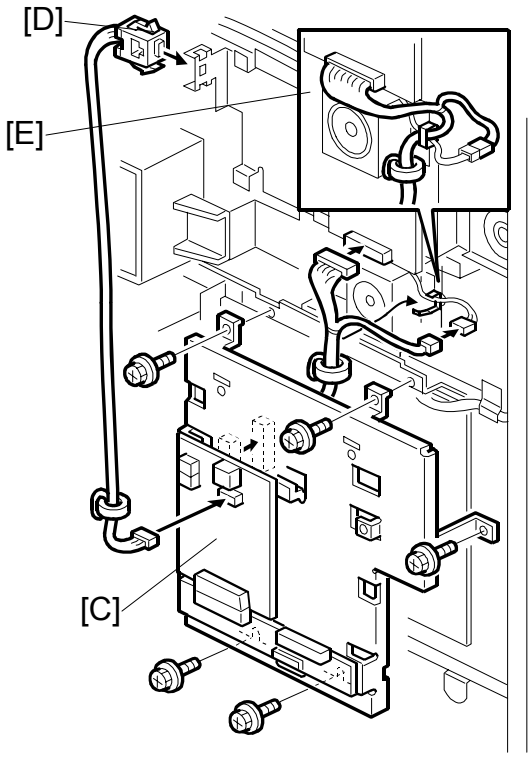
7. Remove the FCU [A] (✋ x 2 for the U.S. version/✋ x 3 for the non-U.S. version, 🔩 x 5)
8. Attach the CCU interface [B] to the FCU bracket [C] (🔩 x 4).
   NOTE: The *G3 Interface Unit Type 1232* package contains one CCU interface, and so does the *ISDN Option Type 1232* package. When installing the two optional units at once, only one of the two interfaces is necessary.
9. Connect the flat cable [D] with the blue side outside.



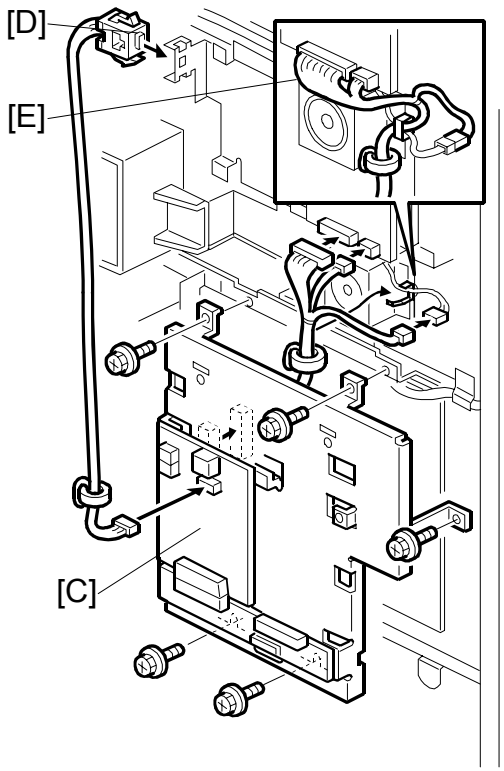
10. Connect the SiG4 [A] to the CCU interface [B] and secure it (x 2).



U.S. VERSION

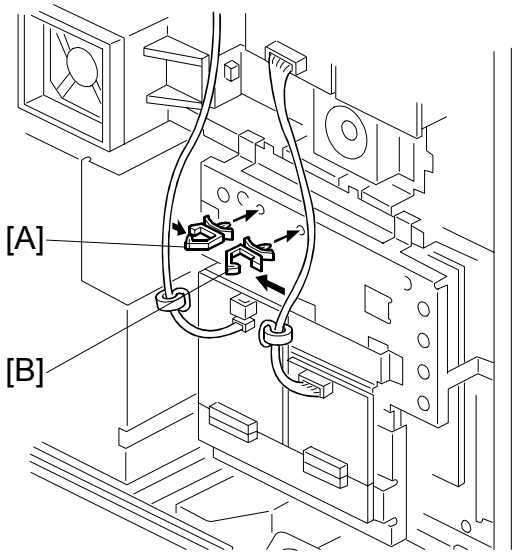


NON-U.S. VERSION

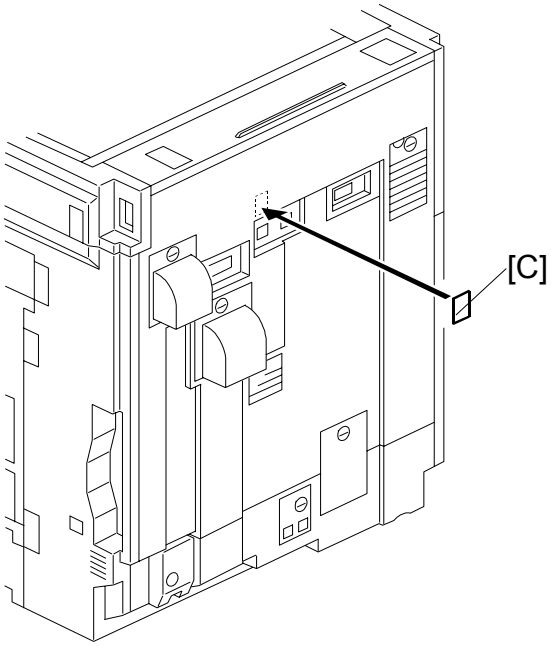


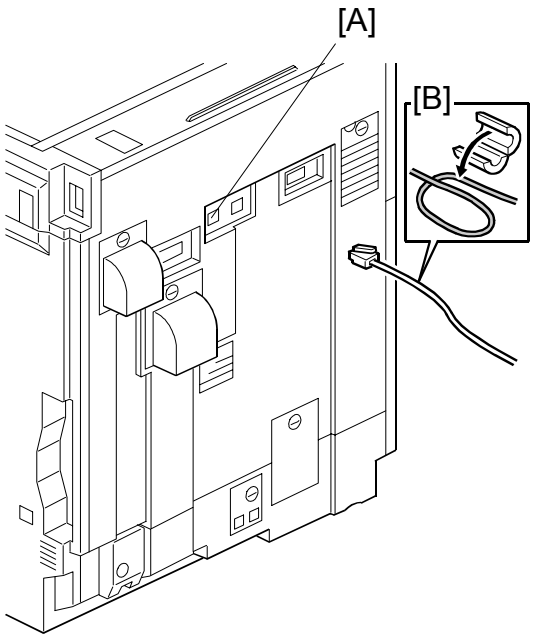
11. Attach the FCU [C] to the copier and connect the connectors (x 3 for the U.S. version/x 4 for the non-U.S. version).
12. Install the modular jack [D] on the NCU bracket [E], and connect the connector.

13. Attach the cable clamp [A].
    NOTE: When installing both *G3 Interface Unit Type 1232* and *ISDN Option Type 1232*, attach the G3 clamp [B] to the right side and the ISDN clamp [A] to the left side.
14. Reattach the BCU cover, the fan with the bracket, and the ground bracket.
    NOTE: When reassembling, use caution not to damage harnesses and electrical circuits.



15. Reattach the rear cover (🔩 x 2).
16. Attach the FCC decal [C] right above the *ISDN* jack.
    NOTE: The FCC decal is for U.S. and Canada only.



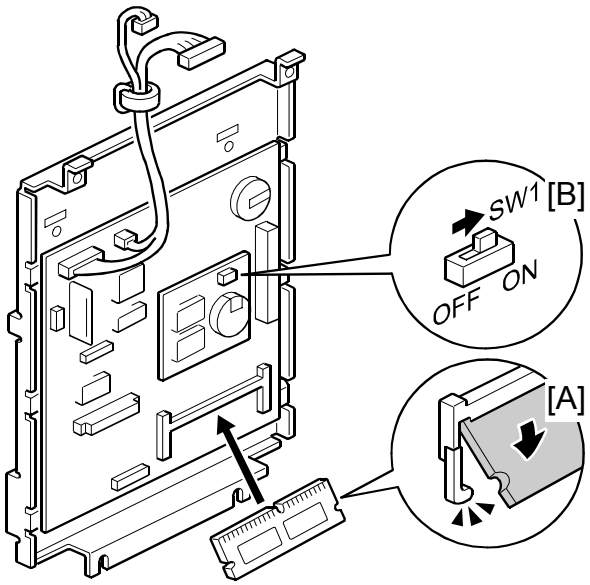


17. Connect the telephone line to the *ISDN* jack [A].
    NOTE: For the European and Asian models, attach the ferrite core [B] to the telephone line.
18. Put the power plug into the outlet and turn the main switch on.
    NOTE: Make sure that the outlet is grounded.
19. Start the service mode and set bit 2 of communication switch 16 to "1" (SP1-104-023).
20. Turn the main switch off and on.
21. Print out the system parameter list and check that "G4" is listed as an option (SP6-101).
22. Set up and program the items required for ISDN communications.
23. Turn the main switch off and on.

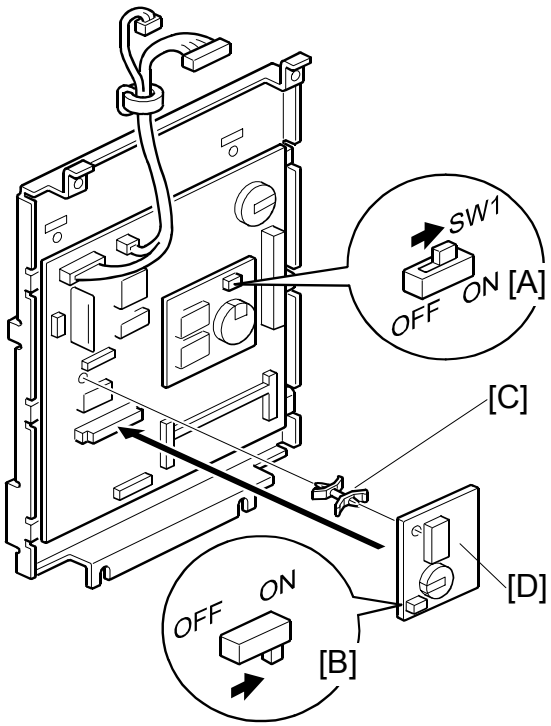
1.2.3 EXPANSION MEMORY

NOTE: Expansion memories are not provided. Locally procure an expansion memory that meets the specifications (same as other recent models — see the specifications section).

1. Remove the rear cover (x 2).
2. Remove the fan with the bracket (x 5, x 1).
3. Remove the ground bracket (x 3).
4. Remove the BCU cover (x 13).
5. Remove the FCU (x 5, x 2 [U.S. version]/ x 3 [non-U.S. version]).
6. Install an expansion memory [A].
7. Turn the MBU battery switch [B] (SW1) on, or check that the switch has been already turned on.
   NOTE: The MBU battery switch (SW1) has been already turned on if the fax unit has been correctly installed.



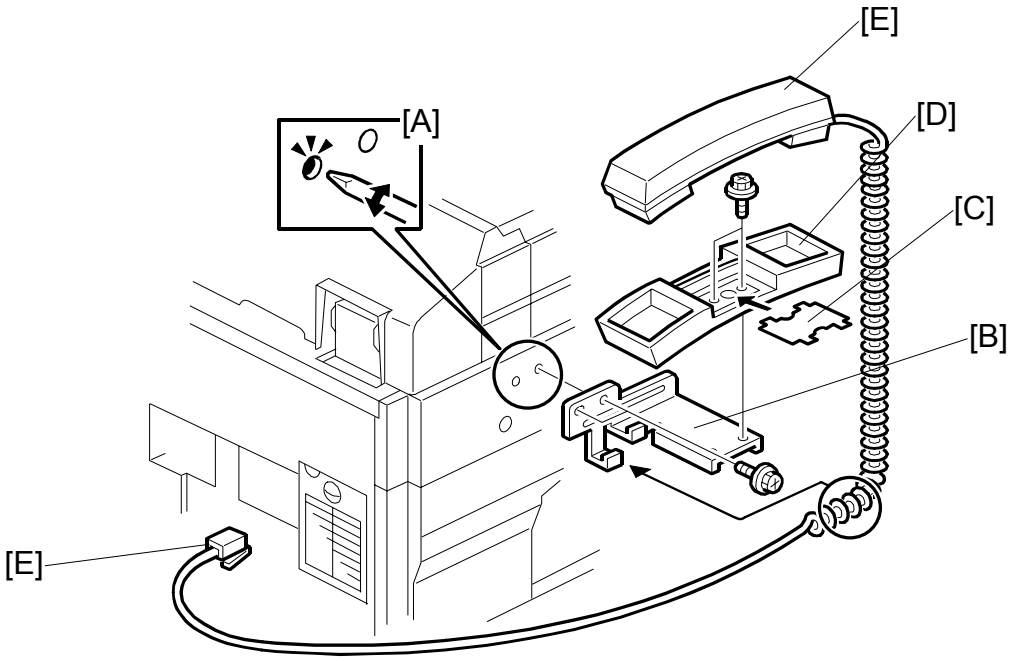
1.2.4 FAX FUNCTION UPGRADE KIT



1. Remove the rear cover (🔩 x 2).
2. Remove the fan with the bracket (🔩 x 5, 🖐 x 1).
3. Remove the ground bracket (🔩 x 3).
4. Remove the BCU cover (🔩 x 13).
5. Remove the FCU (🔩 x 5, 🖐 x 2 [U.S. version]/ 🖐 x 3 [non-U.S. version]).
6. Turn the MBU battery switch [A] (SW1) on, or check that the switch has been already turned on.
   NOTE: The MBU battery switch (SW1) has been already turned on if the fax unit has been correctly installed.
7. Turn the *Fax Function Upgrade Kit* battery switch [B] (SW1) on.
8. Install the double-locking spacer [C].
9. Install the *Fax Function Upgrade Kit* [D].
10. Turn the main switch on.
11. Wait until the message and “Execute” are displayed on the touch screen.
12. Touch “Execute” to initialize the program.
13. Set the system switch 1E Bit 7 to “1” (SP1-101-031).

1.2.5 HANDSET

NOTE: The optional handset is available for the U.S. version only.



1. Make two holes [A] in the scanner left cover.
2. Attach the bracket [B] enclosed with the fax unit (☞ x 2) as shown.
3. Remove the label [C] from the handset cradle [D]. Attach the cradle [D] to the bracket [B] (☞ x 2), then replace the label [C].
4. Install the handset [E] on the cradle [B].
5. Connect the cable [F] to the “TEL” jack at the rear of the machine.

2. REPLACEMENT AND ADJUSTMENT

2.1 NOTES FOR FCU BOARD REPLACEMENT

1. When replacing the FCU board, remove the MBU board from the old FCU board and install it on the new FCU board.
2. Adjust the date and time (UP — System Settings — Timer Setting — Set Date/Set Time).

NOTE: 1) Do not turn off the battery switch (SW1).
2) Print out the system parameter list (SP6-101), group dial list, quick dial list, and speed dial list (UP) to confirm the settings.

3. TROUBLESHOOTING

3.1 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 - Section 4
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.

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 - Section 4
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
0-16	CFR or FTT not detected after modem training in confidential or transfer mode	• Check the line connection. • Check the FCU - NCU connectors. • Replace the NCU or 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.
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
0-30	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 - Section 4
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.

Code	Meaning	Suggested Cause/Action
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.	• 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.

ERROR CODES

Code	Meaning	Suggested Cause/Action
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 or reconstruction error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
2-24	JBIG ASIC error	• Turn off the machine, then turn it back on. • Replace the EXFUNC board if the error is frequent.
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.
2-51	The machine resets itself because of a fatal communication error	• If this is frequent, update the ROM, or replace the FCU.
3-00	G4 interface board reset	• Replace the G4 interface board or FCU.
3-10	Disconnection during ISDN G3 communication	• Check the other terminal and the ISDN line. • The other terminal may have dialed a wrong number.
3-11	Disconnection during ISDN G4 communication	• Check the other terminal and the ISDN line.
3-20	A CSA signal was received during ISDN G4 communication	• The operator at the other terminal may have interrupted the communication.
3-21	A CSA signal was sent during ISDN G4 communication, because the Stop key was pressed	• The local operator has interrupted the communication.
3-30	Mismatched specifications (rx capability)	• Check the receive capabilities requested from the other terminal.
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.
4-10	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.

Code	Meaning	Suggested Cause/Action
5-00	Data construction not possible	• Replace the FCU.
5-01	Data reconstruction not possible	
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	
5-22	Mode table overflow after the second page of a scanned document	• Wait for the messages which are currently in the memory to be sent or delete some files from memory.
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 or optional EXMEM 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 or EXMEM board.
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	
6-04	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.

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.
F6-8x	SG3-V34 modem error	• Update the SG3-V34 modem ROM. • Replace the SG3-V34 board. • Check for line noise or other line problems. • Try communicating another V.8/V.34 fax.

3.2 ERROR CODES FOR THE ISDN OPTION

The tables on the following pages show the error codes for the ISDN option.

The meaning of the numbers in the Action column is as follows.

1. Check Layer 1 signaling with a protocol analyzer to determine the cause of the problem. This may require assistance from a G4 specialist.
2. Repeat the communication. If the problem does not repeat itself, the problem was a temporary one caused by the user connecting the machine to another interface. However, if the problem remains, there is a network problem.
3. There is a network problem.
4. There is a network problem. Do the following:
   - Check the error bit rate of the network. If it is high, contact the network and ask them to improve the line.
   - Check the network speed (is it 56 or 64 kbps), and make sure that the bit switch setting is correct. You may also use the dedicated transmission parameters if this problem only occurs when dialing certain numbers.
   - Check that the user dialed the correct number.
5. There is a network problem, or a problem in the machine at the other end.
6. There is a problem in the machine at the other end; ask a technician to check it.
7. The machine at the other end is not a Group 4 fax terminal.
8. The machine is not compatible with the machine at the other end. A compatibility test is needed.

Error codes related to the errors detected by the FCU are listed in the service manual of the main body.

3.2.1 D-CHANNEL LAYER MANAGEMENT

Code	Probable Cause	Action
7-00	Link reset	2
7-01	Link set-up failed because of time-out.	2
7-02	Link release failed because of time-out.	2
7-03	Link set-up parameter error	2

3.2.2 D-CHANNEL, LAYER 1

Code	Probable Cause	Action
7-10	T3 timeout (layer 1 activation error)	1
7-11	No connection on the S0 interface	1
7-12	Deactivated	1

3.2.3 D-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-20	At the start of link set-up, the machine received an unsolicited S (F=1).	2
7-21	At the start of link set-up, the machine received an unsolicited DM (F=1).	2
7-22	At TEI release, the machine received an unsolicited UA (F=1).	2
7-23	At the start of link set-up, the machine received an unsolicited DM (F=0).	2
7-24	At TEI release, the machine received an unsolicited UA (F=0).	2
7-25	SABME received at the start of network link set-up	No error
7-26	N200 retransmission error for SABME	2
7-27	N200 retransmission error for DISC	2
7-28	N200 retransmission error for situation enquiry (RR)	2
7-29	N(R) sequence number error	3
7-30	N(S) sequence number error	3
7-31	FRMR received	3
7-32	Non-standard frame received	3
7-33	Abnormal frame length	3
7-34	N201 error; information field N in the I frame exceeded N201	3
7-35	T201 timeout; timeout while waiting for checking	3
7-36	T202 timeout; timeout while waiting for ID assignment	3

3.2.4 D-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-40	Insufficient mandatory information elements	3
7-41	Abnormal LI for a mandatory information element	3
7-42	T301 timeout; timeout while waiting for R:CONN	3
7-43	T303 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-44	T304 timeout; timeout while waiting for R: CALL-PROC etc.	3
7-45	T305 timeout; timeout while waiting for R:REL	3
7-46	T308 timeout; timeout while waiting for R:REL-COMP	3
7-47	T310 timeout; timeout while waiting for R: ALERT etc.	3
7-48	T313 timeout; timeout while waiting for R:CONN-ACK	3
7-49	Internal error	3
7-51	Release call reference during communication	3

3.2.5 B-CHANNEL LINK LAYER

Code	Probable Cause	Action
7-60	T3 timeout; timeout while waiting for flag	4
7-61	T3 timeout; timeout while waiting for SABM during an incoming call	4
7-62	T1 timeout x N2; timeout while waiting for UA after sending SABM	5
7-63	T1 timeout x N2; timeout while waiting for a response to a transmitted S frame (P=1)	5
7-64	T1 timeout x N2; timeout while waiting for SABM or DISC after sending FRMR	5
7-65	T1 timeout x N2; timeout while waiting for a response to DISC	5
7-66	RNR x N2 (other end busy, RCB counter error)	5
7-67	Invalid (Ad) frame received	5
7-68	Invalid short frame received	5
7-69	Link reset error	5
7-70	FRMR received	5
7-71	Non-standard (Cn) frame received	5
7-72	An S or U frame having an information field was received	5
7-73	A frame longer than the maximum N1 length was received	5
7-74	An S or I frame having an N(R) error was received	5
7-75	CRC error	3

3.2.6 B-CHANNEL NETWORK LAYER

Code	Probable Cause	Action
7-80	A packet having an abnormal GFI was received	6
7-81	A packet was received that had a logical channel number different from the logical channel being used for the communication	6
7-82	A packet containing a format error was received	6
7-83	A packet containing an LI error was received	7
7-84	A CN packet was received that had a PID different from 02	7
7-85	Unsupported packet type received	7
7-86	Abnormal or unsupported facility received	7
7-87	P(s) sequence number error	6
7-88	P(r) sequence number error	6
7-89	A reset using S:RQ or R:RI occurred	6
7-90	A restart using S:RQ or R:SI occurred	6
7-91	Call set-up error; in reply to S:CR, R:CI was received to indicate rejection of the call	7
7-92	T20 timeout; timeout while waiting for an SF packet	6
7-93	T21 timeout; timeout while waiting for a CC packet	6
7-94	T22 timeout; timeout while waiting for an RF packet	6
7-95	T23 timeout; timeout while waiting for a CF packet	6
7-96	T10 timeout; timeout while waiting for the first frame	6

3.2.7 TRANSPORT LAYER

Code	Probable Cause	Action
8-00	Invalid block received	8
8-01	TCC block received	8
8-02	TBR block received	8
8-05	TCR block; block format error	8
8-06	TCR block; block size parameter LI error	8
8-07	TCR block; extended addressing LI error	8
8-08	TCR block; block size length error	8
8-10	TCA block; block format error	8
8-11	TCA block; Tx origin reference data in TCR disagreed with the address reference data in TCA	8
8-12	TCA block; octet 7 did not equal 0	8
8-13	TCA block; extended addressing LI error	8
8-14	TCA block; block size exceeded that set by TCR	8
8-15	TCA block; block size parameter LI error	8
8-20	TDT block; block format error	8
8-21	TDT block; octet 3 did not equal either 00 or 80(H)	8
8-22	TDT block; the end indicator was “Continue” even though there was no field data	8
8-23	TDT block; an end block with no field data was received after an end indicator of “End”	8
8-26	Timeout during state 0.2	8
8-27	Timeout during state 1.1	8
8-28	Timeout during state 0.3	8

3.2.8 SESSION LAYER

Code	Probable Cause	Action
8-30	Invalid frame received	8
8-31	RSSN received	8
8-32	CSA received	8
8-34	Calling terminal identification error in CSS	8
8-35	Date and time error in CSS	8
8-36	Window size error in CSS	8
8-37	Service identification error in CSS	8
8-38	Session user data error in CSS	8
8-39	CSS rejected (new session rejected)	8
8-40	Called terminal identification error in RSSP	8
8-41	Date and time error in RSSP	8
8-42	Date and time in RSSP was not the same as that in CSS	8
8-43	Window size error in RSSP	8
8-44	Service identification error in RSSP	8
8-45	Session user data error in RSSP	8
8-47	Message synchronization error inside the CCU	8
8-48	Document task busy	8
8-50	Ti timeout; non-communication surveillance timer (T.62)	8
8-51	T2 timeout; timeout while waiting for a response (T.62)	8
8-52	T3 timeout; CSA timer timeout (T.62)	8
8-53	G4 board load timer timeout; calling side waited too long for a new session	8
8-54	G4 board load timer timeout; calling side waited too long for transport probability	8
8-55	G4 board load timer timeout; called side waited too long for S:RSSP	8
8-56	G4 board load timer timeout; document transmission surveillance timer timeout	8
8-57	G4 board load timer timeout; timeout while waiting for a user abort request after a provider fail	8

3.2.9 DOCUMENT LAYER

Code	Probable Cause	Action
8-60	T.62 coding format error (LI error)	8
8-61	A mandatory PI was absent, or the LI for a mandatory PI was 0	8
8-62	Calling/called terminal identification LI was different from that specified by F.184 (LI = 24)	8
8-63	The LI for session user data exceeded the maximum value (512)	8
8-64	The LI for CDUI was not 0	8
8-65	Checkpoint and document reference numbers LI error, or they were not in T.61 (ASCII) coding	8
8-66	The checkpoint reference number differed from the expected value	8
8-70	RDGR received	8
8-71	A non-standard PDU was received while in calling mode	8
8-72	A non-standard PDU was received while in called mode	8
8-73	Abnormal PDU received while in calling state ds1	8
8-74	15 consecutive CDCL signals received	8
8-75	Session window size control error (size not equal to 0)	8
8-76	Internal error	8

3.2.10 PRESENTATION LAYER

Code	Probable Cause	Action
8-80	X.209 coding error in session user data (LI error)	8
8-81	PV error in session user data	8
8-82	PI error in session user data	8
8-83	The capabilities in the session user data of CDS/CDC were not the same as those in RDCLP	8
8-84	X.209 coding error in the DP (LI error)	8
8-85	X.209 coding error in the SLD (document descriptor/page descriptor) (LI error)	8
8-86	SLD object type absent	8
8-87	PI error in the SLD (document descriptor/page descriptor)	8
8-88	The capabilities in the SLD (document descriptor/page descriptor) are duplicated or are not the same as those in RDCLP	8
8-89	No document descriptor at the start of the document	8
8-90	No page descriptor at the start of the page	8
8-91	Page descriptor PV error	8
8-92	X.209 coding error in the TU (LI error)	8
8-93	The TU was absent	8
8-94	PV error in the TU	8
8-95	TI error	8
8-96	X.209 coding nest level >> 8, or an LI form error	8
8-97	CDPB/CDE received while TU/TI not yet completed, or an unexpected PDU was received while analyzing an SLD	8

3.3 FAX SC CODES

3.3.1 OVERVIEW

When the FCU detects a Fax SC Code condition other than SC1201 and SC1207, it resets itself automatically (default setting). This initializes the FCU without erasing files in the SAF memory or resetting the switches.

NOTE: For details on Fax SC Codes 1201 and 1207, refer to the following sections.

If bit 7 of System Switch 1F is changed to “1”, when the FCU detects a Fax SC Code condition, it displays the code on the display and stops working until the fax unit is initialized using one of the following methods:

- Hold down the “7” and “9” keys for more than 10 s.
- Turn off the main power switch and turn it back on.

3.3.2 SC1201

When the FCU detects an unrecoverable error in the SRAM, which requires a complete SRAM initialization, the fax unit displays this SC Code and stops. There is no way to recover from this error condition without a complete SRAM initialization (all the user and service programmed data will be erased).

The possible causes are:

- SRAM backup battery defect, or SW1 on the MBU is at the “OFF” position
- The SRAM on the MBU has a physical defect
- Flash memory card connection was loose

3.3.3 SC1207

This is the same as SC1201 except the error location is the SRAM on the Fax Function Upgrade board.

The possible causes are:

- SRAM backup battery defect, or SW1 on the Fax Function Upgrade board is at the “OFF” position.
- SRAM on the Fax Function Upgrade board has a physical defect.
- The Fax Function Upgrade board connection was loose.

3.3.4 FAX SC CODE TABLE

SC Code	Description	Suggested Action	Sys Switch 1F bit 7 = 0	Sys Switch 1F bit 7 = 1
1001	FCU error	Initialize the fax unit. (See section 2.3.1.for the initialization procedure)	Automatic reset	SC Code display
1201	Unrecoverable FCU - SRAM error	Refer to section 2.3.2.	“Service Call” display	
1207	Unrecoverable Fax Function Upgrade - SRAM error	Refer to section 2.3.3.	“Service Call” display	
1299	Software error	Initialize the fax unit.	Automatic reset	
1305				
1310				
1311				
1312				
1401				
1405				

3.4 ISDN TEST FUNCTION

3.4.1 LEDS

There are four LEDs on the G4 board. These LEDs describe the status of the machine.

LED 1	LED 2	LED 3	LED 4

	O=ON, --=OFF			
Initial Settings				
Initial check (if the flash ROM is updated)	O	O	O	O
Handshaking with the FCU ready	O	O	--	--
Standby Mode				
Ready to communicate	--	--	--	--
Communication				
Layer 1 activated	--	--	--	O
Link setup	--	--	O	O
B channel 1 connected	--	O	O	O
B channel 2 connected	O	--	O	O

3.4.2 BACK-TO-BACK TEST

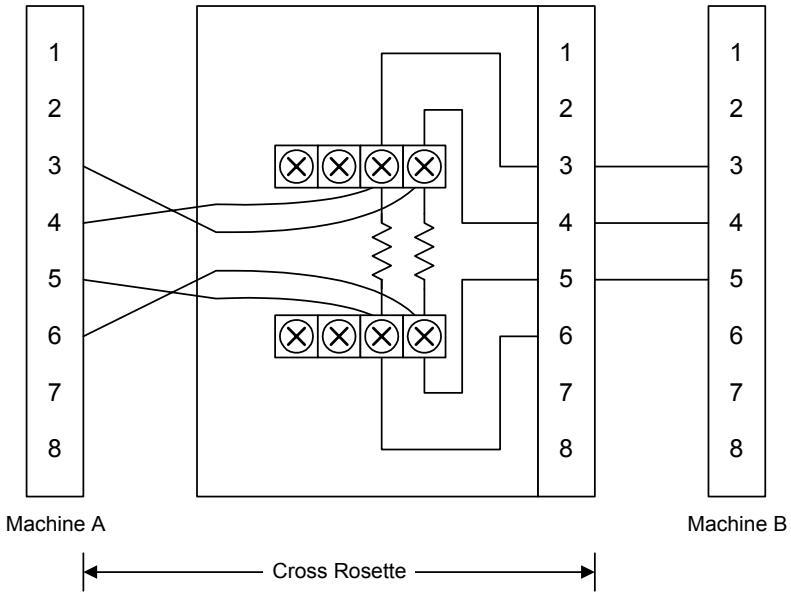
To make a back-to-back test, you need:

- Two machines, one with the CiG4 board (G4 board used in the FX4, FR4, ADAM, NAD, Stinger, and Russian) and the other with the SiG4 board (G4 board used with the Schmidt 3, S4, and Kaiser 1).
- Cross rosette

NOTE: You cannot make a back-to-back test using two SiG4 machines.

The procedure is as follows.

1. Switch off the machines
2. Connect two machines back-to-back using a cross rosette as follows.



3. Make the following bit switch adjustments:
   - In the machine acting in NT mode (CiG4 board), set bits 0 and 1 of G4 parameter switch 0D to 1.
   - In the machine acting in TE mode (SiG4 board) set bit 0 of G4 parameter switch 0D to 0 and bit 1 to 1.
4. Reset the machines by switching them off, waiting a few seconds, then switching back on.
5. Place a document in one of the machines, dial a number, then press Start.
6. After you have finished the test, set bits 0 and 1 of G4 parameter switch 0D back to 0, then reset the machine.

NOTE: The following cannot be tested using this procedure:

- ISDN G3 communication
- Point to Multi (Like a broadcasting test, from one point to many places.)

4. SERVICE TABLES

⚠CAUTION

Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation power switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.

NOTE: The main power LED (☀) lights or flashes while the platen cover or ARDF is open, while the main machine is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

4.1 SERVICE PROGRAM MODE

4.1.1 SERVICE PROGRAM MODE OPERATION

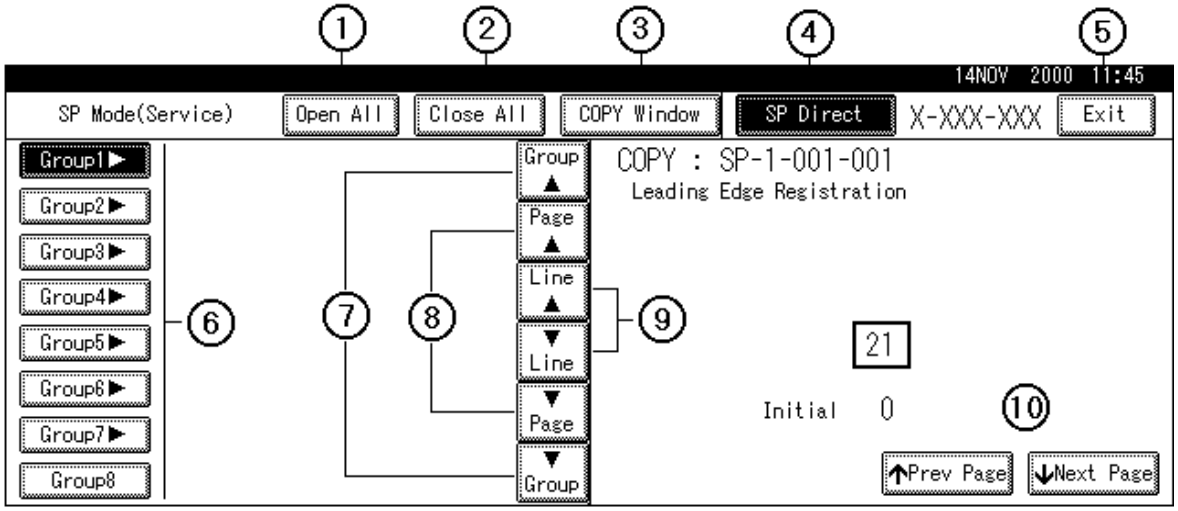
The service program (SP) mode is used to check electrical data, change modes, and adjust values.

Entering and Exiting SP Mode

Clear Mode	1. Press the Clear Mode key.
1 0 7	2. Use the keypad to enter “107”.
C/Stop	3. Hold down Clear/Stop for at least 3 seconds.
Fax SP	4. On the touch-panel, press Fax SP.
Exit	5. Press Exit twice to return to the copy window.

SP Mode Button Summary

Here is a short summary of the touch-panel buttons.



① Opens all SP groups and sublevels.

② Closes all open groups and sublevels and restores the initial SP mode display.

③ Not used for the Fax SP mode.

④ Enter the SP mode directly with the number keys if you know the SP number and then press #. (SP Mode must be highlighted before you can enter the number. Just press SP Mode if it is not highlighted.)

⑤ Press twice to leave the SP mode return to the copy window to resume normal operation.

⑥ Press any Group number to open a list of SP modes and titles for that group. For example, to open the SP mode list for SP1-nnn , press Group1. If an SP has sublevels, click the appropriate button to expand the list.

⑦ Press to scroll the display to the previous or next group.

⑧ Press to scroll to the previous or next display in segments the size of the screen display (page).

⑨ Press to scroll the display to the previous or next line, line by line.

⑩ Press to move to the highlight to the previous or next selection in the list on the left.

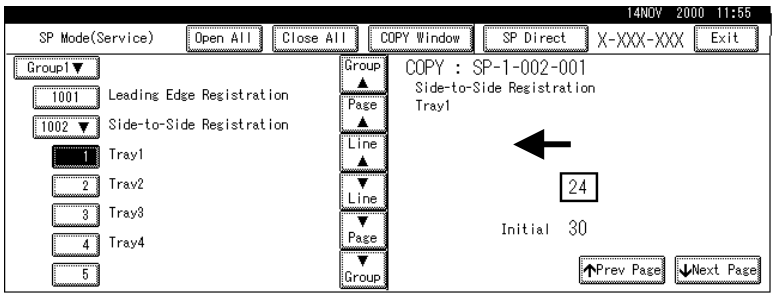
Switching Between SP Mode and Copy Mode for Test Printing

1) In the SP mode, select the test print and then press Copy Window.
2) Use the copy window (copier mode), to select the appropriate settings (paper size, etc.) for the test print.
3) Press Start ⓘ to execute the test print.
4) Press SP Mode (highlighted) to return to the SP mode screen and repeat from step 1.

Selecting the Program Number

Program numbers have two or three levels.

1. Before you begin, refer to the Service Tables to find the SP that you want to adjust. (☛ 4.1.2)
2. Click the Group number on the left side SP Mode window that contains the SP that you want to adjust.
3. Use the scrolling buttons in the center of the SP mode window to display the SP number that you want to open, and then press that number to expand the list.
4. Use the center touch-panel buttons to scroll to the number and title of the item that you want to set and press. The small entry box on the right is activated and displays the default or the current setting below.



NOTE: Refer to the Service Tables for the range of allowed settings. (☛ 4.1.2)

1. To enter a setting
   - Press ⓒ to toggle between plus and minus and then use the keypad to enter the appropriate number. The number you enter write over the previous setting.
   - Press ⓗ to enter the setting. (If you enter a number that is out of range, the key press is ignored.)
   - When you are prompted to complete the selection, press Yes.
2. When you are finished, press Exit twice to return to the copy window.

4.1.2 SERVICE PROGRAM MODE TABLES

⇒ *SP1-XXX (Bit Switches)* ☛ Section 4.2 Bit Switches

1	Mode No.		Function
101	System Switch		
	001 – 032	00 – 1F	Change the bit switches for system settings for the fax option ☛ Section 4.2 Bit Switches
102	Scanner Switch		
	001 – 016	00 – 0F	Change the bit switches for scanner settings for the fax option ☛ Section 4.2 Bit Switches
103	Printer Switch		
	001 – 016	00 – 0F	Change the bit switches for printer settings for the fax option ☛ Section 4.2 Bit Switches
104	Communication Switch		
	001 – 032	00 – 1F	Change the bit switches for communication settings for the fax option ☛ Section 4.2 Bit Switches
105	G3-1 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the standard G3 board ☛ Section 4.2 Bit Switches
106	G3-2 Switch		
	001 – 016	00 – 0F	Change the bit switches for the protocol settings of the optional G3 board ☛ Section 4.2 Bit Switches
108	G4 Internal Switch		
	001 – 032	00 – 1F	Change the bit switches for the optional ISDN settings ☛ Section 4.2 Bit Switches
109	G4 Parameter Switch		
	001 – 016	00 – 0F	Change the bit switches for optional ISDN parameters ☛ Section 4.2 Bit Switches

SP2-XXX (RAM Data)

2	Mode No.		Function
101	RAM Read/Write		
⇒	001		Change RAM data for the fax board directly. ☛ Section 4.5 Service RAM Addresses
102	Memory Dump		
	001	G3-1 Memory Dump	Print out RAM data for the fax board. ☛ Section 4.5 Service RAM Addresses
	002	G3-2 Memory Dump	Print out RAM data for the optional SG3 board.
	004	G4 Memory Dump	Print out RAM data for the SiG4 board.

2	Mode No.		Function
103	G3-1 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the standard G3 board. ☛ Section 4.3 NCU Parameters
104	G3-2 NCU Parameters		
	001 – 023	CC, 01 – 22	NCU parameter settings for the optional G3 board. ☛ Section 4.3 NCU Parameters

SP3-XXX (Tel Line Settings)

3	Mode No.		Function
101	Service Station		
	001	Fax Number	Enter the fax number of the service station.
	002	Select Line	Select the line type.
102	Serial Number		
	000		Enter the fax unit's serial number.
103	PSTN-1 Port Settings		
	001	Select Line	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)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-1 line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, turn this SP on.
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-1 line.
104	PSTN-2 Port Settings		
	001	Select Line	Select the line setting for the G3-2 line. If the machine is installed on a PABX line, select "PABX", "PABX(GND)" or "PABX(FLASH)".
	002	PSTN Access Number	Enter the PSTN access number for the G3-2 line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, change this SP to on.
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the G3-2 line.
106	ISDN Port Settings		
	001	Select Line	Select the line setting for the ISDN line. If the machine is installed to the PABX line, select "PABX".
	002	PSTN Access Number	Enter the PSTN access number for ISDN line.
	003	Memory Lock Disabled	If the customer does not want to receive transmissions using Memory Lock on this line, change this SP to on
	004	Transmission Disabled	If you turn this SP on, the machine does not send any fax messages on the ISDN line.

SP4-XXX (ROM Versions)

4	Mode No.		Function
101	001	FCU ROM Version	Displays the FCU ROM version.
102	001	Error Codes	Displays the latest 64 fax error codes.
103	001	G3-1 ROM Version	Displays the G3-1 modem version.
104	001	G3-2 ROM Version	Displays the G3-2 modem version.
106	001	G4 ROM Version	Displays the G4 (ISDN) ROM version.
107	001	Charge ROM Version	Not used.

SP5-XXX (Initializing)

5	Mode No.		Function
101	Initialize SRAM		
	000		Initializes the bit switches and user parameters, user data in the SRAM, files in the SAF memory, and clock.
102	Erase All Files		
	000		Erases all files stored in the SAF memory.
103	Reset Bit Switches		
	000		Resets the bit switches and user parameters.
104	Factory setting		
	000		Resets the bit switches and user parameters, user data in the SRAM and files in the SAF memory.
105	Delete All Speed Dials		
	001	Speed Dials Enabled	200 speed dials and 1000 quick dials are available when the Fax Function Upgrade Unit is installed.
	002	Speed Dials Disabled	1200 quick dials (but no speed dials) are available when the Fax Function Upgrade Unit is installed.

SP6-XXX (Reports)

6	Mode No.		Function
101	System Parameter List		
	000		Touch the “ON” button to print the system parameter list.
102	Service Monitor Report		
	000		Touch the “ON” button to print the service monitor report.
103	G3 Protocol Dump List		
	001	G3 All Communications	Prints the protocol dump list of all communications for all G3 lines.
	002	G3-1 (All Communications)	Prints the protocol dump list of all communications for the G3-1 line.

6	Mode No.		Function
103	003	G3-1 (1 Communication)	Prints the protocol dump list of the last communication for the G3-1 line.
	004	G3-2 (All Communications)	Prints the protocol dump list of all communications for the G3-2 line.
	005	G3-2 (1 Communication)	Prints the protocol dump list of the last communication for the G3-2 line.
104	G4 Protocol Dump List		
	001	Dch + Bch 1	Prints the protocol dump lists for the G4 line.
	002	Dch	
	003	Bch 1 Link Layer	
	004	Dch Link Layer	
	005	Dch +Bch 2	
	006	Bch 2 Link Layer	
105	All Files print out		
	000		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.
107	Log List Print out		
	001	All log files	These log print out functions are for designer use only.
	002	Printer	
	003	SC/TRAP Stored	
	004	Decompression	
	005	Scanner	
	006	JOB/SAF	
	007	Reconstruction	
	008	JBIG	
	009	Fax Driver	
	010	G3CCU	
	011	Fax Job	
	012	CCU	
	013	Scanner Condition	

SP7-XXX (Test Modes)

These are the test modes for PTT approval.

7	Function
101	G3-1 Modem Tests
102	G3-1 DTMF Tests
103	Ringer Test
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	Recorded Message Test
110	G3-2 Modem Tests
111	G3-2 DTMF Tests
112	G3-2 V34 (S2400baud)
113	G3-2 V34 (S2800baud)
114	G3-2 V34 (S3000baud)
115	G3-2 V34 (S3200baud)
116	G3-2 V34 (S3429baud)
124	IG3-1 Modem Tests
125	IG3-1 DTMF Tests
126	IG3-1 V34 (S2400baud)
127	IG3-1 V34 (S2800baud)
128	IG3-1 V34 (S3000baud)
129	IG3-1 V34 (S3200baud)
130	IG3-1 V34 (S3429baud)
131	IG3-2 Modem Tests
132	IG3-2 DTMF Tests
133	IG3-2 V34 (S2400baud)
134	IG3-2 V34 (S2800baud)
135	IG3-2 V34 (S3000baud)
136	IG3-2 V34 (S3200baud)
137	IG3-2 V34 (S3429baud)

4.2 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 areas, 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.

4.2.1 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	Confidential RX message print out without the password. **0:** Disabled **1:** Enabled	**1**: Confidential RX messages can be printed out without the password. Use this bit if the customer forgot the password for the confidential messages. Reset this bit to 0 after printing confidential RX messages.
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 01 00** 03 04 The four-digit hexadecimal value (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 the above example, the decimal value of N (= 0100 [H]) is 256. So, the actual rx level is 256/-16 = -16 dB	
3-4	Not used	Do not change the settings.
5	G3/G4 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.

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.

G4 Communication Parameters

Compression mode	MMR: MMR compression MR: MR compression MH: MH compression
Resolution	21: Standard (200 x 100 dpi) 22: Detail (200 x 200 dpi) 44: Superfine (400 x 400 dpi)
Width and reduction	A4: A4 (8.3"), no reduction B4: B4 (10.1"), no reduction A3: A3 (11.7"), no reduction
Transfer	T: Transfer - : Other
Confidential	C: Confidential - : Other
Other parameters	The following information is shown in 6-bit format. Bit 1 is the first bit from the left, and bit 6 is at the right end. Bit 1 - Smoothing 0: Off, 1: On (Smoothing is disabled in halftone mode.) Bit 2 - CIL printing 0: On, 1: Off Bit 3 - Not used Bit 4 - mm/inch conversion 0: Off, 1: On Bit 5 - Engine type 0: mm, 1: inches Bit 6 - Document resolution unit 0: mm, 1: inches

System Switch 01 - Not used (Do not change the factory settings.)

System Switch 02		**SP No. 1-101-003**
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	File retention time **0:** Depends on User Parameter 24 [18(H)] **1:** No limit	**1:** A file that had a communication error will not be erased unless the communication is successful.
5	Not used	Do not change the settings.

BIT SWITCHES

System Switch 02		SP No. 1-101-003
No	**FUNCTION**	**COMMENTS**
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. 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/Speed Dial Lists **0:** Disabled **1:** Enabled	**1:** Each Quick/Speed 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		SP No. 1-101-007
No	**FUNCTION**	**COMMENTS**
0 **to** **7**	Margin setting for Create Margin Transmission	71 to 99 (BCD) %. This setting determines the reduction ratio when the user uses the Create Margin Transmission feature. Default setting:1001 0011 (93%)

System Switch 07 - Not used (Do not change the factory settings.)
System Switch 08 - Not used (Do not change the factory settings.)

System Switch 09		SP No. 1-101-010
No	**FUNCTION**	**COMMENTS**
0	Addition of image data from confidential transmissions on the transmission result report **0:** Disabled **1:** Enabled	If this feature is enabled, the top half of the first page of confidential messages will be printed on transmission result reports.
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 settings.
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. In G4 communication, G4_TID (Terminal ID) is used instead of RTI or CSI. **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**
0-2	Not used	Do not change the settings.
3	Continuous polling reception **0:** Disabled **1:** Enabled	This feature allows a series of stations to be polled in a continuous cycle. This will continue until the polling reception file is erased. The dialing interval is the same as memory transmission.
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	Line used for G3 transmission **0:** PSTN **1:** ISDN	If an ISDN unit has been installed, this bit determines whether G3 transmissions go out over the PSTN or the ISDN.
7	Line used when the machine falls back to G3 from G4 if the other end is not a G4 machine **0:** PSTN **1:** ISDN	This bit switch has no effect if Communication Switch 07 bit 0 is set to 0.

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: SP No. 2-103-001 for G3-1 SP No. 2-104-001 for G3-2

System Switch 10		SP No. 1-101-017
No	**FUNCTION**	**COMMENTS**
0 to 7	Threshold memory level for parallel memory transmission	Threshold = N x 128 KB + 256 KB N can be between 00 - FF(H) Default setting: 02(H) = 512 KB

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	TSI (G3) or CIL/TID (G4) printing position **0:** Superimposed on the page data **1:** Printed before the data leading edge	Change this bit to 1 if the TSI (G3) or CIL/TID (G4) overprints information that the customer considers to be important. CIL: Command Information Line (Group 4)
2	Not used	Do not change the factory settings.
3	TTI used for broadcasting **0:** The TTIs selected for each Quick/Speed dial are used **1:** The same TTI is used for all destinations	**1:** The TTI (TTI_1 or TTI_2) which is selected for all destinations during broadcasting.

BIT SWITCHES

System Switch 11		SP No. 1-101-018
No	**FUNCTION**	**COMMENTS**
4	Type of TTI used for transmission using the ten-key pad **0:** TTI_1 **1:** TTI_2	**1:** The machine uses TTI_2 when the user dials the destination using the ten-key pad. It is also used for polling transmission and manual transmission using the handset.
5-6	Not used	Do not change the factory settings.
7	Use of parallel memory transmission with G4 transmission **0:** Disabled **1:** Enabled	This determines whether parallel transmission can be used with a G4 transmission or not. Note that this bit is only effective if Parallel Memory transmission is enabled (User Parameter 07 - bit 2).

System Switch 12		SP No. 1-101-019
No	**FUNCTION**	**COMMENTS**
0 to 7	TTI/CIL printing position in the main scan direction	TTI/CIL: 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. On an A4 page, if the CIL is moved over by more than 50 mm, it may overwrite the page number.

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 settings.
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	Interval for preventing the machine from entering Energy Saver mode if there is a pending transmission file. **Bit 5 4 Setting** 0 0 1 min 0 1 30 min 1 0 1 hour 1 1 24 hours	If there is a file waiting for transmission, the machine does not go to Energy Saver mode during the selected period. After transmitting the file, if there is no file waiting for transmission, the machine goes to the Energy Saver mode.
6	Print user codes on reports. **0**: Disabled **1**: Enabled	**1:** User codes are printed out on the Journal or other reports.
7	Not used	Do not change the settings.

System Switch 16		SP No. 1-101-023
No	**FUNCTION**	**COMMENTS**
0	Parallel Broadcasting **0**: Disabled **1**: Enabled	**1:** When the G4 or/and G3 unit is installed, the machine sends messages simultaneously using both available ports (PSTN/ISDN) during broadcasting.
1	Priority setting for the G3 line. **0**: PSTN-1 > PSTN-2 **1**: PSTN-2 > PSTN-1	This function allows the user to select the default G3 line type. The optional SG3 unit is required to use the PSTN-2 setting.
2	Changing the I-G3 modem default. **0**: PSTN-1 **1**: PSTN-2	This function allows the user to select the default I-G3 modem. The optional SG3 unit and ISDN unit are required to use the PSTN-2 setting.
3	Line used for I-G3 transmissions **0**: Allowed to change **1**: Fixed	**0**: The machine will place priority on the line selected by the above bit 2 for I-G3 transmissions. **1**: The machine will always use the line selected by the above bit 2 for I-G3 transmissions.
4-7	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)

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System Switch 19		SP No. 1-101-026
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings.
4	Job Numbers for standby **0:** 64 1: Depends on memory (400:standard, 800: with Fax Function Upgrade Unit)	Job numbers for standby for FAX transmission by LAN FAX (P/C FAX) are limited as follows: **0:** 64 1: Depends on memory (400:standard, 800: with Fax Function Upgrade Unit)
5	Not used	Do not change the settings.
6	Extended scanner page memory after memory option is installed **0:** Disabled **1:** Enabled	0: After installing the memory expansion option, the scanner page memory is extended to 4 MB from 2 MB. 1: If this bit is set to 1 after installing the memory expansion option, the scanner page memory is extended to 12 MB. But the SAF memory decreases to 18 MB.
7	Special Original mode **0:** Disabled **1:** Enabled	**1:** If the customer frequently wishes to transmit a form or letterhead which has a colored or printed background, change this bit to “1”. “Original 1” and “Original 2” can be selected in addition to the “Text”, “Text/Photo” and “Photo” modes.

System Switch 1A - Not used (do not change the settings)
System Switch 1B - Not used (do not change the settings)
System Switch 1C - Not used (do not change the settings)

System Switch 1D		SP No. 1-101-030
No	**FUNCTION**	**COMMENTS**
0	RTI/CSI/CPS display **0:** Disabled **1:** Enabled	**1:** RTI/CSI/CPS 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)”.

System Switch 1E		SP No. 1-101-031
No	**FUNCTION**	**COMMENTS**
5	Address display priority in the AI redial mode **0:** RTI/CSI **1:** Telephone number	**0:** When the machine has both RTI/CSI and the telephone number information, the machine displays RTI/CSI. **1:** The machine always displays the telephone number.
6	Not used	Do not change the settings
7	RAM initialization after the optional Function Upgrade unit is installed or removed **0:** Enabled **1:** Disabled	When the machine detects that a Function Upgrade unit has been installed or removed, the machine shows the following message on the display for the customer. *"Adding/Removing FAX Feature Expander causes data loss. Turn Main Power Switch off and remove/replace it to avoid loss. To continue, press Yes."* If Yes is pressed, the machine initializes the RAM to the "with" or "without card" configuration. However, changing this bit to "1" disables this initialization, even if Yes is pressed. Change this bit to 1 after installing the Function Upgrade unit. **0:** When the above message is displayed, the machine initializes the RAM if Yes is pressed. The amount of data lost depends on whether the board is in or out. To avoid losing data, the user must switch off immediately and put the Function Upgrade unit back in. **1:** When the above message is displayed, the machine does not initialize the RAM even if Yes is pressed. However, the fax unit cannot be used until the user switches off, puts the Function Upgrade unit back in, then switches back on. No data is lost.

System Switch 1F		SP No. 1-101-032
No	**FUNCTION**	**COMMENTS**
0	Not used	Do not change the settings.
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 settings.
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	Received fax print start timing (G4 reception) **0:** After receiving each page **1:** After receiving all pages	
5-6	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 and SC1207, 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"

4.2.2 SCANNER SWITCHES

Scanner Switch 00 - Not used (do not change the settings)

Scanner Switch 01		**SP No. 1-102-002**
No	**FUNCTION**	**COMMENTS**
0-7	Scan density step value (Text mode)	When scan density is adjusted manually away from the Normal setting, the threshold value for binary picture processing changes for each step from the value specified by Scanner Switch 02, by the amount programmed here. For example, with the default setting (14), the threshold value changes as follows. +3 (Darkest) : 71 (= 85 – 14) +2 : 85 (= 99 – 14) +1 : 99 (= 113 – 14) 0 (Normal) : 113 (Scanner Switch 02 setting) -1 : 127 (= 113 + 14) -2 : 141 (= 127 + 14) -3 (Lightest) : 155 (= 141 + 14) For smaller steps, input a lower value.

Scanner Switch 02		**SP No. 1-102-003**
No	**FUNCTION**	**COMMENTS**
0-7	Binary picture processing: Threshold for Text mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in Text mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 71(H) = 113(D)

Scanner Switch 03 - Not used (do not change the settings)

Scanner Switch 04		**SP No. 1-102-005**
No	**FUNCTION**	**COMMENTS**
0-7	Binary picture processing: Threshold for monotone background special original 1 mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in monotone background special original 1 mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: A4(H) = 164(D)

Scanner Switch 05		SP No. 1-102-006
No	**FUNCTION**	**COMMENTS**
0-7	Binary picture processing: Threshold for colored background special original 2 mode - Normal setting (center position)	This setting determines the threshold value for binary picture processing in colored background special original 2 mode (when the scan density setting is at the center). The value can be between 01 and FF. For a darker threshold, input a lower value. Default setting: 28(H) = 40(D)

Scanner Switch 06		SP No. 1-102-007
No	**FUNCTION**	**COMMENTS**
0 to 3	MTF filter level (Text mode) The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 7 This setting is independent from the threshold specified by the copier SP modes.	
4 to 7	MTF filter level (Text/Photo mode) The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 7 This setting is independent from the threshold specified by the copier SP modes.	

Scanner Switch 07		SP No. 1-102-008
No	**FUNCTION**	**COMMENTS**
0 to 2	Smoothing filter level (Photo mode)	The value can be between 0(Off) and 7. For a weaker threshold, input a lower value. Default setting: 2 This setting is independent from the threshold setting specified by the copier SP modes.
3-7	Not used	Do not change the settings.

Scanner Switch 08 - Not used (do not change the settings)
Scanner Switch 09 - Not used (do not change the settings)

Scanner Switch 0A		SP No. 1-102-011
No	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change the settings
4-7	MTF filter level (Color mode) The value can be between 0(Off) and F. For a weaker threshold, input a lower value. Default setting: 7 This setting is independent from the threshold specified by the copier SP modes.	

Scanner Switch 0B		SP No. 1-102-012
No	**FUNCTION**	**COMMENTS**
0-3	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	
4-7	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	

Scanner Switch 0C		SP No. 1-102-013
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 to 2	Setting when an original size cannot be recognized **Bit 2 1 Setting** 0 0 No original 0 1 A5 ▯ 1 0 A5 ▭ 1 1 No original	
3-5	Not used	Do not change the settings.
6	Scan width used for a document set in the ADF when the width is less than 230 mm. **0**: A4 (210 mm) **1**: LT (216 mm)	This bit is set at “1” when the country code is set to the US.
7	Not used	Do not change the settings.

Scanner Switch 0D		SP No. 1-102-014
No	**FUNCTION**	**COMMENTS**
0-6	Not used	Do not change the settings.
7	Scan width for A5 lengthwise or B5 lengthwise originals **0:** 210 mm (8.5") **1:** Original width	**0:** The machine scans the original as 210 mm (8.5") width. The transmitted image has a blank area on the right. **1:** The machine scans 148 mm (A5) or 182 mm (B5) and centers the scanned data on a 216 mm width transmitted image.

Scanner Switch 0E		SP No. 1-102-015
No	**FUNCTION**	**COMMENTS**
0	Wait time for the next page when scanning a book original into memory **0:** 60 s **1:** 30 s	This bit determines how long the machine waits for the next page when scanning a book original for memory transmission. If this timer expires, the machine transmits all the pages scanned so far as one document. **Note:** In immediate tx or parallel memory tx, the wait time for the next page is 10 s.
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	ADF jam alarm display time **0:** 60 s **1:** 30 s	The bit is only effective when bit 0 of scanner bit switch 0C is "0". This bit determines how long the machine displays the ADF jam alarm after a jam occurred.
3-7	Not used	Do not change the settings.

Scanner Switch 0F		SP No. 1-102-016
No	**FUNCTION**	**COMMENTS**
0	Image rotation before transmission (A4/LT sideways) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at 1, A4 (LT) sideways images (297 mm width in the protocol) will be transmitted as A4 (LT) lengthwise images (216 mm width in the protocol).
1	Not used	Do not change the settings
2	Image rotation before transmission (A5/HLT lengthwise) **0:** Disabled **1:** Enabled	This bit determines whether the machine rotates the scanned image by 90 degrees before transmission. If this bit is set at "1", A5 (HLT) lengthwise images will be transmitted as A4 (LT) width images (216 mm width in the protocol).
3-7	Not used	Do not change the settings.

4.2.3 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		SP No. 1-103-002
No	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change the settings.
3-4	Maximum print width used in the setup protocol **Bit 4 3 Setting** 0 0 Not used 0 1 A3 1 0 B4 1 1 A4	These bits are only effective when bit 7 of printer switch 01 is “1”.
5-6	Not used	Do not change the settings.
7	Received message width restriction in the protocol signal to the sender **0:** Disabled **1:** Enabled	**0:** The machine informs the transmitting machine of the print width depending on the paper size available from the paper feed stations. Refer to the table on the next page for how the machine chooses the paper width used in the setup protocol (NSF/DIS). **1:** The machine informs the transmitting machine of the fixed paper width which is specified by bits 3 and 4 above.

Relationship between available paper sizes and printer width used in the setup protocol

Available Paper Size	Printer 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

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. **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.
1	2nd paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
2	3rd paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
3	4th paper feed station usage for fax printing **0:** Enabled **1:** Disabled	
4	LCT usage for fax printing **0:** Enabled **1:** Disabled	
5-7	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) 0 0 1 1 and so on until F 15 Default setting: 6 mm **Cross reference** Length reduction On/Off: Printer Switch 03, Bit 0	

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. <Maximum reducible length> = <Paper length> + (N x 5mm) “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 <Maximum reducible length> = <Paper length> + 0.75 x (N x 5mm)	
5 6	Length of the duplicated image on the next page, when page separation has taken place. $\binom{0}{0}$=4 mm $\binom{1}{0}$=10 mm $\binom{0}{1}$=15 mm $\binom{1}{1}$=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	Reduction for Journal printing **0:** Off **1:** On	**1:** The Journal is reduced to 91% to ensure that there is enough space in the left margin for punch holes or staples.
2-3	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.

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** 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.
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 **Bit 1 Bit 0 Setting** 0 0 Disabled 0 1 Disabled 1 0 Enabled 1 1 Not used	**(0, 0) (0, 1):** Disable smoothing if the machine receives halftone images from other manufacturers fax machines frequently.
2	Duplex printing **0:** Disabled **1:** Enabled	**1:** The machine always prints received fax messages in duplex printing mode:
3	Binding direction for Duplex printing **0:** Left binding **1:** Top binding	
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.

4.2.4 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 settings.
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	Closed network (reception) **0:** Disabled **1:** Enabled	**1:** Reception will not go ahead if the ID code of the other terminal does not match the ID code of this terminal. This function is only available in NSF/NSS mode.

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	Not used	Do not change the setting.
2 to 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.
4-5	Not used	Do not change the setting.
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. **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.

Communication Switch 02		SP No. 1-104-003
No	**FUNCTION**	**COMMENTS**
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		SP No. 1-104-008
No	**FUNCTION**	**COMMENTS**
0	Fallback from G4 to G3 if the other terminal is not a G4 terminal **0:** Disabled **1:** Enabled	Also see system switch 0A bit 7. Refer to G4 Internal Switches 17, 18, 1A, 1B, and 1C for the CPS code set (Cause Value set) that determines G4 to G3 fallback.
1	Not used	Do not change the setting.
2	Not used	Do not change the setting.
3	Fallback from G4 to G3 reflected in programmed Quick/Speed dials **0:** Fallback enabled **1:** Always start with G4	**0:** If a communication falls back from G4 to G3, the machine will always start transmission with G3 from the next communication. **1:** The machine will always start to transmit with G4.
4	Fallback from G4 to G3 when G4 communication fails on the ISDN B-channel **0:** Fallback disabled **1:** Fallback enabled	**1:** Enable this switch only when G4 communication errors occur because the exchanger connects G4 calls to the PSTN. This problem occurs with some types of exchanger.
5	Not used	Do not change the setting.
6	Not used	Do not change the setting.
7	Not used	Do not change the setting.

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.
1-6	Not used	Do not change the settings.
7	Emergency calls using 999 **0:** Enabled **1:** Disabled	If this bit is at 1, the machine will not allow you to dial 999 at the auto-dialer. This is a PTT requirement in the Hong Kong.

Communication Switch 0B		**SP No. 1-104-012**
No	**FUNCTION**	**COMMENTS**
0	Use of Economy Transmission during a Transfer operation to end receivers **0:** Disabled **1:** Enabled	These bits determine whether the machine uses the Economy Transmission feature when it is carrying out a Transfer operation as a Transfer Station.
1	Use of Economy Transmission during a Transfer operation to the Next Transfer Stations **0:** Disabled **1:** Enabled	
2	Use of Label Insertion for the End Receivers in a Transfer operation **0:** Disabled **1:** Enabled	This bit determines whether the machine uses the Label Insertion feature when it is carrying out a Transfer operation as a Transfer Station.
3	Conditions required for Transfer Result Report transmission **0:** Always transmitted **1:** Only transmitted if there was an error	**0:** When acting as a Transfer Station, the machine will always send a Transfer Result Report back to the Requesting Station after completing the Transfer Request, even if there were no problems. **1:** The machine will only send back a Transfer Result Report if there were errors during communication, meaning one or more of the End Receivers could not be contacted.
4	Printout of the message when acting as a Transfer Station **0:** Disabled **1:** Enabled	When the machine is acting as a Transfer Station, this bit determines whether the machine prints the fax message coming in from the Requesting Terminal.

Communication Switch 0B		SP No. 1-104-012
No	**FUNCTION**	**COMMENTS**
5	Action when there is no fax number in the programmed Quick/Speed dials which meets the requesting terminal's own fax number **0:** Transfer is disabled **1:** Transfer is enabled	After the machine receives a transfer request, the machine compares the last N digits of the requesting terminal's own fax number with all the Quick/Speed dials programmed in the machine. (N is the number programmed in communication switch 0C.) **0:** If there is no matching number programmed in the machine, the machine rejects the transfer request. **1:** Even if there is no matching number programmed in the machine, the machine accepts the transfer request. The result report will be printed at the transfer terminal, but will not be sent back to the requesting terminal.
6-7	Not used	Do not change the settings.

Communication Switch 0C		SP No. 1-104-013
No	**FUNCTION**	**COMMENTS**
0 to 4	Number of digits compared to find the requester's fax number from the programmed Quick/Speed Dials when acting as a Transfer Station	00 - 1F (0 to 31 digits) After the machine receives a transfer request, the machine compares the own telephone number sent from the Requesting Terminal with all Quick/Speed Dials programmed in the machine, starting from Quick Dial 01 to the end of the Speed Dials. This number determines how many digits from the end of the telephone numbers the machine compares. If it is set to 00, the machine will send the report to the first Quick/Speed Dial that the machine compared. If Quick Dial 01 is programmed, the machine will send the report to Quick 01. If Quick Dial 01 through 04 are not programmed and Quick Dial 05 is programmed, the machine will send the report to Quick 05. Default setting - 05(H) = 5 digits
5-7	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 **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).

Communication Switch 15 - Not used (do not change the settings)

Communication Switch 16		SP No. 1-104-023
No	**FUNCTION**	**COMMENTS**
0	Standard G3 unit **0:** Disabled **1:** Enabled	Set this bit to 0 if the user wants to use only the ISDN line (option G4 unit), even for G3 communications. However, for ISDN on hook dialing, bit 7 of user parameter 30 must be set to 1. **Note:** If the optional G4 unit is not installed, but this bit is changed to 'disabled', no document can be transmitted.
1	Optional G3 unit (G3-2) **0:** Not installed **1:** Installed	Change this bit to 1 when installing the first optional G3 unit.
2	Optional ISDN unit **0:** Not installed **1:** Installed	Change this bit to 1 when installing the optional ISDN unit.
3-5	Not used	Do not change the settings.
6	Use of the I-G3 line **0:** Tx or rx **1:** Tx only	Change this bit to 1 when the customer requires.

Communication Switch 16		SP No. 1-104-023
No	**FUNCTION**	**COMMENTS**
7	G4 Dual communication **0:** Enabled **1:** Disabled	**1:** The machine uses only one B channel for communication. This enables a customer to occupy another B channel for other purposes such as internet communication.

Communication Switch 17		SP No. 1-104-024
No	**FUNCTION**	**COMMENTS**
0	SEP reception **0:** Disabled **1:** Enabled	**0:** Polling transmission to another maker's machine using the SEP (Selective Polling) signal is disabled.
1	SUB reception **0:** Disabled **1:** Enabled	**0:** Confidential reception to another maker's machine using the SUB (Sub-address) signal is disabled.
2	PWD reception **0:** Disabled **1:** Enabled	**0:** Disables features that require PWD (Password) signal reception.
3-6	Not used	Do not change the settings.
7	Action when there is no box with an F-code that matches the received SUB code **0:** Disconnect the line **1:** Receive the message (using normal reception mode)	Change this setting when the customer requires.

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.)

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 1B. **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)

4.2.5 G3 SWITCHES

G3 Switch 00		SP No. 1-105-001
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 settings.

G3 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 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.

G3 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	V.8 protocol in manual reception **0:** Disabled **1:** Enabled	**0:** The machine sends CED instead of ANSam when starting a manual reception. **1:** The machine sends ANSam during manual reception.
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 (Ricoh mode) or four times (ITU-T mode). This bit is ineffective 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	V.8 protocol in manual transmission **0:** Disabled **1:** Enabled	**1:** The machine detects either ANSam or CED during manual transmission.
7	Not used	Do not change the setting.

G3 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 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.

G3 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

G3 Switch 06		SP No. 1-105-007
No	**FUNCTION**	**COMMENTS**
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 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	PSTN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “1”.
5	PSTN cable equalizer (V.34 rx mode; External)	Keep this bit at “1”.
6-7	Not used	Do not change the settings.

G3 Switch 08 - Not used (do not change the settings)

G3 Switch 09		**SP No. 1-105-010**
No	**FUNCTION**	**COMMENTS**
0 **to** **1**	ISDN 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**	ISDN 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	ISDN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
5	ISDN cable equalizer (V.34 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “0” in most cases.
6-7	Not used	Do not change the settings.

G3 Switch 0A		**SP No. 1-105-011**
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.

G3 Switch 0A		SP No. 1-105-011
No	**FUNCTION**	**COMMENTS**
2-3	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 settings.
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 settings.

G3 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	Protocol requirements: Germany **0:** Disabled **1:** Enabled	
3	Protocol requirements: France **0:** Disabled **1:** Enabled	
4	PTT requirements: Germany **0:** Disabled **1:** Enabled	
5	PTT requirements: France **0:** Disabled **1:** Enabled	
6	Not used	Do not change the settings.
7	DTS requirements : Germany **0:** Disabled **1:** Enabled	Change this bit manually if required.

G3 Switch 0C		SP No. 1-105-013
No	**FUNCTION**	**COMMENTS**
0 **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	Do not change the settings.

G3 Switch 0D		SP No. 1-105-014
No	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change the settings.
2 to 5	Data rate threshold during V.34 reception **Bit 5 4 3 2 Setting** 0 0 0 0 Normal 0 1 1 1 Lower by one step 1 1 1 1 Lower by two steps	The machine changes the modulation parameters in the MPh signal to lower the initial modem rate during V.34 reception. If this switch is set to "0111", the machine lowers the initial speed one step, for example, from 28,800 to 26,400 bps. This switch reduces transmission time if the machine frequently sends PPR signals during V.34 reception.
6	Not used	Do not change the settings.
7	B signal detection time for V.34 polling transmission **0:** 75 ms (default setting) **1:** 65 ms	Change this switch only when there are communication errors during V.34 polling transmission to a machine with a Panasonic modem.

G3 Switch 0E - Not used (do not change the settings)

G3 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.

4.2.6 G3-2 SWITCHES

These switches require an optional G3 interface unit.

G3-2 Switch 00		SP No. 1-106-001
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.
3-6	Not used	Do not change the settings.

G3-2 Switch 01		SP No. 1-106-002
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.

G3-2 Switch 02		SP No. 1-106-003
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.

G3-2 Switch 03		SP No. 1-106-004
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 settings.
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. $\sqrt{N\,\text{Transmit} \le N\text{Re}\,\text{send}}$ $N_{Transmit}$- 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 settings.
7	Not used	Do not change the settings.

G3-2 Switch 04		SP No. 1-106-005
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.

G3-2 Switch 05		SP No. 1-106-006
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 - SG3 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.

G3-2 Switch 06		SP No. 1-106-007
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 - SG3 switch 03, bit2

G3-2 Switch 06		SP No. 1-106-007
No	**FUNCTION**	**COMMENTS**
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 - SG3 switch 03, bit2

G3-2 Switch 07		SP No. 1-106-008
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	PSTN cable equalizer (V.8/V.17 rx mode: External) **0**: Disabled **1**: Enabled	Keep this bit at “1”.
5	PSTN cable equalizer (V.34 rx mode; External)	Keep this bit at “1”.
6-7	Not used	Do not change the settings.

G3-2 Switch 08 - Not used (do not change the settings)
G3-2 Switch 09 - Not used (do not change the settings)

G3-2 Switch 0A		**SP No. 1-106-011**
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.
2-3	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 settings.
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 settings.

G3-2 Switch 0B		SP No. 1-106-012
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	Protocol requirements: Germany **0:** Disabled **1:** Enabled	
3	Protocol requirements: France **0:** Disabled **1:** Enabled	
4	PTT requirements: Germany **0:** Disabled **1:** Enabled	
5	PTT requirements: France **0:** Disabled **1:** Enabled	
6	Not used	Do not change the settings.
7	Not used	Do not change the settings.

G3-2 Switch 0C		SP No. 1-106-013
No	**FUNCTION**	**COMMENTS**
0 **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	Do not change the settings.

G3-2 Switch 0D - Not used (do not change the settings)
G3-2 Switch 0E - Not used (do not change the settings)
G3-2 Switch 0F - Not used (do not change the settings)

4.2.7 G4 INTERNAL SWITCHES

G4 Internal Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-7	Country code Bit 4 3 2 1 0 Country 0 0 0 0 1 Germany (1TR6 mode) 0 0 0 1 0 Universal (Europe Euro ISDN) 1 0 0 0 1 USA **Note:** In Germany, use the Universal setting for the Euro ISDN lines.	

G4 Internal Switch 01 - Not used (do not change these settings)
G4 Internal Switch 02 - Not used (do not change these settings)

G4 Internal Switch 03		
No.	**FUNCTION**	**COMMENTS**
0	Amount of protocol dump data in one protocol dump list **0:** Last communication only **1:** Up to the limit of the memory area for protocol dumping	Change this bit to 0 if you want to have a protocol dump list of the last communication only. This bit is only effective for the dump list D + Bch1.
1-7	Not used	Do not change these settings.

G4 Internal Switch 04		
No.	**FUNCTION**	**COMMENTS**
0-2	Not used	Do not change these settings.
3	Auto data rate change for transmission (64 kbps to 56 kbps) **0:** On **1:** Off	**0:** The machine automatically changes the transmission data rate from 64 kbps to 56 kbps after 3 s if the other end did not accept the call. This is to cope with 56 kbps networks in the USA. Normally, keep this bit at 0.
4	Auto data rate change for reception (64 kbps to 56 kbps) **0:** Off **1:** On	**1:** The machine automatically changes the reception data after 6 s. Change this bit to 1 only when there is a communication error where the other terminal informs 64 kbps in the SETUP signal although it is actually 56 kbps.
5-7	Not used	Do not change these settings.

G4 Internal Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-1	Not used	Do not change these settings.
2	Protocol ID check **0:** Yes **1:** No	The Protocol ID is in the CR packet.
3-7	Not used	Do not change these settings.

G4 Internal Switch 06 - Not used (do not change these settings)
G4 Internal Switch 07 - Not used (do not change these settings)
G4 Internal Switch 08 - Not used (do not change these settings)
G4 Internal Switch 09 - Not used (do not change these settings)
G4 Internal Switch 0A - Not used (do not change these settings)
G4 Internal Switch 0B - Not used (do not change these settings)
G4 Internal Switch 0C - Not used (do not change these settings)
G4 Internal Switch 0D - Not used (do not change these settings)
G4 Internal Switch 0E - Not used (do not change these settings)
G4 Internal Switch 0F - Not used (do not change these settings)

G4 Internal Switch 10 (Dch. Layer 1)		
No.	**FUNCTION**	**COMMENTS**
0-5	Not used	Do not change these settings.
6	INFO1 signal resend **0:** Resend **1:** No resend	**0:** Some DSUs may not reply to the INFO1 signal with INFO2, if there is noise in the INFO1 signal accidentally. Try changing this bit to 0, to resend INFO1 before the machine displays “CHECK INTERFACE”.
7	Not used	Do not change these settings.

G4 Internal Switch 11 (Dch. Layer 2)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Type of TEI used **0:** Dynamic TEI **1:** Static TEI	This is normally fixed at 0. However, some networks may require this bit to be set at 1 (see below). In this case, you may have to change the values of bits 2 to 7.
2-7	Static TEI value	Store the lowest bit of the TEI at bit 7 and the highest bit of the TEI at bit 2. **Example:** If the static TEI is 011000, set bits 3 and 4 to 1 and bits 2, 5, 6, and 7 to 0.

G4 Internal Switch 12 - Not used (do not change these settings)

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	Not used	Do not change these settings.
1	Information transfer capability shift down to retry transmission **0:** Shift down procedure disabled (Default) **1:** Shift down and retry the call	**1:** The machine changes the ISDN G3 information transfer capability informed in the [SETUP] signal to "Speech" from "3.1 kHz audio" or to "3.1 kHz audio" from "Speech" automatically and retries the transmission. The information transfer capability used in the first try is determined by the setting of G4 internal bit switch 14 bit 0. This switch is effective with some types of exchangers and T/As where they only accept calls with information transfer capability "Speech".
2	Attachment of calling ID and subaddress **0:** No **1:** Yes	Normally, this bit should be at 0, because most networks add the calling ID and subaddress to the SETUP signal to the receiver. However, some networks may require the machine to add this ID (and/or subaddress). Only in this case should this bit be at 1.
3	Attachment of the Lower Layer Capabilities **0:** No **1:** Yes	This bit determines whether Lower Layer Capabilities are informed in the [SETUP] signal. Keep this bit at 0 in most cases.
4	Attachment of the Higher Layer Capabilities **0:** Yes **1:** No	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not. Keep this bit at 0 in most cases.
5	Attachment of the channel information element (CONN) **0:** No **1:** Yes	Keep this bit at 0 in most cases.
6	Attachment of the Higher Layer Capabilities for ISDN G3 transmission **0:** Same as the bit 4 setting **1:** Not attached	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal for ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBX that do not respond to Higher Layer Capability "G3". When this bit is set to 0, the setting depends on the setting of bit 4. Keep this bit at 1 in most cases.

G4 Internal Switch 13: D channel layer 3 (Attachment IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
7	Condition for fallback from G4 to G3 **0:** Refer to the CPS code setting **1:** Fallback in response to any CPS code	**0:** Fallback occurs when a CPS code is the same as the CPS code settings specified by G4 internal switches 17, 18, 1A, 1B, and 1C. If you wish to enable fallback when any CPS code is detected, set this bit to "1". This switch is effective in coping with fallback problems where the CPS code does not match those specified in the ITU-T recommendation.

G4 Internal Switch 14: D channel layer 3 (Selection IE in S: SETUP)		
No.	**FUNCTION**	**COMMENTS**
0	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] message. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio.
1-2	Not used	Do not change these settings.
3-4	Channel selection in [SETUP] in tx mode Bit 4 3 Setting 0 0 Any channel 0 1 B1 channel 1 0 B2 channel 1 1 Not used	**Any channel:** When this is informed to the exchanger, the exchanger will select either B1 or B2.
5	Called ID mapping **0:** Called party number **1:** Keypad facility	**0:** Called ID is mapped to the called party number. **1:** Called ID is mapped to the keypad facility. Note that the subaddress in not mapped. On the 5ESS network (USA), set it to 1.
6	Numbering plan for the called party number **0:** Unknown **1:** E.164	**E.164:** This may be used in Sweden if an AXE10 exchanger is fitted with old software, and in Australia. **Unknown:** This is the normal setting.
7	Subaddress coding type **0:** IA5 (NSAP) **1:** BCD (ISO8348)	This is normally kept at 0. However, some networks require this bit to be at 1.

G4 Internal Switch 15: D channel layer 3 (Judgement R: MSG)		
No.	**FUNCTION**	**COMMENTS**
0	Action when receiving [SETUP] signal containing no called subaddress **0:** A reply is sent **1:** No reply is sent	This bit depends on user requirements. If it is at 1, communication will be halted if the other terminal has not input the subaddress.
1-4	Not used	Do not change the settings
5	Global call reference **0:** Ignored **1:** Global call number is used	Global call reference means 'call reference value = 0'. This bit determines how to deal with such an incoming call if received from the network. Keep this bit at 1 in Germany 1TR6.
6-7	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
0-1	Answer delay time Bit 1 0 Setting 0 0 No delay 0 1 1.0 s delayed (1TR6) 1 0 0.5 s delayed 1 1 Not used	In some countries, a time delay to answer a call is required. Otherwise, use this switch as follows: If the machine is connected to the same bus from the DSU as a model K200 is connected, the machine receives most of the calls because the response time to a call is faster than the K200. If the customer wants the K200 to receive most of the calls, adjust the response time using these bits. If the customer does not want one machine to receive most of the calls, use subaddresses to identify each terminal.
2	Action when receiving [SETUP] signal containing user-specific called party subaddress **0:** Ignores the call **1:** Receives the call	Normally, the 3rd octet of called party subaddress information in the [SETUP] signal is set to NSAP. However, some networks may add “user-specific” subaddress to the [SETUP] signal, and the result of this is that the machine won't answer the call if a subaddress is specified. So, change this bit to 1 to let the machine receive the call if the machine is connected to such a network.
3-4	Not used	Do not change these settings.
5	Indicated bearer capabilities **0:** 56 kbps **1:** 64 kbps	**1:** 64 kbps calling is indicated in the Bearer Capabilities, but communication is at 56 k. Use this bit if the machine is connected to a network which does not accept a 56 kbps data transfer rate as a bearer capability.
6	Not used	Do not change these settings.

G4 Internal Switch 16: D channel layer 3 (Approval)		
No.	**FUNCTION**	**COMMENTS**
7	Transfer capabilities (SI) informed in 1TR6 ISDN G3 transmission **0:** G3 Fax **1:** Analog	This bit determines whether transfer capabilities informed in the Service Indicator for 1TR6 ISDN G3 transmission. This switch is effective in coping with communication problems with some types of T/A and PBXs. Normally keep this bit at 1 in Germany 1TR6.

G4 Internal Switch 17: CPS Code Used for G4 to G3 Fallback - 1		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 Bits 0 to 6 of bit switch 17 contain a CPS code, and bits 0 to 6 of bit switch 18 contain another CPS code. If a CPS code is received which is the same as either of these, communication will fall back from ISDN G4 mode to ISDN G3 mode. The CPS codes must be the same as those specified in table 4-13 of ITU-T recommendation Q.931. Examples: Bit 6 5 4 3 2 1 0 1 0 0 0 0 0 1 CPS code 65 1 0 1 1 0 0 0 CPS code 88 For the codes in bits 0 to 6 of bit switches 17 and 18 to be recognized, bit 7 of bit switch 17 must be 1. Also, bit 0 of the Communication Switch 07 must be at 0, or Fallback from G4 to G3 will be disabled.	
7	This bit determines whether fallback from G4 to G3 occurs on receipt of one of the CPS codes programmed in bit switch 17 or 18, or on receipt of a certain standard code. **0:** Fallback occurs on receipt of any of the following CPS codes: Universal (Euro ISDN) - #3, #18, #57, #58, # 63, # 65, #79, #88, and #127 Germany 1TR6 mode - #3, #53, #58, and #90 Others - #3, #65, and #88 **1:** Fallback from G4 to G3 occurs on receipt any of above CPS codes or one of the CPS codes programmed in bit switch 17, 18, 1A, 1B, or 1C	

G4 Internal Switch 18: CPS Code Used for G4 to G3 Fallback - 2		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17	
7	This bit helps to choose the CPS code set for G4 to G3 fallback. **0:** Fallback occurs on receipt of the CPS code set, which is specified by the country code setting. **1:** Fallback occurs on receipt of the Universal CPS code set (#3, #18, #57, #58, # 63, # 65, #79, #88, and #127) even if another country code is programmed. If bit switch 17 bit 7 is “1”, fallback occurs on receipt of the Universal CPS code set or one of the CPS codes programmed in bit switches 17, 18, 1A, 1B, or 1C.	

G4 to G3 fallback

Bit 0 of Communication Switch 07 must be at 0, or fallback from G4 to G3 will be disabled.

The CPS codes for which fallback occurs are decided as follows.

- G4 bit switch 17, bit 7 - If set to “0”, fallback occurs on receipt of a code from a set that depends on the country code. If set to ”1”, fallback occurs for the 5 CPS codes programmed in bits 0 to 6 of G4 bit switches 17, 18, 1A, 1B, and 1C, in addition to the country code set.
  Note that if G4 bit switch 18, bit 7 is set to “1”, the CPS code set that is used is always the Universal set, regardless of the country code setting.

G4 Internal Switch 19		
No.	**FUNCTION**	**COMMENTS**
0	Permanence of the link **0:** Set/released each LAPD call **1:** Permanent	Keep this at 1 in the USA. In other areas, this bit is normally 0, depending on network requirements.
1	Channel used in ISDN L2 (64k) mode **0:** B1 **1:** B2	When making an IDSN L2 back-to-back test, you can select either the B1 or B2 channel with this bit switch.
2-7	Not used	Do not change the factory settings.

G4 Internal Switch 1A: CPS Code Used for G4 to G3 Fallback - 3		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1B: CPS Code Used for G4 to G3 Fallback - 4		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1C: CPS Code Used for G4 to G3 Fallback - 5		
No.	**FUNCTION**	**COMMENTS**
0-6	Condition for fallback from G4 to G3 See the explanation for bits 0 to 6 of bit switch 17.	
7	Not used	Do not change this setting.

G4 Internal Switch 1D - Not used (do not change these settings)
G4 Internal Switch 1E - Not used (do not change these settings)
G4 Internal Switch 1F - Not used (do not change these settings)

4.2.8 G4 PARAMETER SWITCHES

G4 Parameter Switch 00		
No.	**FUNCTION**	**COMMENTS**
0-2	Network type Bit 2 1 0 Type x 0 0 Circuit switched ISDN Other settings: Not used	Do not change the default setting.
3-7	Not used	Do not change the default settings.

G4 Parameter Switch 01		
No.	**FUNCTION**	**COMMENTS**
0	Voice coding **0:** μ law **1:** A law	**0:** This setting is used in USA. **1:** This setting is used in Europe and Asia.
1	Action when [SETUP] signal without HLC is received **0:** Respond to the call **1:** Not respond to the call	If there are several TEs on the same bus and the machine responds to calls for another TE, the call may be without HLC information. Identify the type of calling terminal and change this bit to 1 if the caller is not a fax machine.
2-6	Not used	Do not change these settings.
7	Signal attenuation for G3 fax signals received from ISDN line (-6dB) **0:** Off **1:** On	**0:** If an analog signal comes over digital line, the signal level after decoding by the TE is theoretically the same as the level at the entrance to the digital line. However, this sometimes causes the received signal level to be too high at the received end. In this case, set this bit to 1 to adjust the attenuation level.

G4 Parameter Switch 02		
No.	**FUNCTION**	**COMMENTS**
0-1	Data rate (kbps) Bit 1 0 Setting 0 0 64 kbps 0 1 56 kbps	Other settings: Not used
2-7	Not used	Do not change these settings.

G4 Parameter Switch 03 - Not used (do not change these settings)
G4 Parameter Switch 04 - Not used (do not change these settings)

G4 Parameter Switch 05		
No.	**FUNCTION**	**COMMENTS**
0-3	Not used	Do not change these settings.
4	B-channel T3 timer **0:** 30s **1:** 57s	**1:** This switch is useful when used in combination with the Communication Bit SW 07 bit 4. This is to cope with communication problems where G4 communication fails on the ISDN B-channel. Normally keep this bit at 1.
5-7	Not used	Do not change these settings.

G4 Parameter Switch 06		
No.	**FUNCTION**	**COMMENTS**
0	Layer 3 protocol **0:** ISO8208 **1:** T.70NULL	Set this bit to match the type of layer 3 signaling used by the ISDN. The dedicated parameters have the same setting for specific destinations. Normally keep this bit at 0.
1-7	Not used	Do not change these settings.

G4 Parameter Switch 07		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value is sent in the CR packet. This value must match the value stored in the other terminal, or communication will stop (CI will be returned). If the other end returns CI, check the value of the packet window size with the other party. Note that this value must be the same as the value programmed for the transport block size (G4 Parameter Switch 0B, bits 0 to 3). Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 08		
No.	**FUNCTION**	**COMMENTS**
0-3	Packet window size Bit 3 2 1 0 Value 0 0 0 1 1 0 0 1 0 2 and so on until 1 1 1 1 15	This is the maximum number of unacknowledged packets that the machine can send out before having to pause and wait for an acknowledgement from the other end. Normally this should be kept at 7.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 09 - Not used (do not change these settings)
G4 Parameter Switch 0A - Not used (do not change these settings)

G4 Parameter Switch 0B		
No.	**FUNCTION**	**COMMENTS**
0-3	Transport block size Bit 3 2 1 0 Value 0 1 1 1 128 1 0 0 0 256 1 0 0 1 512 1 0 1 0 1024 1 0 1 1 2048	This value must match the value set in the other terminal. Note that this value must be the same as the value programmed for the packet size (G4 Parameter Switch 7, bits 0 to 3). Also, the transport block size is limited by the amount of memory in the remote terminal. Normally, do not change the default setting.
4-7	Not used	Do not change these settings.

G4 Parameter Switch 0C - Not used (do not change these settings)

G4 Parameter Switch 0D		
No.	**FUNCTION**	**COMMENTS**
0-1	Back-to-back test mode Bit 1 0 Setting 0 0 Off 1 0 ISDN L2 test mode (TE mode) Other settings - Not used	When doing a back-to-back test or doing a demonstration without a line simulator, use these bits to set up one of the machines in TE mode, and the other in NT mode Please note that this machine can only be set to TE mode. After the test, return both bits to 0. See "Back-to-back Testing" in the Troubleshooting section for full details.
2-7	Not used	Do not change these settings.

G4 Parameter Switch 0E - Not used (do not change these settings)
G4 Parameter Switch 0F - Not used (do not change these settings)

4.3 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 (SP2-102), but some can be changed using NCU Parameter programming (SP2-103, 104 and 105); if SP2-103, 104 and 105 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.

NOTE: The following addresses describe settings for the standard NCU. Change the fourth digit from “5” to “6” (e.g. 680500 to 680600) for the settings for the first optional G3 interface unit.

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
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
Greece	33	21
Hungary	34	22
Czech	35	23
Poland	36	24

Address	Function	Unit	Remarks
680501	Line current detection time	20 ms	Line current detection is disabled. Line current is not detected if 680501 contains FF.
680502	Line current wait time		
680503	Line current drop detect time		
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: See 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)		
68050F	PSTN ring-back tone detection time	20 ms	Detection is disabled if this contains FF.
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)		

Address	Function	Unit	Remarks
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)		
680522	PABX ringback tone detection time	20 ms	If both addresses contain FF(H), tone detection is disabled.
680523	PABX ringback tone off detection time	20 ms	
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 (±) **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% Bits 7, 6, 5, 4 - number of cycles required for cadence detection		
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)		

Address	Function	Unit	Remarks
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). Belgium: See Note 2.
680539	International dial tone reset time (LOW)		
68053A	International dial tone reset time (HIGH)		
68053B	International dial tone continuous tone time		
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	See Notes 3, 6 and 8. SP2-103-012 (parameter 11).
68054B	Break time for pulse dialing	1 ms	See Note 3. SP2-103-013 (parameter 12).
68054C	Make time for pulse dialing	1 ms	See Note 3. SP2-103-014 (parameter 13).
68054D	Time between final OHDI relay closure and DO relay opening or closing	1 ms	See Notes 3, 6 and 8. SP2-103-015 (parameter 14). This parameter is only valid in Europe.
68054E	Minimum pause between dialed digits (pulse dial mode)	20 ms	See Note 3 and 8. SP2-103-016 (parameter 15).
68054F	Time waited when a pause is entered at the operation panel		SP2-103-017 (parameter 16). See Note 3.

Address	Function	Unit	Remarks
680550	DTMF tone on time	1 ms	SP2-103-018 (parameter 17).
680551	DTMF tone off time		SP2-103-019 (parameter 18).
680552	Tone attenuation level of DTMF signals while dialing	-N x 0.5 –3.5 dBm	SP2-103-020 (parameter 19). See Note 5.
680553	Tone attenuation value difference between high frequency tone and low frequency tone in DTMF signals	-dBm x 0.5	SP2-103-021 (parameter 20). The setting must be less than –5dBm, and should not exceed the setting at 680552h above. See Note 5.
680554	PSTN: DTMF tone attenuation level after dialling	-N x 0.5 –3.5 dBm	SP2-103-022 (parameter 21). See Note 5.
680555	ISDN: DTMF tone attenuation level after dialling	-dBm x 0.5	See 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.

Address	Function	Unit	Remarks
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).	SP2-103-003 (parameter 02).
680573	Acceptable ringing signal frequency: range 1, lower limit		SP2-103-004 (parameter 03).
680574	Acceptable ringing signal frequency: range 2, upper limit		SP2-103-005 (parameter 04).
680575	Acceptable ringing signal frequency: range 2, lower limit		SP2-103-006 (parameter 05).
680576	Number of rings until a call is detected	1	SP2-103-007 (parameter 06). The setting must not be zero.
680577	Minimum required length of the first ring	20 ms	See Note 4. SP2-103-008 (parameter 07).
680578	Minimum required length of the second and subsequent rings	20 ms	SP2-103-009 (parameter 08).
680579	Ringing signal detection reset time (LOW)	20 ms	SP2-103-010 (parameter 09).
68057A	Ringing signal detection reset time (HIGH)		SP2-103-011 (parameter 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.

Address	Function	Unit	Remarks
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 disabled.
6805A9	Acceptable CNG detection frequency lower limit (low byte)		
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	SP2-103-002 (parameter 01).
6805B5	PSTN: 1100 Hz tone transmission level	- N 6805B4 - 0.5N 6805B5 –3.5 (dB) See Note 7.	
6805B6	PSTN: 2100 Hz tone transmission level	- N6805B4 - 0.5N 6805B6 –3 (dB) See Note 7.	
6805B7	PABX: Tx level from the modem	- dBm	
6805B8	PABX: 1100 Hz tone transmission level	- N 6805B7 - 0.5N 6805B8 (dB)	

NCU PARAMETERS

Address	Function	Unit	Remarks
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.		
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.

NOTES

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 x $N_{680552/680554}$–3.5 dBm
   – 0.5 x N_{680555} dBm
   Low frequency tone: – 0.5 x ($N_{680552/680554}$ + N_{680553}) –3.5 dBm
   – 0.5 x (N_{680555} + N_{680553}) 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
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.

4.4 DEDICATED TRANSMISSION PARAMETERS

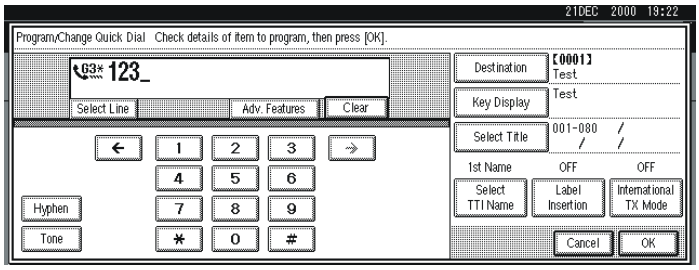
Each Quick Dial Key and Speed Dial Code has eight bytes of programmable parameters allocated to it. If transmissions to a particular machine often experience problems, store that terminal's fax number as a Quick Dial or Speed Dial, and adjust the parameters allocated to that number.

The programming procedure will be explained first. Then, the eight bytes will be described.

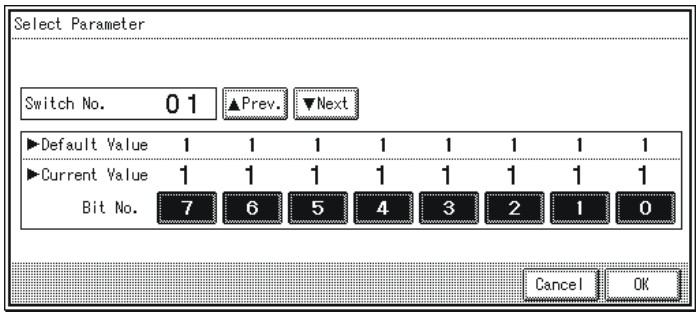
4.4.1 PROGRAMMING PROCEDURE

1. Set the bit 0 of System Bit Switch 00 to 1.
2. Press "Dest. Management" in the facsimile standby mode.
3. Press "Program/Change/Delete Quick Dial".
4. Select the destination key you want to program.

5. When the programmed dial number is displayed, press "Start".
   Make sure that the LED of the Start button is lit as green.



6. The settings for the switch 01 are now displayed.
   Press the bit number that you wish to change.
7. To scroll through the parameter switches, either:
8. Select the next switch:
   press "Next"
   or
   Select the previous switch: "Prev." until the correct switch is displayed.
   Then go back to step 6.



9. After the setting is changed, press "OK".
10. After finishing, reset bit 0 of System Bit Switch 00 to 0.

4.4.2 PARAMETERS

The initial settings of the following parameters are all FF(H) - all the parameters are disabled.

Switch 01
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 02		
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.

Switch 03		
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.

Switch 04		
No	**FUNCTION**	**COMMENTS**
0 1	Inch-mm conversion before tx **Bit 1 Bit 0 Setting** 0 0 Inch-mm conversion available 0 1 Inch only 1 0 Not used 1 1 Disabled	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.
2 to 3	DIS/NSF detection method **Bit 3 Bit 2 Setting** 0 0 First DIS or NSF 0 1 Second DIS or NSF 1 0 Not used 1 1 Disabled	**(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.

Switch 04		
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.

Switch 05 - Not used (do not change the settings)
Switch 06 - Not used (do not change the settings)

Switch 07 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Data rate **Bits 3 2 1 0 Setting** 0 0 0 0 64 kbps 0 0 0 1 56 kbps 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 2 (bits 0 and 1) is used.
4-7	Not used	Do not change the settings.

Switch 08 - Not used

Switch 09 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0 **to** **3**	Layer 3 protocol **Bits 3 2 1 0 Setting** 0 0 0 0 ISO 8208 0 0 0 1 T.70 NULL 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 0) is used.
4 **to** **7**	Packet modulus **Bits 3 2 1 0 Setting** 0 0 0 0 Modulo 8 0 0 0 1 Modulo 128 1 1 1 1 Disabled	If the setting is “Disabled”, the current setting of G4 parameter switch 6 (bit 4) is used.

Switch 10 - Optional ISDN G4 kit required		
No	**FUNCTION**	**COMMENTS**
0	Attachment of the Higher Layer Capabilities	This bit determines whether Higher Layer Capabilities are informed in the [SETUP] signal or not.
1	Not used	Do not change the setting.
2	ISDN G3 information transfer capability **0:** 3.1 kHz audio **1:** Speech	In tx mode, this determines the information transfer capability informed in the [SETUP] messages. In rx mode, this determines the information transfer capability that the machine can use to receive a call. Set this bit to 1 if the ISDN does not support 3.1 kHz audio.
3-7	Not used	Do not change the settings.

4.5 SERVICE RAM ADDRESSES

⚠CAUTION
Do not change the settings which are marked as "Not used" or "Read only."

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
680040 to 68004F(H) - Scanner bit switches
680050 to 68005F(H) - Printer bit switches
680060 to 68007F(H) - Communication bit switches
680080 to 68008F(H) - G3 bit switches
680090 to 68009F(H) - G3-2 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: CIL printing (G4) 0: Disabled, 1: Enabled
Bit 6: TID printing (G4) 0: Disabled, 1: Enabled
Bit 7: Not used

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: Polling reserve report (polling reception) 0: Off, 1: On
Bit 4: Polling result report (polling reception) 0: Off, 1: On
Bit 5: Transmission result report (immediate transmissions) 0: Off, 1: On
Bit 6: Polling clear report 0: Off, 1: On
Bit 7: Journal 0: Off, 1: On

6800D4(H) - User parameter switch 04 (SWUSR_04: Automatic report printout)
Bit 0: Automatic confidential reception report output 0: Off, 1: On
Bits 1 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: Not used
Bit 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)
Bits 0 to 5: Not used
Bit 6: Scan sequence in Book transmission
0: Left page then right page, 1: Right page then left page
Bit 7: 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: Method of transmitting numbers after the “Tone” mark over an ISDN line
0: UUI, 1: Tone
Bits 2 to 5: Not used
Bit 6: Printout of messages received while acting as a forwarding station
0: Off, 1: On
Bit 7: Polling Standby duration 0: Once, 1: No limit

6800DC(H) - User parameter switch 12 (SWUSR_0C): Not used

6800DD(H) - **User parameter switch 13 (SWUSR_0D)**
(This switch is not printed on the user parameter list.)
Bits 0 to 4: Not used
Bit 5: Action when receiving a SETUP signal containing no called number and the G4 subscriber number was programmed in this machine.
0: Respond to the call, 1: Do not respond to the call
Bit 6: Action when the received HLC (Higher Level Capabilities) is Tel or BC (Bearer Capabilities) is Speech.
0: Do not respond to the call, 1: Respond to the call
This switch determines which information transfer capabilities the machine can accept when receiving a call.
1: When the received HLC is Tel (digital telephone) or BC is Speech (voice), the machine responds to the call. In short, the machine receives every call.
This switch is useful for communication problems when the other terminal informs the above transfer capabilities although it is a fax machine.
Bit 7: ISDN SPID programming (used only in the USA)

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

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	LCT

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)
Bits 0 and 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
Bit 4 to 7: Not used

6800E3(H) - User parameter switch 19 (SWUSR_13)
Bit 0: Offset sort function for the fax (only using the shift tray on the 1,000 sheet finisher)
0: Disabled, 1: Enabled
Bit 1: Journal format
0: The Journal is separated into transmissions and receptions
1: The Journal is separated into G3-1, G3-2, G3-3 and G4 communications
Bit 2: Action when the paper cassette that was selected by the specified cassette selection feature becomes empty.
(This switch is not printed on the user parameter list.)
0: The machine will not print any received files until paper is added.
1: The machine will use other cassettes to print received files that are not specified by this feature.
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 (LAN fax) error report
0: Off, 1: On
Bit 1: Reprint the documents fail to print from PC fax (LAN fax) driver
0: Off, 1: On
Bits 2 to 5: Store documents in memory which could not be printed from PC fax (LAN 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 and 7: Not used.

6800E5(H) - User parameter switch 21 (SWUSR_15) : Not used
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(H) to 6800ED(H) - User parameter switch 26 to 29 (SWUSR_1A to 1D)
: Not used

680EE(H) - User parameter switch 30 (SWUSR_1E)
Bits 0 to 6: Not used
Bit7: On hook dialing
0: PSTN, 1: ISDN

NOTE: If this bit set to 1, the on hook dialing is available on the ISDN line. But, the machine cannot use the G3 standard analog line for detecting the ringing and on hook dialing.

6800F0 to 6800FF(H) - G4 Parameter Switches
680100 to 68011F(H) - G4 Internal Switches

680160 to 68016E(H) - Service station's fax number (SP3-101)
See 68030C(H) for the type of network used for this number**.**

68016F to 68017D(H) - Own fax PABX extension number
68017E to 68018C(H) - Own fax number (PSTN)
68018D to 68019B(H) - Own fax number (ISDN G4)
68019C to 6801AA(H) - The first subscriber number (ISDN G3)
6801AB to 6801B9(H) - The second subscriber number (ISDN G3)
6801BA to 6801C8(H) - The first subscriber number (ISDN G4)
6801C9 to 6801D7(H) - The second subscriber number (ISDN G4)

6801D8 to 6801EB(H) - PSTN-1 RTI (Max. 20 characters - ASCII) - See the following note.
680217 to 680256(H) - TTI 1 (Max. 64 characters - ASCII) - See the following note.
680257 to 680296(H) - TTI 2 (Max. 64 characters - ASCII) - See the following note.
680297 to 6802AA(H) - PSTN-1 CSI (Max. 20 characters - ASCII)
6802AB to 6802BE(H) - PSTN-2 CSI (Max.20 characters - ASCII)

6802D3(H) - Number of PSTN-1 CSI characters (Hex)
6802D4(H) - Number of PSTN-2 CSI characters (Hex)

NOTE: 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.

6802E0 to 6802E2(H) - PSTN-1 line settings

6802E0

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

6802E1: PSTN access number for loop start

Access number	Hex value to program (BCD)
0	F0
⇩	⇩
9	F9
00	00
⇩	⇩
99	99

6802E2

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

6802E8 to 6802EA(H) - PSTN-2 line settings
6802F8 to 6802EA(H) - ISDN line settings

680300(H) - ID code (low - Hex)
680301(H) - ID code (high - Hex)

680302(H) - Confidential ID (low - BCD)
680303(H) - Confidential ID (high - BCD)

680304(H) - Memory Lock ID (low - BCD)
680305(H) - Memory Lock ID (high - BCD)

68030C(H) - Network type used for the service station number
0 1 (H) - PSTN-1
0 2 (H) - PSTN-2
1 0 (H) - G4
0 7 (H) - G3 auto selection

680310 to 680317(H) - Last power off time (Read only)
680310(H) - 01(H) - 24-hour clock, 00(H) - 12-hour clock (AM),
02(H) - 12-hour clock (PM)
680311(H) - Year (BCD)
680312(H) - Month (BCD)
680313(H) - Day (BCD)
680314(H) - Hour
680315(H) - Minute
680316(H) - Second
680317(H) - 00: Monday, 01: Tuesday, 02: Wednesday, ... , 06: Sunday

680324(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

680325(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
Bit 5: Not used
Bit 6: ISDN unit 0: Not installed, 1: Installed
Bit 7: Not used

680358 to 68036F(H) - G4 terminal ID (ASCII - Max. 24 characters)
680370 to 680383(H) - ISDN CSI
680384(H) - Number of ISDN CSI characters (Hex)
680389 to 68038C(H) - ISDN G3 sub-address
68038D to 680390(H) - ISDN G4 sub-address
680391 to 680395(H) - SiG4 board ROM information (Read only)
680391(H) - Suffix
680392(H) - Version (BCD)
680393(H) - Year (BCD)
680394(H) - Month (BCD)
680395(H) - Day (BCD)

680396 to 68039A – Option G3 board (G3-2) ROM information (Read only)
680396(H) - Suffix (BCD)
680397(H) - Version (BCD)
680398(H) - Year (BCD)
680399(H) - Month (BCD)
68039A(H) - Day (BCD)

6803A2(H) - Option G3 board (G3-2) modem ROM version (Read only)

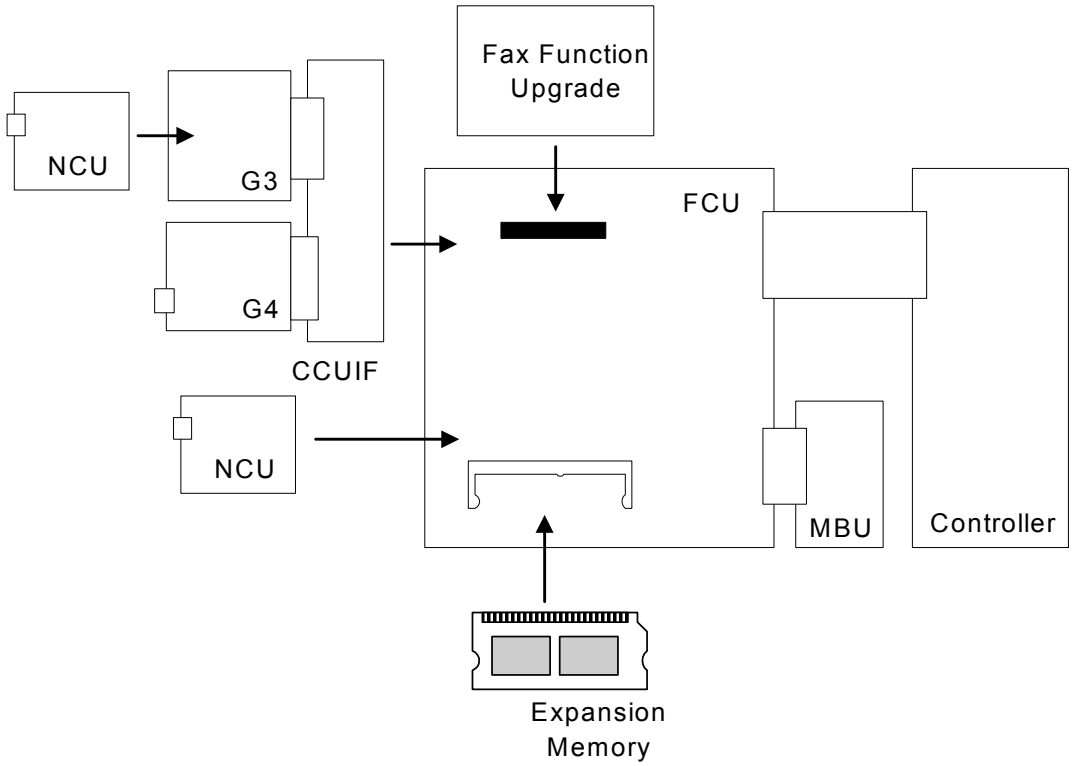
6803A6 to 6803AB(H) - Modem ROM version (Read only)
6803A6(H) - Part number (low)
6803A7(H) - Part number (high)
6803A8(H) - Control (low)
6803A9(H) - Control (high)
6803AA(H) - DSP (low)
6803AB(H) - DSP (high)

680406(H) - Time for economy transmission (hour in 24h clock format - BCD)
680407(H) - Time for economy transmission (minute - BCD)

680422(H) - Transmission monitor volume 00 - 07(H)
680423(H) - Reception monitor volume 00 - 07(H)
680424(H) - On-hook monitor volume 00 - 07(H)
680425(H) - Dialing monitor volume 00 - 07(H)
680426(H) - Buzzer volume 00 - 07(H)

5. DETAILED SECTION DESCRIPTIONS

5.1 OVERVIEW



The basic fax unit consists of two PCBs: an FCU, an MBU and an NCU.

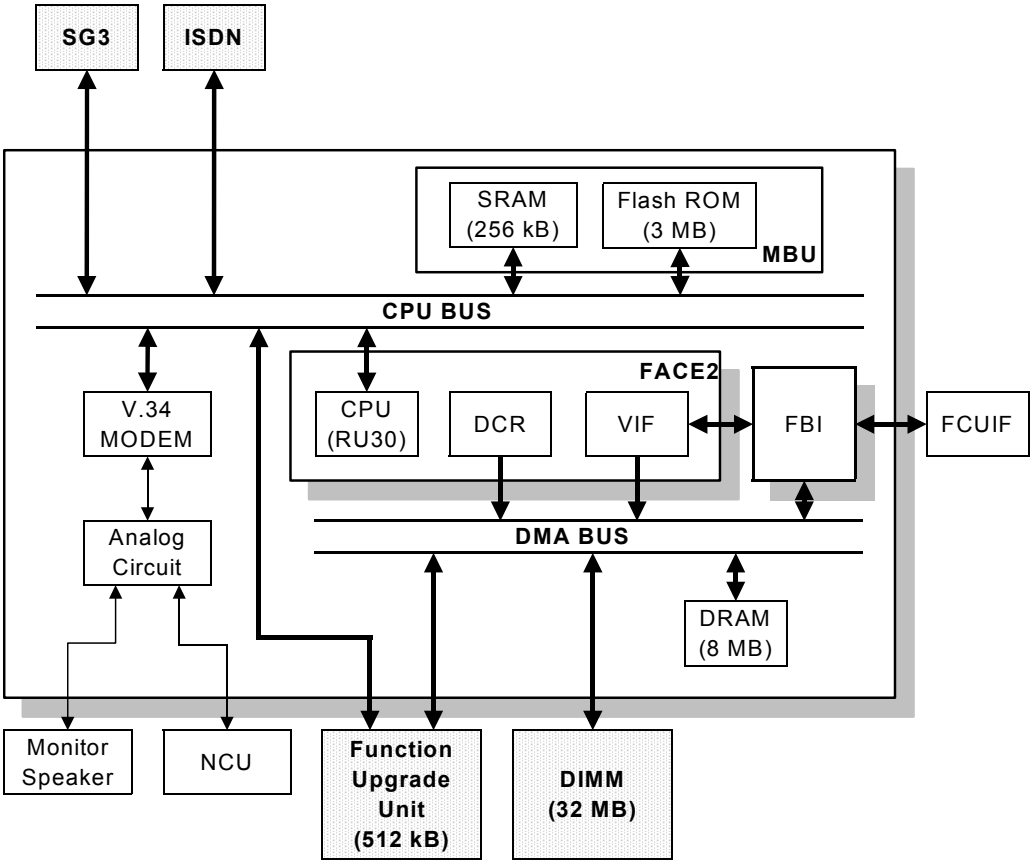
The FCU controls all the fax communications and fax features, in cooperation with the controller board. The MBU contains the ROM and SRAM. The NCU switches the analog line between the fax unit and the external telephone.

Fax Options:

1. Extra G3 Interface option: This provides one more analog line interface. This allows full dual access. Only one extra G3 interface option can be installed. The optional G3 unit consists of two PCBs: G3 board and NCU.
2. ISDN unit: This allows the fax unit to communicate over an ISDN line.
3. Fax Function Upgrade Unit: JBIG compression becomes available. In addition, this expands the system's SRAM capacity to hold programmed telephone numbers, memory files, etc.
4. Memory Expansion: This expands the SAF memory and the page memory (used for image rotation); without this expansion, the page memory is not big enough for image rotation at 400 dpi, so transmission at 400 dpi is not possible.

5.2 BOARDS

5.2.1 FCU



The FCU (Facsimile Control Unit) controls fax communications, the video interface to the base copier's engine, and all the fax options.

FACE2 (Fax Application Control Engine)

- CPU
- Data compression and reconstruction (DCR)
- DMA control
- Clock generation
- DRAM backup control
- Ringing signal/tone detection

FBI (FACE Bridge Interface)

- Interface between the PCI bus and the FACE
- DMA control

Modem (R288F-29)

- V.34, V33, V17, V.29, V.27ter, V.21, and V.8

DRAM

- The 8 MB of DRAM is shared as follows.
  SAF memory : 2MB
  Working memory : 2MB
  Page memory : 4MB
- The SAF memory is backed up by a rechargeable battery.

Memory back-up

- A Rechargeable battery backs up the SAF memory (DRAM) for 1 hour.

Switches

Item	Description
SW1	Reset switch, to reboot the FCU board

5.2.2 MBU

On this board, the flash ROM contains the FCU firmware, and the SRAM contains the system data and user parameters. Even if the FCU is changed, the system data and user parameters are kept on the MBU board.

ROM

- 3MB flash ROMs for system software storage
  2MB (16bit x 1MB) + 1MB (16bit x 512K)

SRAM

- The 256 KB SRAM for system and user parameter storage is backed up by a lithium battery.

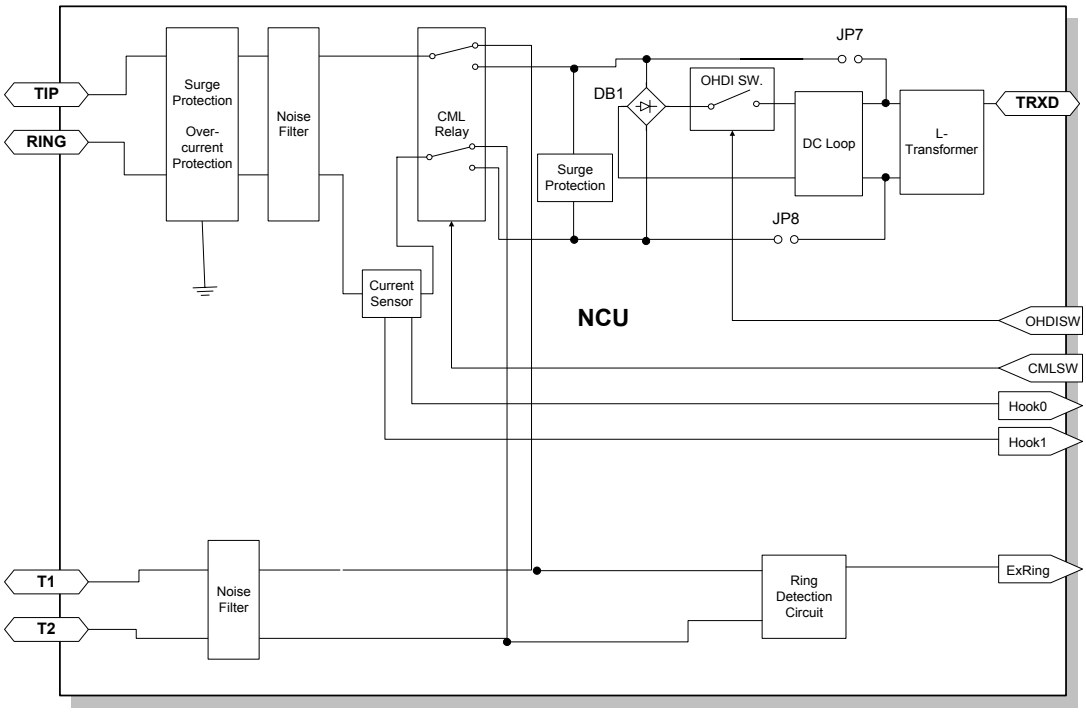
Memory back-up

- 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
SW1	Switches the SRAM backup battery on/off.

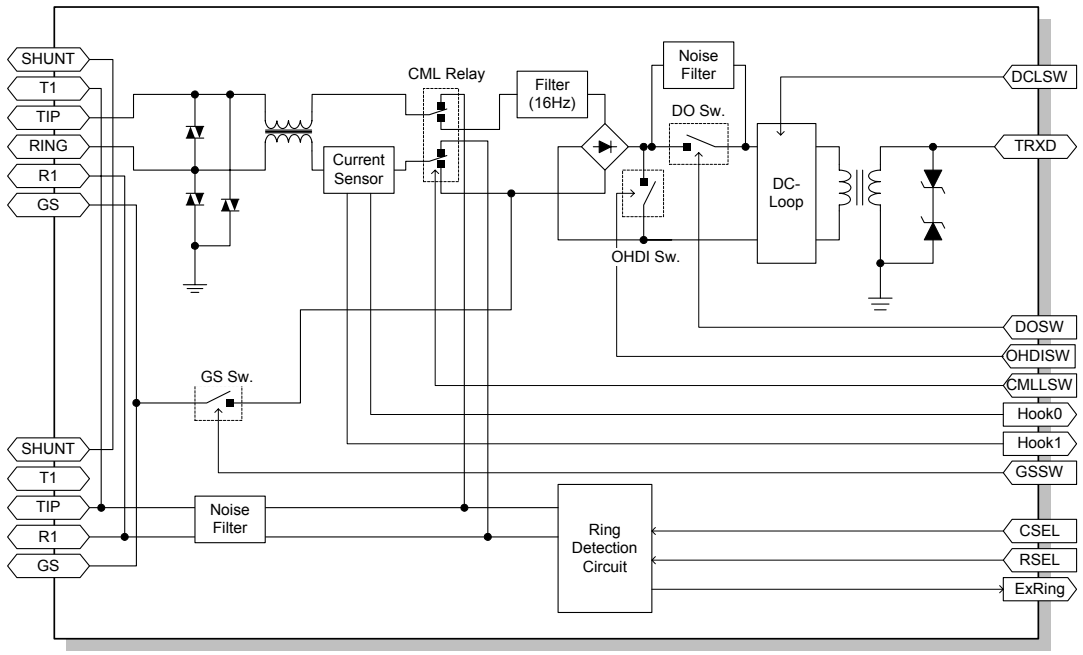
5.2.3 NCU (US)



Jumpers

Item	Description
JP7	These jumpers should be shorted when the machine is connected to a dry line.
JP8	
DB1	Also remove DB1 when the machine is connected to a dry line.

5.2.4 NCU (EUROPE/ASIA)

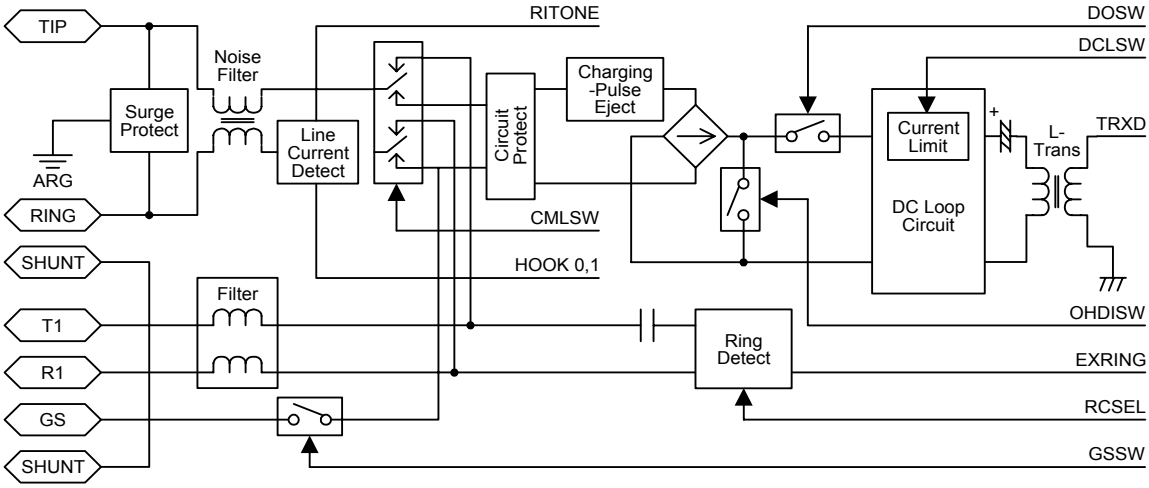


Control Signals and Jumpers

	CSEL1	RSEL
Country	**CN2-5**	**CN1-13**
CTR21	H	H
Australia	H	H
South Africa	H	H
Malaysia	H	H
Hong Kong	L	L
New Zealand	L	L
Singapore	L	L
Asia	L	L
	L: Low, H: High	

CTR21 (Common Technical Regulation 21):
France, Germany, UK, Italy, Austria, Belgium, Denmark, Finland, Ireland, Norway, Sweden, Switzerland, Portugal, Holland, Spain, Israel, Greece

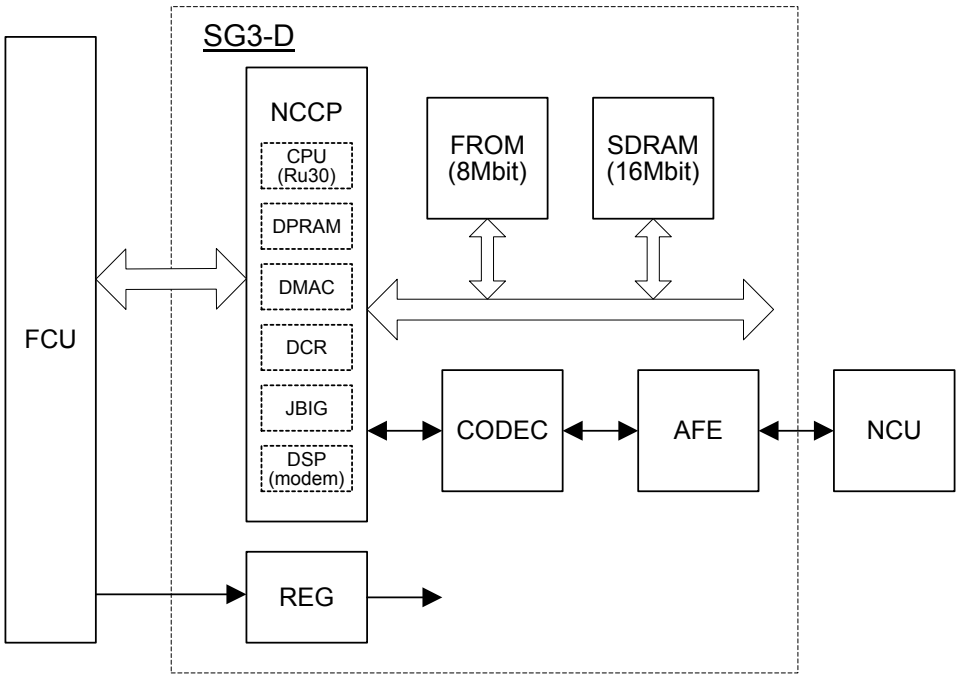
5.2.5 NCU (OPTIONAL G3 INTERFACE: EUROPE/ASIA)



Region/Country	**TB1** [A]	**TB2** [B]
Hong Kong	OFF	OFF
Hungary	ON	ON
Poland	ON	ON
Czech Republic	ON	ON
Israel	ON	ON
South Africa	ON	ON
Regions/countries where the CTR21 standard is valid	ON	ON
Other	ON	OFF

TB1 ON: Keep the jumper attached. OFF: Remove the jumper.
TB2 ON: Keep the jumper at ON. OFF: Move the jumper to OFF.

5.2.6 SG3 BOARD



The SG3 board allows up to two simultaneous communications when used in combination with the FCU.

NCCP (New Communication Control Processor)

- Controls the SG3 board.
- CPU (RU30)
- DPRAM (Dual Port RAM): Handshaking with the FCU is done through this block.
- DMA controller
- JBIG
- DSP V34 modem (RL5T892): Includes the DTMF Receiver function
- DCR for MH, MR, MMR, and JBIG compression and decompression

FROM

- 8M flash ROM for SG3 software storage and modem software storage

SDRAM

- 16M DRAM shared between ECM buffer, line buffer, and working memory

AFE (Analog Front End)

- Analog processing

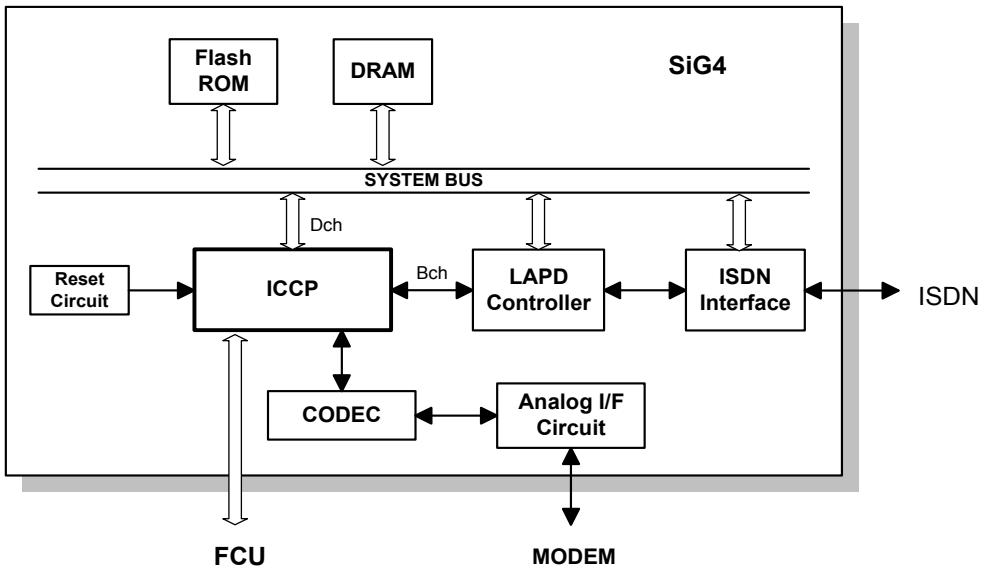
CODEC (COder-DECoder)

- A/D & D/A conversions for modem

REG

- Generates +3.3 V from the +5V from the FCU

5.2.7 SIG4 BOARD



The SiG4 (Standard ISDN G4) board contains ICCP (ISDN Communication Control Processor), Flash ROM, DRAM, LAPD controller, CODEC, ISDN interface and analog interface. The ICCP controls the entire board.

ICCP (ISDN Communication Control Processor)

- 16 bit CPU which controls the entire board
- HDLC control
- Channel select for B channel interface control

CODEC

- A/D, D/A converter for ISDN G3 communication

LAPD Controller

- ISDN layer 1 and LAPD control

ROM

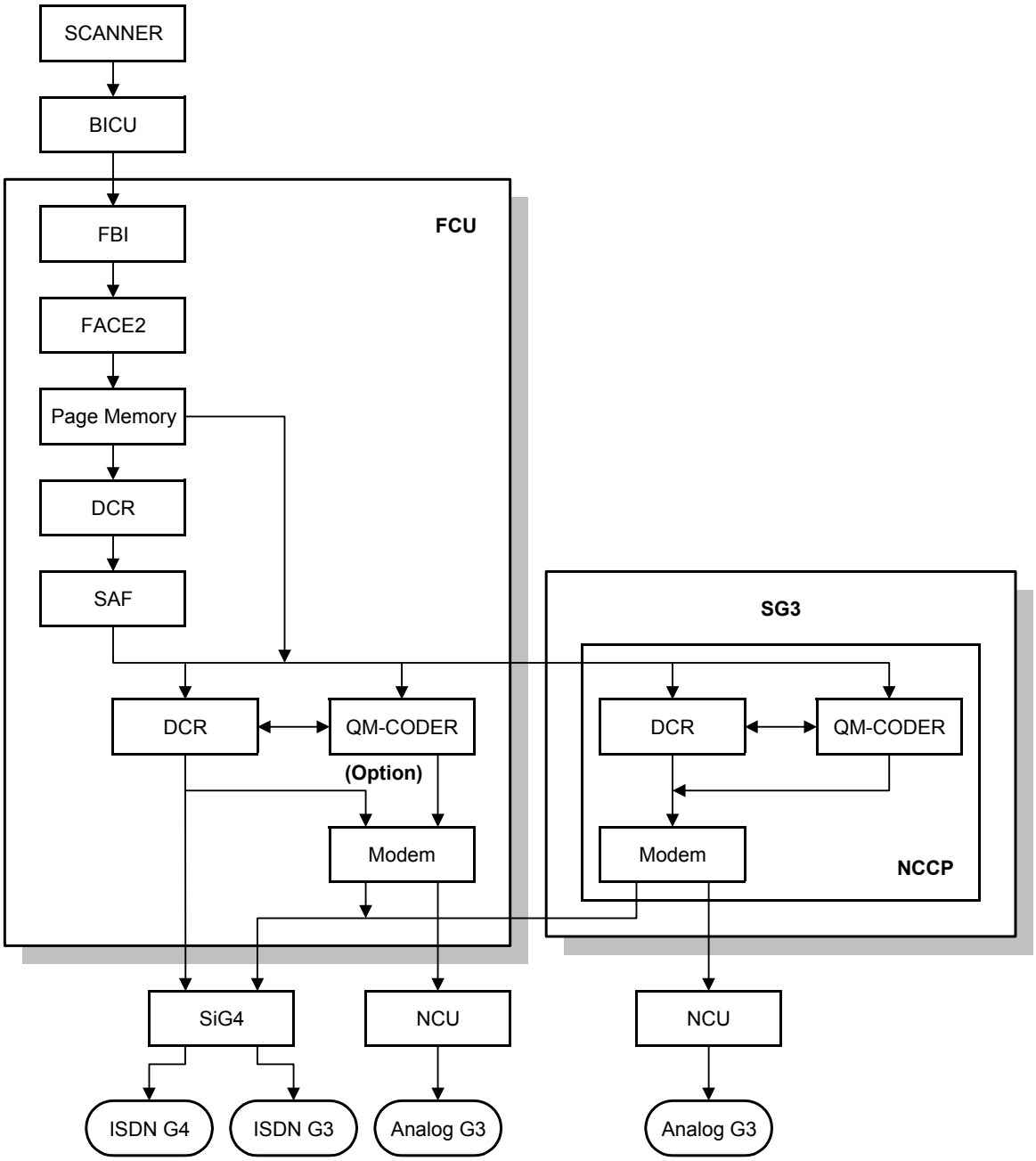
- 512 kB (4 Mbit) Flash ROM for system software storage

DRAM

- 2MB (16 Mbit) DRAM used

5.3 VIDEO DATA PATH

5.3.1 TRANSMISSION



Memory Transmission and Parallel Memory Transmission

The base copier's scanner scans the original at the selected resolution in inch format. The BICU processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BICU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then, the FCU converts the data to mm format, and compresses the data in MMR or raw format to store it in the SAF memory. If image rotation will be done, the image is rotated in page memory before compression.

At the time of transmission, the FCU decompresses the stored data, then re-compresses and/or reduces the data if necessary for transmission. Either the NCU or SiG4 (optional) transmits the data to the line.

Immediate Transmission

The base copier's scanner scans the original at the resolution agreed with the receiving terminal. The BICU video processes the data and transfers it to the FCU.

NOTE: When scanning a fax original, the BICU uses the MTF, independent dot erase and thresholding parameter settings programmed in the fax unit's scanner bit switches, not the copier's SP modes.

Then the FCU stores the data in page memory, and compresses the data for transmission. Either the NCU or SiG4 (optional) transmits the data to the line.

JBIG Transmission

- **Memory transmission:** If the receiver has JBIG compression, the data goes from the DCR to the QM-Coder on the Function Upgrade Unit for JBIG compression. Then either the NCU or SiG4 (ISDN G3) transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.
- **Immediate transmission:** If the receiver has JBIG compression, the data goes from the page memory to the QM-Coder on the Function Upgrade Unit for JBIG compression. Then either the NCU or SiG4 (ISDN G3) transmits the data to the line. When an optional G3 unit (SG3) is installed and PSTN2 is selected as the line type, JBIG compression is available, but only for the PSTN-2 line.

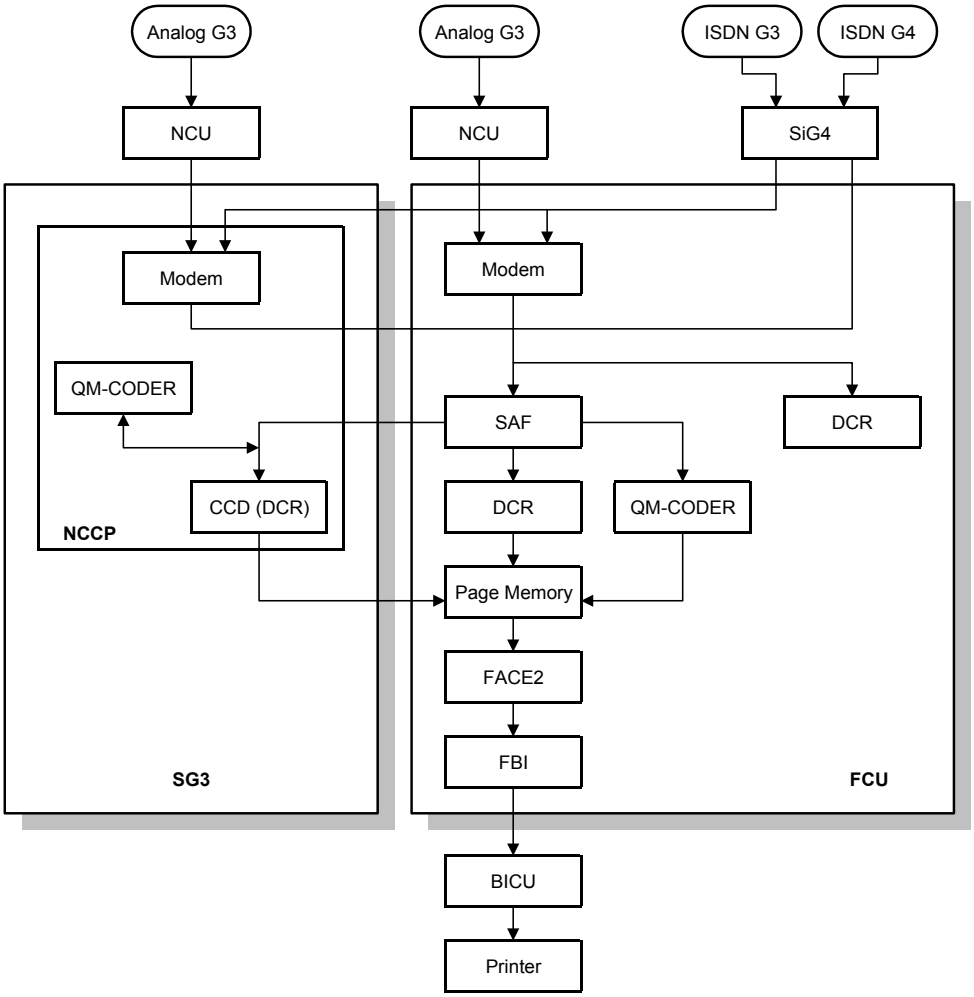
I-G3 (ISDN G3) Transmission

G3 transmission is available through the ISDN line by using the optional G4 unit (SiG4). In this case, the G3 modem is used for the I-G3 transmission. When an optional G3 unit (SG3) is installed, the modem on the SG3 can be also used for the I-G3 transmission. This means that two I-G3 transmission is available at the same time.

Adjustments

- Line used for G3 transmissions (PSTN or ISDN): System switch 0A bit 6
- Line used for G3 transmissions (PSTN 1/PSTN 2): System switch 16 bit 1
- I-G3 modem default: System switch 16 bit 2 and 3

5.3.2 RECEPTION



First, the FCU stores the incoming data from either an analog line or an ISDN line to the SAF memory. (The data goes to the FACE at the same time, and is checked for error lines/frames.)

The FCU then decompresses the data and transfers it to page memory. If image rotation will be done, the image is rotated in the page memory. The data is transferred to the BICU.

If the optional G3 unit is installed, the line that the message comes in on depends on the telephone number dialled by the other party (the optional G3 unit has a different telephone number from the main fax board).

JBIG Reception

When data compressed with JBIG comes in on PSTN-1 (the standard analog line), the data is sent to the Function Upgrade Unit for decompression. Then the data is stored in the page memory, and transferred to the IPU.

When data compressed with JBIG comes in on PSTN-2 (optional extra analog line), the data is sent to the QM-CODER on the SG3 board for decompression.

5.4 FAX COMMUNICATION FEATURES

5.4.1 PERSONAL/INFORMATION/TRANSFER BOXES

When an incoming message has a SUB or SEP code attached, the machine will look for a Personal Box, Transfer Box or Information Box with an identical SUB or SEP code. If a matching code is found, the message will be stored in the box and not printed, or it will be forwarded to the receiver if registered.

Personal Box (Confidential Box)

The user can create personal boxes in the machine's memory for receiving fax messages. Each box must have a name and a code.

If a sender knows the code that was used to create a personal box, they can specify this as the SUB code during transmission. The message will then go to this personal box. If the sender also sends a SID code, this is ignored; the receiver must input the SID code stored in the receiving machine to print the message (the receiver's SID code acts as a password).

The receiver can set up the personal box as a forwarding station – any messages entering the box will be forwarded to another station.

Items to program at the receiving machine

Items	Note
SUB Code (Box number)	Required
Box name	Required
Password (SID)	Optional
Receiver (1 forwarding destination)	Optional (Quick Dial)

Items for the sender to specify when setting up the transmission

Items	Note
SUB Code (Box number)	Required (must be the same as the code that was used to set up the personal box)
Password (SID)	Optional

NOTE: 1) Group dial is not available for the forwarding destination
2) If the sender uses a SID code, this code is ignored. The communication can proceed even if the SID code stored in the machine is different. In addition, the SID code stored in the machine must be used to print the stored message, and not the SID code from the sender.
3) If a forwarding destination is programmed, the received file is deleted after delivering the documents to the pre-programmed receiver. If forwarding did not succeed, the forwarding result report is printed out but the file stays in the memory until it is printed out on the machine.

Transfer Box

The user can create transfer boxes in the machine's memory for forwarding incoming fax messages. Each box must have a name and a code. Each box must also have destinations associated with it; any message arriving in this box will automatically be sent on to these destinations.

If a sender knows the code that was used to create a transfer box, they can specify this as the SUB code during transmission. The message will then go to this transfer box, and will be sent on to the transfer destinations associated with that transfer box.

If the sender also sends a SID code, the SID code stored in the receiver must be the same or the communication will be disconnected.

Items to program at the receiving machine

Items	Note
SUB Code (Box number)	Required
Box name	Required
Password (SID)	Optional
Receiver (Final destinations)	Required (Quick Dial)

Items for the sender to specify when setting up the transmission

Items	Note
SUB Code (Box number)	Required (must be the same as the code that was used to set up the transfer box)
Password (SID)	Optional

NOTE: 1) 5 destinations can be programmed with Group or Quick Dial as the delivery destinations.
2) More than 5 destinations are available if a Group is specified as one of the destinations.
3) If the SID does not match, the communication is disconnected.
4) A result report is not sent back to the transmitter but it is printed on the receiving machine.

Information Box (Polling Tx)

The user can set up documents in memory to be picked up by another machine. The user makes an information box for each document.

The information box is identified by a code. Anybody who wishes to call the fax machine and receive the document from the information box has to input this code as the SEP code when calling the machine.

In addition, the user who sets up the information box can protect it with a password. This protects the document from other people at the same location (to print the stored document, this password must be input). The person who wishes to receive the document does not have to know this PWD code, but only has to know the SEP code.

Items to program at the machine that has the document on standby for polling

Items	Note
SEP Code (Box number)	Required
Box name	Required
Password (PWD) for printing the stored document	Optional

Items for the caller to specify when picking up the document

Items	Note
SEP Code (Box number)	Required (must be the same as the code that was used to set up the information box)

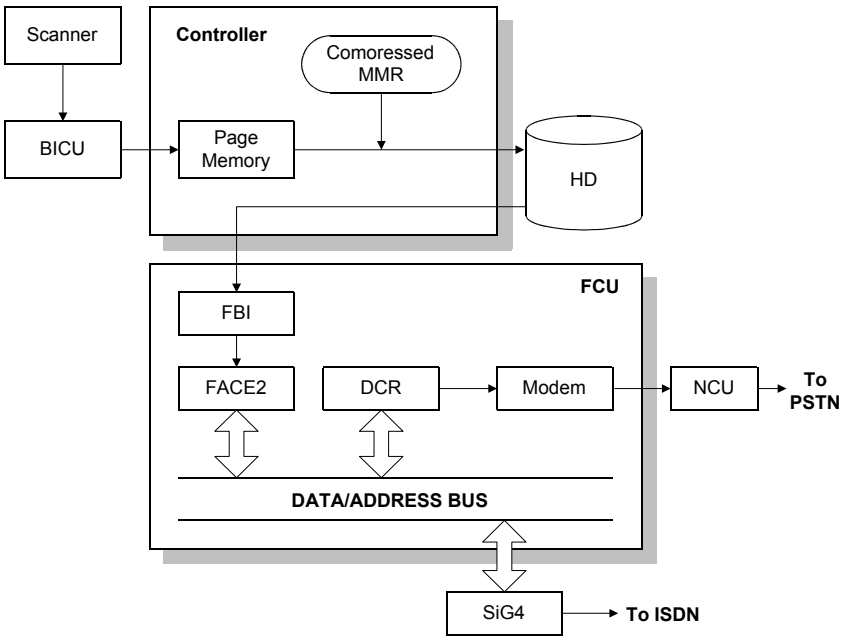
NOTE: 1) Only one fax message can go in each information box.
2) The SEP code must be different for each box.

5.4.2 MULTI-PORT

When the optional ISDN Unit or optional extra G3 Interface Unit is installed, communication can take place at the same time through the two or three lines at once.

Option	Available Line Type	Available protocol Combinations
Standard only	PSTN	G3
Extra G3 Interface Unit	PSTN + PSTN	G3 + G3
ISDN Unit	PSTN + ISDN	G3 + G4
	ISDN	I-G3 + G4
Extra G3 Interface Unit + ISDN Unit	PSTN + PSTN + ISDN	G3 + G3 +G4
	PSTN + ISDN	G3 + I-G3 or G3 + I-G3 + G4
	ISDN	I-G3 + I-G3 or I-G3 + G4

5.4.3 DOCUMENT SERVER



The base copier's scanner scans the original at the selected resolution. The BICU video processes the data and transfers it to the controller board.

Then the controller stores the data in the page memory for the copier function, and compresses the data in MMR (by software) to store it in the HDD. If image rotation will be done, the image is rotated in the page memory before compression.

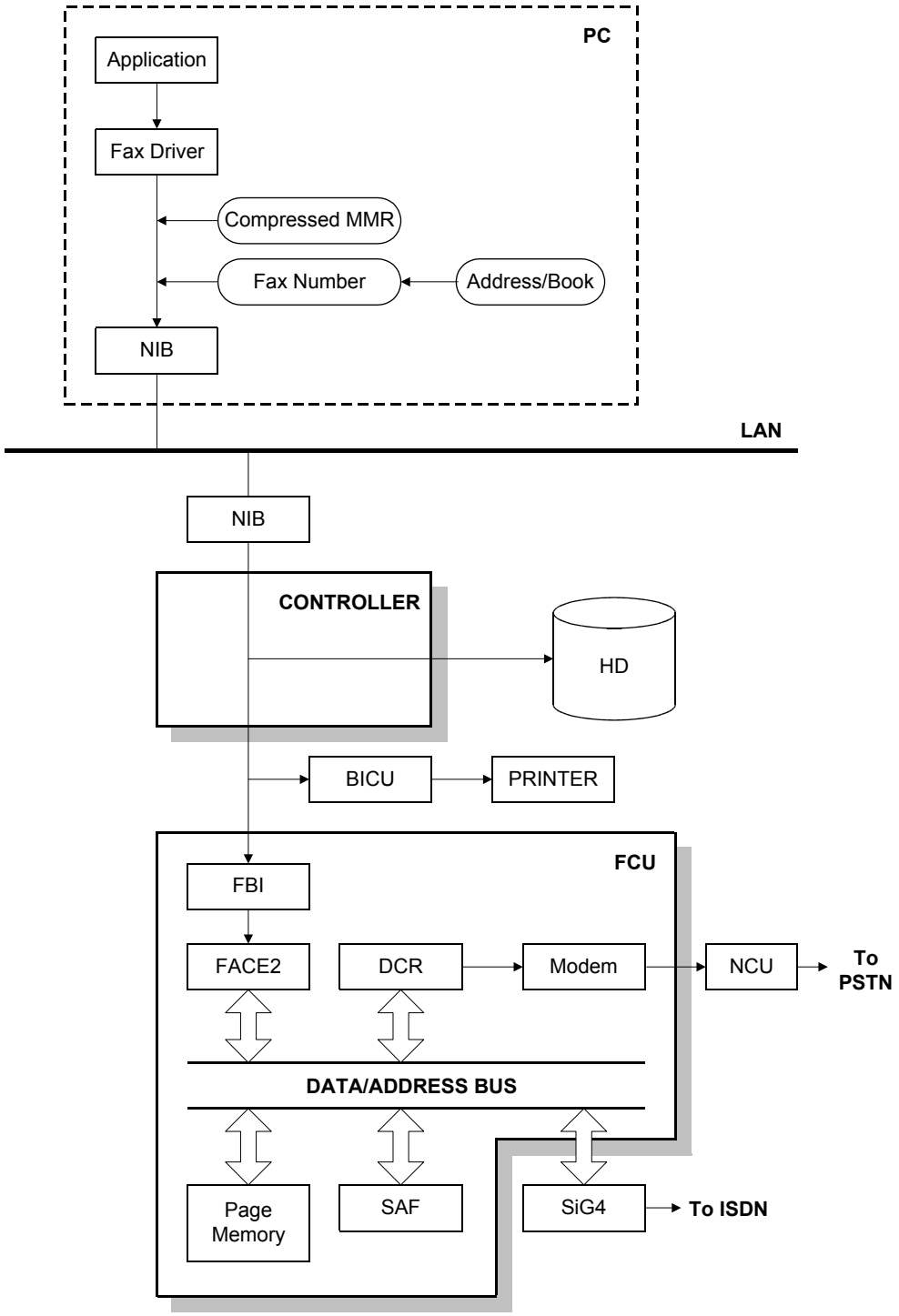
For transmission, the stored image data is transferred to the FCU. The FCU decompresses the image data, then recompresses and/or reduces the data if necessary for transmission. Either the NCU or SiG4 (optional) transmits the data to the line.

The documents can be stored in the HDD (Document Server) from the fax application. The stored documents in the document sever can be used for the fax transmission in many times. More than one document and the scanned document can be combined into one file and then the file can be transmitted.

- When using the document server, the SAF memory is not used.
- The document is compressed with MMR and stored.
- Up to 9,000 pages can be stored. (1 file: Up to 1,000 pages with Fax Function Upgrade and Expansion Memory) from the fax application.
- Only stored documents from the fax application can be transmitted.
- Scanned documents are given a name automatically, such as “FAX001”. But it is possible to change the file name, user name and password.
- Up to 30 files can be selected at once.

NOTE: 1) The compression method of the fax application is different from the copy application. The storing time is longer than the copier storing.
2) When selecting “Print 1st page”, the stored document will be reduced to A4 size.

5.4.4 LAN FAX DRIVER



The fax driver makes print data from an application, then compresses the print data into MMR data. PJL commands are added to the compressed data and the destination telephone number and the line selection are included in the PJL commands. The telephone number can be taken from an address book application.

The fax driver uses TCP/IP protocol to transfer the print (MMR) data to the machine.

Regular Transmission

The machine stores the print (MMR) data in the SAF memory. Then, the print data is transferred using the same method as memory transfer.

Print and Transmission

The machine stores the print (MMR) data in the page memory on the controller. Then, the machine decompresses the print data and prints out. The decompressed print data is transferred to the FCU and is stored to page memory.

Even if the Expansion Memory is not installed, it is possible to transmit and print the document from the PC with 400 dpi resolution. However, the data is converted to 200 dpi and printed out if the data stored in the SAF memory for memory transmission. This is because the page memory on the FCU is not enough to expand the print data to 400 dpi with only standard memory.

Using the Document Server

At first, the machine stores the print (MMR) data in the HDD, when using the Document Server. Then the print data is transferred to the FCU. But the FCU does not store this data in the SAF memory. Then the print data is transferred using the same method as Document Server transmission.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

Type:	Desktop type transceiver
Circuit:	PSTN (max. 2ch.) PABX ISDN
Connection:	Direct couple
Original Size:	Book (Face down) Maximum Length: 432 mm [17 ins] Maximum Width: 297 mm [11.7 ins] ARDF (Face up) (Single-sided document) Length: 128 - 1200 mm [5.0 - 47.2 ins] Width: 105 - 297 mm [4.1 - 11.7 inch] (Double-sided document) Length: 128 - 432 mm [5.0 - 17 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) Note1 16 x15.4 line/mm (Super Fine) See Note 1 200 x 100 dpi (Standard) 200 x 200 dpi (Detail) 400 x 400 dpi (Super Fine) See Note 1 G4 200 x 100 dpi (Standard) 200 x 200 dpi (Detail) 400 x 400 dpi (Super Fine) See Note 1 **NOTE:** 1. Optional Expansion Memory required
Transmission Time:	G3: 3 s at 28800 bps; Measured with G3 ECM using memory for an ITU-T #1 test document (Slerexe letter) at standard resolution G4: 3 s at 64 kbps; Measured with an ITU-T #1 test document (Slerexe letter) at standard resolution
Data Compression:	MH, MR, MMR JBIG (optional Fax Function Upgrade Unit required)
Protocol:	Group 3 with ECM Group 4 (ISDN unit required)

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 G4: 64 kbps/56 kbps
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 Standard: 2 MB With optional Expansion Memory: 26 MB (2 MB+ 24 MB)
	Page Memory Standard: 4 MB (Print: 2 MB + Scanner: 2 MB) With optional Expansion Memory: 12 MB (4 MB + 8 MB) (Print 8 MB + Scanner: 4 MB)

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.

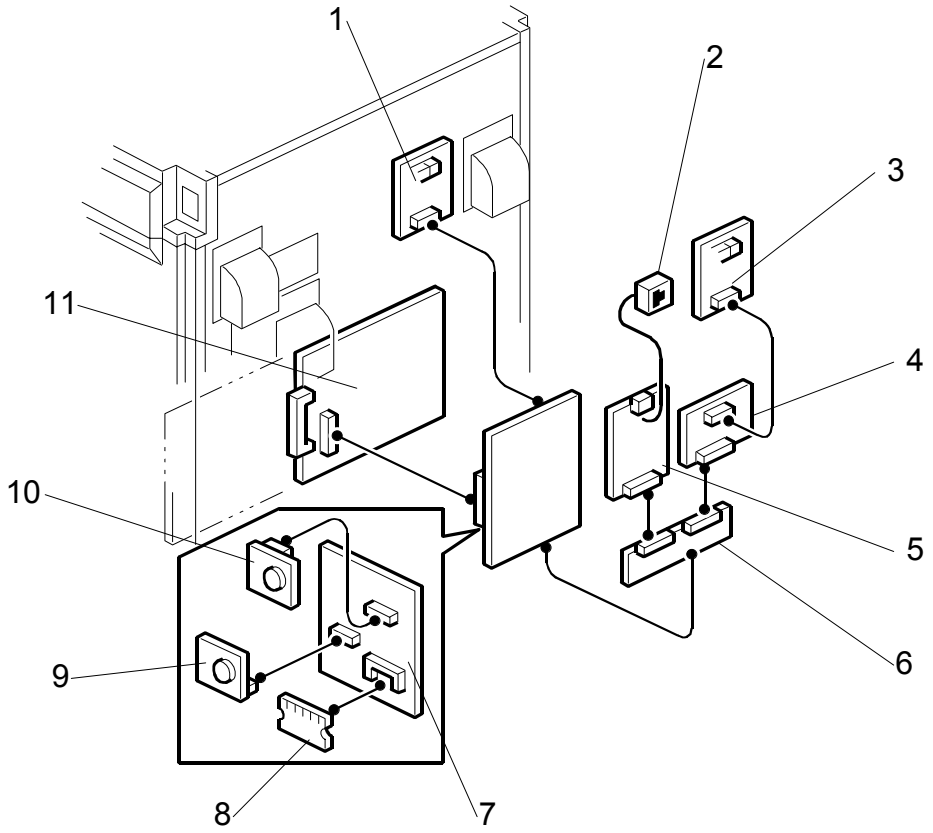
Item	Standard	With Fax Function Upgrade Unit
Quick Dial	400	1200
Groups	64	64
Destination per Group	500	500
Boxes (Information/Personal/Transfer)	150	400
Destinations dialed from the ten-key pad overall	100	1000
Programs	100	200
Auto Document	6	18
Communication records for Journal stored in the memory	200	1000
Specific Senders	30	50

The following table shows how the capabilities of the document memory will change after the optional Fax Function Upgrade Unit and the Expansion Memory are installed.

		Without the Expansion Memory	With the Expansion Memory
Memory Transmission file	**Without the Fax Function Upgrade Unit**	400	400
Maximum number of page for memory transmission		400	1000
Memory capacity for memory transmission (Note1)		160	1000
Memory Transmission file	**With the Fax Function Upgrade Unit**	800	800
Maximum number of page for memory transmission		400	3000
Memory capacity for memory transmission (Note1)		160	2080

NOTE: Measured using an ITU-T #1 test document (Slerexe letter) at the standard resolution, the auto image density mode and the Text mode.

3. MACHINE CONFIGURATION



No.	Description	No.	Description	No.	Description
1	NCU board	5	SiG4 board	9	Fax function upgrade kit
2	Modular jack	6	CCU interface board	10	MBU board
3	Optional NCU board	7	FCU board	11	Controller board
4	SG3-D board	8	Expansion memory		

Item	Machine Code	No.	Remarks
Fax Option Type 1232	B502	1, 7, 10	
G3 Interface Unit Type 1232	B503	3, 4, 6	
ISDN Option Type 1232	B504	2, 5, 6,	
Fax Function Upgrade Kit 185	A892	9	• Used in common with Stinger-C, A-C2, and Russian-C2
Handset Type 1018	B433	—	• USA only • Used in common with Kir C1
Expansion Memory	—	8	• Not provided (procure locally) • Used in common with Stinger-C, Russian-C2, and A-C2
Marker Type 30	H903	—	• Refill ink for stamp

FIRMWARE HISTORY

1. FAX FIRMWARE MODIFICATION HISTORY

- If no firmware history data is present in the table below, then no data was available at the time of this service manual's printing.
- Please check the http://tsc.ricohcorp.com website for current firmware downloads.
- Engine firmware modification history information is provided in “Section 7 – Firmware History.”

FAX MACHINE FIRMWARE MODIFICATION HISTORY			
DESCRIPTION OF MODIFICATION	**FIRMWARE LEVEL**	**SERIAL NUMBER**	**FIRMWARE VERSION**

B463/B529
PRINTER/SCANNER CONTROLLER

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

PRINTER/SCANNER CONTROLLER B463/B529

TABLE OF CONTENTS

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

1. INSTALLATION

1.1 INSTALLATION REQUIREMENTS

Please refer to section 1 of the main unit service manual.

1.2 PRINTER/SCANNER INSTALLATION

Accessory Check

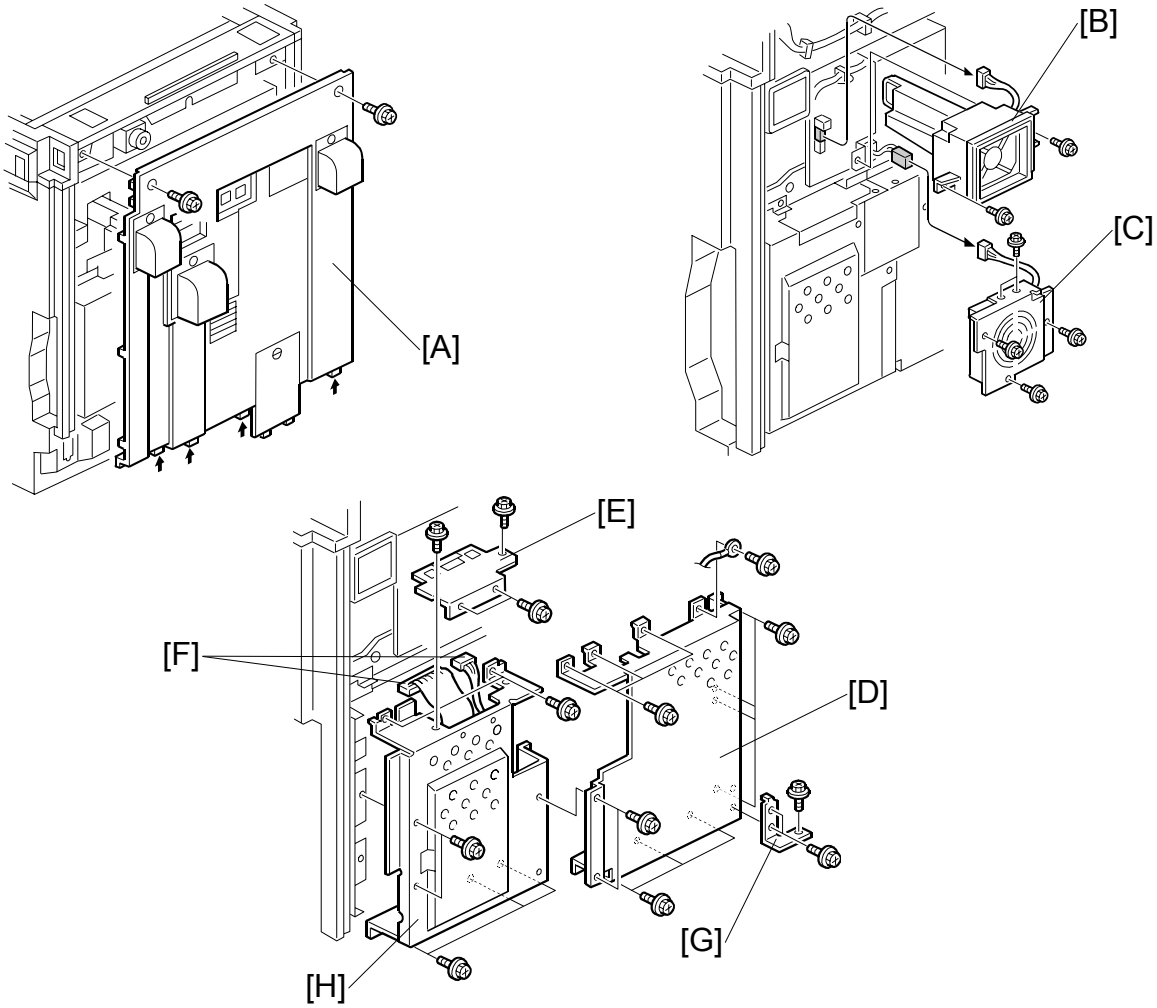
Check the accessories in the box against the following list:

No.	Description	Q'ty	Note
1	IEEE1284 (Centronics) Board	1	
2	Network Interface Board	1	
3	DIMM – Printer	1	
4	DIMM – NIB/Scanner	1	Scanner firmware is included only in the B529 (printer and scanner) model
5	NVRAM Board	1	
6	Key Top – Printer	1	
7	Key Top – Scanner	1	Included only in the B529 (printer and scanner) model
8	CD ROM – Printer	1	
9	CD ROM – Scanner	1	Included only in the B453 (printer and scanner) model
10	CD ROM – Operation Manual	1	
11	Operating Instructions	1	
12	FCC Label	1	Included only in the USA models.
13	IC Card Cover	1	
14	Ferrite Core	1	
15	Screw – M3x8	2	
16	Screw – M3x6	3	

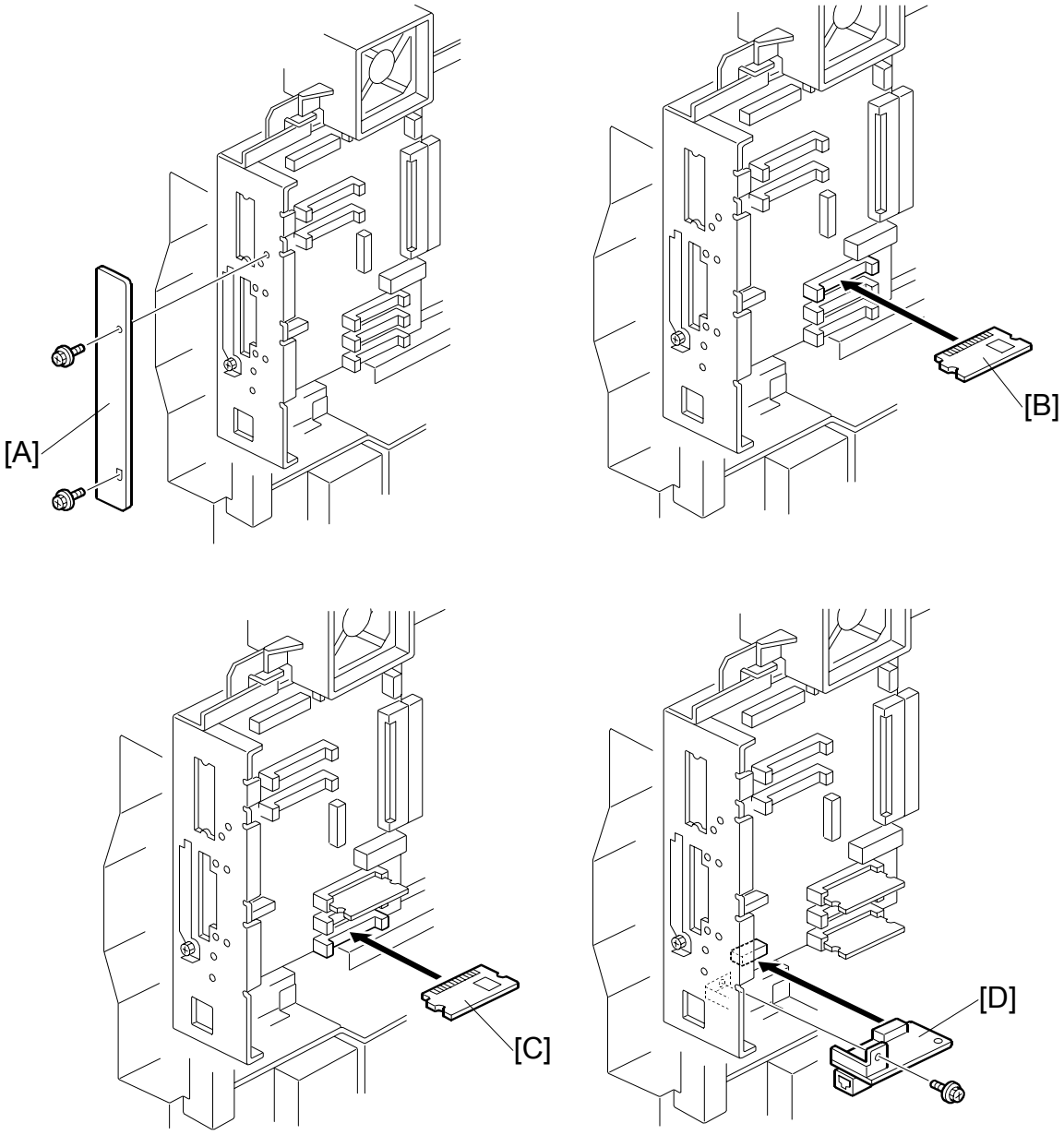
Printer, Printer/Scanner Controller Installation

⚠CAUTION
Unplug the main machine power cord before starting the following procedure.

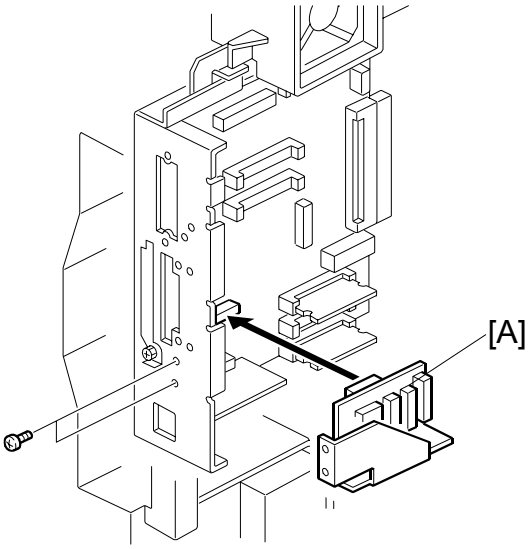
NOTE: When installing this unit, 128 MB or 256 MB memory must be installed.

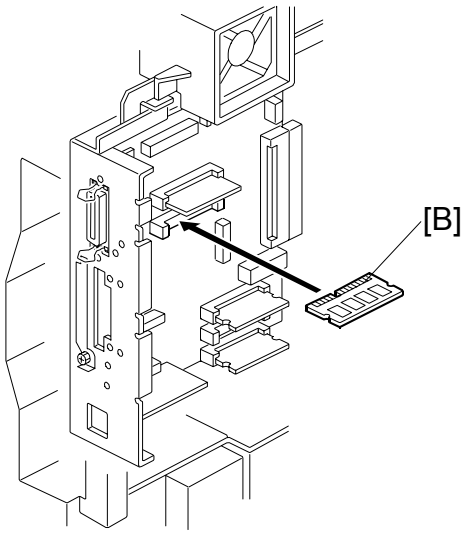


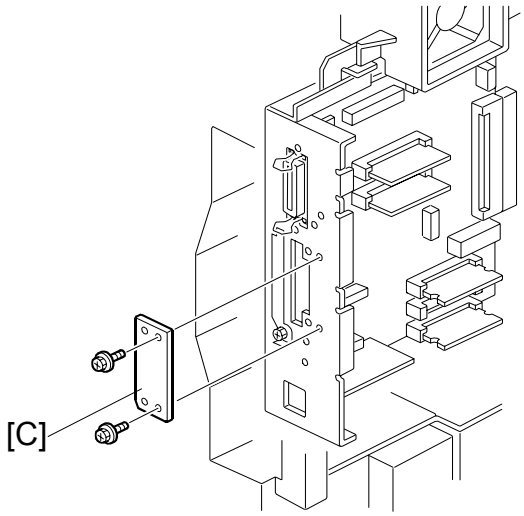
1. Remove the rear cover [A] (x 2).
2. Remove the cooling fan [B] (x 2).
3. Remove the PCB fan [C] (x 3, x 1).
4. Remove the BICU cover [D] (x 16).
5. Remove the HDD connector cover [E] (x 4).
6. Disconnect two HDD harnesses [F].
7. Remove the bracket [G] (x 3).
8. Remove the controller board cover [H] (x 7).

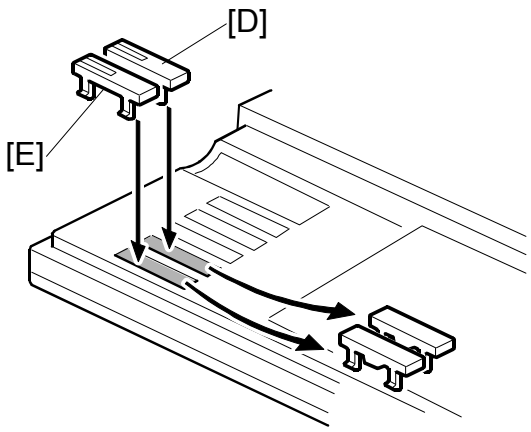


9. Remove the plate [A] (☞ x 2).
10. Install the printer or printer/scanner controller ROM DIMM [B] in Slot 1 on the controller board.
    NOTE: The colored label on the DIMM indicates the correct slot. For example, install the DIMM with a blue label in the slot with the blue lock.
11. Install the NIB ROM DIMM [C] in Slot 3 on the controller board.
12. Install the NIB [D] (☞ x 1).

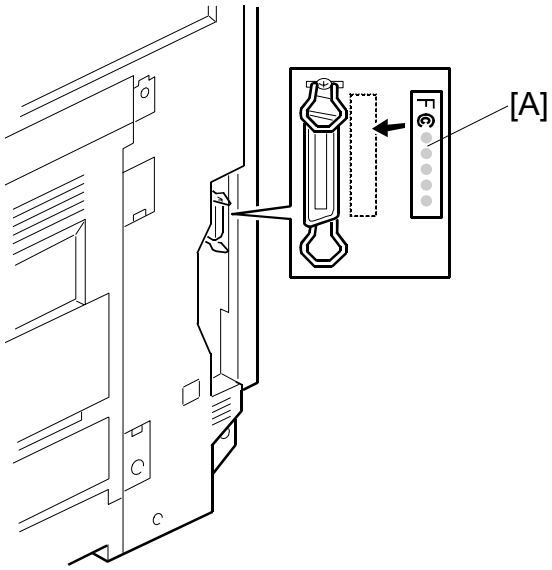








13. Install the NVRAM board [A] (☞ x 2).
14. Install the memory [B].
15. If the optional IEEE1394 or wireless LAN will not be installed, install the cover plate [C] (☞ x 2).
16. Reassemble the machine.
17. Replace the key tops for the appropriate units to be installed.
    [D]: Printer
    [E]: Scanner



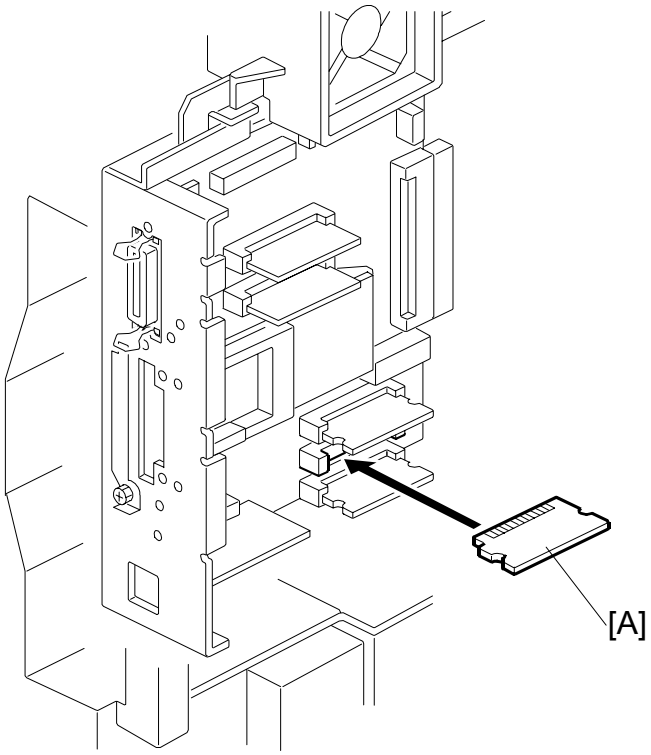
18. Attach the FCC label [A] to the controller panel board as shown.
    NOTE: This step is required only in the USA models.
19. Replace the left rear cover.
20. Replace the controller board cover and rear cover.
21. When installing the Printer/Scanner DIMM, perform copier SP5-801-9 (Memory All Clear – Scanner Application).
22. Ensure that the plug and play setting is correct (copier SP 5-907).

1.3 PRINTER OPTIONS

1.3.1 POSTSCRIPT UNIT (B522)

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

NOTE: To install the Postscript option, the printer option (B463 or B529) must be installed first (☛ 1.2).



1. Remove the rear cover and controller board cover (☛ steps 1 and 2 of the printer/scanner installation section).
2. Install the PostScript DIMM [A] on the controller board.
3. Replace the controller board cover and rear cover.

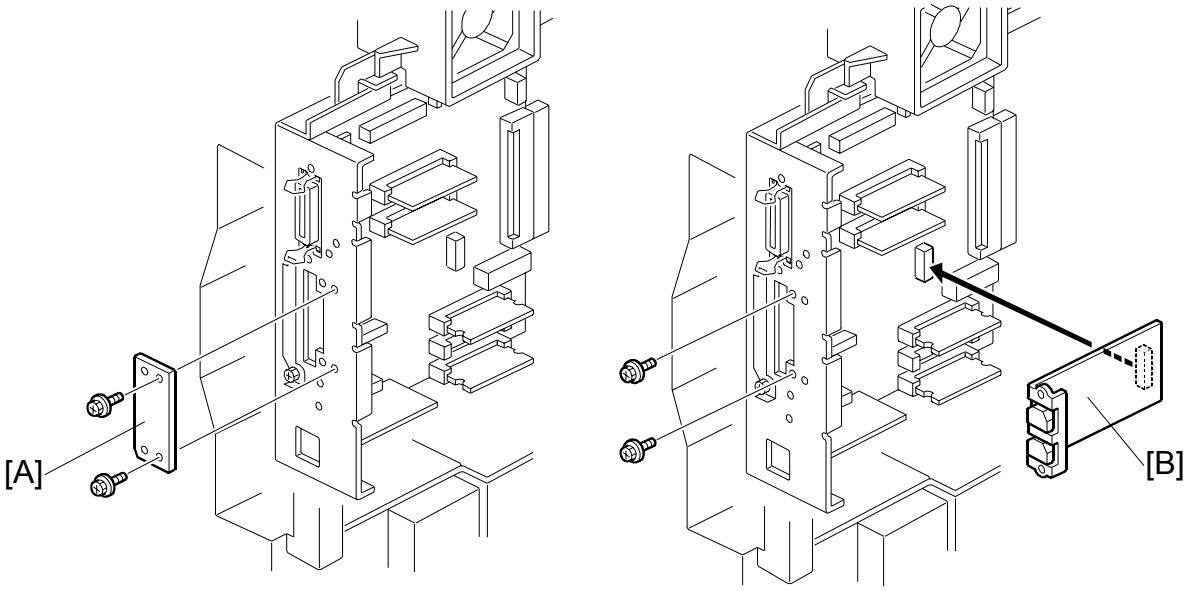
1.3.2 IEEE1394 INTERFACE (G539)

⚠CAUTION

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

NOTE: To install the IEEE1394 option, the printer option (B463 or B529) must be installed first (☛ 1.2).

⇒ The wireless LAN board, the IEEE1394 interface board or the MLB File Format Converter cannot be installed in the same machine at the same time.. If a wireless LAN board or MLB has been installed, remove it.



1. Remove the rear cover and controller board cover (☛ steps 1 and 2 of the printer/scanner installation section).
2. If the cover plate [A] has been installed, remove it (☞ x 2).
3. Attach the IEEE1394 board [B] to the controller board (☞ x 2).
4. Replace the controller board cover and rear cover.

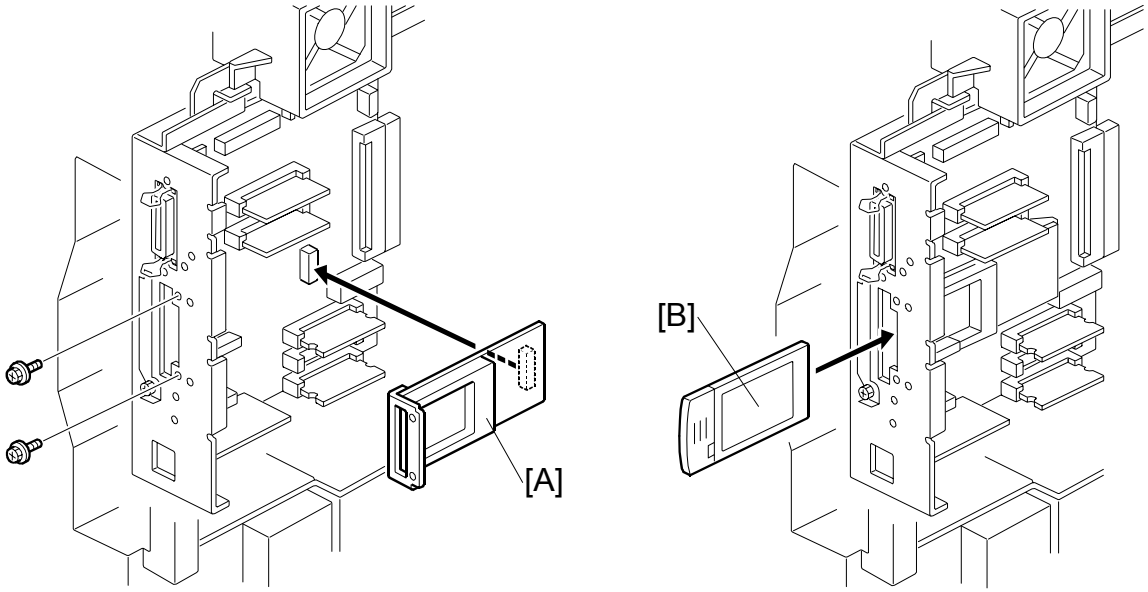
1.3.3 WIRELESS LAN (B515)

⚠CAUTION

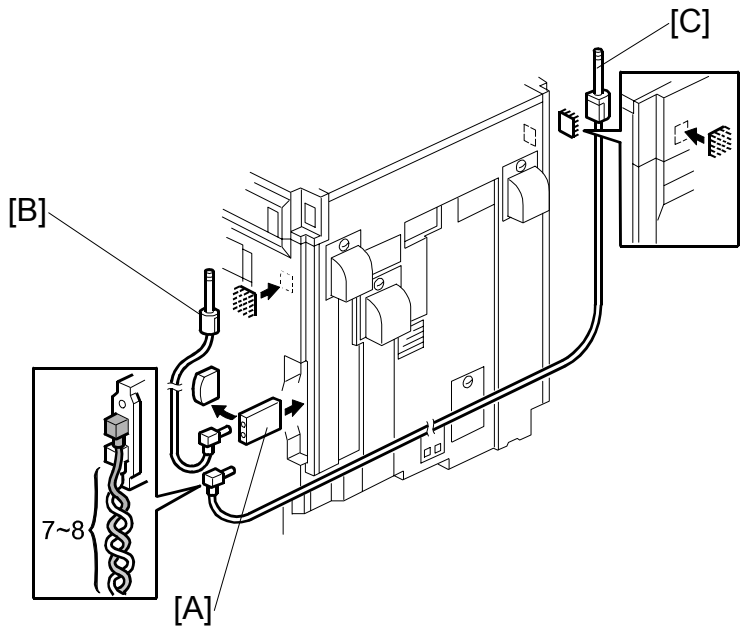
Unplug the main machine power cord before starting the following procedure.

NOTE: To install the wireless LAN option, the printer option (B463 or B529) must be installed first (☛ 1.2).

⇒ The wireless LAN board the IEEE1394 interface board and the MLB File Format Converter cannot be installed in the same machine at the same time. If the IEEE1394 board or MLB File Format Converter has been installed, remove it.



1. Remove the rear cover and controller board cover (☛ steps 1 and 2 of the printer/scanner installation section).
2. Attach the wireless LAN board [A] to the controller board (🔩 x 2).
3. Install the wireless LAN card [B].
4. Replace the controller board cover and rear cover.



If wireless LAN reception is not very good, install the extended antenna.

5. Remove the wireless LAN card [A] from the machine.
6. Remove the standard antenna [B] from the wireless LAN card.
7. Install the extended antenna [C] on the LAN card, as shown.
   NOTE: The antenna jack must be at the bottom end.
8. Twine the extended-antenna wires seven or eight times.
9. Peel off the backing of the double-sided tape attached to the antenna, and stick the antenna on the machine.

1.3.4 CHECKING THE CONNECTIONS

1. Plug in the power cord and turn on the main switch.
2. Enter the printer user mode and print the configuration page.
   (User Tools/ Printer Settings/ List Test Print/ Config. Page)
   The same data can also be printed using the printer service mode.
   ("Print Summary": SP1-004)

All installed options are listed in the "System Reference" column.

⇒ 1.4 FILE FORMAT CONVERTER INSTALLATION (B519)

1.4.1 ACCESSORY CHECK

Check the accessories in the box against the following list:

No.	Description	Q'ty	Note
1	File Format Converter Board	1	
2	Operating Instructions	1	
3	Screw – M3x6	2	

1.5 INSTALLATION PROCEDURE

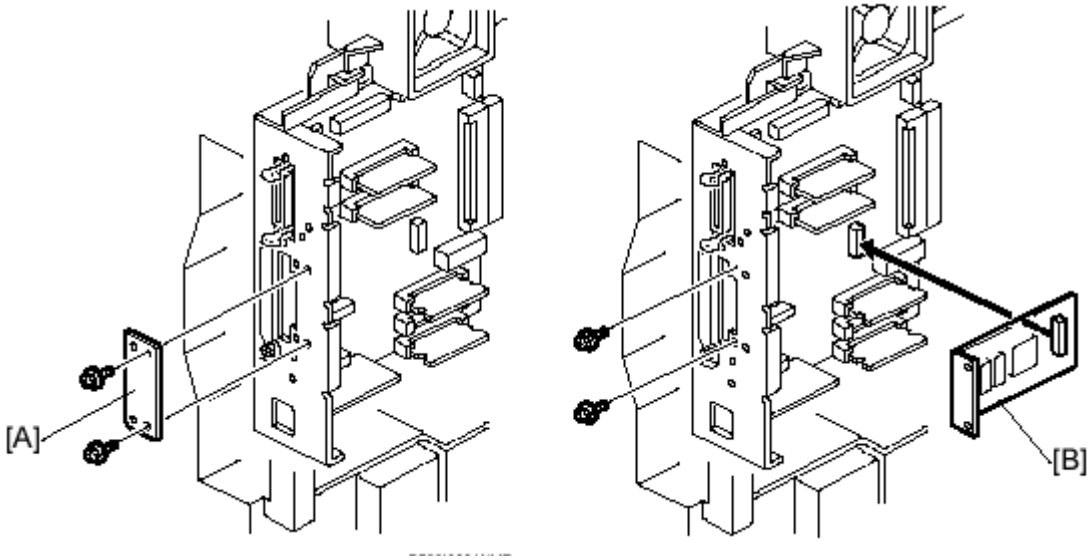
⚠CAUTION

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

NOTE: 1) To install this option, the printer/scanner option (B529) and memory option (G331 or G332) must be installed first (☛ 1.2).
2) The wireless LAN board, the IEEE1394 interface board, and this option cannot be installed in the same machine. If the wireless LAN board or IEEE1394 interface board has been installed, remove it.
3) The file format converter is available for the following software versions or later.

Software	Version	Service Card Version
Controller	2.00.1	Controller ver. 2.001
Fax	2.00	BICU-Fax ver. 1.07
Printer	2.00	Printer ver. 2.00
NFA (Net File)	1.66.00	
Scanner	2.00	S2.00_PS1.06
DeskTop Binder V2	3.0.0.0	----

⇒



1. Remove the rear cover and controller board cover (☛ steps 1 and 2 of the printer/scanner installation section).
2. If the cover plate [A] has been installed, remove it (🔩 x 2).
3. Attach the media link board [B] to the controller board (🔩 x 2).
4. Replace the controller board cover and rear cover.
5. Turn the main switch on.
6. Check the software versions listed on the previous page. If the installed software version does not match the table, download the correct firmware.
7. Perform the memory clear for network application (SP5-801-10).
8. Input the following default values manually (SP5-836).

SP No.	Value	SP No.	Value	SP No	Value
5-836-01	0 (see NOTE)	5-836-74	3	5-836-83	1
5-836-02	0	5-836-75	0	5-836-84	0
5-836-71	3	5-836-76	0	5-836-85	1
5-836-72	0	5-836-81	0	5-836-86	2
5-836-73	0	5-836-82	1	5-836-91	50

NOTE: When you want to capture images using e-Cabinet, SP5-836-01 must be set to “1”.

⟹ 1.5.1 PURPOSE OF THE FILE FORMAT CONVERTER (MLB)

In previous models (such as B003 or B022 Series), DeskTopBinder V2 could retrieve copy and print jobs from the document server and convert them to a TIFF format. However, this software-based conversion was slow for many users.

So, for this machine, this conversion has been made hardware-based, using the optional File Format Converter. Without the File Format Converter, copy and print jobs cannot be downloaded to a PC (or e-Cabinet) from the document server.

Two common target formats are provided for conversion to files that can be selected by the SP modes: JPEG, and TIFF.

In scanner mode, users can select file format from TIFF, JPEG, or PDF. The time to create TIFF and JPEG files will be shortened with the File Format Converter, especially for high resolution scanning and large image size. When the customer selects PDF, the machine creates a TIFF or JPEG file from the scanned image first then converts it to PDF. So, the total time to create a PDF is also shortened with the File Format Converter.

The sRGB color space can be selected in color scanning mode. The color-scanned data (RGB data) are converted to sRGB color space using the File Format Converter.

2. TROUBLESHOOTING

2.1 CONTROLLER ERRORS

Refer to section 7.1 of the main unit service manual for descriptions on SC code information because the GW architecture includes controller SC codes in the main unit SC code table.

2.2 LEDS AND TEST POINTS

LEDs and test points are not used for this option (except for the NIB ☛ section 4.4).

3. SERVICE TABLES

3.1 SERVICE PROGRAM MODE

⚠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.

⚠CAUTION

Never turn off the main power switch when the power LED is lit or flashing. To avoid damaging the hard disk or memory, press the operation power switch to switch the power off, wait for the power LED to go off, and then switch the main power switch off.

NOTE: The main power (✳①) lights or flashes while the platen cover or ARDF is open, while the main unit is communicating with a facsimile or the network server, or while the machine is accessing the hard disk or memory for reading or writing data.

3.1.1 ENABLING AND DISABLING SERVICE PROGRAM MODE

Entering the SP mode

◈	1. Press the Clear Mode key.
1 0 7	2. Use the keypad to enter “107”.
C/⊗	3. Hold down Clear/Stop for at least 3 seconds.
	4. Enter the Service Mode.
Printer SP	Press “Printer SP” to enter printer SP mode.
Scanner SP	Press “Scanner SP” to enter scanner SP mode.

NOTE: If you switch the machine off, any jobs stored on the hard disk using the sample print and protected print features will be deleted.
Check first if there are any jobs stored with these features
(Printer mode: View Sample Print Jobs/View Locked Print Job).

Exiting the Service Mode

Press “Exit” on the LCD panel to exit from the service mode.

3.2 PRINTER SERVICE MODE

3.2.1 SERVICE 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.
italics	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 / [Setting]
001	BitSw# 1 through 4 Adjust bit switch settings.		
	1	0	Not Used
		1	Not Used
		2	Not Used
		3	Not Used
		4	Card Save Function **0: Disabled** 1: Enabled
		5	Not Used
		6	Not Used
		7	Not Used
	2	Not Used	Note**:** Currently bit switches 2 and 4 are not being used
⇒	3	0	Specifically, the Euro currency symbol has been added along with the "PS fonts download" feature, which allows the symbol to be downloaded to machine RAM. Enable this feature by changing the setting of Bit SW#3- **0** to "**1** (ON)" in SP mode (default:0=OFF).
	4	Not Used	Note**:** Currently bit switches 2 and 4 are not being used
003	Clear Setting		
	1	Initialize Printer System	Initializes settings in the “System” menu of the user mode.
	2	Clear CSS counter	**DFU**
	3	Delete Program	**DFU**
004	Print Summary		
	1		Prints the printer summary sheet (An error log is printed in addition to the configuration page).
005	Display Version		
	1		Displays the version of the controller firmware.
101	Data Recall		
	1	Factory	Recalls a set of gamma settings.
	2	Previous	
	3	Current	
	4	ACC	

102	Resolution Settings		
	1		Selects the printing mode (resolution) for the printer gamma adjustment. **1800x1200 Photo** 1800x600 Text 1800x600 Graph 600x600 Photo 600x600 Text
103	Test Page		
	1	Color Gray Scale	Prints the *Color Calibration Test Sheet* or *Color Test Pattern* to check the color balance before and after toner control adjustment (gamma adjustment). *For toner control adjustment, see SP1-104 and SP1-105.*
	2	Color Pattern	
104	Gamma Adjustment		
	1	Black: Highlight	Adjusts the printer gamma for the mode selected in the "Mode Selection" menu. [0 to 30 / **15** / 1/step] *For the Color Calibration Test Sheet and Color Test Pattern, see SP1-103. For saving adjusted values, see SP1-105.*
	2	Black: Shadow	
	3	Black: Middle	
	4	Black: IDmax	
	21	Cyan: Highlight	
	22	Cyan: Shadow	
	23	Cyan: Middle	
	24	Cyan: IDmax	
	41	Magenta: Highlight	
	42	Magenta: Shadow	
	43	Magenta: Middle	
	44	Magenta: IDmax	
	61	Yellow: Highlight	
	62	Yellow: Shadow	
	63	Yellow: Middle	
	64	Yellow: IDmax	
105	Save Tone Control Value		
	1		Stores the print gamma adjusted with the "Gamma Adj." menu item as the current setting. Before the machine stores the new 'current setting', it moves the data currently stored as the 'current setting' to the 'previous setting' memory storage location.
106	Toner Limit		
	1	Toner Limit Photo	Adjusts the maximum toner amount for image development. [100 ~ 400 / **250** / 1%/step]
	2	Toner Limit Text	[100 ~ 400 / **180** / 1%/step]
107	Factory Test Print		
	1		**DFU**

3.2.2 SP MODES RELATED TO THE PRINTER CONTROLLER

The following SP modes are located in the copier SP mode.

⇒☛ Section 5.1.2 of the main unit service manual.

SP No.	Description	Function and Setting
5104	A3/DLT Double Count	Specifies whether the counter is doubled for A3/DLT. 0: No, 1: Yes If Yes is selected, the total counter and the current user code counter count up twice when A3 or DLT paper is used.
5801	Memory All Clear	Resets data for process control and all software counters, and returns all modes and adjustments to their defaults values.
5907	Plug & Play	Selects the brand name and the production name for Windows Plug & Play. This information is stored in NVRAM.
7832	Detailed Display of Self-Diagnostics	Displays the controller self-diagnostic result.

3.3 SCANNER SERVICE MODE

3.3.1 SCANNER PROGRAM MODE TABLE

SP1-XXX (System and Others)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001	**[System]**		
	1	Model Name	Displays the model name.
	2	Scanner Firmware Version	Displays the scanner firmware version.
	3	Scanner Firmware Number	Displays the firmware's part number.
	4	Detail Model Name	Displays the detail model name.
002	**[Error Log Display]**		
	1	Error Log Display	Displays the error log data.
004	**[Compression Type]**		
	1	Compression Type	Selects the compression type for binary picture processing. [1 to 3 / 3 / 1/step] 1: MH, 2: MR, 3: MMR
005	**[Erase margin]**		
	1	Erase Margin	Creates an erase margin for all edges of the scanned image. *If the machine has scanned the edge of the original, create a margin.* [0 to 5 / 0 / 1 mm/step]
006	**[Auto Reset Timer]**		
	1	Auto Reset Timer	Adjusts the auto reset timer for the scanner function. *If this is "0", the auto reset function is disabled.* [0 to 99 / 60 / 1 sec/step]

SP2-XXX (Scanning-image quality)

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
002	**[Text (print) mode settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction for Text mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 7 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 6 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern for Text mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma	Selects the scanner gamma type for Text mode when using binary picture processing mode. [0 to 6 / 4 / 1/step] **DFU** 0: Standard 1: Smooth 2: Clearly 3: Liner 4: Text image for the delivery function 5: Text/photo image for the delivery function 6: Photo image for the delivery function
	5	Notch No.7(Lighter): Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 104 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold	[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold	[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold	[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold	[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Contrast	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold	[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness	[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
002	21	Notch No.2: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold	[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No. 1(Darker): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold	[0 to 255 / 70 / 1/step] **DFU**
003	**[Text (OCR) mode settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction for Text mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 7 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 6 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern for Text mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma	Selects the scanner gamma type for Text mode when using binary picture processing mode. [0 to 6 / 4 / 1/step] **DFU** 0: Standard 1: Smooth 2: Clearly 3: Liner 4: Text image for the delivery function 5: Text/photo image for the delivery function 6: Photo image for the delivery function
	5	Notch No.7(Lighter): Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 104 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold	[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold	[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold	[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold	[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness	[0 to 255 / 128 / 1/step] **DFU**

2	**Mode Number (Class 1, 2, and 3)**		**Function / [Setting]**
003	18	Notch No.3: Contrast	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold	[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold	[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No. 1(Darker): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold	[0 to 255 / 70 / 1/step] **DFU**
004	**[Text/Photo mode settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction for Text/Photo mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 4 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0-13 / 4 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern for Text/Photo mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma	Selects the scanner gamma type for Text/Photo mode when using binary picture processing mode. [0 to 6 / 5 / 1/step] **DFU**
	5	Notch No.7(Lighter): Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold	[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold	[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold	[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Threshold	[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness	[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
004	18	Notch No.3: Contrast	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold	[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold	[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No. 1(Darker): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold	[0 to -255 / 70 / 1/step] **DFU**
005	**[Photo mode settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction for Photo mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied.* [0 to 15 / 0 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 0 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern for Photo mode when using binary picture processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma	Selects the scanner gamma type for Photo mode when using binary picture processing mode. [0 to 6 / 6 / 1/step] **DFU**
	5	Dither Matrix Filter	Selects the dither matrix type for Photo mode when using binary picture processing mode. [1 to 26 / 4 / 1 step] **DFU**
	6	Notch No.7(Lighter): Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	8	Notch No.7(Lighter): Threshold	[0 to 255 / 160 / 1/step] **DFU**
	9	Notch No.6: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	11	Notch No.6: Threshold	[0 to 255 / 145 / 1/step] **DFU**
	12	Notch No.5: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	14	Notch No.5: Threshold	[0 to 255 / 135 / 1/step] **DFU**
	15	Notch No.4(Middle): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No. 4(Middle): Contrast	[0 to 255 / 128 / 1/step] **DFU**

2	**Mode Number (Class 1, 2, and 3)**		**Function / [Setting]**
005	17	Notch No. 4(Middle): Threshold	[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Contrast	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	20	Notch No.3: Threshold	[0 to 255 / 100 / 1/step] **DFU**
	21	Notch No.2: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	23	Notch No.2: Threshold	[0 to 255 / 85 / 1/step] **DFU**
	24	Notch No. 1(Darker): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	26	Notch No. 1(Darker): Threshold	[0 to 255 / 70 / 1/step] **DFU**
006	**[Gray – scale mode settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction when using grayscale processing mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied* [0 to 15 / 0 / 1 step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 0 / 1 step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern when using grayscale processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	Scanner Gamma	Selects the scanner gamma type when using grayscale processing mode. [0 to 6 / 3 / 1/step] **DFU**
	5	Notch No.7(Lighter): Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	6	Notch No.7(Lighter): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	7	Notch No.7(Lighter): Threshold	[0 to 255 / 160 / 1/step] **DFU**
	8	Notch No.6: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	9	Notch No.6: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	10	Notch No.6: Threshold	[0 to 255 / 145 / 1/step] **DFU**
	11	Notch No.5: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	12	Notch No.5: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	13	Notch No.5: Threshold	[0 to 255 / 135 / 1/step] **DFU**
	14	Notch No.4(Middle): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No. 4(Middle): Contrast	[0 to 255 / 128 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
006	16	Notch No. 4(Middle): Threshold	[0 to 255 / 128 / 1/step] **DFU**
	17	Notch No.3: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	18	Notch No.3: Contrast	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 128 / 1/step] **DFU**
	19	Notch No.3: Threshold	[0 to 255 / 100 / 1/step] **DFU**
	20	Notch No.2: Brightness	[0 to 255 / 128 / 1/step] **DFU**
	21	Notch No.2: Contrast	[0 to 255 / 128 / 1/step] **DFU**
	22	Notch No.2: Threshold	[0 to 255 / 85 / 1/step] **DFU**
	23	Notch No. 1(Darker): Brightness	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No. 1(Darker): Contrast	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No. 1(Darker): Threshold	[0 to 255 / 70 / 1/step] **DFU**
007	**[Full Color (text) settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction when using grayscale processing mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied* [0 to 15 / 0 / 1/step] **DFU**
	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 0 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern when using grayscale processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	R-Gamma Curve	Adjusts the scanner gamma for RGB. [0 to 9 / 7 / 1 /step] **DFU**
	5	G-Gamma Curve	
	6	B-Gamma Curve	
	7	Notch No.7(Lighter): R - Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 195 / 1/step] **DFU**
	8	Notch No.7(Lighter): G - Brightness	[0 to 255 / 194 / 1/step] **DFU**
	9	Notch No.7(Lighter): B - Brightness	[0 to 255 / 195 / 1/step] **DFU**
	10	Notch No.7(Lighter): R - Contrast	[0 to 255 / 185 / 1/step] **DFU**
	11	Notch No.7(Lighter): G - Contrast	[0 to 255 / 184 / 1/step] **DFU**
	12	Notch No.7(Lighter): B - Contrast	[0 to 255 / 185 / 1/step] **DFU**
	13	Notch No.7(Lighter): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	14	Notch No.7(Lighter): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**

2	**Mode Number (Class 1, 2, and 3)**		**Function / [Setting]**
007	15	Notch No.7(Lighter): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No.6: R - Brightness	[0 to 255 / 177 / 1/step] **DFU**
	17	Notch No.6: G - Brightness	[0 to 255 / 174 / 1/step] **DFU**
	18	Notch No.6: B - Brightness	[0 to 255 / 177 / 1/step] **DFU**
	19	Notch No.6: R - Contrast	[0 to 255 / 168 / 1/step] **DFU**
	20	Notch No.6 G - Contrast	[0 to 255 / 164 / 1/step] **DFU**
	21	Notch No.6: B - Contrast	[0 to 255 / 168 / 1/step] **DFU**
	22	Notch No.6: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	23	Notch No.6: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No.6: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No.5: R - Brightness	[0 to 255 / 172 / 1/step] **DFU**
	26	Notch No.5: G - Brightness	[0 to 255 / 165 / 1/step] D**FU**
	27	Notch No.5: B - Brightness	[0 to 255 / 168 / 1/step] **DFU**
	28	Notch No.5: R - Contrast	[0 to 255 / 165 / 1/step] **DFU**
	29	Notch No.5 G - Contrast	[0 to 255 / 161 / 1/step] **DFU**
	30	Notch No.5: B - Contrast	[0 to 255 / 164 / 1/step] **DFU**
	31	Notch No.5: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	32	Notch No.5: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	33	Notch No.5: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	34	Notch No.4(Middle): R - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	35	Notch No. 4(Middle): G - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	36	Notch No. 4(Middle): B - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	37	Notch No. 4(Middle): R - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	38	Notch No. 4(Middle): G - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	39	Notch No. 4(Middle): B - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	40	Notch No. 4(Middle): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	41	Notch No. 4(Middle): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	42	Notch No. 4(Middle): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	43	Notch No.3: R - Brightness	[0 to 255 / 125 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
007	44	Notch No.3: G - Brightness	[0 to 255 / 127 / 1/step] **DFU**
	45	Notch No.3: B - Brightness	[0 to 255 / 127 / 1/step] **DFU**
	46	Notch No.3: R - Contrast	[0 to 255 / 136 / 1/step] **DFU**
	47	Notch No.3 G - Contrast	[0 to 255 / 134 / 1/step] **DFU**
	48	Notch No.3: B - Contrast	[0 to 255 / 134 / 1/step] **DFU**
	49	Notch No.3: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	50	Notch No.3: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	51	Notch No.3: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	52	Notch No.2: R - Brightness	[0 to 255 / 124 / 1/step] **DFU**
	53	Notch No.2: G - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	54	Notch No.2: B - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	55	Notch No.2: R - Contrast	[0 to 255 / 140 / 1/step] **DFU**
	56	Notch No.2 G - Contrast	[0 to 255 / 138 / 1/step] **DFU**
	57	Notch No.2: B - Contrast	[0 to 255 / 138 / 1/step] **DFU**
	58	Notch No.2: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	59	Notch No.2: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	60	Notch No.2: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	61	Notch No. 1(Darker): R - Brightness	[0 to 255 / 124 / 1/step] **DFU**
	62	Notch No. 1(Darker): G - Brightness	[0 to 255 / 125 / 1/step] **DFU**
	63	Notch No. 1(Darker): B - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	64	Notch No. 1(Darker): R - Contrast	[0 to 255 / 144 / 1/step] **DFU**
	65	Notch No. 1(Darker) G - Contrast	[0 to 255 / 144 / 1/step] **DFU**
	66	Notch No. 1(Darker): B - Contrast	[0 to 255 / 142 / 1/step] **DFU**
	67	Notch No. 1(Darker): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	68	Notch No. 1(Darker): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	69	Notch No. 1(Darker): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
008	**[Full Color (photo) settings]**		
	1	MTF Filter Coefficient (Main scan)	Selects the MTF filter coefficient in the main scan direction when using grayscale processing mode. *Select a higher number for a stronger filter.* *If this is "0", the MTF filter is not applied* [0 to 15 / 0 / 1/step] **DFU**

2	**Mode Number (Class 1, 2, and 3)**		**Function / [Setting]**
008	2	MTF Filter Coefficient (Sub scan)	As above, for sub scan [0 to 13 / 0 / 1/step] **DFU**
	3	Smoothing Filter	Selects the smoothing pattern when using grayscale processing mode. *A larger value could cause moiré to appear in the image.* [0 to 7 / 0 / 1/step] **DFU**
	4	R-Gamma Curve	Adjusts the scanner gamma for RGB. [0 to 9 / 7 / 1 /step] **DFU**
	5	G-Gamma Curve	
	6	B-Gamma Curve	
	7	Notch No.7(Lighter): R - Brightness	Adjusts the image density for each image density level for Text mode when using binary picture processing mode. [0 to 255 / 195 / 1/step] **DFU**
	8	Notch No.7(Lighter): G - Brightness	[0 to 255 / 194 / 1/step] **DFU**
	9	Notch No.7(Lighter): B - Brightness	[0 to 255 / 195 / 1/step] **DFU**
	10	Notch No.7(Lighter): R - Contrast	[0 to 255 / 185 / 1/step] **DFU**
	11	Notch No.7(Lighter): G - Contrast	[0 to 255 / 184 / 1/step] **DFU**
	12	Notch No.7(Lighter): B - Contrast	[0 to 255 / 185 / 1/step] **DFU**
	13	Notch No.7(Lighter): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	14	Notch No.7(Lighter): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	15	Notch No.7(Lighter): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	16	Notch No.6: R - Brightness	[0 to 255 / 177 / 1/step] **DFU**
	17	Notch No.6: G - Brightness	[0 to 255 / 174 / 1/step] **DFU**
	18	Notch No.6: B - Brightness	[0 to 255 / 177 / 1/step] **DFU**
	19	Notch No.6: R - Contrast	[0 to 255 / 168 / 1/step] **DFU**
	20	Notch No.6 G - Contrast	[0 to 255 / 164 / 1/step] **DFU**
	21	Notch No.6: B - Contrast	[0 to 255 / 168 / 1/step] **DFU**
	22	Notch No.6: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	23	Notch No.6: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	24	Notch No.6: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	25	Notch No.5: R - Brightness	[0 to 255 / 172 / 1/step] **DFU**
	26	Notch No.5: G - Brightness	[0 to 255 / 165 / 1/step] D**FU**
	27	Notch No.5: B - Brightness	[0 to 255 / 168 / 1/step] **DFU**
	28	Notch No.5: R - Contrast	[0 to 255 / 165 / 1/step] **DFU**

2	Mode Number (Class 1, 2, and 3)		Function / [Setting]
008	29	Notch No.5 G - Contrast	[0 to 255 / 161 / 1/step] **DFU**
	30	Notch No.5: B - Contrast	[0 to 255 / 164 / 1/step] **DFU**
	31	Notch No.5: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	32	Notch No.5: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	33	Notch No.5: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	34	Notch No.4(Middle): R - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	35	Notch No. 4(Middle): G - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	36	Notch No. 4(Middle): B - Brightness	[0 to 255 / 128 / 1/step] **DFU**
	37	Notch No. 4(Middle): R - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	38	Notch No. 4(Middle): G - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	39	Notch No. 4(Middle): B - Contrast	[0 to 255 / 128 / 1/step] **DFU**
	40	Notch No. 4(Middle): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	41	Notch No. 4(Middle): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	42	Notch No. 4(Middle): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	43	Notch No.3: R - Brightness	[0 to 255 / 125 / 1/step] **DFU**
	44	Notch No.3: G - Brightness	[0 to 255 / 127 / 1/step] **DFU**
	45	Notch No.3: B - Brightness	[0 to 255 / 127 / 1/step] **DFU**
	46	Notch No.3: R - Contrast	[0 to 255 / 136 / 1/step] **DFU**
	47	Notch No.3 G - Contrast	[0 to 255 / 134 / 1/step] **DFU**
	48	Notch No.3: B - Contrast	[0 to 255 / 134 / 1/step] **DFU**
	49	Notch No.3: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	50	Notch No.3: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	51	Notch No.3: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	52	Notch No.2: R - Brightness	[0 to 255 / 124 / 1/step] **DFU**
	53	Notch No.2: G - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	54	Notch No.2: B - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	55	Notch No.2: R - Contrast	[0 to 255 / 140 / 1/step] **DFU**
	56	Notch No.2 G - Contrast	[0 to 255 / 138 / 1/step] **DFU**
	57	Notch No.2: B - Contrast	[0 to 255 / 138 / 1/step] **DFU**
	58	Notch No.2: R - Threshold	[0 to 255 / 128 / 1/step] **DFU**

2	**Mode Number (Class 1, 2, and 3)**		**Function / [Setting]**
008	59	Notch No.2: G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	60	Notch No.2: B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	61	Notch No. 1(Darker): R - Brightness	[0 to 255 / 124 / 1/step] **DFU**
	62	Notch No. 1(Darker): G - Brightness	[0 to 255 / 125 / 1/step] **DFU**
	63	Notch No. 1(Darker): B - Brightness	[0 to 255 / 126 / 1/step] **DFU**
	64	Notch No. 1(Darker): R - Contrast	[0 to 255 / 144 / 1/step] **DFU**
	65	Notch No. 1(Darker): G - Contrast	[0 to 255 / 144 / 1/step] **DFU**
	66	Notch No. 1(Darker): B - Contrast	[0 to 255 / 142 / 1/step] **DFU**
	67	Notch No. 1(Darker): R - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	68	Notch No. 1(Darker): G - Threshold	[0 to 255 / 128 / 1/step] **DFU**
	69	Notch No. 1(Darker): B - Threshold	[0 to 255 / 128 / 1/step] **DFU**
009	**[Compression ratio of gray-scale]**		
	1	Compression ratio (Normal image)	Selects the compression ratio for grayscale processing mode (JPEG) for the three settings that can be selected at the operation panel. [5 to 95 / 50 / 1 /step]
	2	Compression ratio (High quality image)	[5 to 95 / 60 / 1 /step]
	3	Compression ratio (Low-quality image)	[5 to 95 / 40 / 1 /step]

3.3.2 FILE FORMAT CONVERTER (B519 MEDIA LINK BOARD)

After installing the File Format Converter (MLB) and upgrading the software, the following SP modes will be available.

5	Number/Name		Function/[Setting]
⇒ 836	Capture Setting		
	001	Capture Function	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/0/1] 0: Disable 1: Enable
	002	Panel Setting	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] 0: Disable 1: Enable The setting for SP5836 001 has priority.
	051	Capture Setting: Cancel Document	Deletes the file(s) that could not send to a PC or waiting for sending.
	071	Capture Setting: Resolution Conversion for Color	Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	072	Capture Setting: Resolution Conversion for Copy Text	Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	073	Capture Setting: Resolution Conversion for Copy (Others)	Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
⇒ 836	074	Capture Setting: Resolution Conversion for Color Print	Determines the resolution conversion ratio when a color print image document is sent to the Document Server via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	075	Capture Setting: Resolution Conversion for Binary Print	Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	076	Capture Setting: Resolution Conversion for Dither Print (Grayscale processing mode)	Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the File Format Converter. [1~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	081	Capture Setting: Format for Color Copy	Determines the image format for Color Copy images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	082	Capture Setting: Format for Copy Text	Determines the image format for Copy Text images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	083	Capture Setting: Format for Copy (Others)	Determines the image format for Copy (other than text) images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	084	Capture Setting: Format for Color Print	Determines the image format for Color Print images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG

5	Number/Name		Function/[Setting]
⇒ 836	085	Capture Setting: Format for Binary Print	Determines the image format for Binary Print images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	086	Capture Setting: Format for Dither Print (1200dpi)	Determines the image format for Dither Print images sent to the Document Server via the File Format Converter. [0~3/2/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	091	Capture Setting: Page Quality for JPEG	Determines the quality level of JPEG images sent to the Document Server via the File Format Converter. [5~95/50/1]
⇒ 847	Net File Mag. Rate		
	001	Copy: Color	Changes the default settings of color copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [1~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	002	Copy: Text	Changes the default settings of copy text image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	003	Copy: Others	Changes the default settings of a copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
⇒ 847	004	Print: Color	Changes the default settings of color print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	005	Print: Binary	Changes the default settings of binary print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	006	Print: Dither (Grayscale processing mode)	Changes the default settings of dither print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	021	Netfile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by DeskTopBinder V2 sent via the File Format Converter. [5~95 / 50 / 1]
⇒ 848	Web Service		Sets the 4-bit switch assignment for the access control setting. 0000: No access control 0001: Denies access to Desk Top Binder V2. Has no effect on access and delivery from Scan Router. The lower 4 bits are used.
	001	Access Control: Net file	Net File: Job printed from the document server from a PC using DeskTopBinder V2. DocBox: Document Server Repository: Document Management area on the machine's hard disks
	002	Access Control: Repository	
	003	DocBox Print	
	004	User Directory	
	005	Delivery Input (Lower 4 Bits)	
	006	Fax Control (Lower 4 Bits)	

3.4 FIRMWARE UPDATE PROCEDURE

Firmware updating procedure is described in section 5.2 of the main unit service manual.

3.5 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 controller board.

- CPU, ASIC and clock
- Flash ROM
- Resident and optional SDRAM
- Parallel interface
- NIB
- IEEE1394 interface (if installed)
- NVRAM
- HDD

- Refer to section 4.1.2 of the main unit service manual for how to check the error codes (SP7-832).

3.6 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 “# Enter” key together.
3. The machine prints the diagnostic report automatically.
   - Refer to section 4.1.2 of the main unit service manual for how to check the error codes (SP7-832).

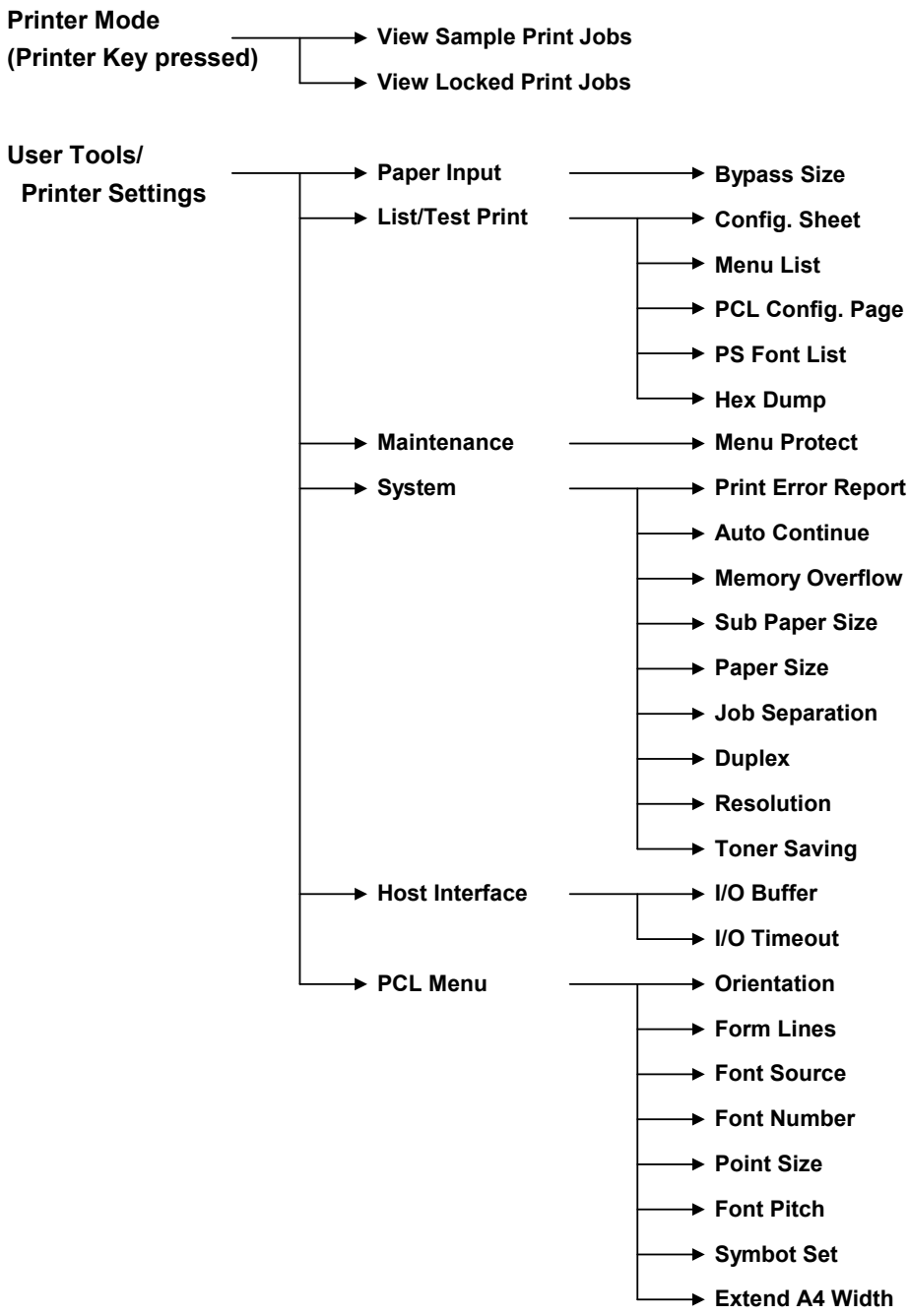
3.7 USER PROGRAM MODE

3.7.1 PRINTER USER PROGRAM MODE

Press the “Printer” key on the operation panel to enter the printer mode.

⇒ Press the “User Tools/Counter” then select “Printer Settings” to change printer settings.

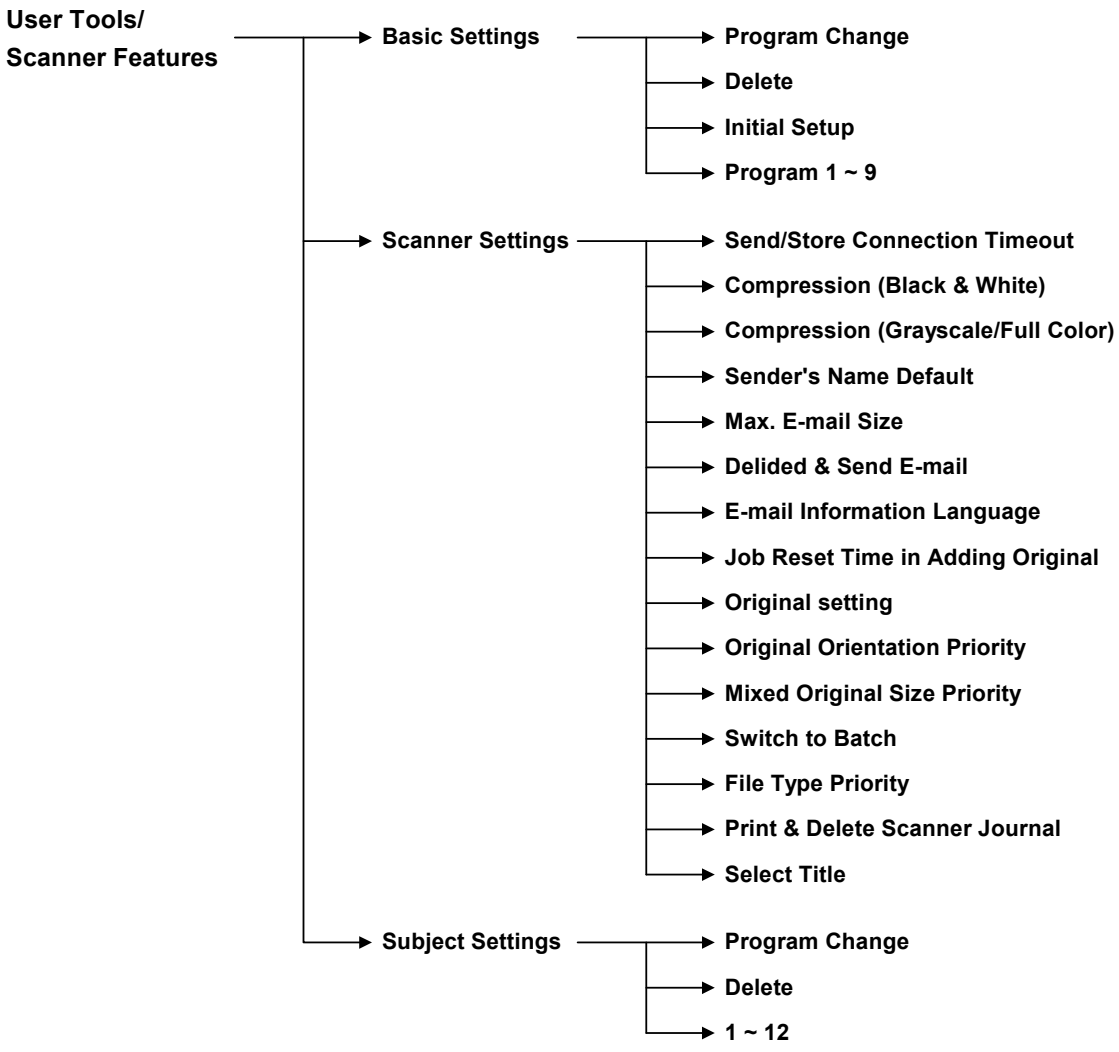
User Mode Tree



3.7.2 SCANNER USER PROGRAM MODE

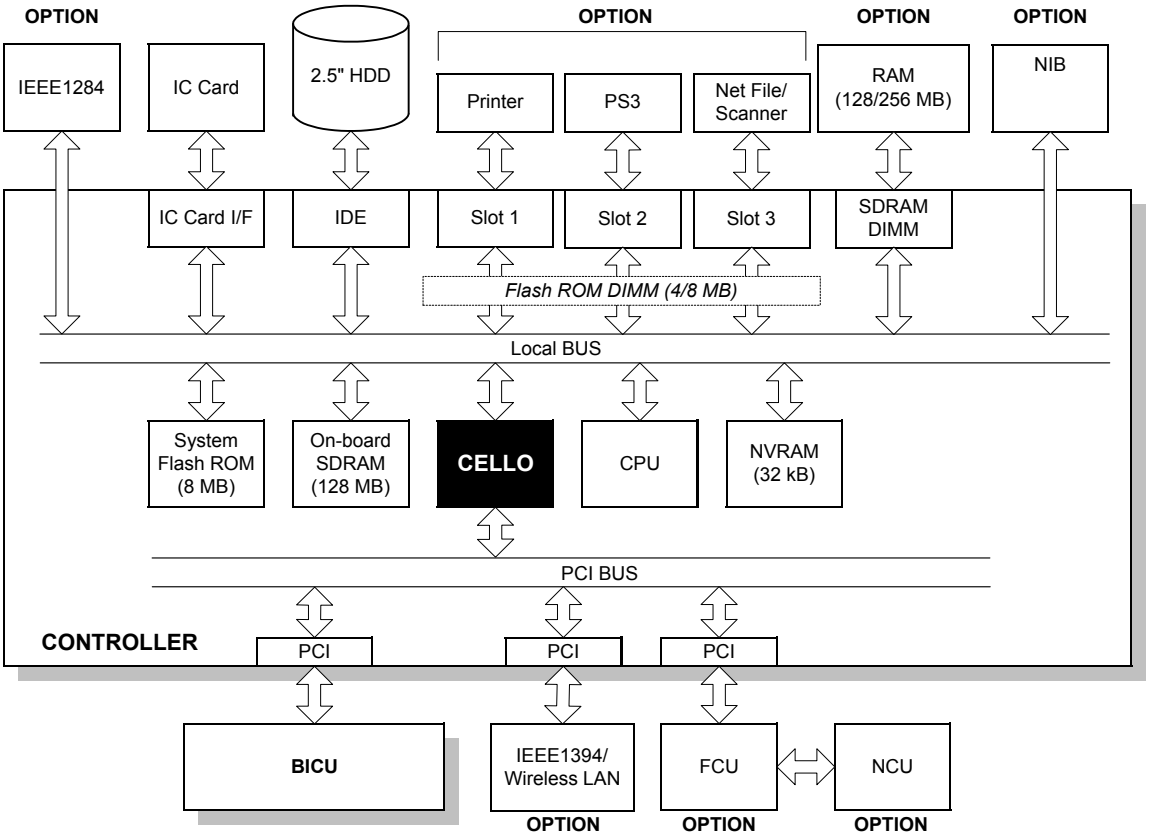
⇒ Press the “User Tools/Counter” then select “Scanner Settings” to change scanner settings.

User Mode Tree



4. DETAILED SECTION DESCRIPTIONS

4.1 OVERVIEW

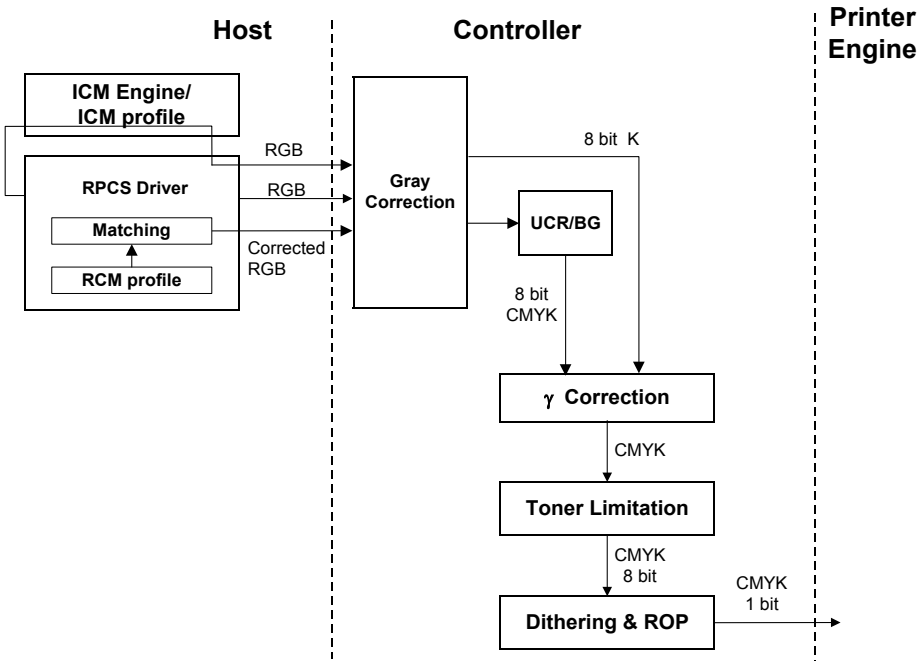


This machine uses the GW architecture, which allows the controller board to control all applications. To enable the application, just install the appropriate ROM DIMM on the controller.

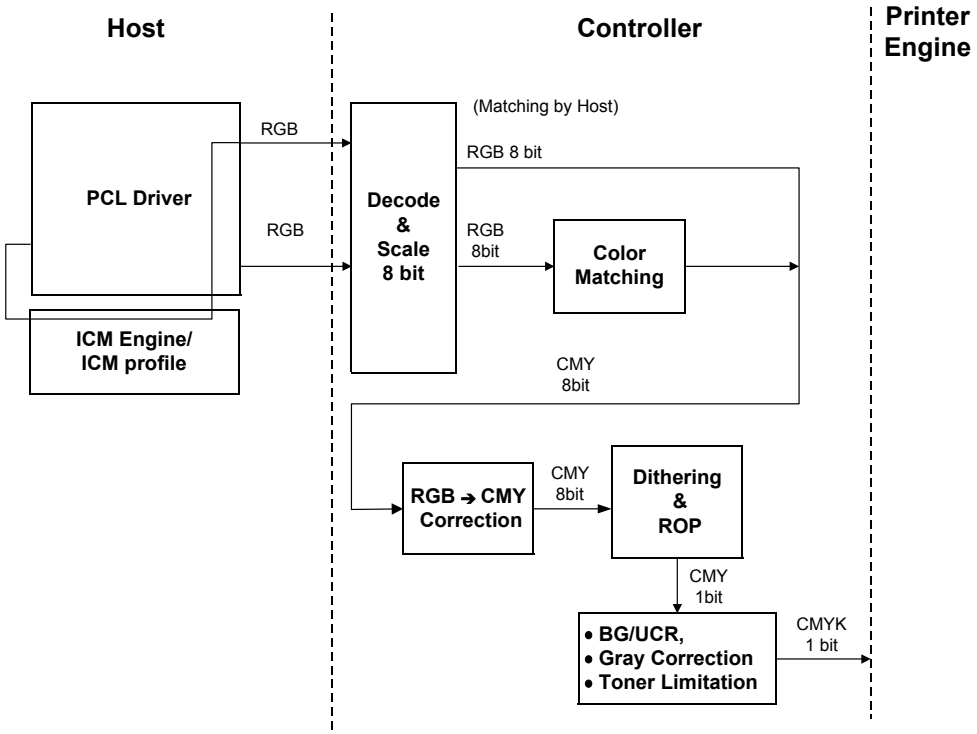
CPU:	PMC RM526A-250
CELLO:	GW architecture ASIC. It controls all the functions of the controller board.
Flash ROM:	8MB Flash ROM for the system program
SDRAM (on-board):	128 MB SDRAM, expandable with 128 MB or 256 MB optional DRAM.
NVRAM:	Stores the controller settings
PCI Interface:	Options such as the Fax, IEEE1394, and Wireless LAN are installed. The IEEE1394 and wireless LAN card cannot both be installed at the same time.
NIB	The NIB is a standard component of the printer and printer/scanner kits. 'Option' in this diagram means that it is an option for the copier (like the printer and printer/scanner kits).
HDD:	Used to store additional soft fonts. Also used for collation, locked print, sample print and form overlay

4.2 PRINT DATA PROCESSING

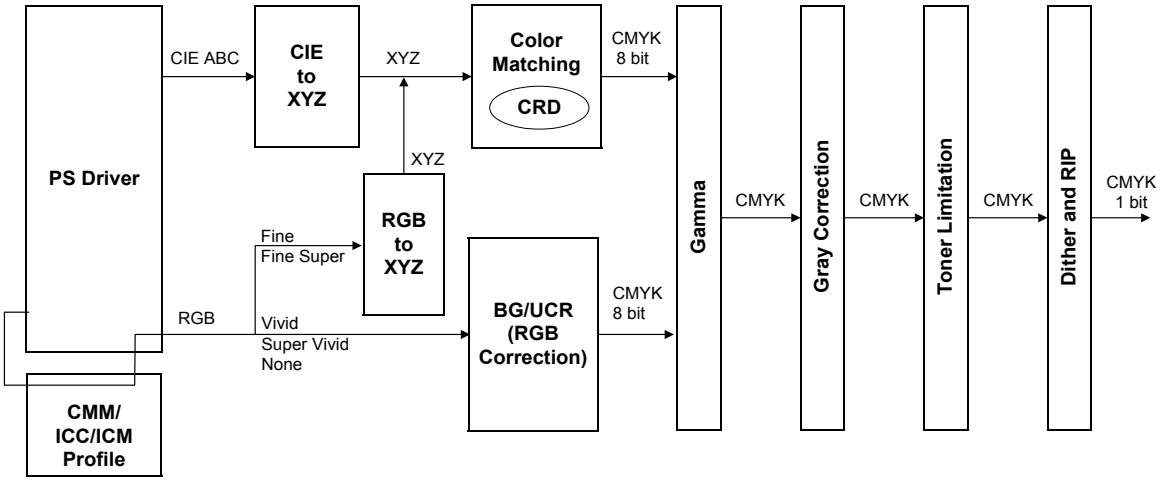
4.2.1 RPCS DRIVER



4.2.2 PCL5C DRIVER



4.2.3 PS3 DRIVER



CMS (Color Management System)

CMS optimizes the color print quality using a color profile that is based on the characteristics of the printer. With RPCS, the color profile is applied by the driver. With PS3 and PCL5c, the color profile is applied in the matching/CRD module on the controller except when using CMM/ICC/ICM profiles.

CMS is not used when the color profile setting in the printer driver is set to “Off.”

Gray Correction

Gray correction processes gray with K or CMYK toner depending on the driver settings.

BG/UCR (Black Generation/Under Color Removal)

The RGB data is converted to CMYK data with BG/UCR. During CMYK conversion, some CMY data is replaced with K data by the BG/UCR algorithm.

Gamma Correction

The printer gamma can be adjusted with controller SP mode (Gamma Adj.). For CMYK, there are15 points between 0 and 100%. The corrected gamma data is stored in NVRAM.

Toner Limitation

Toner limitation prevents toner from being scattered around text or printed lines.

Maximum values have been prepared independently for text and photo. They can be adjusted with controller SP mode (Toner Limit).

- Default: 180% for text, 250% for photo
- Adjustable range: 100% to 400%

Dither Processing and ROP/RIP

Dither patterns have been prepared for photo and text independently. Dithering converts the 8-bit data to 1-bit data. However, these dither patterns create the illusion of 256 gradations for high quality prints. The optimum dither pattern is selected depending on the selected resolution.

RIP: Raster Image Processing
ROP: Raster Operation

4.3 CONTROLLER FUNCTIONS

4.3.1 SAMPLE PRINT

This function gives users a chance to check the print results before starting a multiple-set print run.

- The size of the hard disk partition for the sample print feature is 5.8 GB. This partition is also used by the collation and locked print features.
- The partition can hold up to 30 files, including files stored using locked print.
- The maximum number of pages is 1,000, including jobs using locked print and collation.

4.3.2 LOCKED PRINT

Using this feature, the print job is stored in the machine but will not be printed until the user inputs an ID at the machine's operation panel. This ID must match the ID that was input with the printer driver.

- Stored data is automatically deleted after it is printed.
- Stored data can be manually deleted at the operation panel.
- The hard disk can hold up to 30 files, including files stored using sample print.
- The maximum number of pages is 1,000, including jobs using sample print and collation.
- Locked print uses the same hard disk partition as sample print and collation, which is 5.8 GB.

4.3.3 JOB SPOOLING

Print data can be spooled (stored) in the machine's HDD, and the machine starts to print when data transfer is complete. Since the machine stores all data first before printing, the host computer is freed up more quickly.

NOTE: 1) The supported print protocols are IPP and LPR.
2) The default setting for this feature is 'off'. The user must switch it on using UP mode to enable this feature.

- The size of the HDD partition for job spooling is 1 GB.
- The partition can hold up to 50 jobs.

Related SP Modes

Job spooling can be turned on and off using printer service mode for each protocol.

"Job spool (LPR)": Job spooling on/off for LPR.
"Job spool (IPP)": Job spooling on/off for IPP.

The machine does not spool jobs when job spooling is switched off with the SP mode, even when the customer switches it on with the user mode.

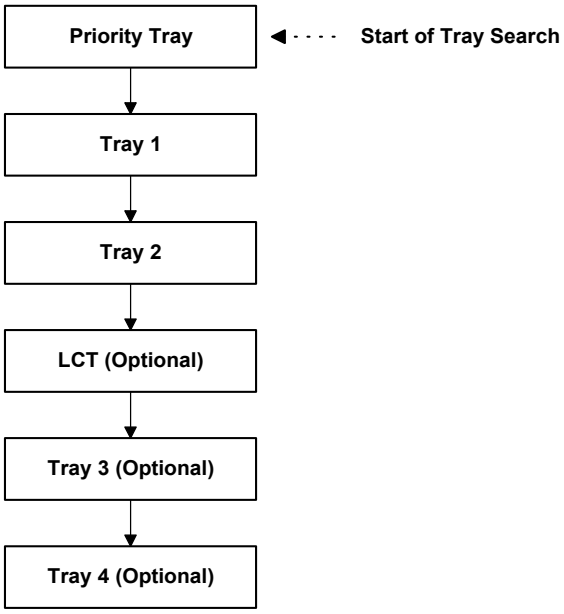
4.3.4 PAPER SOURCE SELECTION

Tray Priority (Auto Tray Select)

The Tray Priority setting determines the start of the tray search when the user selects “Auto Tray Select” with the driver.
The machine searches for a paper tray with the specified paper size and type.

When no tray contains paper that matches the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

The Tray Priority setting can be specified using the Paper Size Setting in the user tools.
(User Tools/ System Settings/ Paper Size Settings)



NOTE: The by-pass tray is not part of the tray search.

Tray Lock

If Tray Lock is enabled for a tray, the controller skips the “locked” tray in the tray search process.

The Tray Lock setting can be specified by selecting “No” for the “Apply Auto Paper Select” setting in the Paper Size Setting screen in the user tools.
(User Tools/ System Settings/ Paper Size Settings)

NOTE: The by-pass feeder cannot be locked.

Manual Tray Select

If the selected tray does not have the paper size and type specified by the driver, the controller stops printing until the user loads the correct paper.

4.3.5 AUTO CONTINUE

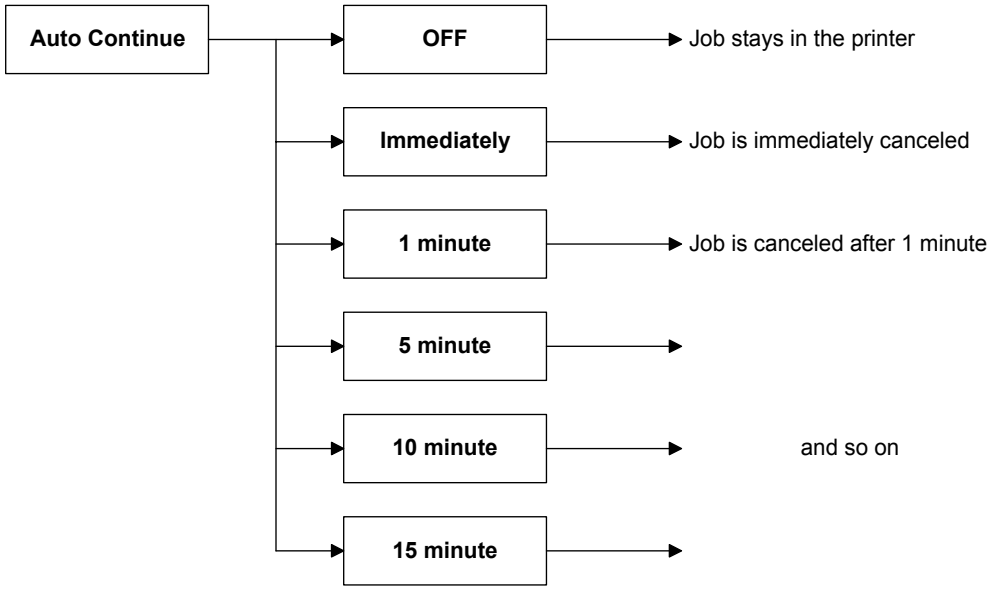
When this function is disabled, the machine stops printing and cancels the print job if there is no paper tray which matches the paper size and paper type specified by the driver.

If Auto Continue is enabled, the machine waits for a specified period (0, 1, 5, 10, 15 minutes) for the correct size paper to be set in the tray, then cancels the print job if the interval expires.

- The interval can set with the Printer Settings in the user tools.
  (User Tools/ Printer Settings/ System/ Auto Continue)

If Auto Continue is disabled, the machine will not print the job, but will not cancel it, so the job stays in the print queue.

If no paper tray matches the paper size and paper type specified by the driver:



NOTE: The default setting for Auto Continue is “Off.”

4.3.6 PAPER OUTPUT TRAY

The default paper output tray for each application (copy/fax/printer) can be selected using the System Settings menu in the user tools. (User Tools/ System Settings/ General Features)

If a print job does not specify an output tray or if the driver specifies the default tray, the default paper output tray is used.

Output Tray Selected

- If an output tray is specified by the driver, it overrides the default tray setting in the user tools.
- If the machine cannot print to the selected output tray, it prints to the default paper output tray.
- If the mailbox unit is installed, paper larger than B4 cannot be printed to the standard (internal) tray.
- If paper overflow is detected at the selected output tray, the controller stops printing until the overflow detector goes off.

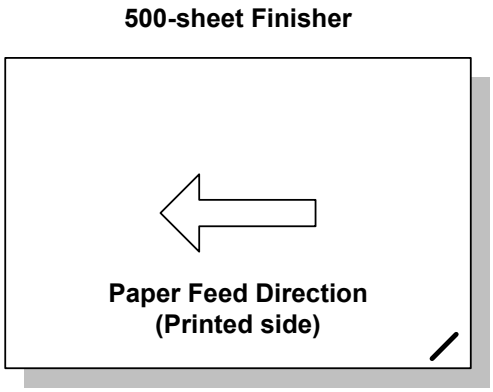
4.3.7 DUPLEX PRINTING

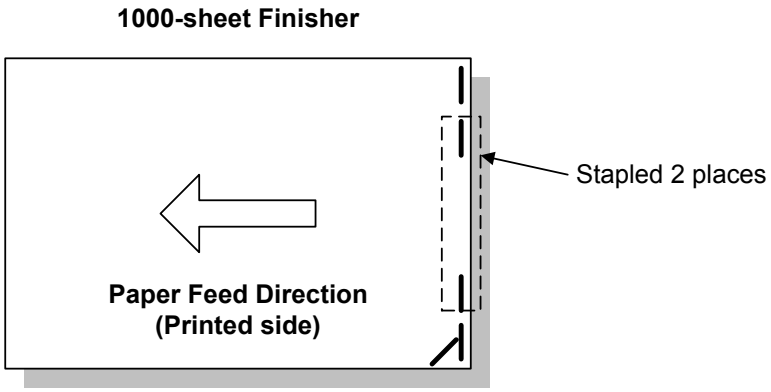
Duplex printing is not available with all paper sizes. If a job specifies duplex printing but the paper size to be used cannot be used by the duplex unit, the job will be printed single-sided.

- When the by-pass feeder is selected as the paper source, duplex printing is automatically disabled.

4.3.8 STAPLING

Stapling is available when the 500-sheet finisher or 1000-sheet finisher is installed. The finishers have the following stapling positions.

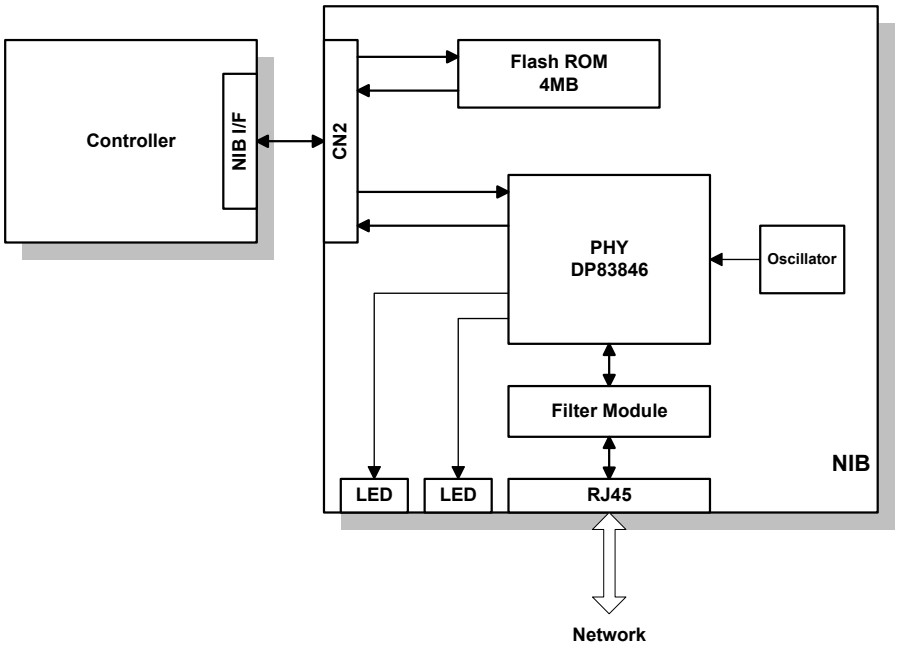




- Depending on the paper orientation, the image may have to be rotated. The controller does the image rotation.
- There is a limit for the number of sheets that can be stapled. If a job has more than this number, it will not be stapled.

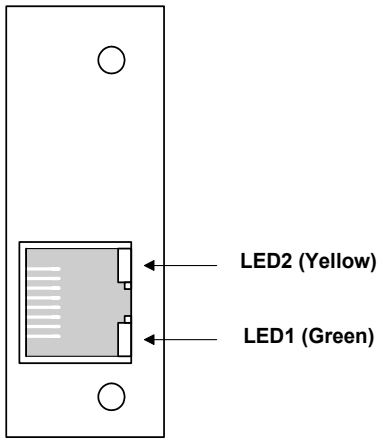
4.4 NIB

4.4.1 BLOCK DIAGRAM



- The Flash ROM contains the NIB firmware. The firmware can be upgraded using an IC card connected to the controller board.

4.4.2 LED INDICATORS



Description	On	Off
LED1 (Green): Link status	Link success	Link failure
LED2 (Yellow): Data rate	100 Mbps	10 Mbps

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4.5 IEEE1394 INTERFACE

4.5.1 SPECIFICATIONS

Hardware Specification

Interface: IEEE1394 (6 pins)
(no power supply, cable power repeated, IEEE1394a-2000 compliant)
Ports: 2 ports
Data rates: 400Mbps/200Mbps/100Mbps

System Requirements

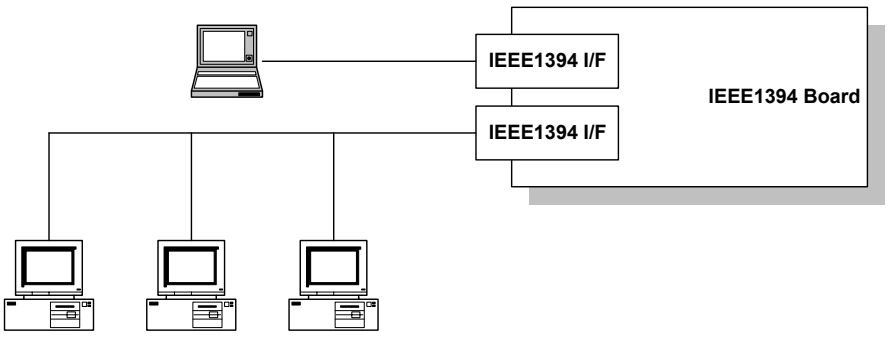
PC: Windows PC with IEEE1394 port
OS: Microsoft Windows 2000 upgraded with service pack 1
Cable length: 4.5m (15ft)

4.5.2 IEEE1394

IEEE1394, also known as FireWire (a name patented by Apple), is an easy-to-use peer-to-peer networking technology allowing speeds of up to 400 Mbps.

The current standard contains the following features, which are supported in most devices:

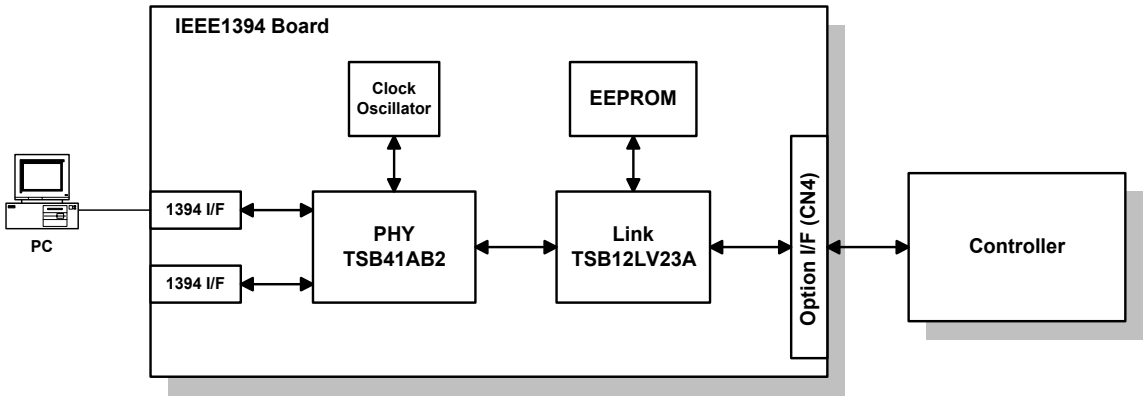
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- Peer-to-peer networking (no hub required)
- No terminator or device ID is required, unlike SCSI
- Automatic configuration of devices upon start-up, or “plug and play.”
- Real-time data transfer at 100, 200, and 400 Mbps
- Common connectors for different devices



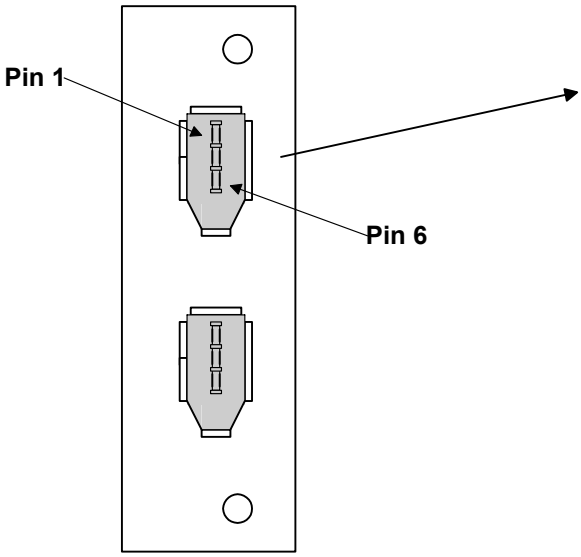
The cable length is limited to 4.5 m (15ft). However, up to 16 cables and 63 devices can be connected to an IEEE1394 network.

IEEE1394 cables can be either 4-pin (data only) or 6-pin (data and power). IEEE1394 allows either 6-pin or 4-pin connectors. However, this machine only uses the 6-pin connectors. The machine 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

Pin assignment	
Pin 1	Pin 4
Pin 2	Pin 3
Pin 5	Pin 6

4.5.5 REMARKS ABOUT THIS INTERFACE KIT

Note the following points about this unit.

- The machine does not print reports specifically for IEEE1394. Just print the Configuration Page at installation to check that the machine recognizes the card.
- There is no spooler or print queue. If a computer tries to print over the IEEE1394 while the printer is busy, the IEEE1394 interface card inside the printer will return a busy signal.
- After starting a job using IEEE1394, do not switch the printer off until the job has been completed. Even though the printer may appear to be dead, it may be in the middle of an IEEE1394 protocol exchange with the computer.
- When using IEEE1394, it is not possible to check the printer status from the computer with a utility such as Printer Manager for Client.

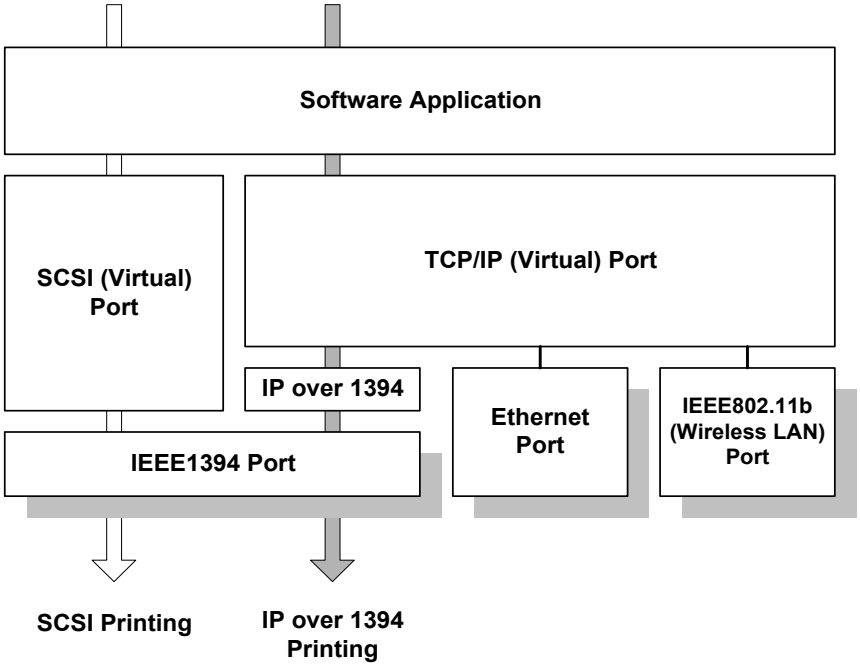
4.5.6 TROUBLESHOOTING NOTES

If there are problems printing using the IEEE1394 interface, check the following.

- Is the computer using Windows 2000 with service pack 1?
- Has the interface card been replaced recently? Each card has an individual address, similar to the MAC address in an Ethernet card. If the card was changed, the driver cannot find the old card. The new card is another device and a new printer appears in Windows Control panel, and this must be configured in the same way as the printer that was replaced (the old printer icon in Windows Control Panel should be deleted) has to be reconfigured.
- Is there a loop somewhere in the network? An IEEE1394 network must be a chain or a branched chain. There can be no loops.
- Try to find out where in the chain the problem is occurring. Test the machine one-to-one with the computer to determine if the printer is defective (when the printer's interface cable is plugged in, the computer should see 'Printer Ready'; when the cable is disconnected, the computer should see 'Offline').

4.5.7 IP OVER IEEE1394

This machine supports IEEE1394 printing by setting an IP address. This feature is called ‘IP over 1394’.
The former IEEE1394 printing without IP address is known as ‘SCSI printing’.



NOTE: 1) Windows XP is the only OS which supports IP over 1394.
2) Windows XP and 2000 supports IEEE1394 SCSI printing.

4.6 IEEE802.11B (WIRELESS LAN)

4.6.1 SPECIFICATIONS

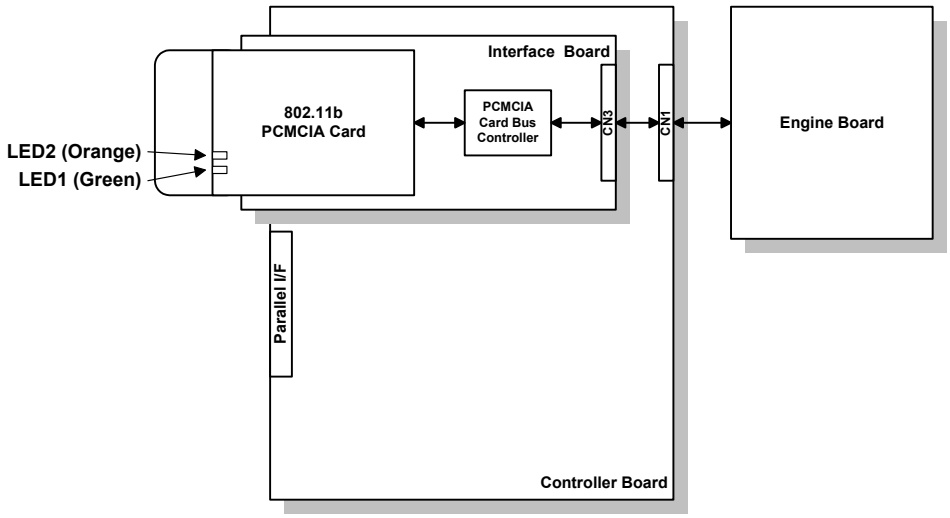
A wireless LAN is a flexible data communication system used to extend or replace a wired LAN. Wireless LAN employs radio frequency technology to transmit and receive data over the air and minimize the need for wired connections.

- With wireless LANs, users can access information on a network without looking for a place to plug into the network.
- Network managers can set up or expand networks without installing or moving wires.
- Most wireless LANs can be integrated into existing wired networks. Once installed, the network treats wireless nodes like any other physically wired network component.
- Flexibility and mobility make wireless LANs both effective extensions of and attractive alternatives to wired networks.

Standard applied: IEEE802.11b
Data transfer rates: 11 Mbps/5.5 Mbps/2 Mbps/1 Mbps (auto sense)
Network protocols: TCP/IP, Apple Talk, NetBEUI, IPX/SPX
Bandwidth: 2.4GHz
(divided over 14 channels, 2400 to 2497 MHz for each channel)

NOTE: The wireless LAN cannot be used together with the Ethernet. The “LAN Type” setting in the Host Interface menu determines the LAN interface to be used.

4.6.2 BLOCK DIAGRAM



LED Indicators

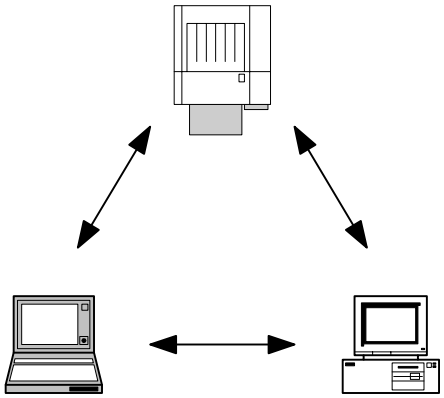
LED	Description	On	Off
LED1 (Green)	Link status	Link success	Link failure
LED2 (Orange)	Power distribution	Power on	Power off

4.6.3 TRANSMISSION MODE

The following transmission modes are provided for wireless communication.

Ad hoc Mode

The ad hoc mode allows communication between each device (station) in a simple peer-to-peer network. In this mode, all devices must use the same channel to communicate.



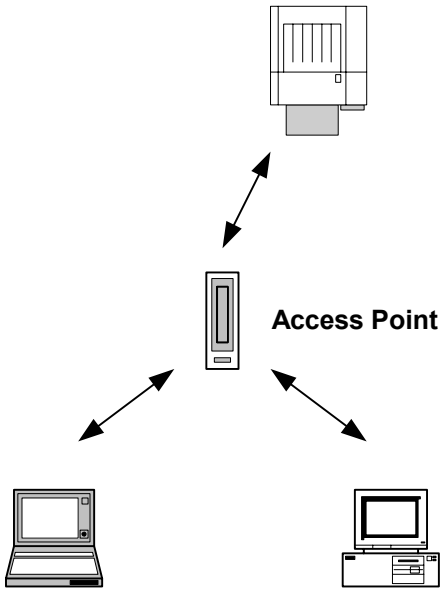
In this machine, the default transmission mode is ad hoc mode and the default channel is 11. First, set up the machine in ad hoc mode and program the necessary settings, even if the machine will be used in the infrastructure mode.

To switch between ad hoc and infrastructure modes, use the following user tool: Host Interface Menu - IEEE802.11b - Comm Mode

Infrastructure Mode

The infrastructure mode allows communication between each computer and the machine via an access point equipped with an antenna and wired into the network. This arrangement is used in more complex topologies.

- The wireless LAN client must use the same SSID (Service Set ID) as the access point in order to communicate.



4.6.4 SECURITY FEATURES

SSID (Service Set ID)
The SSID is used by the access point to recognize the client and allow access to the network. Only clients that share the same SSID with the access point can access the network.

NOTE: 1) If the SSID is not set, clients connect to the nearest access point.
2) The SSID can be set using the web status monitor or telnet.

Using the SSID in Ad hoc mode

When the SSID is used in ad hoc mode and nothing is set, the machine automatically uses “ASSID” as the SSID. In such a case, “ASSID” must also be set at the client.

NOTE: SSID in ad hoc mode is sometimes called “Network Name.”

WEP (Wired Equivalent Privacy)
WEP is a coding system designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side. There is 128 bit WEP keys.

NOTE: The WEP key can be set using the web status monitor or telnet.

MAC Address
When the infrastructure mode is used, access to the network can also be limited at the access points using the MAC address. This setting may not be available with some types of access points.

4.6.5 TROUBLESHOOTING NOTES

Communication Status

Wireless LAN communication status can be checked with the UP mode “W.LAN Signal” in the Maintenance menu. This can also be checked using the Web Status Monitor or Telnet.
The status is described on a simple number scale.

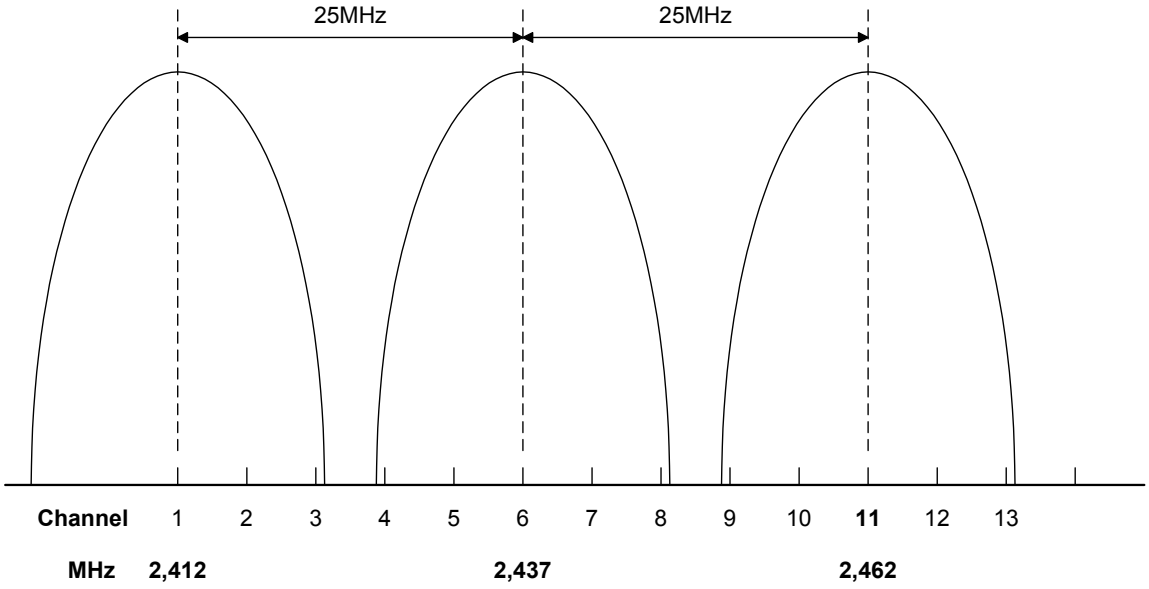
Status Display	Communication Status
Good	76~100
Fair	41~75
Poor	21~40
Unavailable	0~20

NOTE: Communication status can be measured only when the infrastructure mode is being used.

Channel Settings

If a communication error occurs because of electrical noise, interference with other electrical devices, etc., you may have to change the channel settings.

To avoid interference with neighboring channels, it is recommended to change by 3 channels. For example, if there are problems using channel 11 (default), try using channel 8.



Troubleshooting Steps

If there are problems using the wireless LAN, check the following.

1) Check the LED indicator on the wireless LAN card.
2) Check if “IEEE802.11b” is selected in the UP mode LAN Type in Network Setup in the Host Interface menu.
3) Check if the channel settings are correct.
4) Check if the SSID and WEP are correctly set.

If infrastructure mode is being used,

1) Check if the MAC address is properly set
2) Check the communication status
   If the communication status is poor, bring the machine closer to the access point, or check for any obstructions between the machine and the access point.
   If the problem cannot be solved, try changing the channel setting.

4.7 SCANNER FUNCTIONS

4.7.1 IMAGE PROCESSING FOR SCANNER MODE

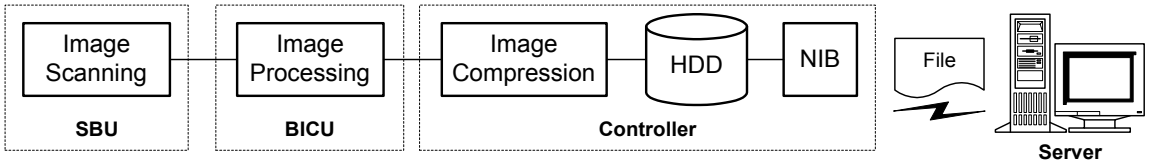
The image processing for scanner mode is done in the IPU chip on the BICU board. The IPU chip chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.

The image compression method for binary picture processing can be selected with scanner SP1-004 (either MR, MH, or MMR). For grayscale processing, JPEG is used.

Whether the user selects the image mode using the driver (TWAIN mode) or from the operation panel (Delivery mode), the IPU chip does the image processing using the appropriate image processing methods mentioned above.

Image Data Path

1. Image Store/Image Delivery Mode



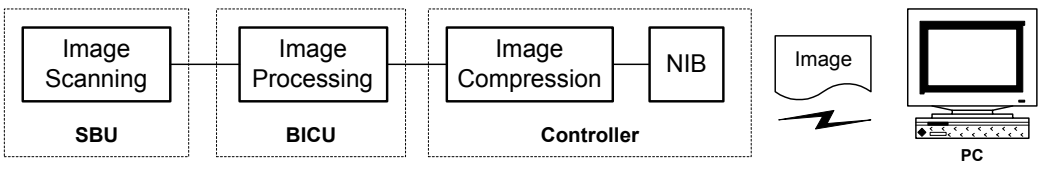
The user can select the following modes from the LCD.

1) Delivery only
2) Store only
3) Store and delivery

After image processing and image compression, all image data for the job are stored in the printer controller HDD using TIFF file format (binary picture processing) or JPEG file format (grayscale processing). The type of TIFF format used depends on the user's scanner settings.

When delivery mode is selected, the controller creates a file which contains the destination and page information, then the controller sends the file to a server.

2. Twain Mode



After image processing and image compression, the data (RAW or JPEG) is sent to the scanner Twain driver directory on the computer.

SPECIFICATIONS

1. GENERAL SPECIFICATIONS

1.1 PRINTER

Printing Speed:

	Plain Paper	Thick	OHP
Color	10 ppm	4 ppm	2 ppm
Black & White	36 ppm	6.5 ppm	3.2 ppm

Printer Languages: PCL5c
RPCS (Refined Printing Command System)
PostScript 3 (Option)

Resolution: 600 x 600 dpi (PCL5c/RPCS/PS3)
300 x 300 dpi (PS3)

Resident Fonts: PCL:
35 Intellifonts
10 True Type fonts
1 bitmap fonts
PS3:
136 fonts (24 Type 2 fonts, 112 Type 14 fonts)

Host Interfaces: Bi-directional IEEE1284 parallel x 1 (standard)
Ethernet (100 Base-TX/10 Base-T) (standard)
IEEE1394 (option)
IEEE 802.11b (Wireless LAN) (option)

Network Protocols: TCP/IP, IPX/SPX, NetBEUI, Apple Talk

Memory: 256 MB (Resident 128 MB + 128 MB Memory option)
384 MB (Resident 128 MB + 256 MB Memory option)

Supported Paper Sizes

Paper Feed

Paper Size			M.U.			B.T.			Dx.	P.T.			LCT		
			NA	ER	AS	NA	ER	AS	Co	NA	ER	AS	NA	ER	AS
A3	SEF	297 x 420 mm	*M*	*A*	*A*	*M*	*A*	*A*	*A*	*A*	*A*	*A*	-	-	-
B4	SEF	257 x 364 mm	*M*	*A*	*A*	*M*	*M*	*M*	*A*	*M*	*A*	*A*	-	-	-
A4	SEF	210 x 297 mm	*A*	*A*	*A*	*M*	*A*	*A*	*A*	*M*	*A*	*A*	-	-	-
A4	LEF	297 x 210 mm	*M*	*A*	*A*	*M*	*M*	*M*	*A*	*A*	*A*	*A*	*M*	*A*	*A*
B5	SEF	182 x 257 mm	*A*	*A*	*A*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
B5	LEF	257 x 182 mm	*A*	*A*	*A*	*M*	*M*	*M*	*A*	*M*	*A*	*M*	-	-	-
A5	SEF	148 x 210 mm	*M*	*M*	*M*	*M*	*A*	*A*	*A*	*M*	*M*	*M*	-	-	-
A5	LEF	210 x 148 mm	*M*	*A*	*A*	*M*	*M*	*M*	*A*	*M*	*A*	*A*	-	-	-
B6	SEF	128 x 182 mm	*S*	*S*	*S*	*M*	*M*	*M*	-	-	-	*N*	-	-	-
B6	LEF	182 x 128 mm	-	-	-	-	-	-	-	-	-	*N*	-	-	-
A6	SEF	105 x 148 mm	*M*	*M*	*M*	*M*	*M*	*M*	-	-	-	*N*	-	-	-
A6	LEF	148 x 105 mm	-	-	-	-	-	-	-	-	-	*N*	-	-	-
DLT	SEF	11" x 17"	*A*	*M*	*M*	*A*	*M*	*M*	*A*	*A*	*A*	*A*	-	-	-
LG	SEF	8 1/2" x 14"	*A*	*M*	*M*	*M*	*M*	*M*	*A*	*A*	*M*	*M*	-	-	-
LT	SEF	8 1/2" x 11"	*A*	*A*	*A*	*A*	*M*	*M*	*A*	*A*	*M*	*M*	-	-	-
LT	LEF	11" x 8 1/2"	*A*	*M*	*M*	*M*	*M*	*M*	*A*	*A*	*A*	*A*	*A*	*M*	*M*
HLT	SEF	5 1/2" x 8 1/2"	*M*	*M*	*M*	*A*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
HLT	LEF	8 1/2" x 5 1/2"	*M*	*M*	*M*	*M*	*M*	*M*	-	*A*	*M*	*M*	-	-	-
A3 width	SEF	12" x 18"	-	-	-	*M*	*M*	*M*	-	-	-	-	-	-	-
Executive	SEF	7 1/4" x 10 1/2"	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
Executive	LEF	10 1/2" x 7 1/4"	*M*	*M*	*M*	*M*	*M*	*M*	-	-	-	-	-	-	-
F	SEF	8" x 13"	*M*	*M*	*M*	*M*	*A*	*A*	*A*	*M*	*M*	*M*	-	-	-
Foolscap	SEF	8 1/2" x 13"	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
Folio	SEF	8 1/4" x 13"	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
8 K	SEF	267 x 390 mm	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
16 K	SEF	195 x 267 mm	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
16 K	LEF	267 x 195 mm	*M*	*M*	*M*	*M*	*M*	*M*	*A*	*M*	*M*	*M*	-	-	-
Custom															
M.U. (W:100-297, L:148-432mm)			*S*	*S*	*S*	-	-	-	-	-	-	-	-	-	-
P.T. (W:148-297, L:148-432mm)			-	-	-	-	-	-	-	*S*	*S*	*S*	-	-	-
B.T. (W:90-305, L:148-457mm)			-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-
Com10	SEF	4 1/8" x 9 1/2"	-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-
Monarch	SEF	3 7/8" x 7 1/2"	-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-
C6	SEF	114 x 162 mm	-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-
C5	SEF	162 x 229 mm	-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-
DL Env	SEF	110 x 220 mm	-	-	-	*S*	*S*	*S*	-	-	-	-	-	-	-

M.U.: Main unit
Dx. : Duplex
B.T. : Bypass tray unit
P.T. : Paper tray unit

NA : North America
ER : Europe
AS : Asia
Co : Common

A : Automatically processed
M : Manually selected from operation panel
S : Specified from numeric keypad
– : Not supported

NOTE: Envelopes can be fed from the bypass tray. Keep the flap unfolded (if they are not stuck), and let the opposite end be fed first. Duplex printing is not guaranteed.

Paper Output

Paper Size			M.U.	1-B	Shift Tray		500-Sheet Finisher			1000-Sheet Finisher			
					Clr	Shft	Clr	Shft	Stpl	Prf	Clr	Shft	Stpl
A3	SEF	297 x 420 mm	O	O	O	O	O	O30	O30	O	O	O	O30
B4	SEF	257 x 364 mm	O	O	O	O	O	O30	O30	O	O	O	O30
A4	SEF	210 x 297 mm	O	O	O	O	O	O30	O30	O	O	O	O50
A4	LEF	297 x 210 mm	O	O	O	O	O	O30	O30	O	O	O	O50
B5	SEF	182 x 257 mm	O	O	O	O	O	-	-	O	O	O	O50
B5	LEF	257 x 182 mm	O	O	O	O	O	O30	O30	O	O	O	O50
A5	SEF	148 x 210 mm	O	O	O	O	-	-	-	O	O	O	-
A5	LEF	210 x 148 mm	O	O	O	O	O	-	-	O	O	O	-
B6	SEF	128 x 182 mm	O	O	O	O	-	-	-	O	-	-	-
B6	LEF	182 x 128 mm	-	-	-	-	-	-	-	-	-	-	-
A6	SEF	105 x 148 mm	O	O	O	O	-	-	-	O	-	-	-
A6	LEF	148 x 105 mm	-	-	-	-	-	-	-	-	-	-	-
DLT	SEF	11" x 17"	O	O	O	O	O	O30	O30	O	O	O	O30
LG	SEF	8 1/2" x 14"	O	O	O	O	O	O30	O30	O	O	O	O30
LT	SEF	8 1/2" x 11"	O	O	O	O	O	O30	O30	O	O	O	O50
LT	LEF	11" x 8 1/2"	O	O	O	O	O	O30	O30	O	O	O	O50
HLT	SEF	5 1/2" x 8 1/2"	O	O	O	O	-	-	-	O	O	O	-
HLT	LEF	8 1/2" x 5 1/2"	O	O	O	O	O	-	-	O	O	O	-
A3 width	SEF	12" x 18"	O	-	O	-	-	-	-	O	O	O	O30
Executive	SEF	7 1/4" x 10 1/2"	O	O	O	O	O	-	-	O	O	O	O50
Executive	LEF	10 1/2" x 7 1/4"	O	O	O	O	O	-	-	O	O	O	O50
F	SEF	8" x 13"	O	O	O	O	O	-	-	O	O	O	O30
Foolscap	SEF	8 1/2" x 13"	O	O	O	O	O	O30	O30	O	O	O	O30
Folio	SEF	8 1/4" x 13"	O	O	O	O	O	-	-	O	O	O	O30
8 K	SEF	267 x 390 mm	O	O	O	O	O	O30	O30	O	O	O	O30
16 K	SEF	195 x 267 mm	O	O	O	O	O	-	-	O	O	O	O50
16 K	LEF	267 x 195 mm	O	O	O	O	O	O30	O30	O	O	O	O50
Custom													
M.U. (W:100-297, L:148-432mm)			O	-	O	O	-	-	-	-	-	-	-
P.T. (W:148-297, L:148-432mm)			O	-	O	O	-	-	-	-	-	-	-
B.T. (W:90-305, L:148-457mm)			O	-	O	O	-	-	-	-	-	-	-
Com10	SEF	4 1/8" x 9 1/2"	O	O	O	O	-	-	-	-	-	-	-
Monarch	SEF	3 7/8" x 7 1/2"	O	O	O	O	-	-	-	-	-	-	-
C6	SEF	114 x 162 mm	O	O	O	O	-	-	-	-	-	-	-
C5	SEF	162 x 229 mm	O	O	O	O	-	-	-	-	-	-	-
DL Env	SEF	110 x 220 mm	O	O	O	O	-	-	-	-	-	-	-

M.U.: Main unit
1-B : 1-bin paper tray
B.T. : Bypass tray unit
P.T. : Paper tray unit

Clr. : Clear
Shft : Shift
Stpl : Staple
Prf : Proof

O : Output
O30 : Output up to 30 sheets
O50 : Output up to 50 sheets
– : Not output

1.2 SCANNER

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi
Available scanning Resolution Range:	Twain Mode: 100 ~ 1200 dpi Delivery Mode: 100 ~ 600 dpi
Grayscales:	1 bit or 8 bits/pixel each for RGB
Scanning Throughput:	Black & White TWAIN mode: 30 spm Delivery mode: 45 spm (A4L, 200dpi, MMR) Full Color TWAIN mode: 6 spm Delivery mode: 17 spm (A4L, 200dpi, JPEG)
Interface:	Ethernet (100 Base-TX/10 Base-T for TCP/IP)
Compression Method:	MH, MR, MMR (Binary Picture Processing) JPEG (Grayscale Processing)

1.3 SOFTWARE ACCESSORIES

The printer/scanner 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 95/98/ME	Windows NT4.0	Windows 2000	Windows XP	Macintosh
PCL 5c	Yes	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes	Yes
RPCS	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/XP, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.
3) The PS3 driver for Macintosh supports Mac OS 9.2.1 (Max OS X: PDD Installer).
4) The following Unix versions are supported:
TBA

Printer Utility Software

Software	Description
Agfa Monotype Font Manager (Win 95/98/M3, NT4, W2000)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/M3, NT4, W2000)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartNetMonitor for Client (Win 95/98/M3, NT4, W2000)	A printer management utility for client users.
Printer Utility for Mac (Mac OS 9.x)	This software provides several convenient functions for printing from Macintosh clients.
1394 Utility (Win 2000/XP)	A utility for removal IEEE 1394 printers.
LAN-FAX M2 (Win 95/98/ME, NT4, 2000/XP)	PC LAN FAX driver
Address Book (Win 95/98/ME, NT4, 2000/XP)	A utility for PC LAN Fax.
DeskTopBinder V2 Lite (Win 95/98/ME, NT4, 2000/XP)	A utility for document management

Scanner Driver

- Network Twain Driver for Win95/98/ME/NT3.51/NT4.0/2000/XP

Scanner Utilities

- Scan Router V2 Lite (Cherry-Lite) for Win95/98/ME/NT4.0/2000/XP
- Desk Top Binder V2 Lite (Plumeria-Lite) for Win95/98/ME/NT4.0/2000/XP

CÓPIA NÃO CONTROLADA

B456
PAPER TRAY UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

PAPER TRAY UNIT B456

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CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

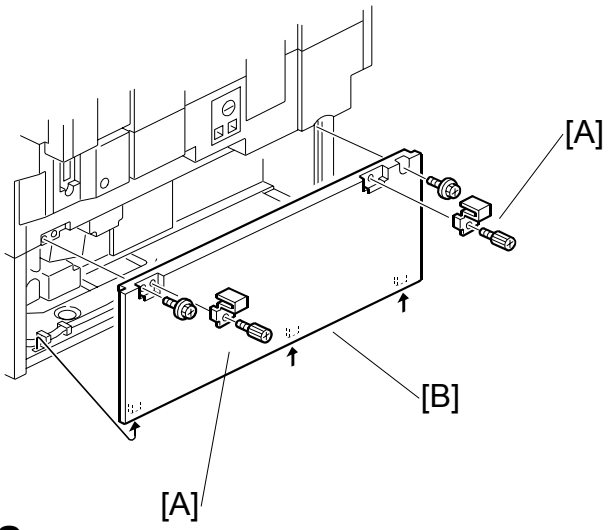
⚠CAUTION

Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

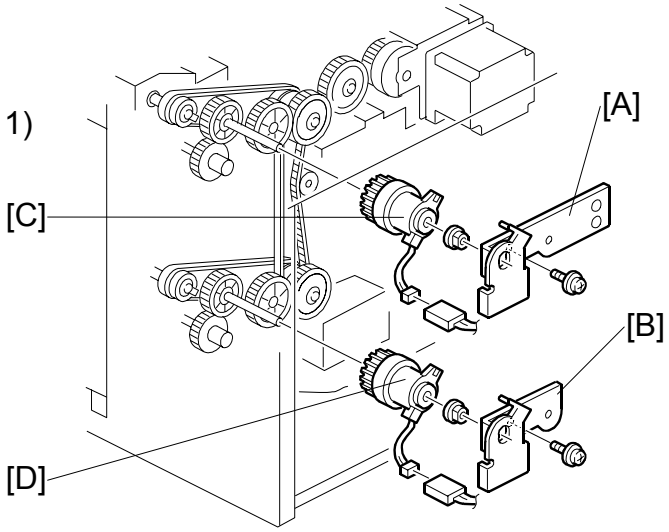
1.1 REAR COVER

1. Joint brackets [A] (x 1 each)
2. Rear cover [B] (x 2)



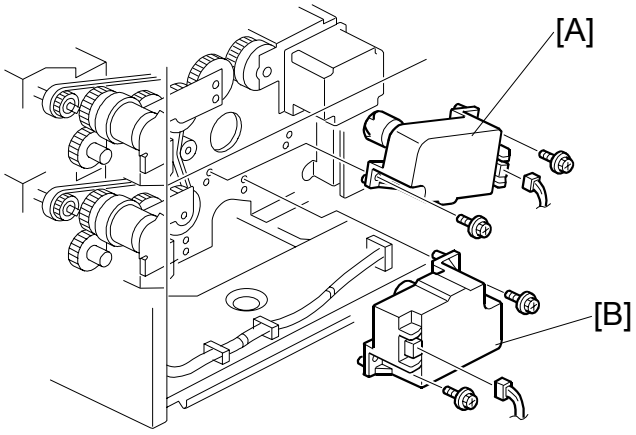
1.2 PAPER FEED CLUTCHES

1. Rear cover (☛ 1.1)
2. Brackets [A][B] (x 1)
3. Clutches [C][D] (1 bearing, x 1)



1.3 LIFT MOTORS

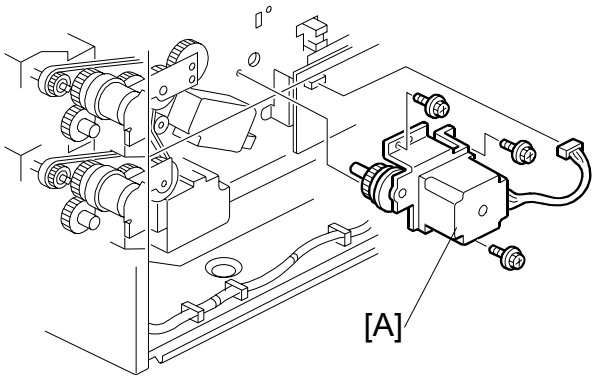
1. Rear cover (☛ 1.1)
2. Lift motors [A][B] (🔩 x 2, ✋ x 1)



1.4 PAPER FEED MOTOR

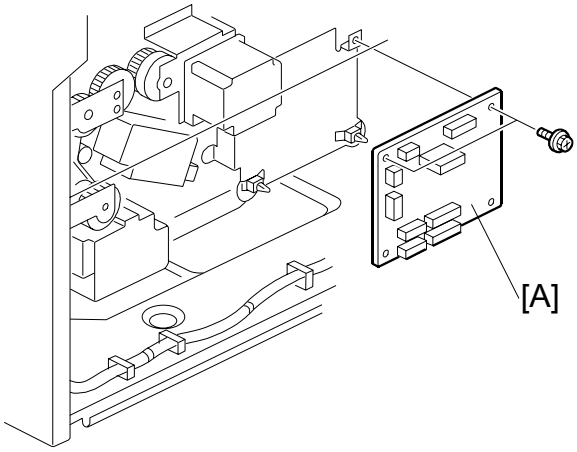
1. Rear cover (☛ 1.1)
2. Paper feed motor [A] (✋ x 1, 🔩 x 3)

   NOTE: Remove the motor with its bracket, then separate the motor from the bracket.



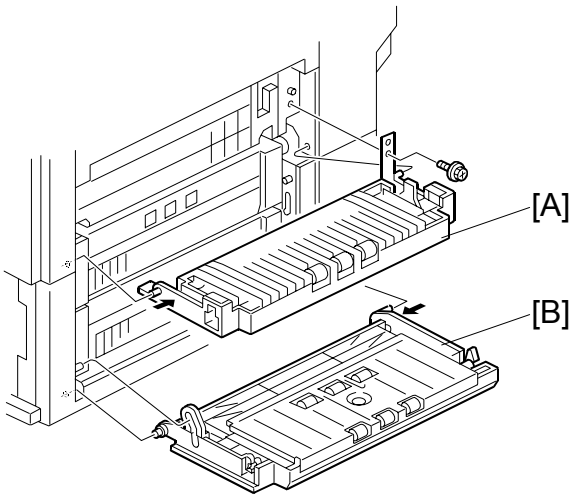
1.5 CONTROLLER BOARD

1. Rear cover (☛ 1.1)
2. Controller board [A] (✋ x 7, 🔩 x 2)

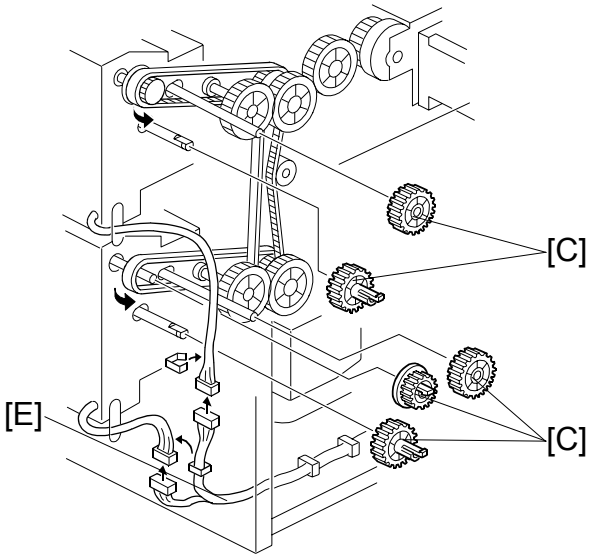


1.6 PAPER FEED UNIT

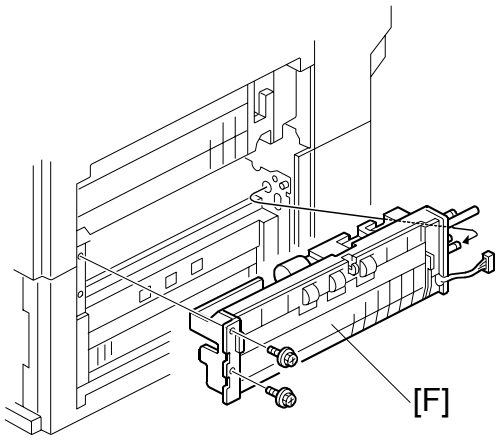
1. Vertical transport guide plate of the copier [A] (🔩 x 1)
2. Vertical transport guide plate of the paper feed unit [B]



3. Paper feed clutch (☛ 1.2)
4. Gears [C], [D]
5. 🖐 x 1 [E]

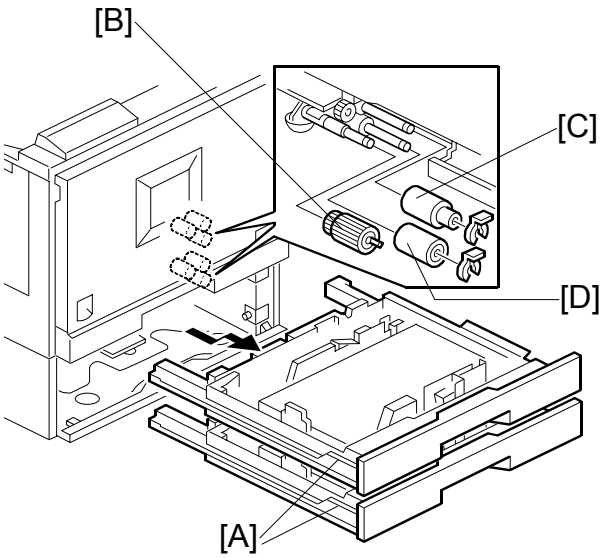


6. Paper feed unit [F] (🔩 x 2)



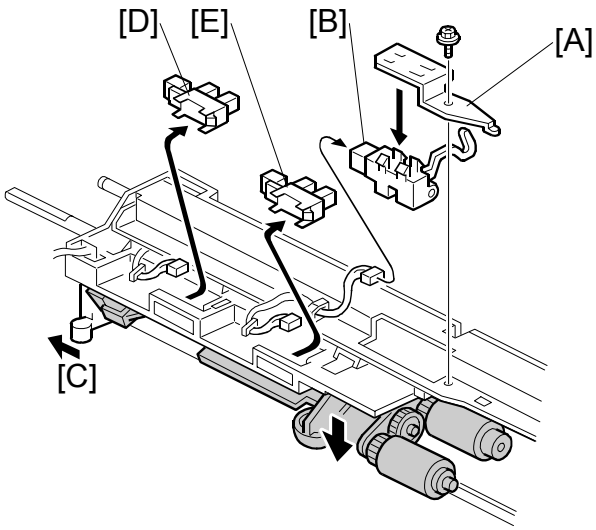
1.7 PICKUP, FEED, AND SEPARATION ROLLERS

1. Paper tray [A]
2. Pickup roller [B] (1 hook)
3. Paper feed roller [C] (x 1)
4. Separation roller [D] (x 1)



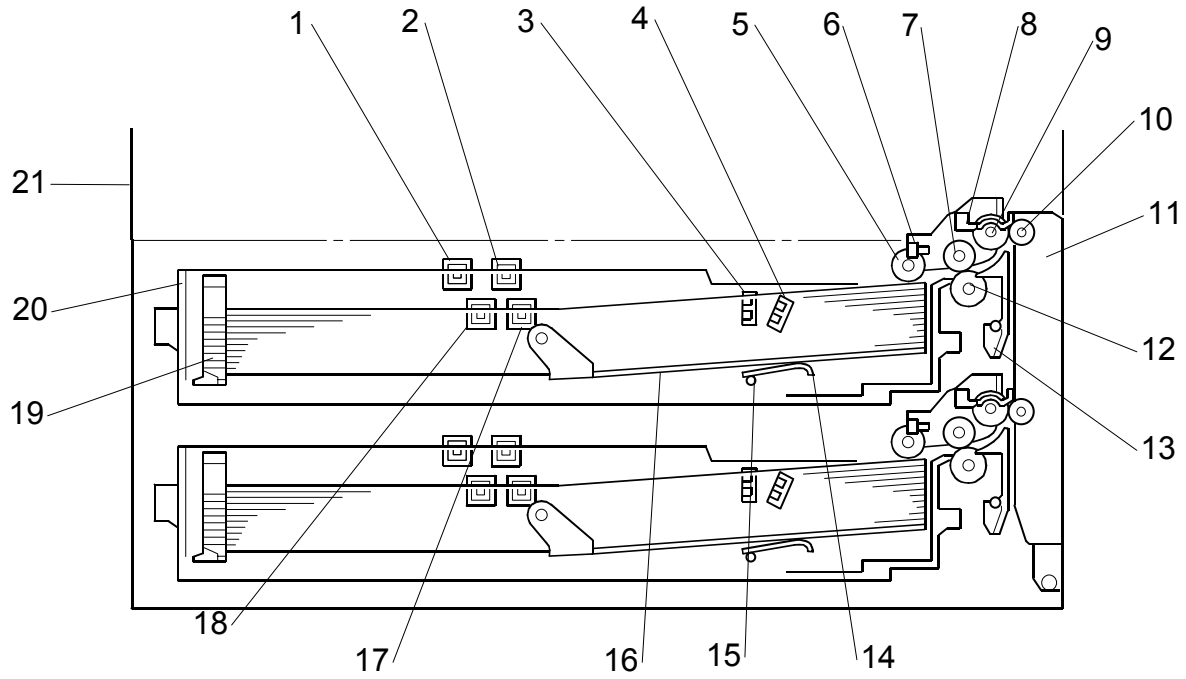
1.8 UPPER LIMIT, PAPER END, AND RELAY SENSORS

1. Paper feed unit (☛ 1.6)
2. Relay sensor bracket [A] (x 1)
3. Relay sensor [B]
4. While pushing the release lever [C], remove the following:
   - Upper limit sensor [D]
   - Paper end sensor [E].



2. DETAILED DESCRIPTIONS

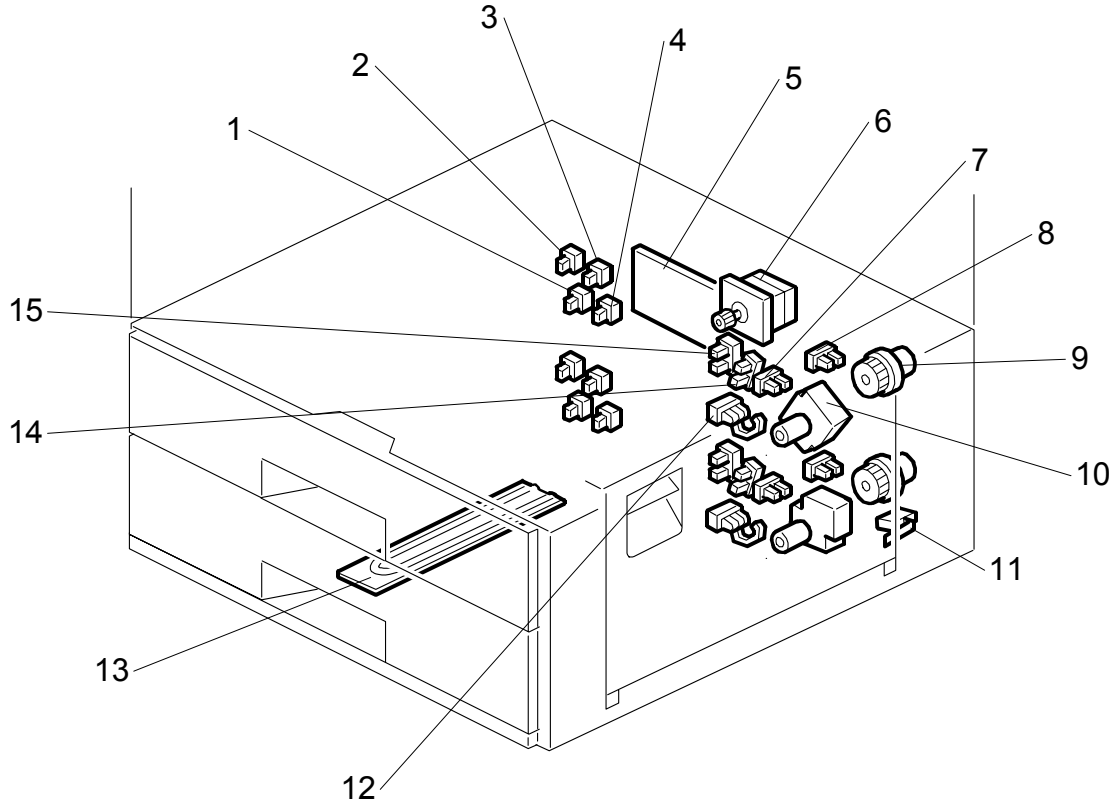
2.1 MECHANICAL COMPONENT LAYOUT



1. Paper size switch 1
2. Paper size switch 3
3. Paper height sensor 1
4. Paper height sensor 2
5. Pickup roller
6. Paper end sensor
7. Feed roller
8. Relay sensor
9. Relay roller
10. Idle roller
11. Right cover
12. Reverse roller
13. Paper guide
14. Tray lift arm
15. Lift arm shaft
16. Bottom plate
17. Paper size switch 4
18. Paper size switch 2
19. End plate
20. Tray
21. Copier

NOTE: Listed above are the components of tray 1 (upper tray). Tray 2 (lower tray) has the same components as tray 1.

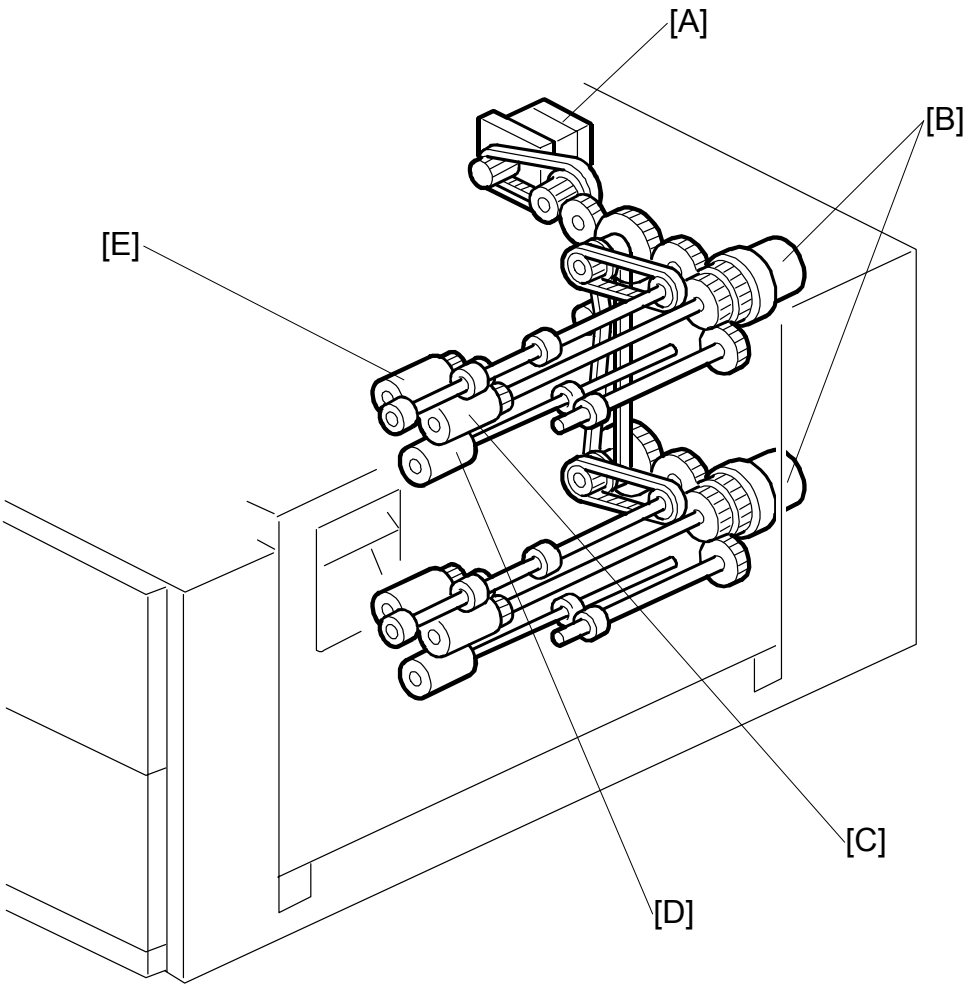
2.2 ELECTRICAL COMPONENT LAYOUT



1. Paper size switch 2
2. Paper size switch 1
3. Paper size switch 3
4. Paper size switch 4
5. Main board
6. Paper feed motor
7. Paper end sensor
8. Upper limit sensor
9. Paper feed clutch
10. Tray lift motor
11. Right cover switch
12. Relay sensor
13. Anti-condensation heater (Optional)
14. Paper height sensor 2
15. Paper height sensor 1

NOTE: Listed above are the components of tray 1 (upper tray), except for the right cover switch and anti-condensation heater (there is only one each of these for the entire unit). Tray 2 (lower tray) has the same components as tray 1.

2.3 PAPER FEED



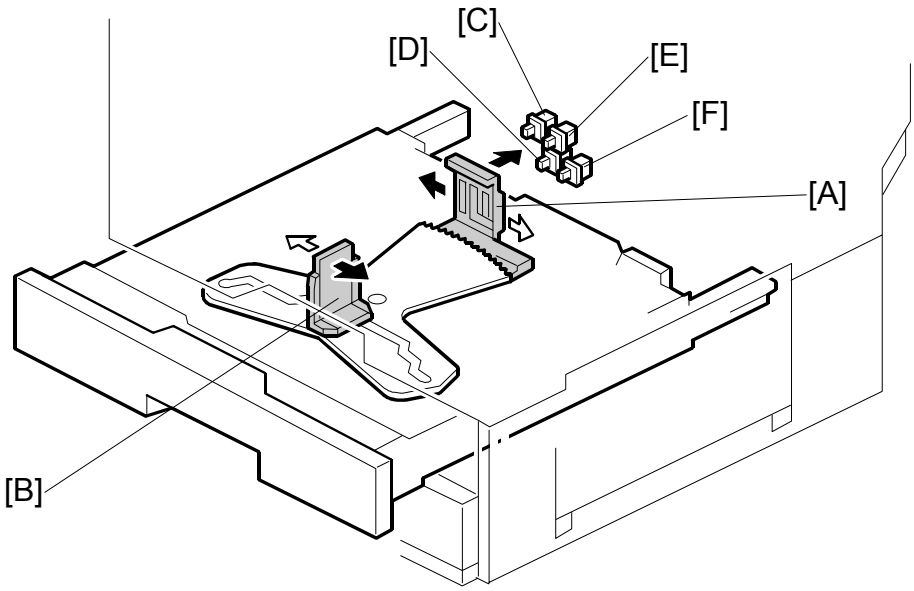
Paper Feed Mechanism

An FRR (feed and reverse roller) feed mechanism is used (☛ CT *Paper Feed Methods*).

Drive Path

Tray 1 (upper tray) and tray 2 (lower tray) have identical paper feed systems. The paper feed motor [A] drives all the rollers in the unit. The paper feed clutches [B] control the pickup roller [E], paper feed roller [C], and reverse roller [D].

2.4 PAPER SIZE DETECTION



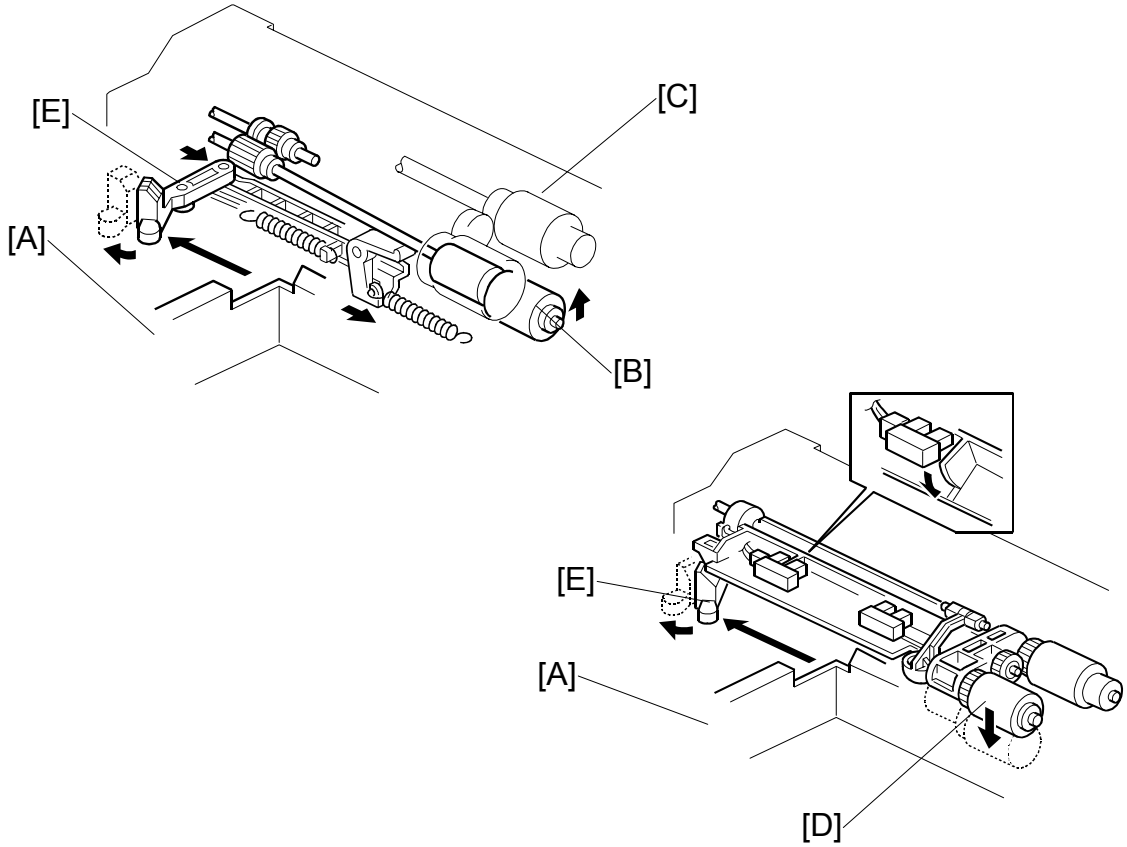
Four paper size switches [C to F] detect paper size. They use the paper tray actuator [A], which is linked with the end plate [B]. The table lists the combinations of switch status and detected paper size.

Models		Switch Location			
North America	**Europe/Asia**	**1 [C]**	**2 [D]**	**3 [E]**	**4 [F]**
11" x 17" SEF	11" x 17" SEF	0	0	1	0
A3 SEF	A3 SEF	0	1	0	1
8 1/2" x 14" SEF	B4 SEF	1	0	1	1
8 1/2" x 11" SEF	A4 SEF	0	1	1	0
8 1/2" x 11" LEF	8 1/2" x 11" LEF	1	1	0	1
A4 LEF	A4 LEF	1	0	1	0
B5 LEF	B5 LEF	0	1	0	0
5 1/2" x 8 1/2" LEF	5 1/2" x 8 1/2" LEF	1	0	0	0

1: Pushed, 0: Not pushed

NOTE: 1) Other paper sizes cannot be automatically detected. The user must select them at the operation panel with a user tool.
2) The machine disables feed from a tray if the paper size cannot be detected (when the paper size actuator is broken or no tray is installed).

2.5 REVERSE ROLLER AND PICK-UP ROLLER RELEASE

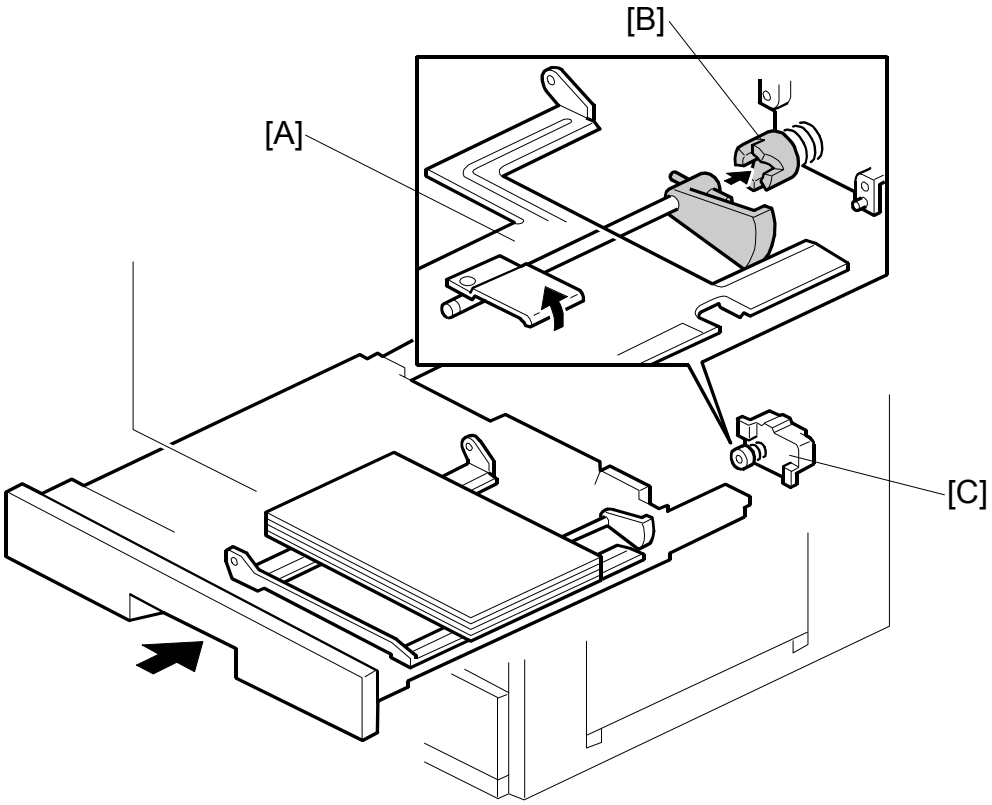


The pickup roller and separation roller release the paper when it is not being fed. This helps remove jammed paper easily.

When the paper tray [A] is not in the machine, the separation roller [B] is away from the paper feed roller [C] and the pickup roller stays in its upper position.

When the paper tray is pushed into the machine, it pushes the release lever [E]. This causes the pickup roller [D] to go down into contact with the top sheet of paper, and causes the reverse roller [B] to move up and contact the paper feed roller.

2.6 PAPER LIFT

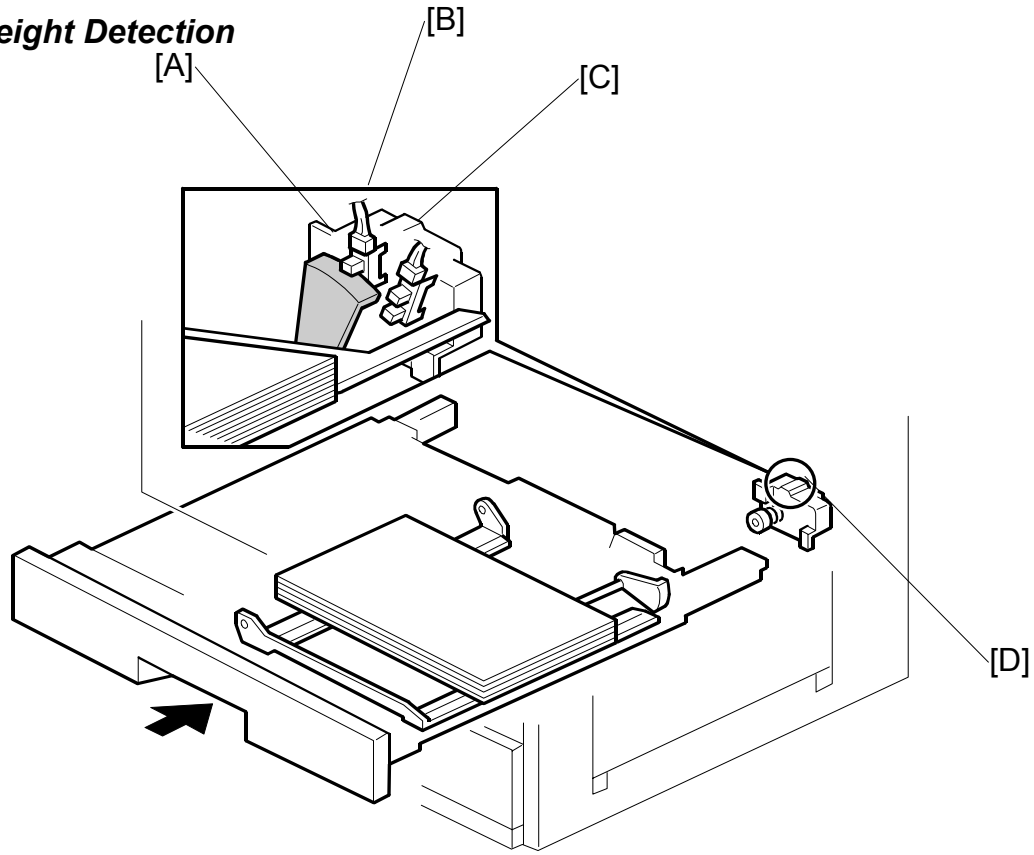


The tray lift motor [C] raises/lowers the tray bottom plate [A] (via the coupling gear [B]), based on the signals from the paper size switches, paper end sensor, and upper limit sensor.

The motor starts to lift the plate when all of the following three conditions exist: any of the paper size switches is pushed, the paper end sensor actuator is in the sensor, and the upper limit sensor actuator is out of the sensor. The motor stops lifting the plate when the upper limit sensor actuator enters the sensor.

2.7 PAPER HEIGHT AND END DETECTION

Paper Height Detection

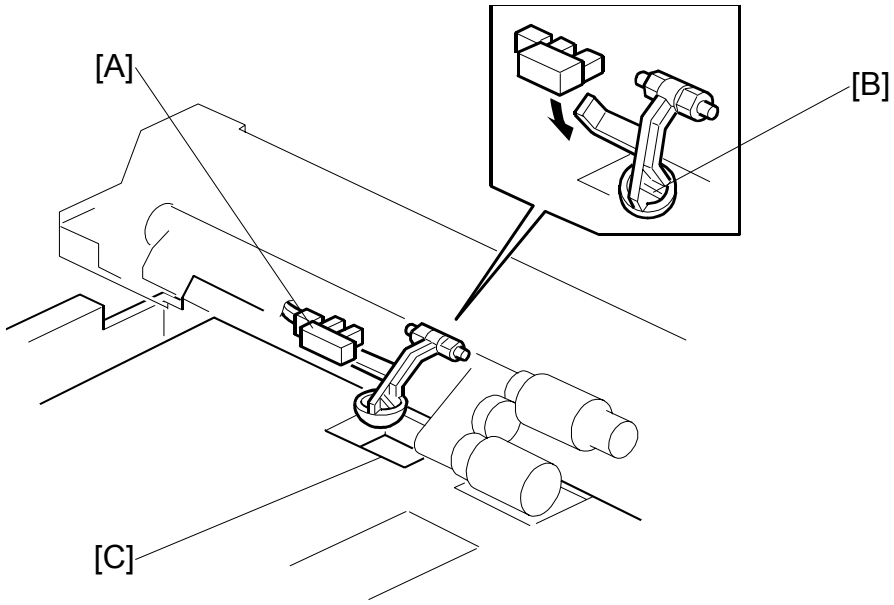


Two paper height sensors detect the amount of paper in the tray. The actuator [A] on the lift arm shaft [D] turns counterclockwise, passing through the paper height sensor 2 [C] and the paper height sensor 1 [B].

Remaining paper	Paper height sensor 2 [C]	Paper height sensor 1 [B]
Full	ON	ON
Nearly full	OFF	ON
Near end	OFF	OFF

On: Actuator inside sensor, Off: Actuator not inside sensor

Paper End and Bottom Plate



The paper end sensor [A] detects paper end. When the paper is all used, the paper end sensor feeler [B] drops into the cutout [C] in the tray bottom plate.

When paper end is detected, the tray lift motor (☛ 2.6) lowers the bottom plate.

B457
LARGE CAPACITY TRAY

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

LARGE CAPACITY TRAY B457

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CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

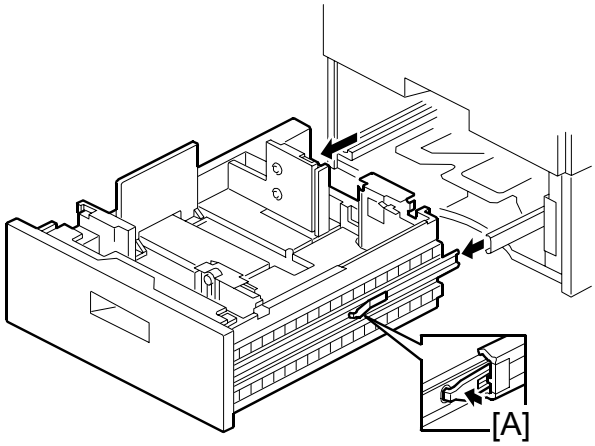
Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

1.1 TRAY

While pressing the stopper [A] attached to the guide rail, pull out the large capacity tray.

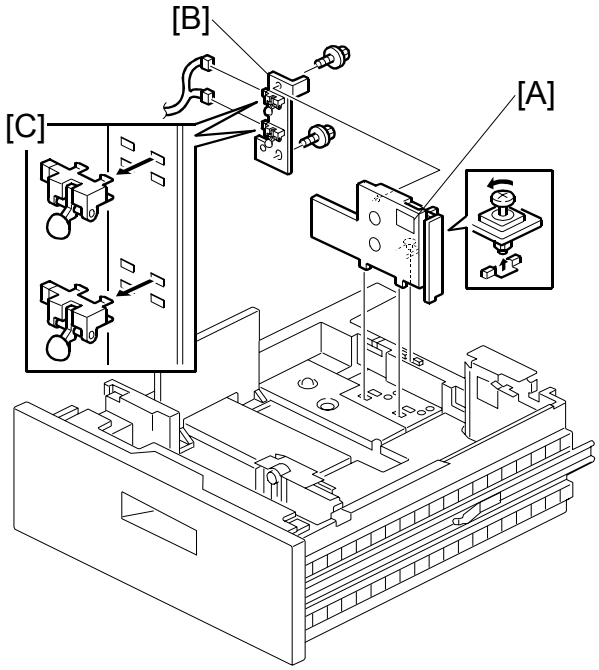
NOTE: When reinstalling the tray, set the tray on the guide rail and carefully push the tray in, making sure to keep the tray level.



1.2 SENSORS

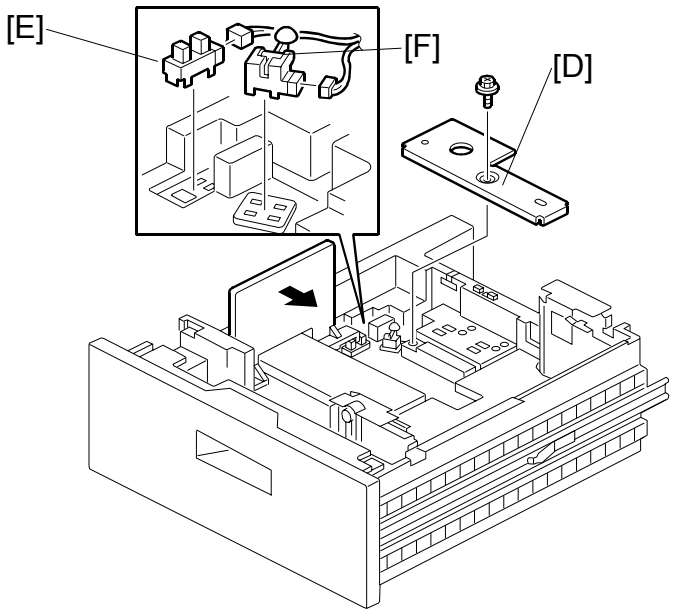
Paper Height Sensors of Paper Storage Side

1. Tray (☛ 1.1)
2. Rear fence [A] (🔩 x 2)
3. Rear fence bracket [B] (🔩 x 2)
4. Paper height sensors [C] (✋ x 2)



Left Fence HP Sensor/Paper End Sensor 2

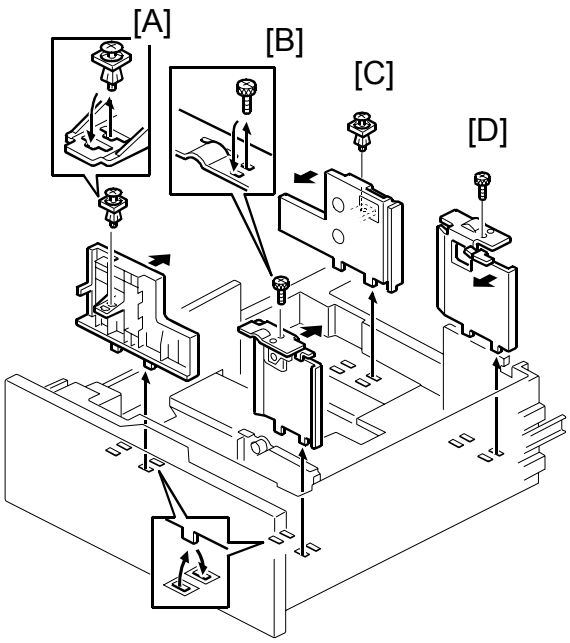
5. Bottom cover [D] (🔩 x 1)
6. Left fence HP sensor [E]
7. Paper end sensor 2 (paper storage side) [F]



1.3 CHANGING THE TRAY SIZE

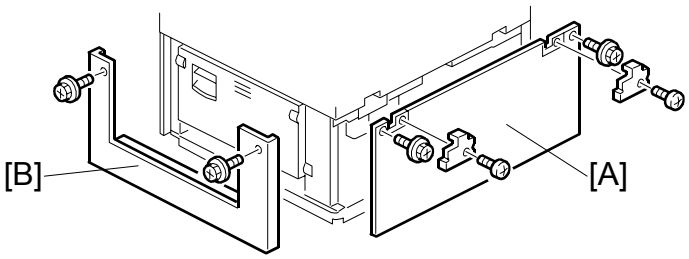
1. Fence screws [A through D]
2. Change the position of the fences.

NOTE: Before fastening the screws, set paper in the tray.

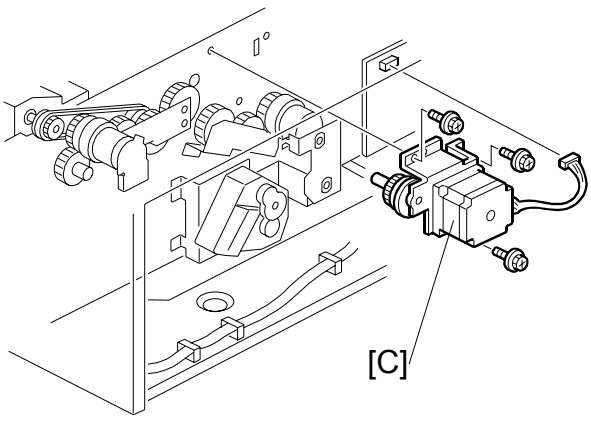


1.4 TRAY LIFT MOTOR

1. Rear cover [A] (x 4)
2. Right cover [B] (x 2)

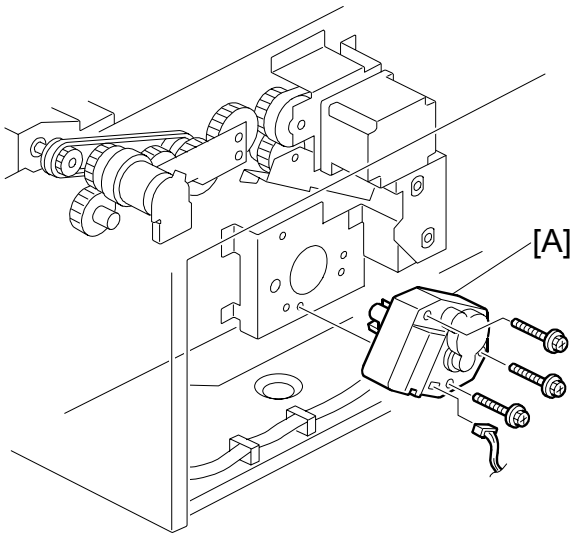


3. Tray lift motor [C] (x 1 , x 3)



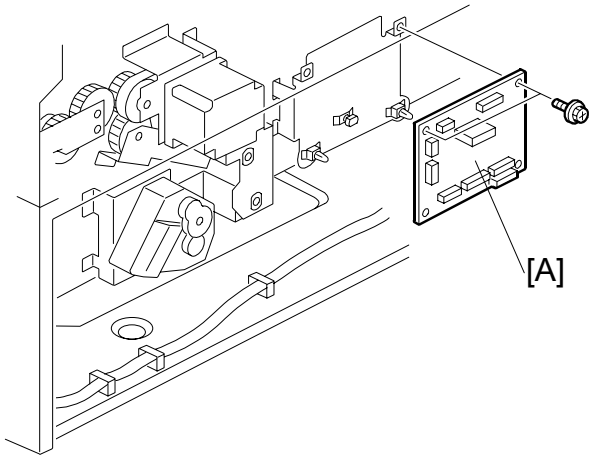
1.5 TRAY MOTOR

1. Rear cover (☛ 1.4)
2. Tray motor [A] (✋ x 1, 🔩 x 3)



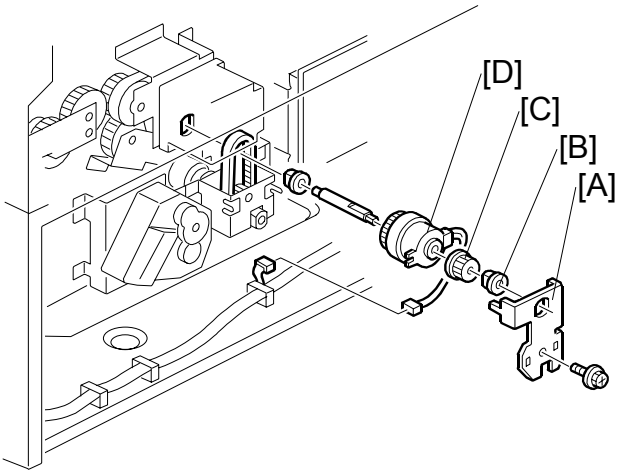
1.6 MAIN BOARD

1. Rear cover (☛ 1.4)
2. Main board [A] (✋ x #, 🔩 x 1)



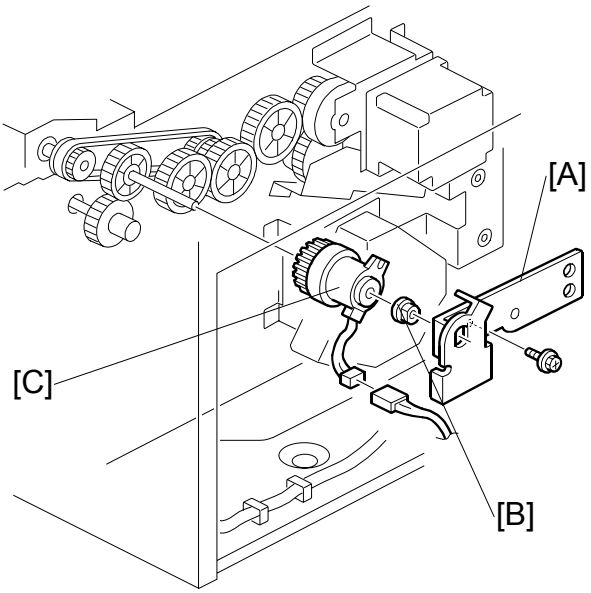
1.7 STACK TRANSPORT CLUTCH

1. Rear cover (☛ 1.4)
2. Clutch bracket [A] (🔩 x 1)
3. Bushing [B]
4. Gear [C]
5. Stack transport clutch [D] (🔌 x 1)



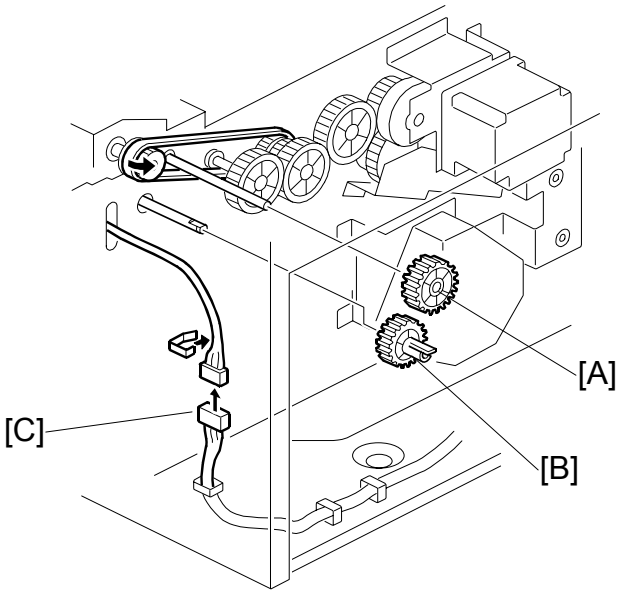
1.8 PAPER FEED CLUTCH

1. Rear cover (☛ 1.4)
2. Paper feed clutch bracket [A] (🔩 x 1)
3. Bushing [B]
4. Paper feed clutch [C] (🔌 x 1)

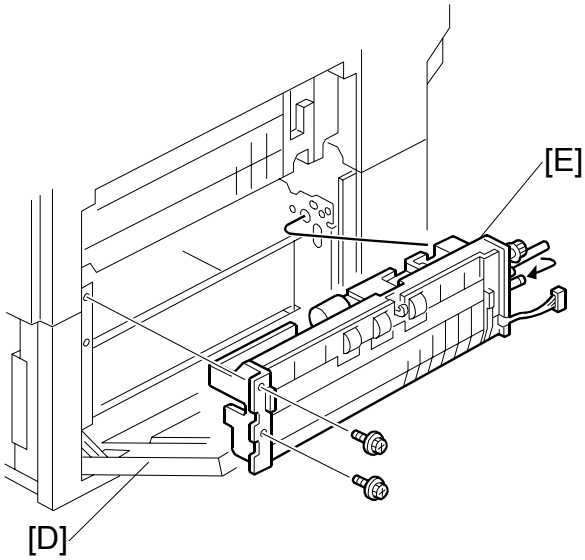


1.9 PAPER FEED UNIT

1. Paper feed clutch (☛ 1.8)
2. Gears [A][B]
3. x 1 [C]

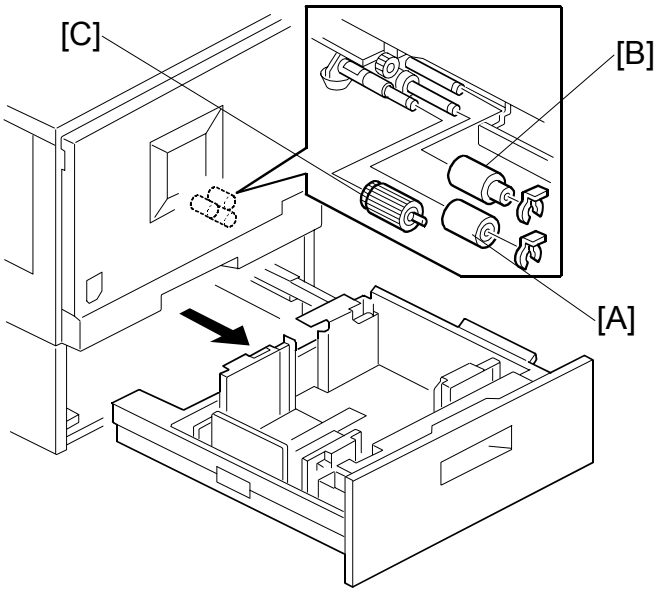


4. Open the vertical transport guide plate [D].
5. Paper feed unit [E] (x 2)



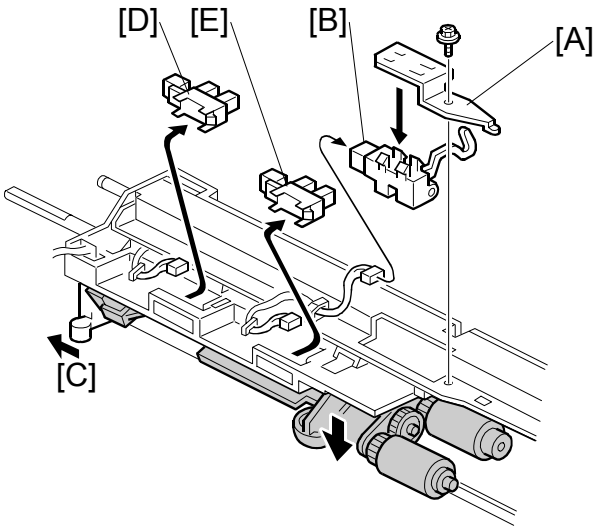
1.10 PICKUP, FEED, AND SEPARATION ROLLERS

1. Tray (☛ 1.1)
2. Separation roller [A] (⟲ x 1)
3. Feed roller [B] (⟲ x 1)
4. Pickup roller [C]



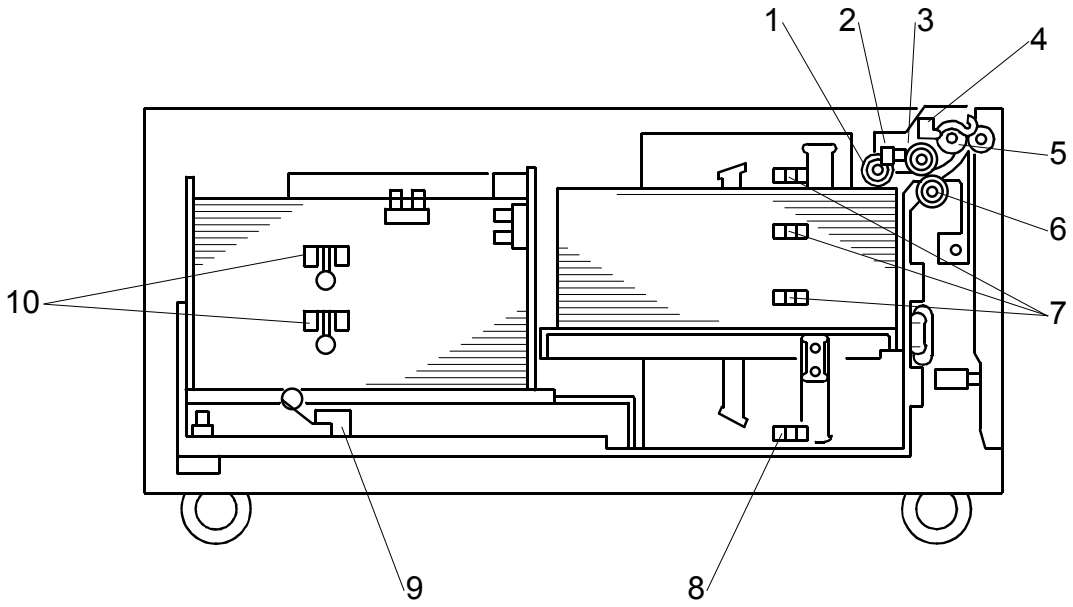
1.11 UPPER LIMIT, PAPER END 1, AND RELAY SENSORS

1. Paper feed unit (☛ 1.9)
2. Relay sensor bracket [A] (🔩 x 1)
3. Relay sensor [B]
4. While pushing the release lever [C], remove the following:
   - Upper limit sensor [D]
   - Paper end sensor 1 [E] (paper feed side)



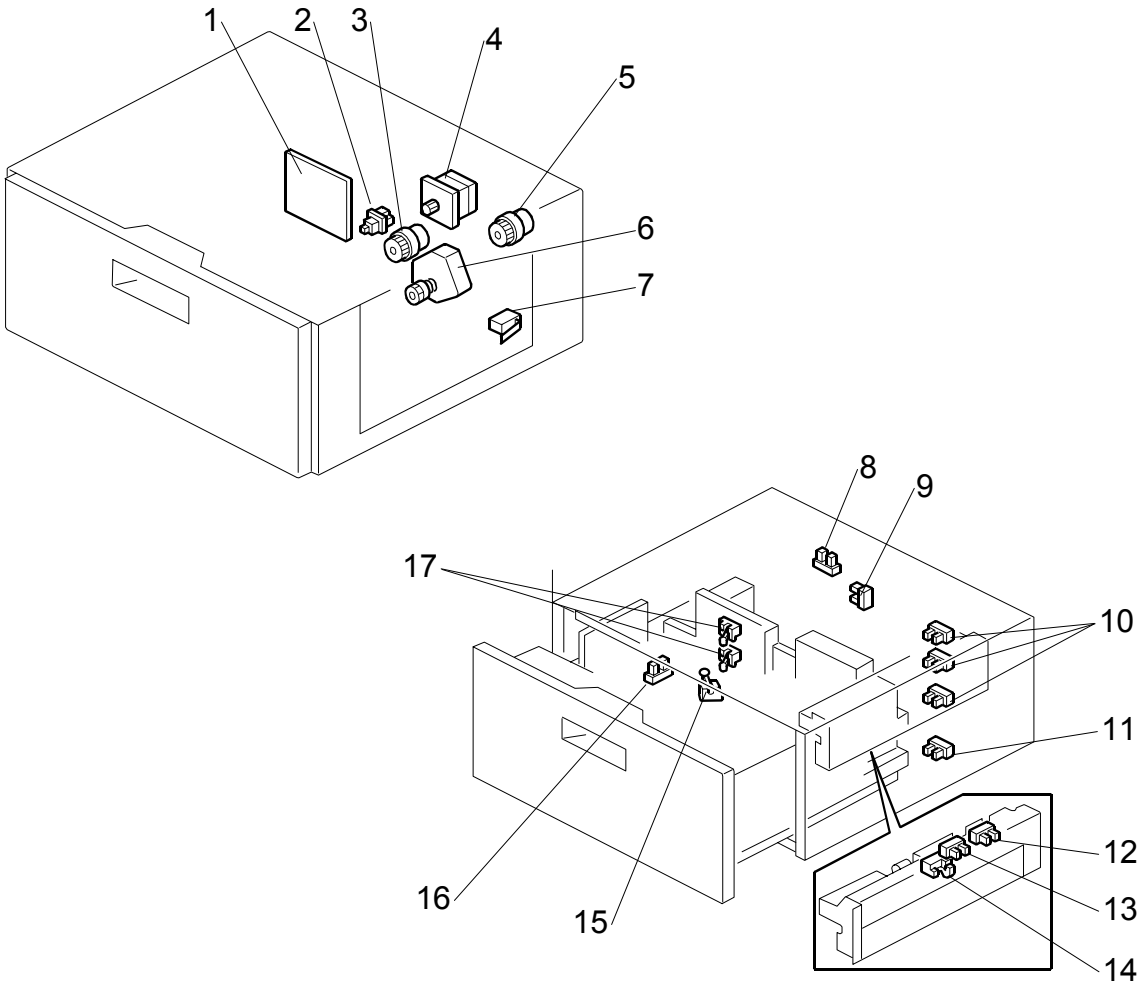
2. DETAILED DESCRIPTIONS

2.1 MECHANICAL COMPONENT LAYOUT



1. Pickup Roller
2. Upper Limit Sensor
3. Paper Feed Roller
4. Relay Sensor
5. Relay Roller
6. Separation Roller
7. Paper Height Sensors 1, 2, 3
8. Lower Limit Sensor
9. Paper End Sensor 2
10. Paper Height Sensors 4,5

2.2 ELECTRICAL COMPONENT LAYOUT

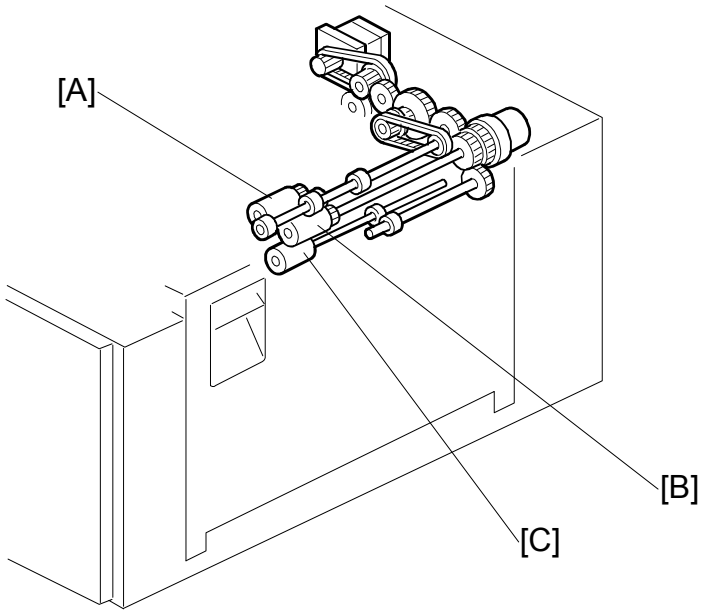


1. Main board
2. Tray sensor
3. Stack transport clutch
4. Tray motor
5. Paper feed clutch
6. Tray lift motor
7. Right cover switch
8. Paper size sensor
9. Side fence sensor
10. Paper height sensors 1, 2, 3
11. Lower limit sensor
12. Upper limit sensor
13. Paper end sensor 1
14. Relay sensor
15. Paper end sensor 2
16. Left fence HP sensor
17. Paper height sensors 4, 5

2.3 ELECTRICAL COMPONENT DESCRIPTIONS

Symbol	Name	Function	Index No.
Motors			
M1	Tray	Drives all rollers.	4
M2	Tray Lift	Drives the paper tray up or down.	6
Sensors			
S1	Paper End 1 (paper feed side)	Informs the copier/printer when the paper in the right side (paper feed side) of the tray has been used up. If there is a paper stack in the left side (paper storage side), this is moved into the paper feed side. If there is no paper stack in the left side, paper end is indicated.	13
S2	Relay	Detects the copy paper coming to the relay roller and checks for misfeeds.	14
S3	Upper Limit	Detects when the paper is at the correct paper feed height.	12
S4	Lower Limit	Detects when the tray is completely lowered, to stop the LCT motor.	11
S5	Paper Height 1, 2, 3	Detects the amount of paper remaining in the right side of the tray.	10
S6	Paper Height 4, 5	Detects the amount of paper remaining in the left side of the tray.	17
S7	Left Fence HP	Detects when the left fence is at its home position	16
S8	Tray	Detects whether the tray is correctly set.	2
S9	Side Fence	Detects whether the side fence is open or closed. (The fence opens when the left-tray paper stack is moving to the paper feed side.)	9
S10	Paper Size	Detects whether the side fence is at the LT or A4 position.	8
S11	Paper End 2 (paper storage side)	Informs the copier/printer when there is no paper in the left side (paper storage side) of the tray.	15
Switches			
SW1	Right Cover	Detects whether the right cover is open.	7
Magnetic Clutches			
MC1	Paper Feed	Drives the paper feed roller.	5
MC2	Stack Transport	Drives the rear fence of the paper storage side.	3
PCBs			
PCB1	Main	Controls the LCT and communicates with the copier/printer.	1

2.4 PAPER FEED

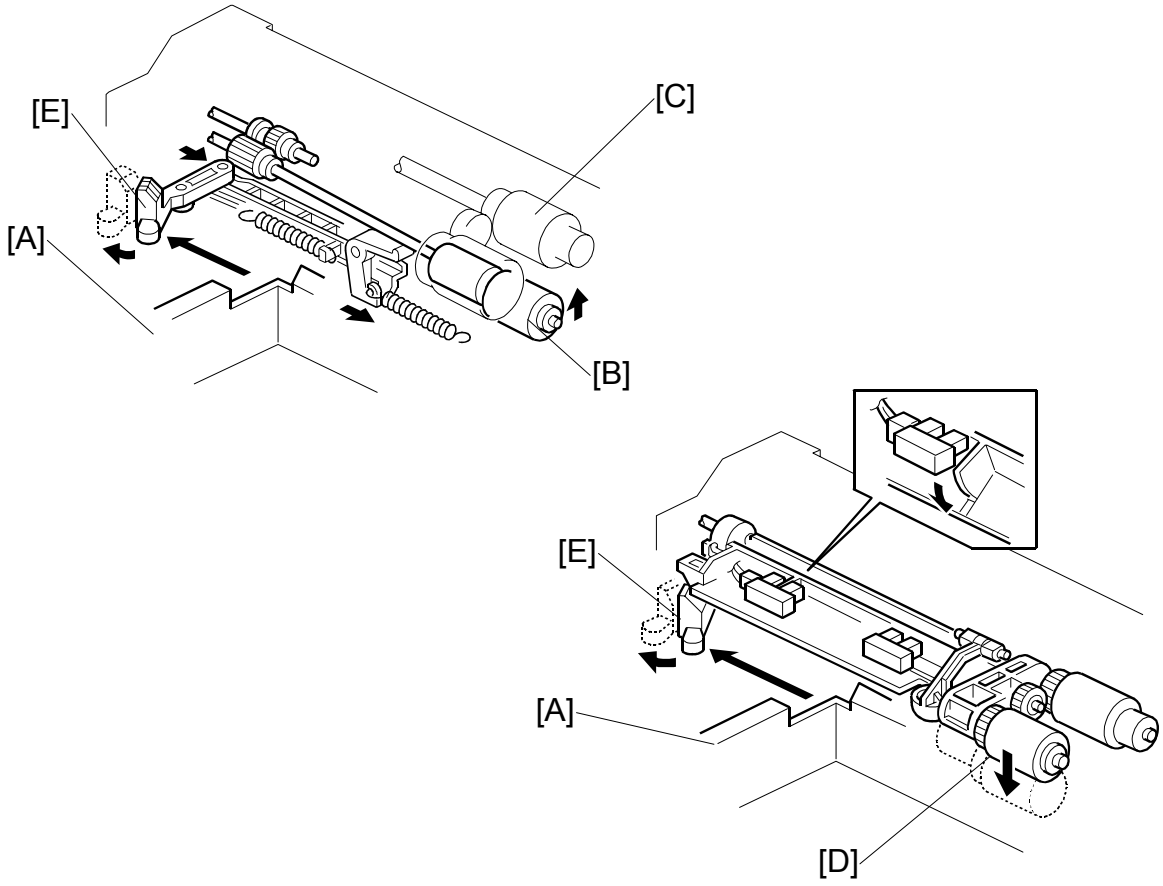


This products uses an FRR type paper feed mechanism.

The paper feed unit consists of the pickup roller [A], paper feed roller [B], separation roller [C], and relay rollers.

There is a torque limiter in the back of the separation roller (ferrite powder type).

2.5 SEPARATION ROLLER AND PICKUP ROLLER RELEASE

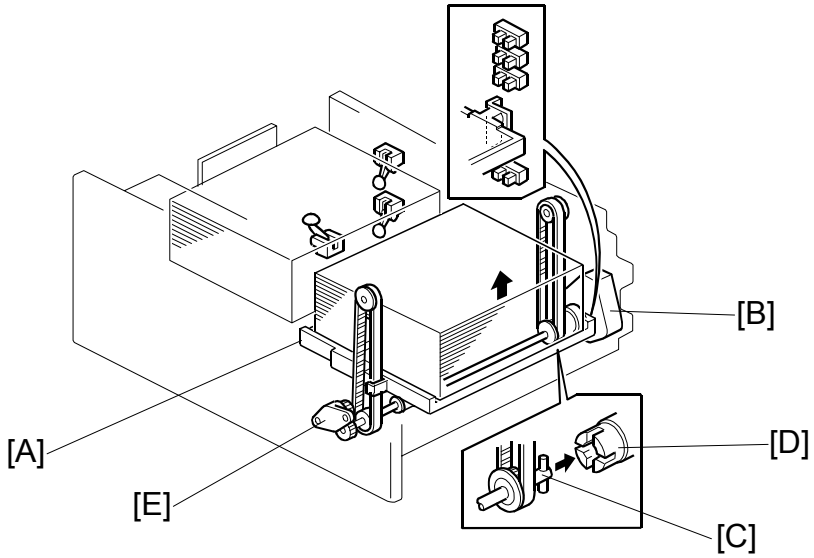


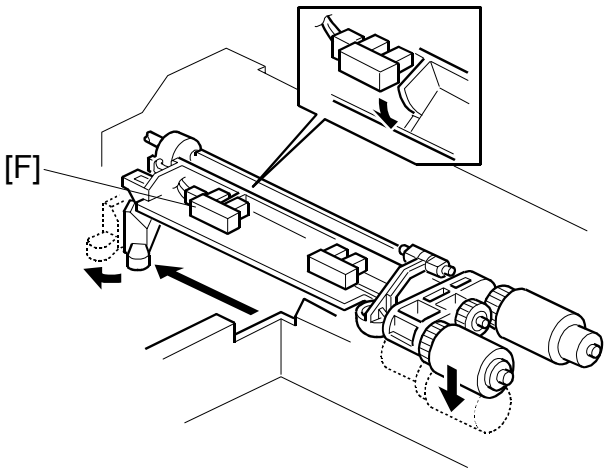
To prevent the paper from being torn when pulling out the paper feed tray, the separation and pickup rollers release automatically.

When the paper tray [A] is not inside the machine, the separation roller [B] is away from the paper feed roller [C], and the pickup roller [D] stays in the upper position.

When the paper tray is set into the machine, it pushes the release lever [E]. This causes the pickup roller [D] to go down into contact with the top sheet of paper and the separation roller [B] to move up and contact the paper feed roller.

2.6 TRAY LIFT





When the paper feed tray is put in the machine, the tray switch on the back turns on and the tray lift motor [B] starts. The base plate lift shaft [C] is coupled to the lift motor at the shaft [D], so the base plate [A] of the tray is lifted. After a short while, the top of the paper stack contacts the pickup roller and lifts it up. Then the motor stops lifting the plate when the upper limit sensor actuator enters the sensor (☛ 2.2).

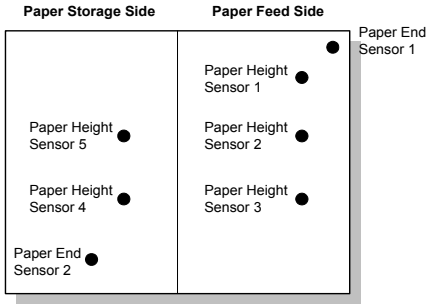
When paper in the tray is used up, the pick-up roller is gradually lowered, and the actuator leaves the upper limit sensor [F]. When this happens, the lift motor begins turning again. The tray will then be lifted until the actuator enters the upper limit sensor again).

When the tray is removed from the copier, the coupling between the lift motor [B] and base plate lift shaft [C] is broken and the base plate goes into a controlled free fall (using a damper [E] to slow the fall and prevent damage).

2.7 PAPER AMOUNT DETECTION

The table lists the sensors that are used to detect the amount of remaining paper.

Paper feed side	• Paper end sensor 1 • Paper height sensors 1 to 3
Paper storage side	• Paper height sensors 4 and 5 • Paper end sensor 2



The table shows the change of sensor patterns after the storage side and the feed side are fully loaded.

Storage side	**F**eed side	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**
	PE1		●		●		●		●		❍		●		●		●		●		❍
	H1		❍		❍		❍		●		❍		❍		❍		❍		●		❍
H4	H2	●	❍	●	❍	●	●	●	❍	●	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍
H5	H3	●	❍	●	●	●	❍	●	❍	●	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	❍
PE2		●		●		●		●		●		❍		❍		❍		❍		❍	
Indication																					
Remarks		The base plate is at the bottom.		As the paper in the feed side is used, the base plate is lifted.				When the paper in the feed side is all used, the base plate returns to the bottom. The paper in the storage side is carried to the feed side.				As the paper in the feed side is used, the base plate is lifted.						The LCT is empty.	

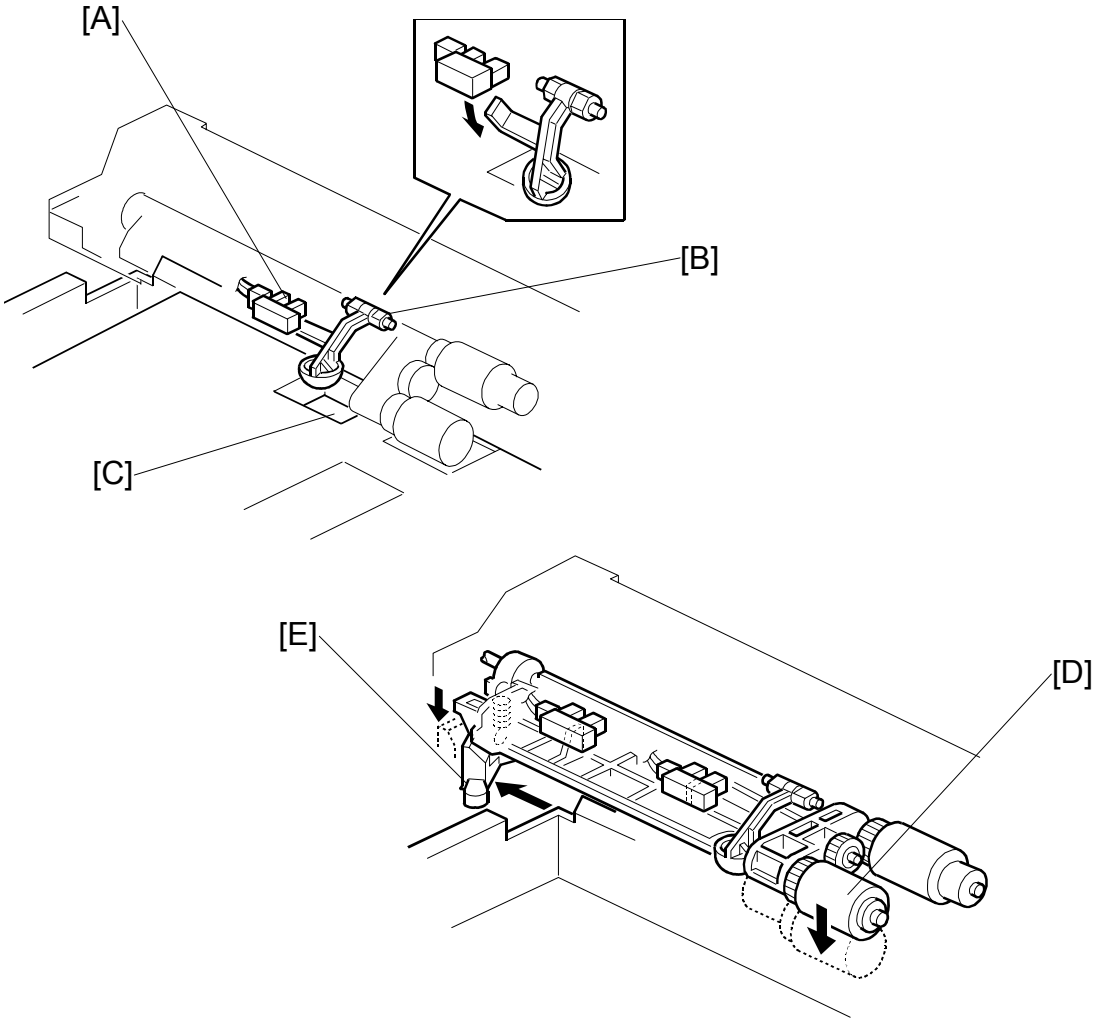
PE1~2: Paper end sensor 1~2, H1~5: Paper height sensor 1~5, ● : Actuated, ❍ :Not actuated

The table shows the change of sensor patterns after the storage side is half loaded and the feed side is fully loaded.

Storage side	**F**eed side	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**	**S**	**F**
	PE1		●		●		●		●		❍		●		●		●		●		❍
	H1		❍		❍		❍		●		❍		❍		❍		●		❍		❍
H4	H2	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	❍
H5	H3	●	❍	●	●	●	❍	●	❍	●	❍	❍	●	❍	❍	❍	❍	❍	❍	❍	❍
PE2		●		●		●		●		❍		❍		❍		❍		❍		❍	
Indication																					
Remarks		The base plate is at the bottom.		As the paper in the feed side is used, the base plate is lifted.				When the paper in the feed side is all used, the base plate returns to the bottom. The paper in the storage side is carried to the feed side. The bottom plate is lifted until paper end sensor 1 detects the paper.				As the paper in the feed side is used, the base plate is lifted.						The LCT is empty.	

PE1~2: Paper end sensor 1~2, H1~5: Paper height sensor 1~5, ● : Actuated, ❍ :Not actuated

2.8 PAPER END DETECTION OF PAPER FEED SIDE

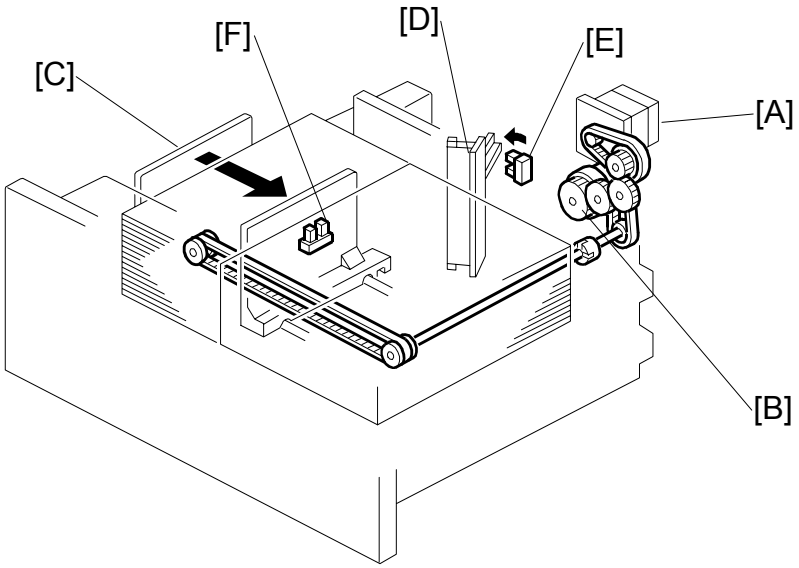


The paper end sensor 1[A] detects when copy paper in the paper feed side runs out.

When there is paper in the tray, the paper pushes up the feeler [B] and the actuator enters the sensor. When paper runs out, the feeler drops and the actuator leaves the sensor, and the machine detects that there is no paper in the tray.

When the user puts back the tray, the lever [E] lowers the pickup roller and the feeler. When, on the other hand, the tray is pulled out, the lever lifts the roller and feeler.

2.9 PAPER STACK TRANSPORT



When the paper in the paper feed side is used up, the tray motor [A] and stack transport clutch [B] turn on. Then the rear fence [C] moves the stack of paper from the paper storage side to the paper feed side.

NOTE: During paper feed, the stack transport clutch (☛ 2.2) does not switch on, so drive from the tray motor only transfers to the relay roller and not to the fence mechanism.

While the stack is in motion, it pushes the side fence [D] aside, and the side fence sensor [E] detects that the fence is open.

After the stack has been moved all the way across, a spring in the side fence moves the side fence back, and the side fence sensor detects that the fence is closed. Then, the tray motor reverses until end fence home position sensor [F] is deactivated.

B386
AUTO REVERSE DOCUMENT FEEDER

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

AUTO REVERSE DOCUMENT FEEDER B386

TABLE OF CONTENTS

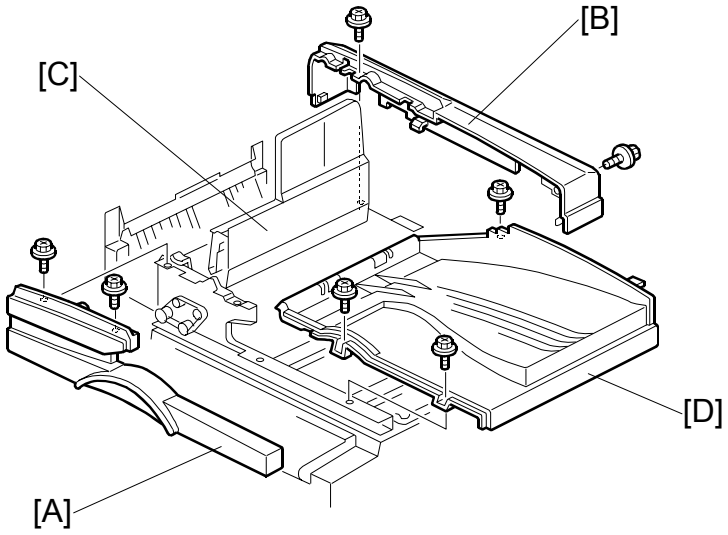
CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

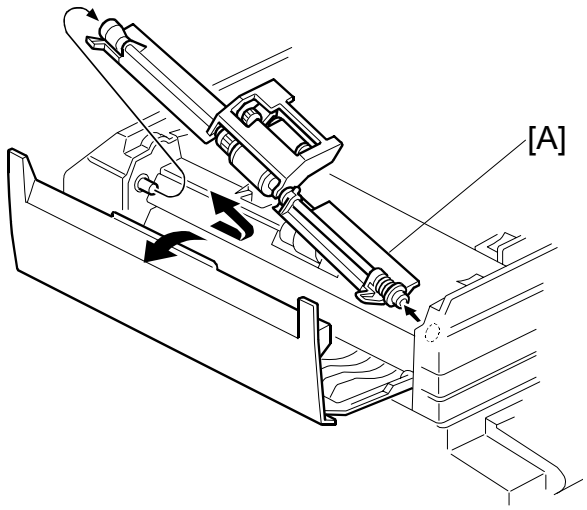
NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

1.1 DF EXIT TABLE AND COVERS



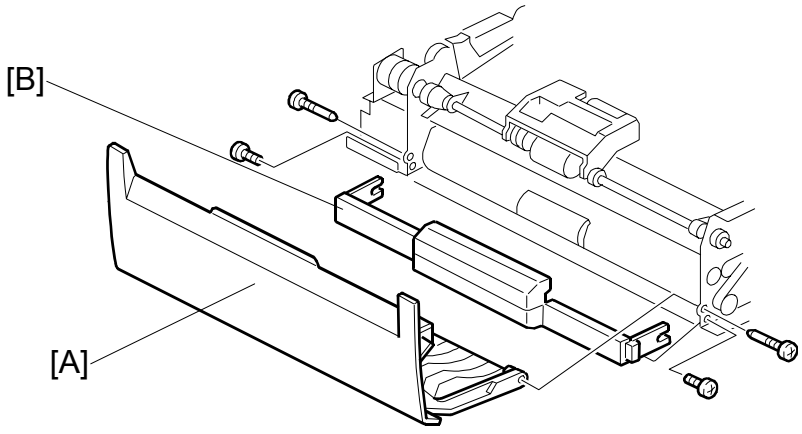
1. Open the DF feed cover.
2. Front cover [A] (x 3)
3. Rear cover [B] (x 3)
4. Open the reverse table [C].
5. Original exit table [D] (x 3)

1.2 ORIGINAL FEED UNIT



1. Open the left cover.
2. Detach the paper feed unit by sliding it toward the front of the machine (spring-loaded side) and then lifting the far side.

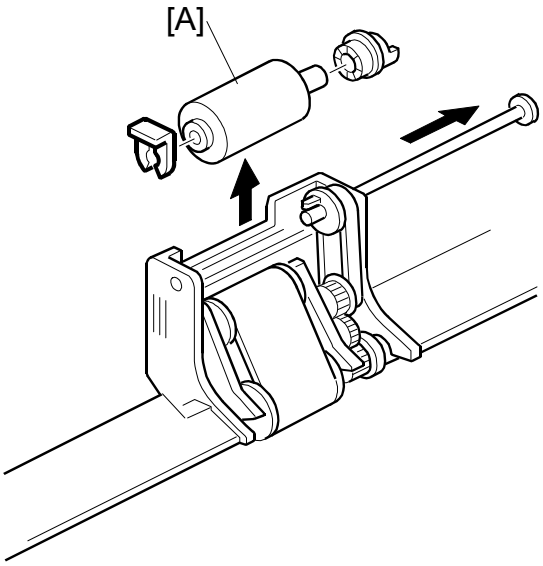
1.3 LEFT COVER



1. Front and rear covers
2. Left cover [A] (x 2)
3. Lower left stay unit [B] (x 2)

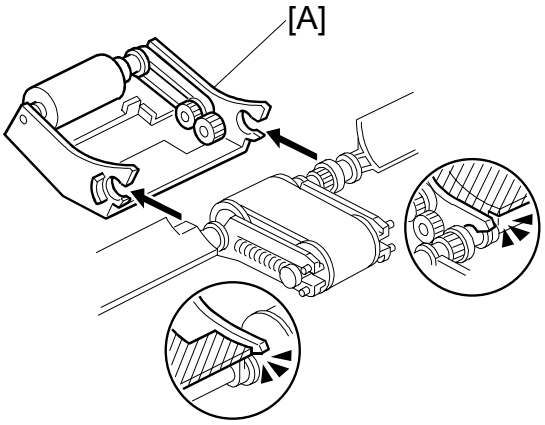
1.4 PICK-UP ROLLER

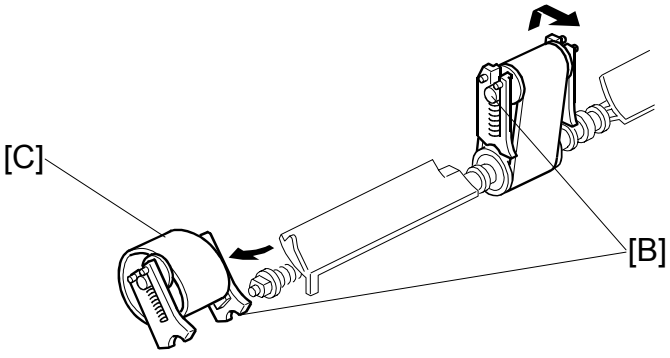
1. Original feed unit.
2. Pick-up roller [A] (x 1)



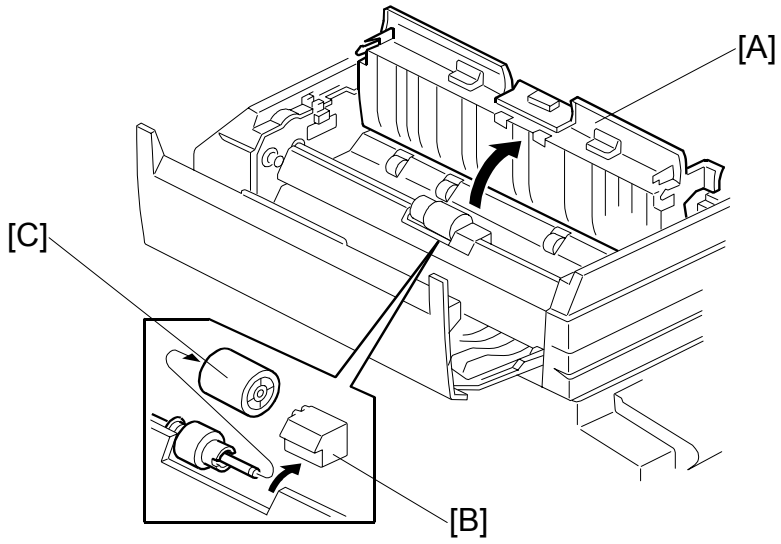
1.5 FEED BELT

1. Original feed unit
2. Open the paper feed guide [A].
3. Belt holders [B]
4. Feed belt [C]
   - Push in on the bottom of the roller and lift slightly to remove the belt.



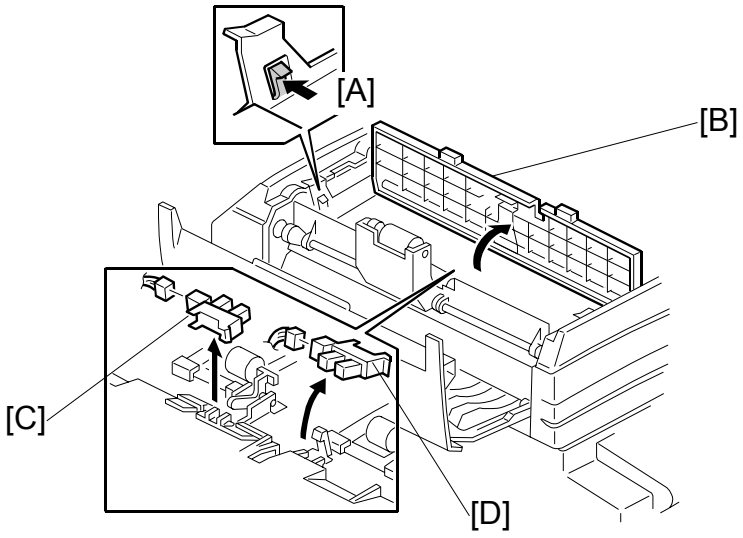


1.6 SEPARATION ROLLER



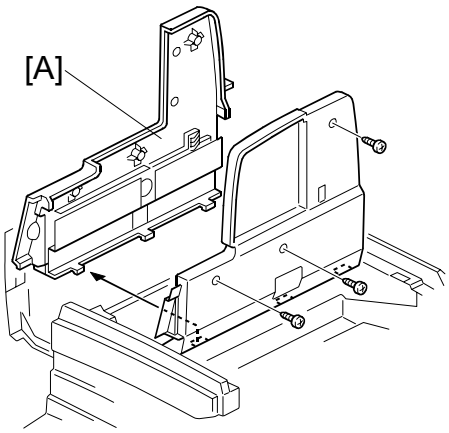
1. Lift the original feed guide [A].
2. Separation roller cover [B]
3. Separation roller [C]

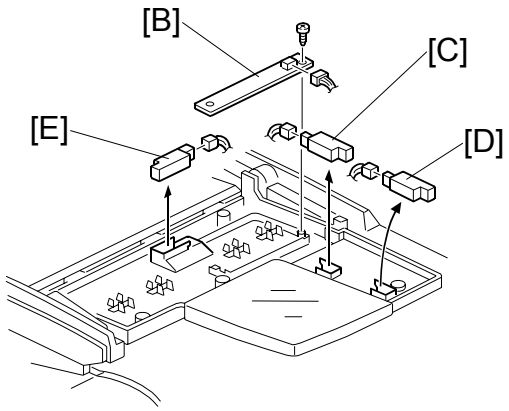
1.7 ORIGINAL SET/ORIGINAL REVERSE SENSORS



1. Open the left cover.
2. While pushing the left and right pawls [A], open the original feed guide plate [B].
3. Original set sensor [C]
4. Original reverse sensor [D]

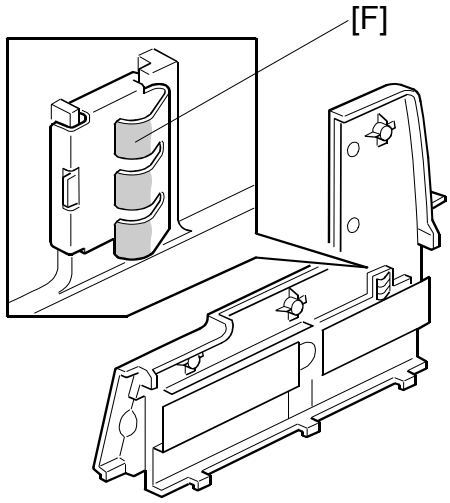
1.8 ORIGINAL SIZE SENSORS, TRAILING EDGE SENSOR



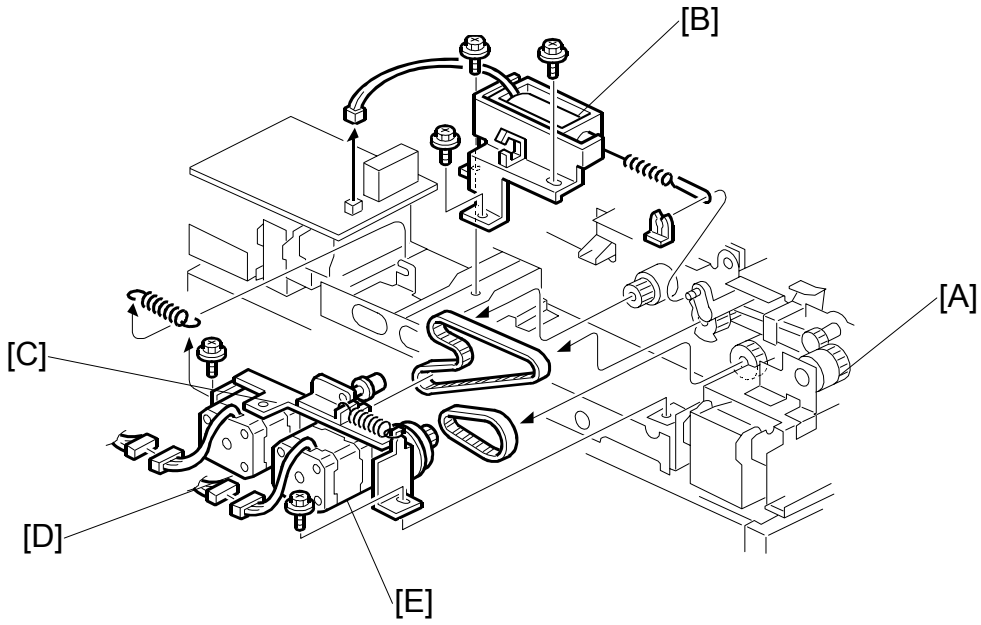


1. Open the original table [A].
2. Upper part of the table (🔩 x 3)
3. Replace the width sensor board [B], length sensor (-1 [C] and -2 [D]) and trailing edge sensor [E].

NOTE: To ensure proper detection of paper size, after wiping off the sensor board and terminal plate with a dry cloth (or cloth with alcohol), apply silicone grease (KS-660) to the terminal plate [F].



1.9 ORIGINAL FEED DRIVE



First remove the rear cover. Then follow the instructions below for each part replacement:

DF Feed Clutch

1. DF feed clutch [A] (C x 1, x 1)

Pick-up Solenoid

1. Pick-up solenoid [B] (x 3, x 1, x 1)

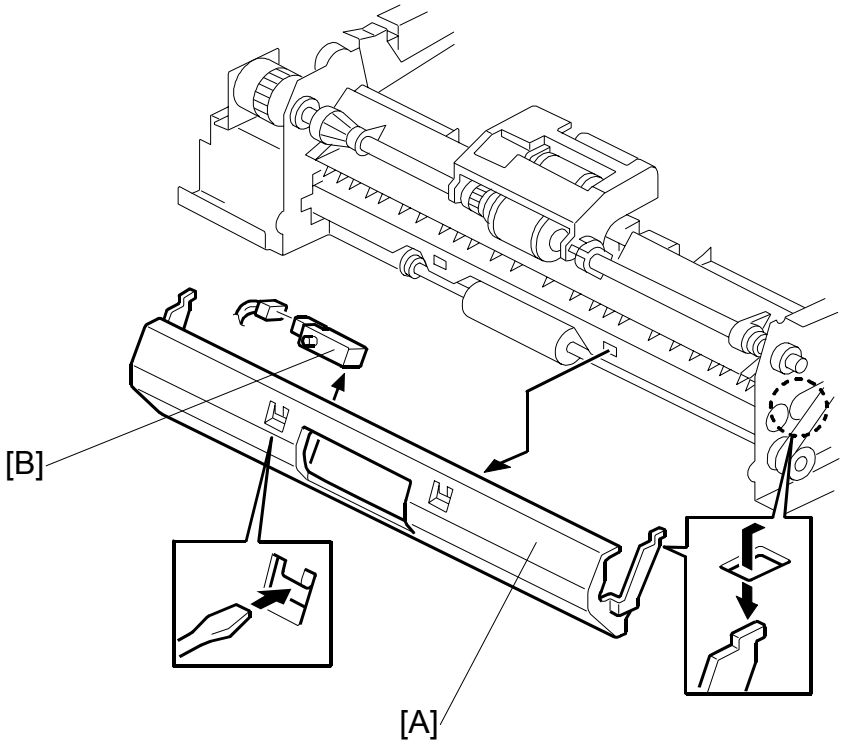
Transport Motor

1. Bracket [C] (x 2)
2. Transport motor [E] (x 2, x 1)

DF Feed Motor

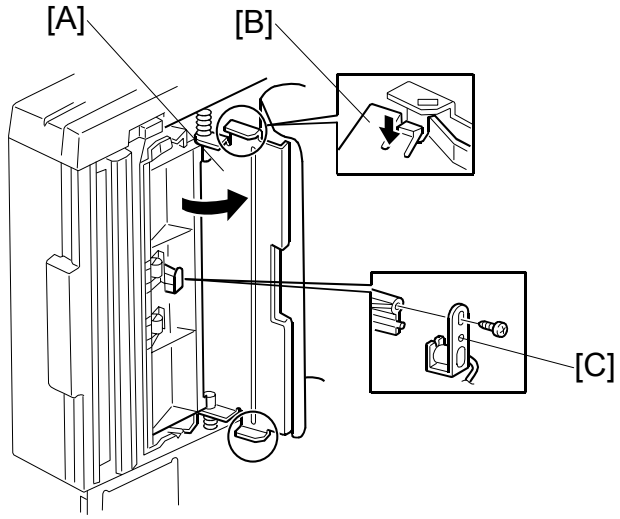
1. Bracket [C] (x 2)
2. DF feed motor [D] (x 2, x 1)

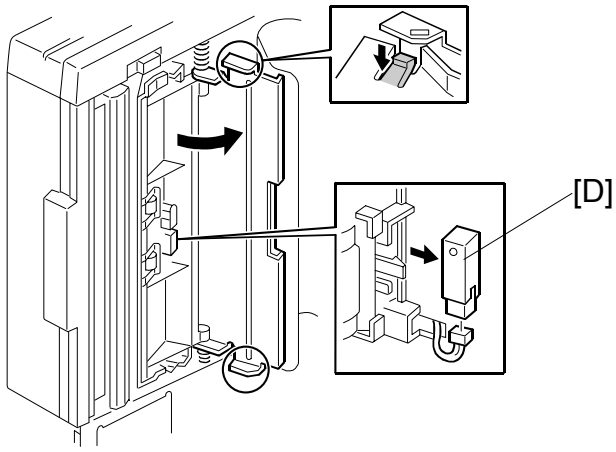
1.10 REGISTRATION SENSOR



1. Front and rear covers
2. Transport guide plate [A]
3. Registration sensor [B]

1.11 STAMP SOLENOID AND ORIGINAL EXIT SENSOR

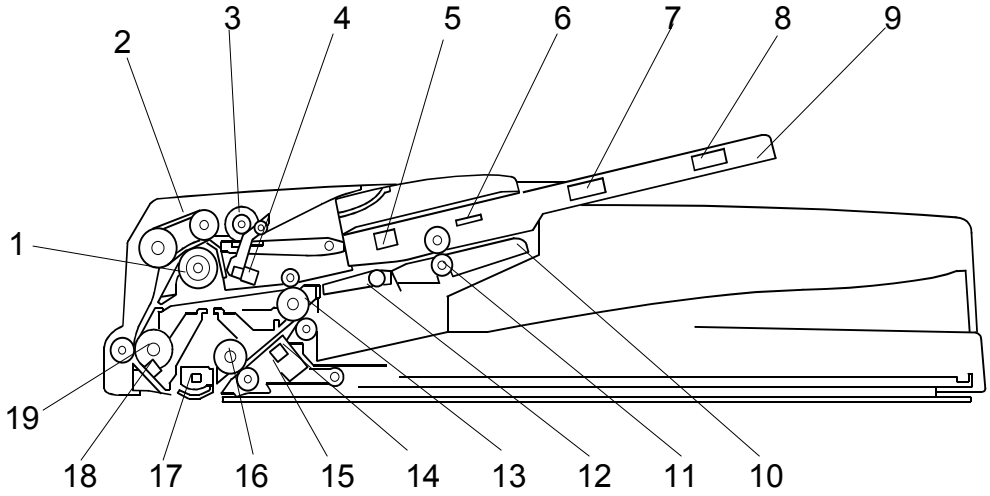




1. Rear cover (☞ x 1)
2. Upper cover and the exit tray
3. Open the exit guide plate [A]. Detach the unit by inserting a screwdriver into one of the small openings [B] on either side of the guide plate holder and pushing firmly.
4. Stamp solenoid [C] (☞ x 1)
5. Original exit sensor [D] (☞ x 1)

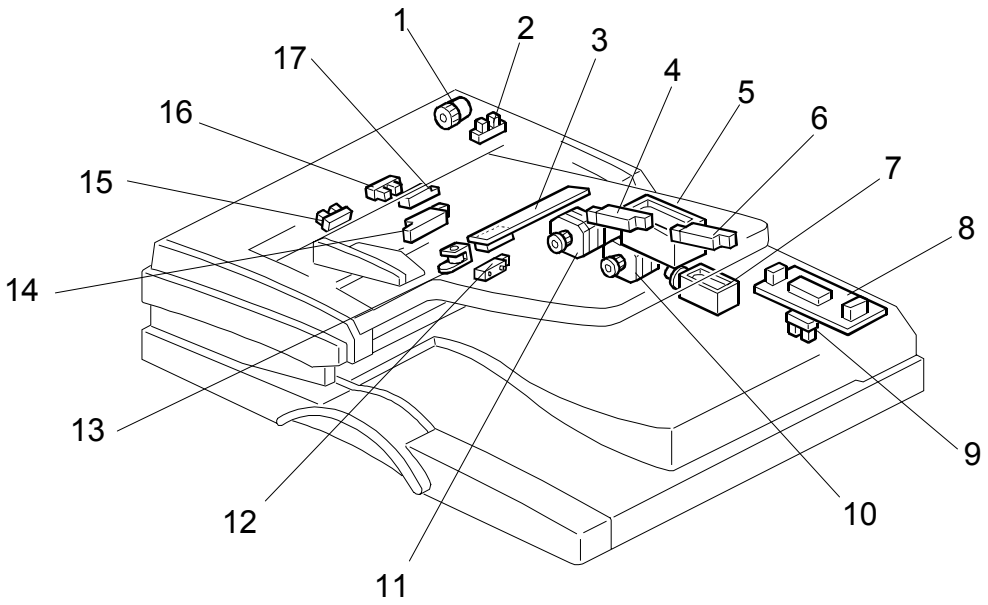
2. DETAILED DESCRIPTIONS

2.1 MECHANICAL COMPONENT LAYOUT



1. Separation Roller
2. Paper Feed Belt
3. Pick-up Roller
4. Original Set Sensor
5. Original Trailing Edge Sensor
6. Original Width Sensor Board
7. Original Length Sensor 1
8. Original Length Sensor 2
9. Original Table
10. Reverse Table
11. Reverse Roller
12. Junction Gate
13. Exit Roller
14. Original Exit Sensor
15. Stamp
16. 2nd Transport Roller
17. Original Exposure Guide
18. Registration Sensor
19. 1st Transport Roller

2.2 ELECTRICAL COMPONENT LAYOUT

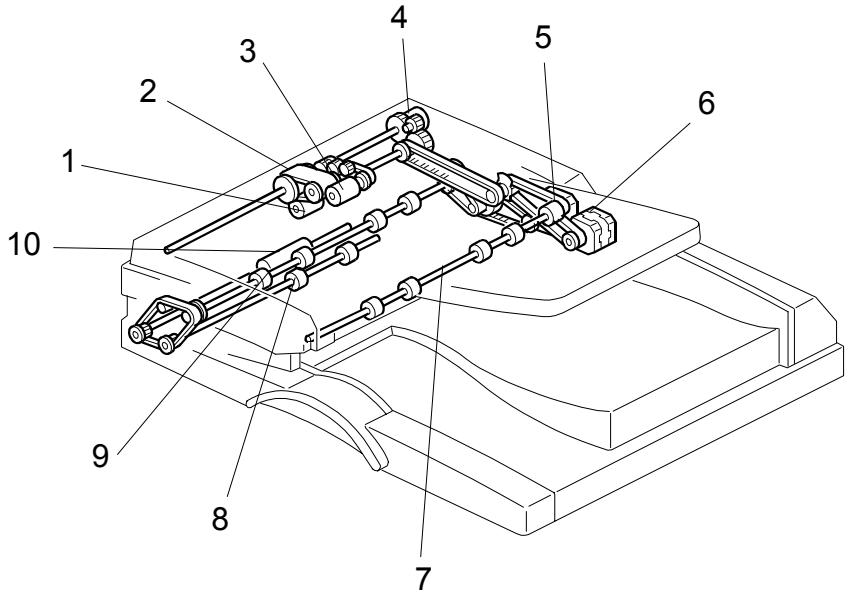


1. DF Feed Clutch
2. Feed Cover Sensor
3. Original Width Sensor Board
4. Original Length Sensor 1
5. DF Pick-up Solenoid
6. Original Length Sensor 2
7. Junction Gate Solenoid
8. DF Drive PCB
9. DF Position Sensor
10. DF Feed Motor
11. DF Transport Motor
12. Original Exit Sensor
13. Stamp Solenoid
14. Original Trailing Edge Sensor
15. Original Set Sensor
16. Original Reverse Sensor
17. Registration Sensor

2.3 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	DF Feed	Drives the feed belt, separation, pick-up, and reverse table rollers.	10
M2	DF Transport	Drives the transport and exit rollers	11
Sensors			
S1	DF Position	Detects whether the DF is lifted or not.	9
S2	Registration	Detects the leading edge of the original to turn off the DF feed and transport motors, detects the original exposure timing, and checks for original misfeeds.	17
S3	Feed Cover Open Sensor	Detects whether the feed-in cover is opened or not.	2
S4	Original Width Sensor Board	Detects the original width.	3
S5	Original Length - 1	Detects the original length.	4
S6	Original Length - 2	Detects the original length.	6
S7	Original Set	Detects if an original is on the feed table.	15
S8	Original Exit	Detects the leading edge of the original to turn on the junction gate solenoid and checks for original misfeeds. Detects the trailing edge of the original to turn off the transport and feed motor and junction gate solenoid. In single-sided mode, used to detect original misfeeds.	12
S9	Original Trailing Edge	Detects the trailing edge of the last original to stop copy paper feed and to turn off the transport motor, and checks for original misfeeds.	14
S10	Original Reverse Sensor	Detects when the original is fed from the reverse area during duplex scanning.	16
Solenoids			
SOL1	DF Pick-up	Controls the up-down movement of the original table.	5
SOL2	Stamp	Energizes the stamper to mark the original.	13
SOL3	Junction Gate	Opens and closes the junction gate.	7
Magnetic Clutches			
MC1	DF Feed	Transfers transport motor drive to the pick-up roller and feed belt.	1
PCBs			
PCB1	DF Drive	Interfaces the sensor signals with the copier, and transfers the magnetic clutch, solenoid and motor drive signals from the copier.	8

2.4 DRIVE LAYOUT

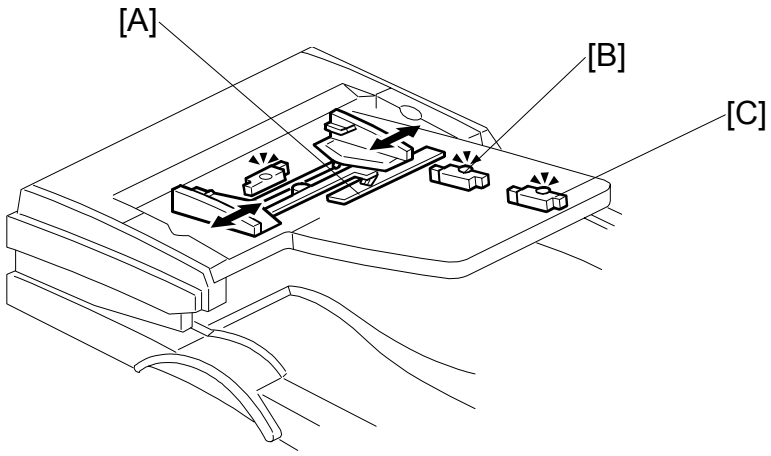


1. Separation Roller
2. Original Feed Belt
3. Pick-up Roller
4. DF Feed Clutch
5. DF Transport Motor
6. DF Feed Motor
7. Reverse Table Roller
8. 2nd Transport Roller
9. Exit Roller
10. 1st Transport Roller

DF Feed Motor: Drives the feed belt, separation, pick-up, and reverse table rollers

DF Transport Motor: Drives the transport and exit rollers

2.5 ORIGINAL SIZE DETECTION



The original size detection mechanism consists of the original width sensor board [A] and two original length sensors-1 [B] and -2 [C]. Based on the combined output of the length sensors and the width sensor board, the machine can detect the size of the original. This integrated detection mechanism is detailed in the table on the next page.

Note that the width sensor's terminal plate is attached to the original guide, so the widths of the originals must all be the same.

ORIGINAL SIZE DETECTION

	NA	EU	Original Width-1	Original Width-2	Original Width-3				Original Length-1	Original Length-2
					P4	P3	P2	P1		
A3 (297 x 420)	✗	❍	L	L	ON	—	—	—	ON	ON
B4 (257 x 364)	✗	❍	L	H	—	ON	—	—	ON	ON
A4 (Lengthwise) (210 x 297)	✗	❍	H	L	—	—	ON	—	ON	—
A4 (297 x 210) (Sideways)	✗	❍	L	L	ON	—	—	—	—	—
B5 (182 x 257) (Lengthwise)	✗	❍	H	H	—	—	—	ON	ON	—
B5 (257 x 182) (Sideways)	✗	❍	L	H	—	ON	—	—	—	—
A5 (148 x 210) (Lengthwise)	✗	✗	H	H	—	—	—	ON	—	—
A5 (210 x 148) (Sideways)	✗	❍	H	L	—	—	ON	—	—	—
11" x 17" (DLT)	❍	✗	L	L	ON	—	—	—	ON	ON
11" x 15"	❍	✗	L	L	ON	—	—	—	ON	ON
10" x 14"	❍	✗	L	H	—	ON	—	—	ON	—
8.5" x 14" (LG)	❍	✗	H	L	—	—	ON	—	ON	—
8.5" x 13" (F4)	✗	❍	H	L	—	—	ON	—	ON	—
8" x 13" (F)	❍	❍	H	L	—	—	ON	—	ON	—
8.5" x 11" (Lengthwise)	❍	✗	H	L	—	—	ON	—	ON	—
8.5" x 11" (Sideways)	❍	✗	L	L	ON	—	—	—	—	—
10" x 8" (Lengthwise)	❍	✗	L	H	—	ON	—	—	ON	—
5.5" x 8.5" (Lengthwise) (HLT)	❍	✗	H	H	—	—	—	ON	—	—
5.5" x 8.5" (Sideways) (HLT)	❍	✗	H	L	—	—	ON	—	—	—

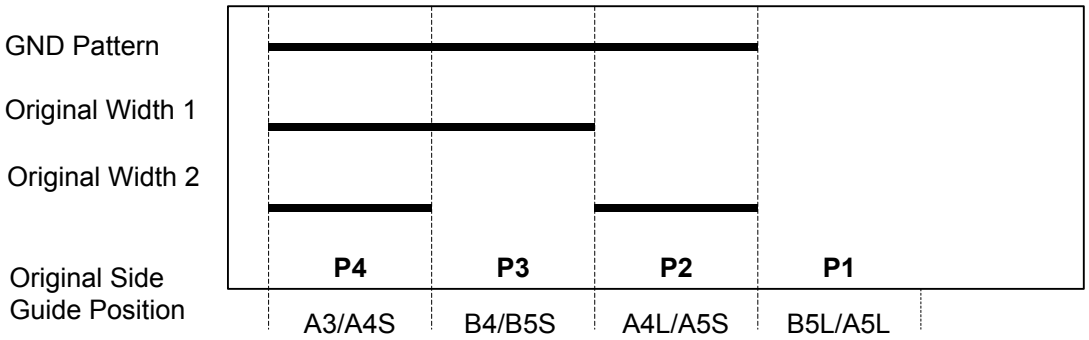
Key
✗: No, ❍: Yes
ON: Paper present
NA: North America, EU: Europe

NOTE: 1) P1-P4 represent the four positions on the width sensor board. ON indicates the presence of the terminal plate in a given position. “Original Width-1” and “Original Width-2” are the outputs from the sensor board to the DF main board. The state of these outputs (L or H) depends on the position of the terminal plate on the sensor board (P1, P2, P3, or P4). For example, if the terminal plate is at P4, both outputs are L.

2) A reading of “L” on either of the width sensor outputs indicates that the terminal plate is connecting the GND pattern with the width sensor output signal line.

3) The machine cannot detect more than one size of originals in the same job.

Original Width Sensor Board



The signal is "L" when the terminal plate is connected to the GND pattern.

2.6 MIXED ORIGINAL SIZE MODE

This section explains what happens when the user selects mixed original size mode.

Because this ADF is a sheet-through document feeder, the method for original document width detection is the same as when the originals are the same size, but the document length detection method is different. Therefore, the scanning speed is slightly slower.

Document length detection

From when the registration sensor switches on until it switches off, the CPU counts the transport motor pulses. The number of pulses determines the length of the original.

Feed-in cycle

When the original size for the copy modes listed below cannot be determined, the image cannot be correctly scaled (reduced or enlarged) or processed until the original's length has been accurately detected. The length must be determined before the image is scanned.

Auto Reduce/Enlarge
Centering
Erase Center/Border
Booklet
Image Repeat

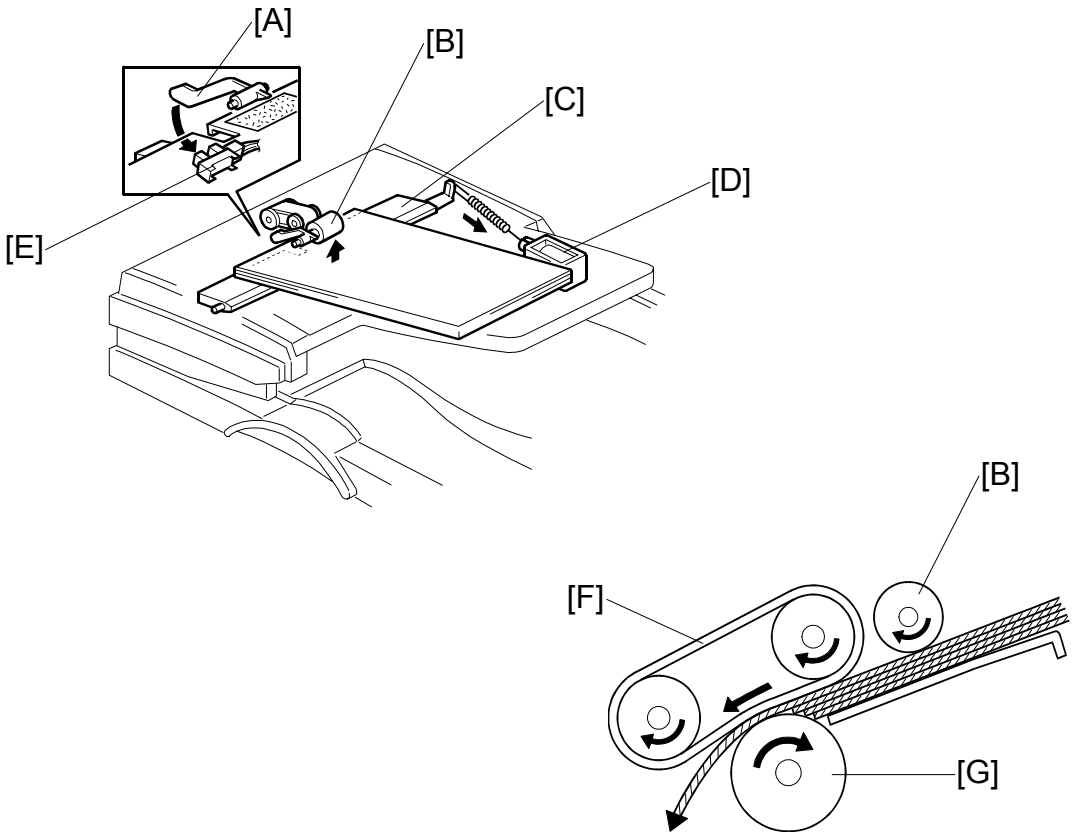
The originals follow this path:

1. Length detection ➔ Scanning glass ➔ Inverter table
2. Inverter table ➔ Scanning glass ➔ Inverter table (restores the original order)
3. Inverter table ➔ Scanning glass (image scanned) ➔ Exit tray

Normal feed-in

In a copy mode other than those listed above, when the reduction/enlargement ratio has been determined, the originals are scanned normally. In order to store the scanned images, a large area of memory (the detected original width x 432 mm length) is prepared. Next, only the portion of the image up to the detected original length is read from memory and printed.

2.7 PICK-UP AND SEPARATION



The original is set with the image facing up. The original pushes actuator [A] and the original set sensor [E] is activated.

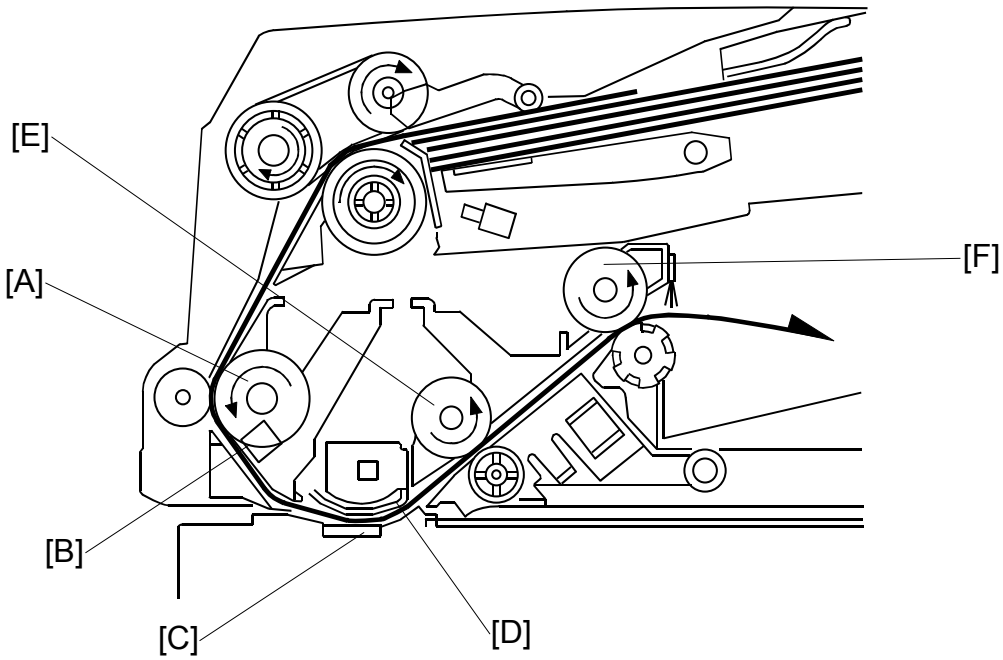
After pressing the start button, the pick-up solenoid [D] is activated and the lift plate [C] lifts the original up until it comes in contact with the pick-up roller [B]. The pick-up roller then feeds the top sheet of paper.

After being fed from the pick-up roller, the topmost sheet is separated from the stack by the separation roller and sent to the first transport roller.

The mechanism is an FRR system, consisting of the original feed belt [F] and separation roller [G].

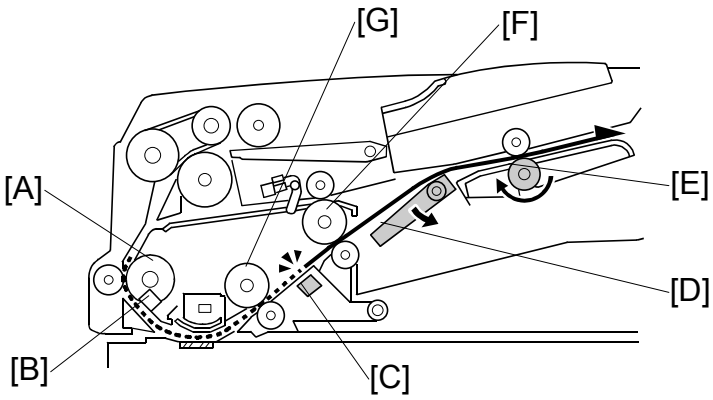
2.8 ORIGINAL TRANSPORT AND EXIT

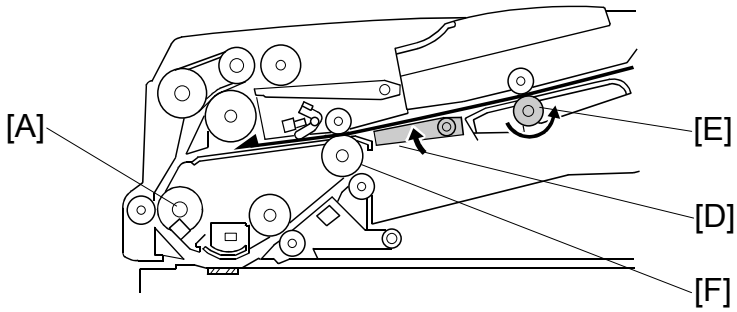
2.8.1 SINGLE-SIDED ORIGINALS



The DF feed motor feeds the separated original to the first transport roller [A] at maximum speed. When the registration sensor [B] detects the leading edge, the motor stops for a short while. Then the feed and transport motors turn on again, and feed the original through scanning area at a lower speed (the scanning area contains the original exposure guide [D] and DF exposure glass [C]). After scanning, the original is fed out by the second transport roller [E] and exit roller [F].

2.8.2 DOUBLE-SIDED ORIGINALS

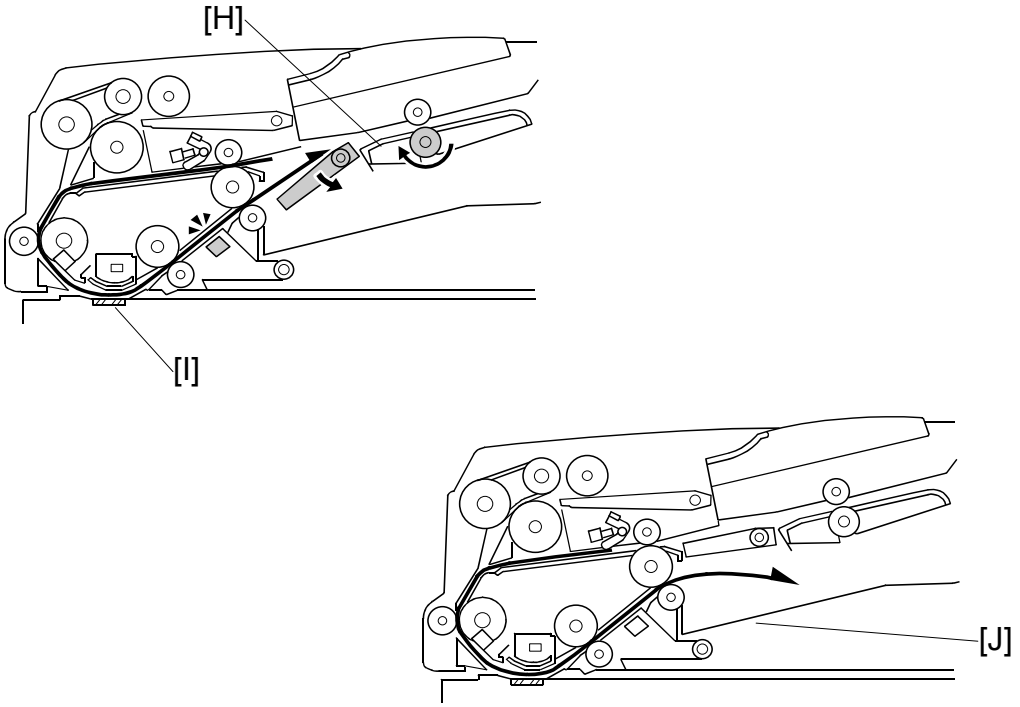




When the registration sensor [B] detects the leading edge of the original, the DF feed motor (which drives the feed roller) and transport motor (which drives the transport roller) both switch off. After a brief interval, the transport motor alone reactivates to drive the first [A] and second transport roller [G] and the exit roller [F]. The front side of the original is then scanned.

When the original exit sensor [C] detects the leading edge of the original, the junction gate solenoid is activated and the junction gate [D] opens. The original is then transported towards the reverse table [H].

Soon after the trailing edge of the original passes the exit sensor [C], the junction gate solenoid switches off and the junction gate [D] is closed. When the original has been fed onto the reverse table, the DF feed motor switches on in reverse. The original is then fed by the reverse roller [E] and then by the exit roller [F] and first transport roller [A] to the scanning area (where the reverse side will be scanned).

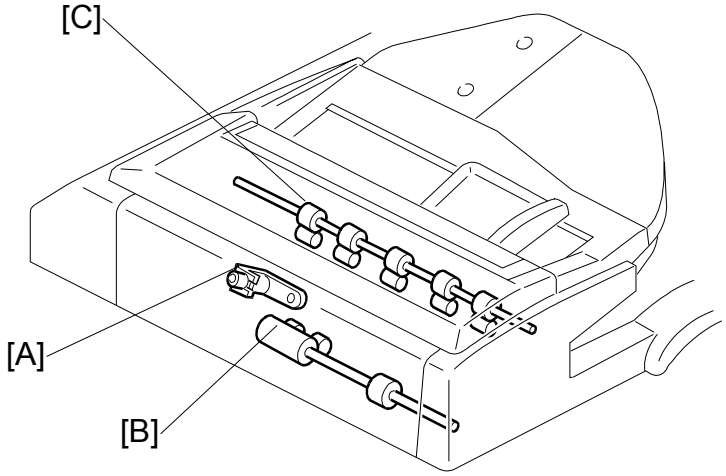


The original is then sent to the reverse table [H] a second time to be turned over. This is done so that the duplex copies will be properly stacked front side down in the exit tray [J] in the correct order.

2.8.3 ORIGINAL TRAILING EDGE SENSOR

During one-to-one copying, copy paper is fed to the registration roller in advance (while the original is still being scanned), to increase the copy speed. The trailing edge sensor monitors the stack of originals in the feeder, and detects when the trailing edge of the last page has been fed in. The main CPU then stops the copier from feeding an unwanted extra sheet of copy paper.

2.9 STAMP



This function is only for fax mode.

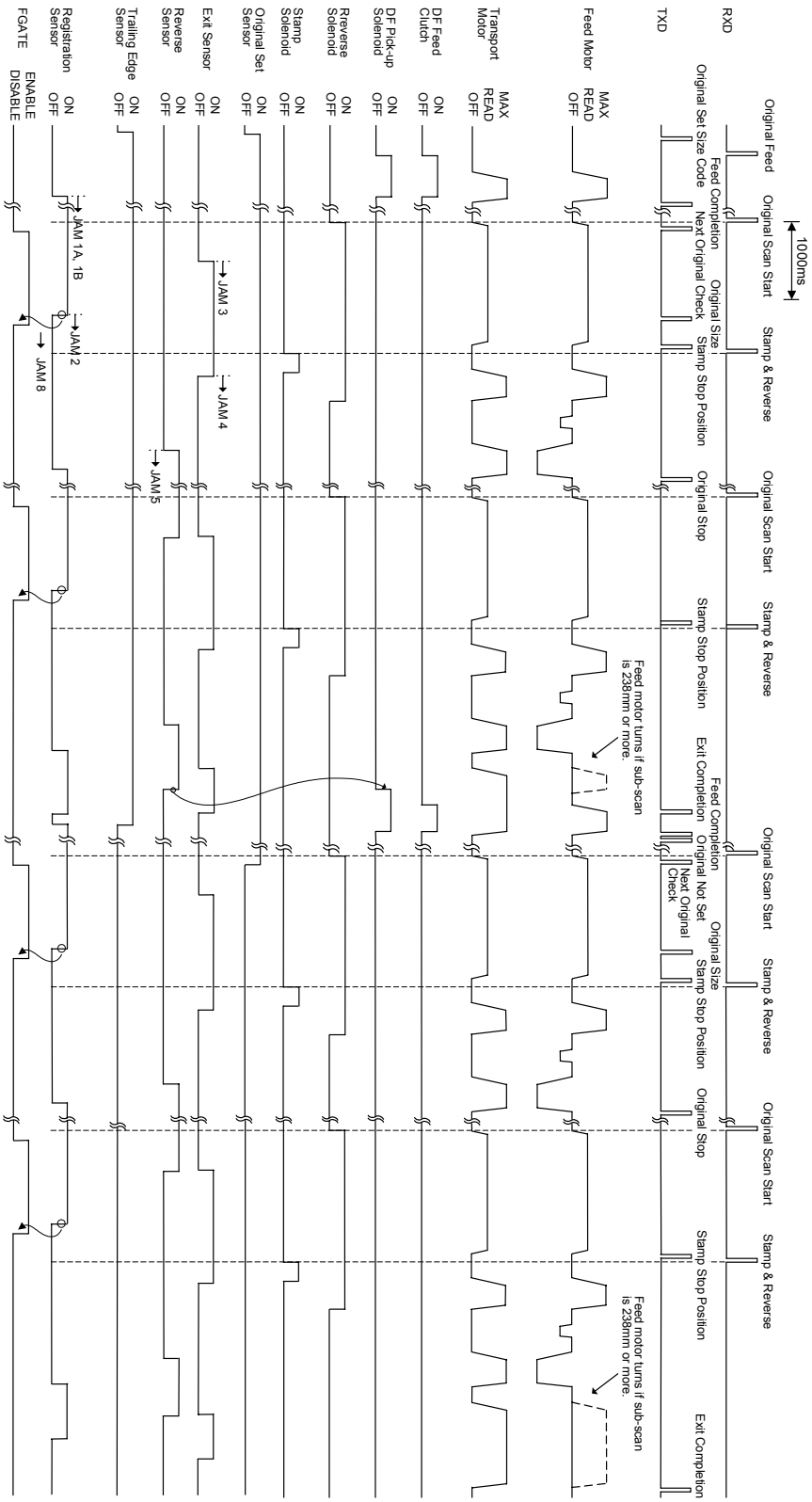
There is a stamp [A] between the 2nd transport roller [B] and the exit roller [C], and its solenoid is controlled by the copier directly.

When the original reaches the stamp position, the DF feed motor stops. At 300 milliseconds after stopping the DF feed motor, the stamp solenoid turns on if the page was sent successfully (immediate transmission) or stored successfully (memory transmission). After stamping, the DF feed motor starts again to feed out the document, and its speed is about 1.3 times the normal speed.

The stamping position on the original can be changed by adjusting SP6-010.

2.10 TIMING CHART

LT SIDEWAYS STAMP MODE (DOUBLE-SIDED ORIGINAL MODE)



2.11 CONDITION OF JAM DETECTION

JAM 1A: If the registration sensor does not turn on within 114 mm x 2 since the feed motor started (twice the distance between the original set position and the (registration sensor).

JAM 1B: Duplex mode only: If the registration sensor does not turn on within 161 mm x 1.5 since the feed motor started (1.5 times the distance between the original reverse position and the registration sensor).

JAM 2: If the registration sensor does not turn off within 1260 mm x 1.1 since the feed motor started (1.1 times the distance between the paper stop position at registration and the maximum original length).

JAM 3: If the original exit sensor does not turn on within 92 mm x 1.5 since the feed motor started (1.5 times the distance between registration sensor and exit sensor)

JAM 4: If the original exit sensor does not turn off within original length + 120 mm since the transport motor started after the exit sensor turns on

JAM 5: Duplex mode only: If the original reverse sensor does not turn on within 161 mm x 1.4 since the feed motor started (1.4 times the distance between the original reverse position and the registration sensor).

JAM 6: If the feeding original is removed.

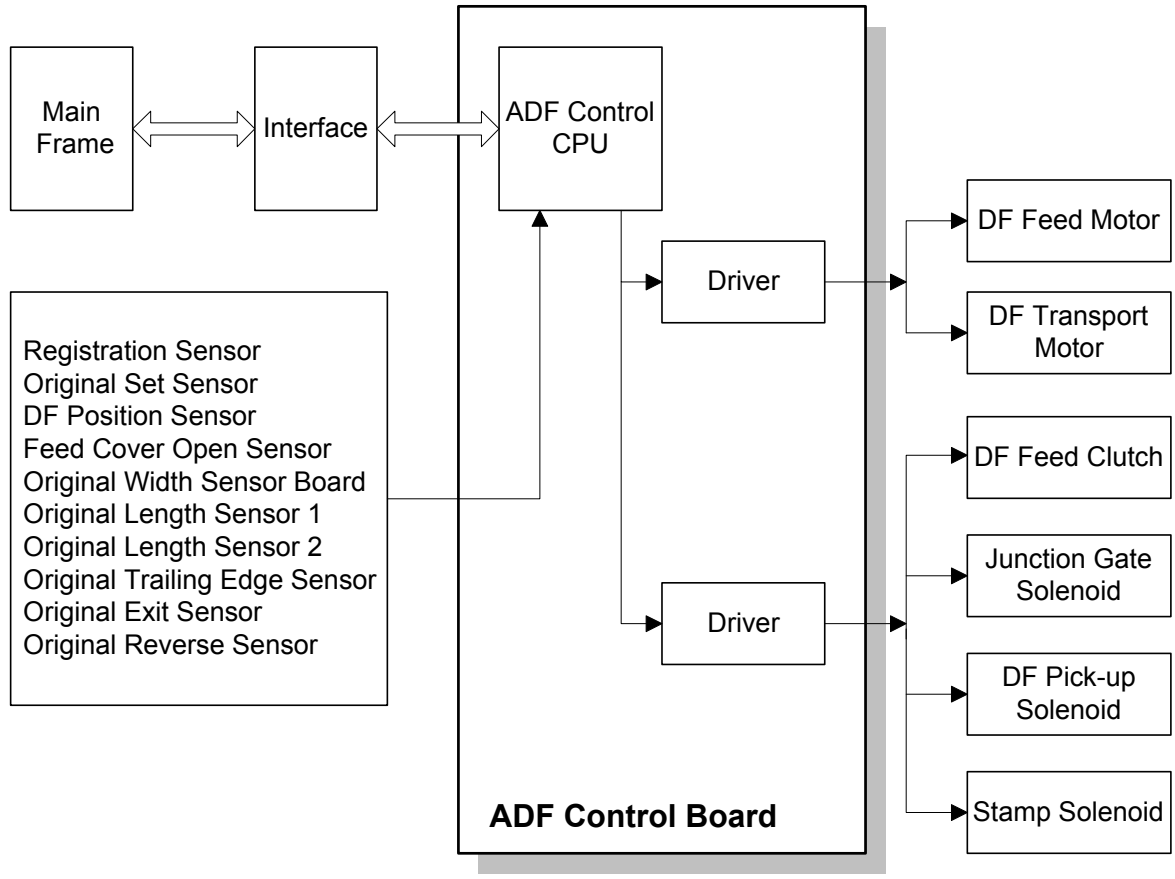
JAM 7: If the cover is opened or the ADF is lifted while the ADF is in operation.

JAM 8: If an area outside the maximum scannable area is selected.

JAM 9: If scanning of the previous original is not completed when the registration sensor detects the leading edge of the current original.

2.12 OVERALL ELECTRICAL CIRCUIT

The DF CPU controls the transport motor, DF feed motor, DF feed clutch, junction Gate solenoid, stamp solenoid, and pick-up solenoid. The DF CPU also monitors all DF sensors and provides updated status information when prompted at regular intervals by the mainframe, which may then take action based on this information. The DF–mainframe connection is checked automatically just after power is supplied to the mainframe.



3. SERVICE TABLES

3.1 DIP SWITCHES

SW100				Description
1	2	3	4	
0	0	0	0	Normal operating mode (Default)
0	0	0	1	No function
0	0	1	0	Free run with two-sided original 100%
0	0	1	1	DF feed clutch operates
0	1	0	0	Free run with one-sided original 32.6%
0	1	0	1	DF pick-up solenoid operates
0	1	1	0	Motors rotate
0	1	1	1	No function
1	0	0	0	Free run with one-sided original 100%
1	0	0	1	Junction gate solenoid operates
1	0	1	0	Free run without two-sided original 100%
1	0	1	1	No function
1	1	0	0	Free run without one-sided original 100%
1	1	0	1	Stamp solenoid operates
1	1	1	0	Free run with two-sided original 32.6%
1	1	1	1	Free run without two-sided original 100%

CÓPIA NÃO CONTROLADA

B481
INTERCHANGE UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

INTERCHANGE UNIT B481

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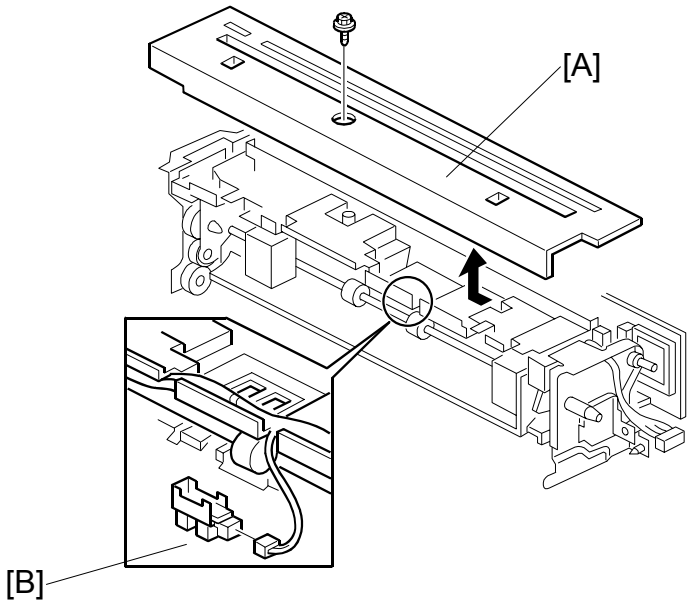
CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

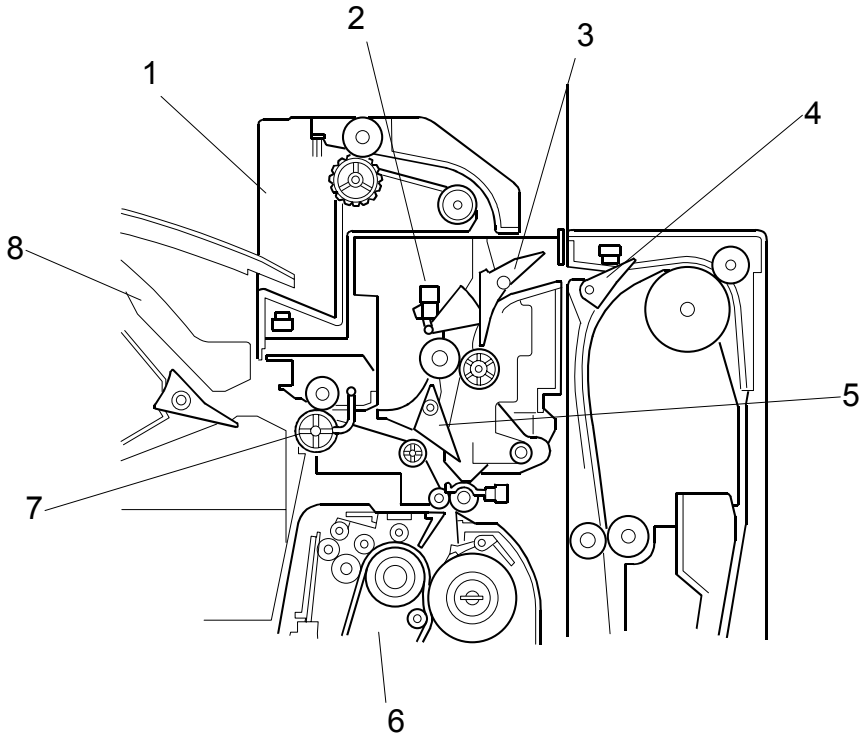
1.1 EXIT SENSOR REPLACEMENT



1. Interchange unit
2. Upper cover [A] of the interchange unit
3. Exit sensor [B] (x 1)

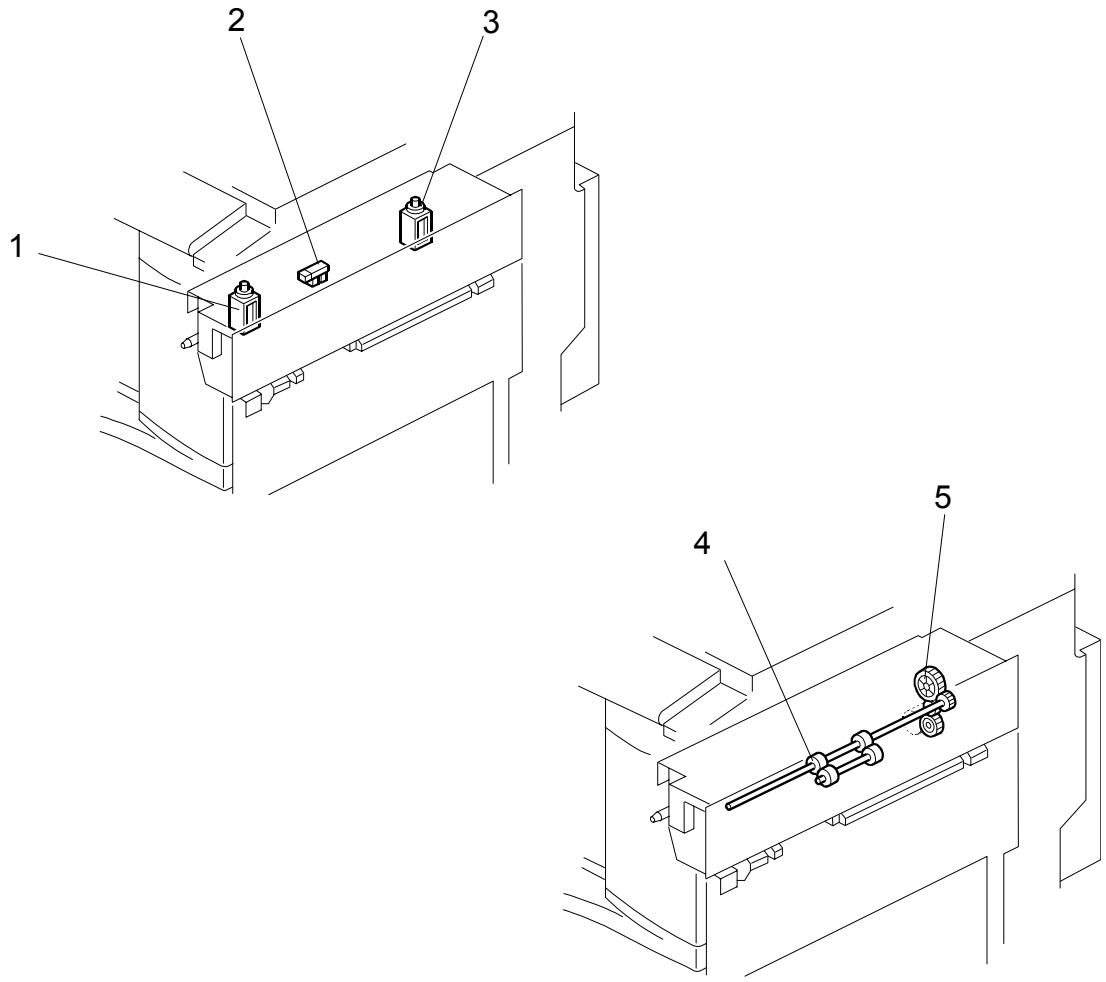
2. DETAILED DESCRIPTION

2.1 MECHANICAL COMPONENT LAYOUT



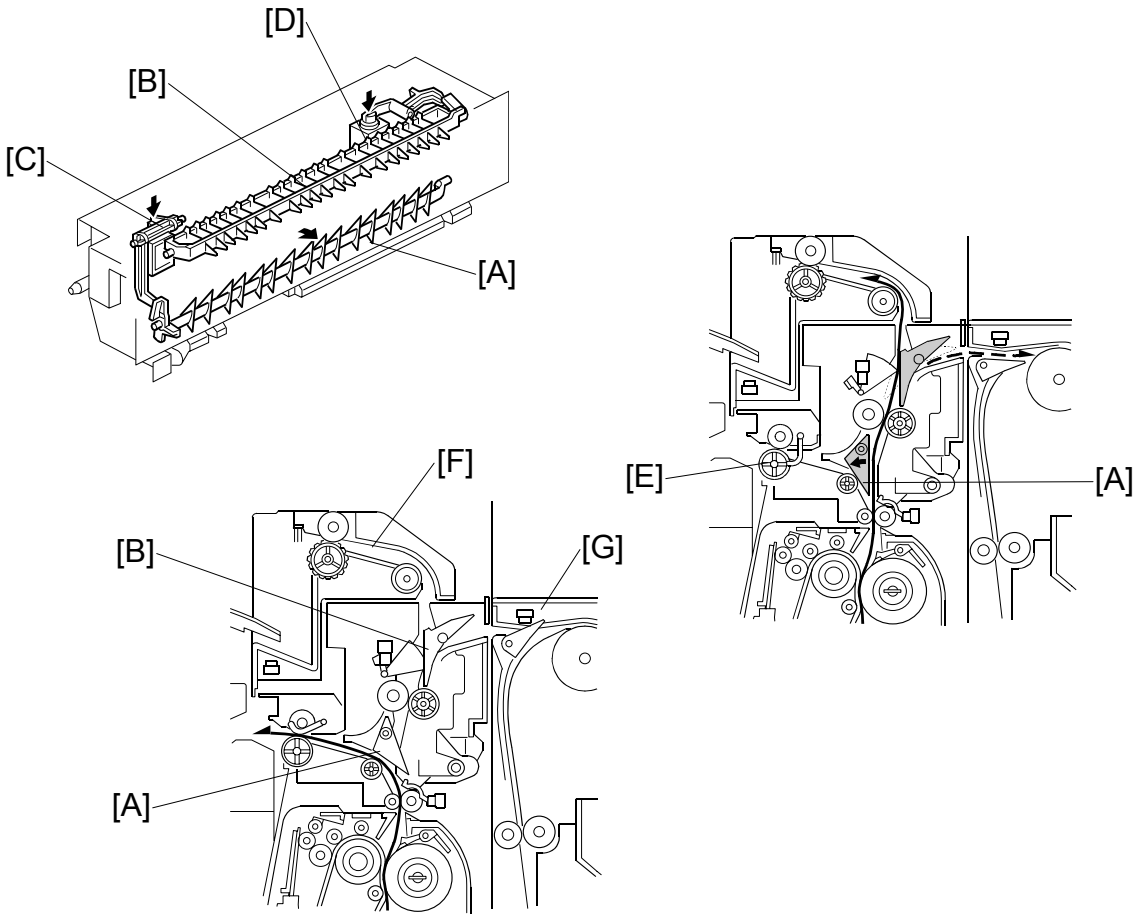
1. 1-bin Tray (Option)
2. Exit Sensor
3. Duplex Junction Gate
4. Duplex Unit (Option)
5. Exit Junction Gate
6. Fusing Unit (Inside the Copier)
7. Exit Roller
8. Bridge Unit

2.2 ELECTRICAL COMPONENT AND DRIVE LAYOUT



1. Exit Junction Gate Solenoid
2. Exit Sensor
3. Duplex Junction Gate Solenoid
4. Exit Roller
5. Drive Gear

2.3 JUNCTION GATE MECHANISM



Depending on the selected mode, the copies are directed up, left, or right by the exit junction gate [A] and the duplex junction gate [B]. These are controlled by the exit junction gate solenoid [C] and the duplex junction gate solenoid [D].

To the Exit Tray or Bridge Unit (for the Upper Tray on top of the Bridge Unit, or the Finisher)

The exit junction gate solenoid stays off and the paper is directed to the copier exit or bridge unit [E].

To the 1-bin Tray

The exit junction gate solenoid turns on and the duplex junction gate solenoid stays off. The paper is directed to the 1-bin tray [F].

To the Duplex Unit

The exit junction gate solenoid and the duplex junction gate solenoid both turn on and the paper is directed to the duplex unit [G].

B480
1-BIN TRAY UNIT

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1-BIN TRAY UNIT B480

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1. REPLACEMENT AND ADJUSTMENT

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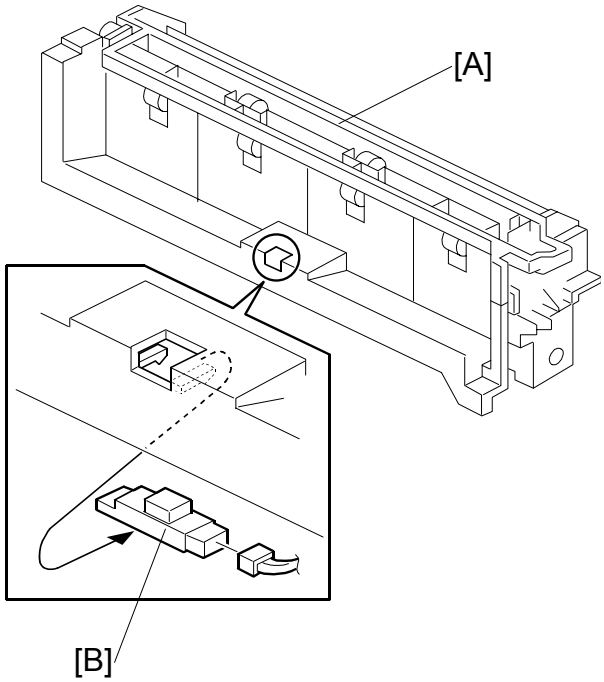
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

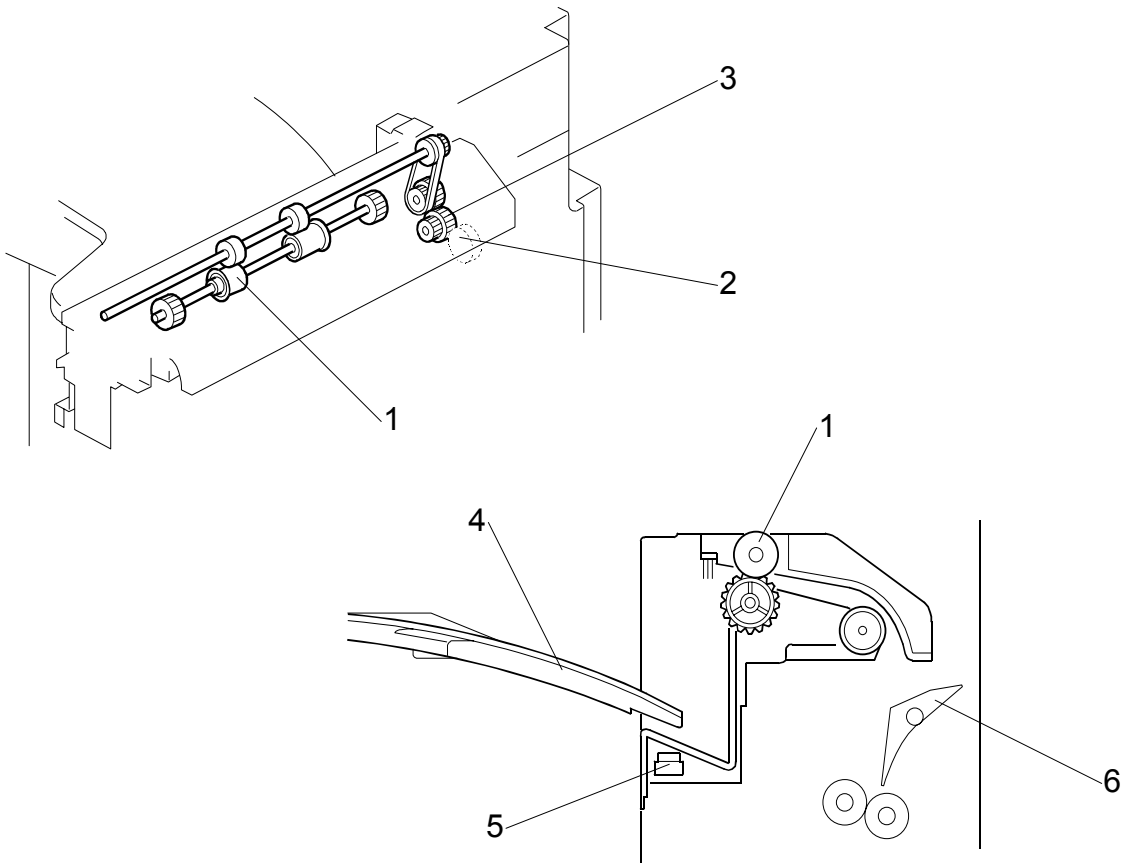
1.1 PAPER SENSOR REMOVAL



1. 1-bin tray
2. 1-bin sorter unit [A]
3. Paper sensor [B] (x 1)

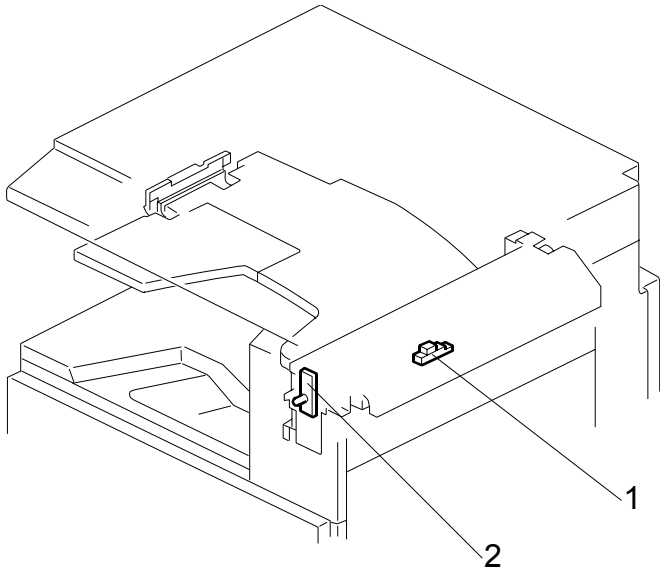
2. DETAILED DESCRIPTION

2.1 MECHANICAL COMPONENT LAYOUT



1. Exit Rollers
2. Junction Gate Gear
3. Drive Gear
4. Paper Tray
5. Paper Sensor
6. Junction Gate (Interchange Unit)

2.2 ELECTRICAL COMPONENT LAYOUT

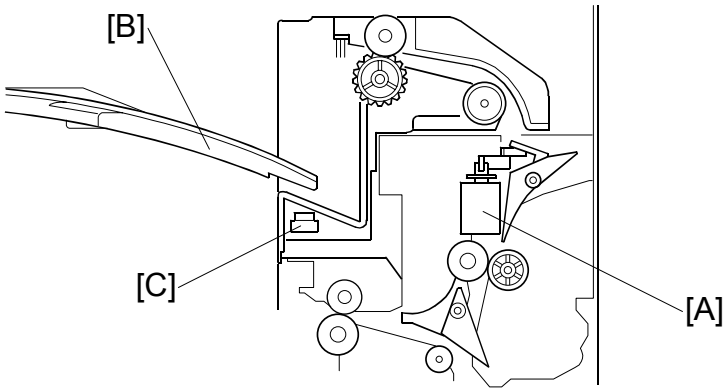


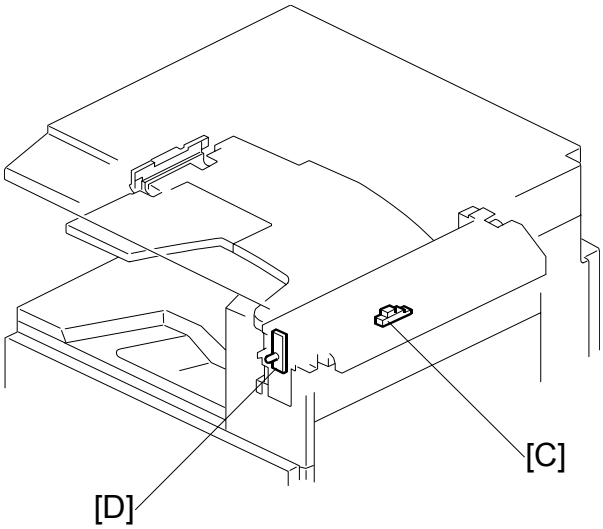
1. Paper Sensor
2. 1-bin Sorter Exit Tray LED
   (located in the copier)

2.3 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Sensors			
S1	Paper	Detects whether there is paper on the tray.	1
LEDs			
LED1	1 Bin Exit Tray	Indicates when there is paper in the tray. This is located in the copier.	2

2.4 BASIC OPERATION





At the appropriate time after the leading edge of the first sheet of copy paper reaches the copier's registration roller, the junction gate solenoid [A] in the interchange unit turns on to switch the junction gate to direct the paper to the tray [B].

The junction gate solenoid turns off at the appropriate time after the paper is directed to the tray. The main motor in the copier stops after the final sheet passes the paper sensor [C] and arrives on the tray.

The paper sensor [C] turns on when there is paper in the tray, and the paper indicator [D] turns on.

The tray can be opened for easier jam removal by swinging the tray to the left.

B510
SHIFT TRAY UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

SHIFT TRAY UNIT B510

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CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

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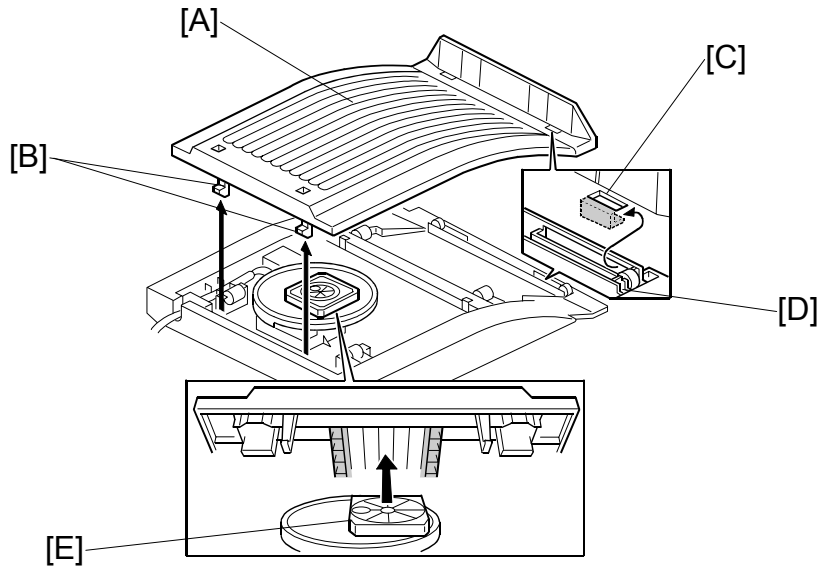
 : E-ring

1.1 TRAY COVER REPLACEMENT



1.1.1 TRAY COVER REMOVAL

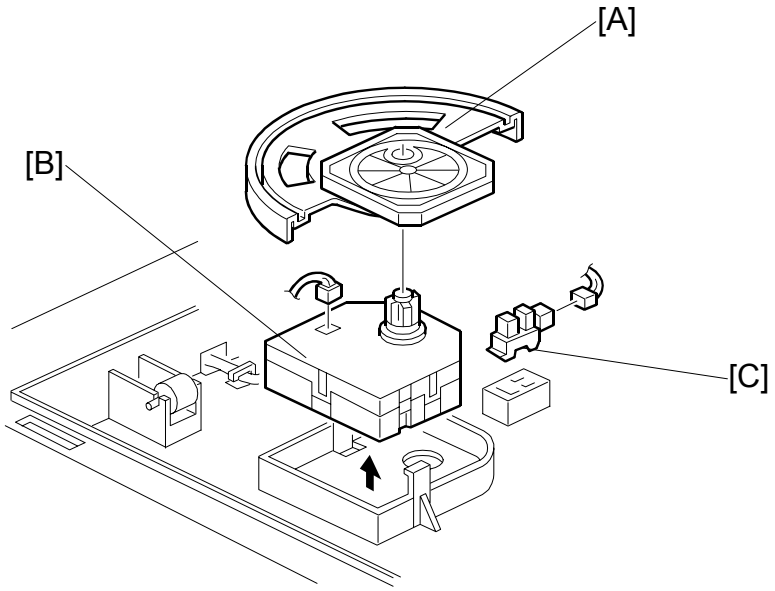
1. Remove the tray cover [A] by pressing on the two pawls [B] on the left side of the cover.

1.1.2 TRAY COVER ATTACHMENT

NOTE: The right side of the tray cover should be attached first.

1. Fit the pawls [C] (just below the cover fin) around the thin bar [D] on the shift tray.
2. Align the square [E] so that it fits into the groove in the underside of the tray cover and does not interfere with the attachment of the cover.
3. Complete the attachment by inserting the left side pawls [B] into place.

1.2 TRAY MOTOR AND HALF TURN SENSOR REPLACEMENT



1.2.1 REPLACING THE TRAY MOTOR

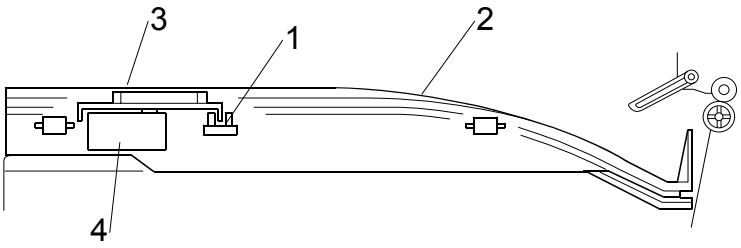
1. Slip disc [A]
2. Tray motor [B] (☞ x 1)

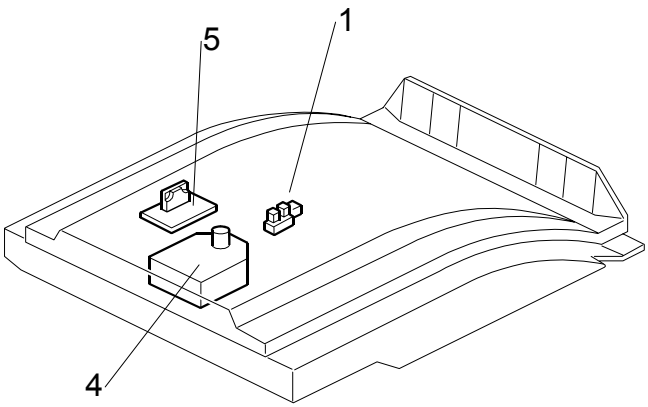
1.2.2 REPLACING THE HALF TURN SENSOR

1. Half turn sensor [C] (☞ x 1).

2. DETAILED DESCRIPTIONS

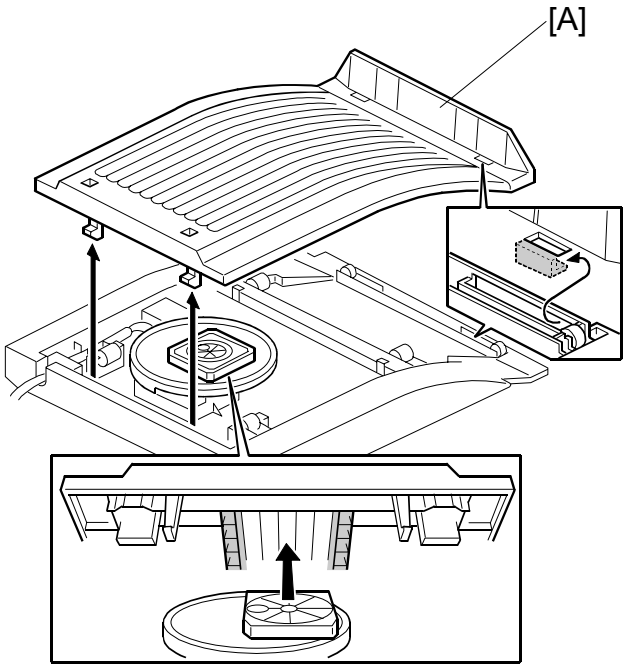
2.1 COMPONENT LAYOUT





1. Half Turn Sensor
2. Tray Cover
3. Slip Disc
4. Tray Motor
5. Driver PCB

2.2 BASIC OPERATION

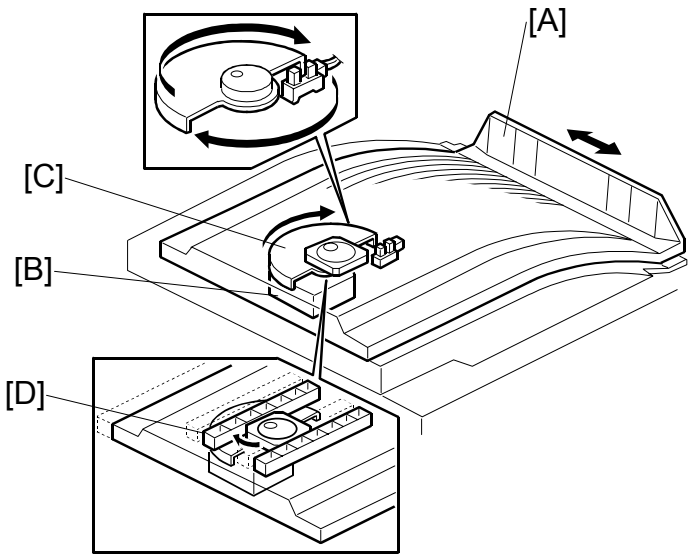


The shift tray allows copies to be sorted into separate piles on one tray.

From the left-right movement of the tray cover [A], the piles of copies are offset into two positions, slightly overlapping one another.

2.3 PRIMARY MECHANISMS

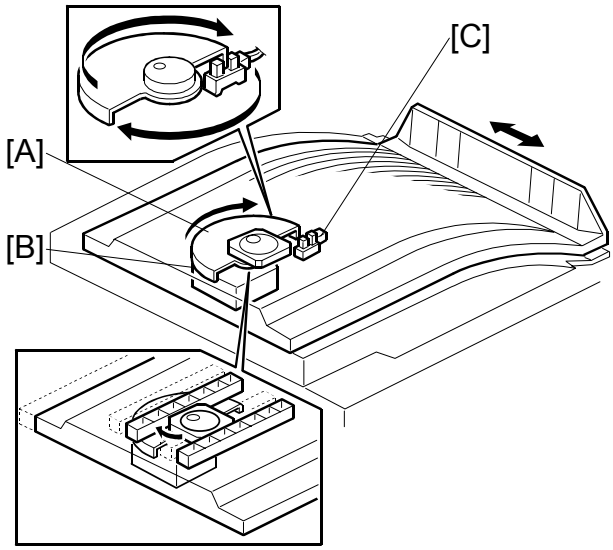
2.3.1 TRAY SHIFT



As stated above, the shift tray [A] moves from left to right to create two possible positions for the copies to stack up. This motion is driven by the tray motor [B], which connects to the slip disc [C] via a small shaft. The shaft is connected at the rotational center of the disc. However, there is an off-centered white square attached to the top surface of the disc. When the tray cover is attached to the unit, this square fits into a groove [D] (approximately equal to its width) that runs lengthwise along the underside of the tray.

When the motor is running, the disc rotation causes the off-centered white square to change position. The square only has freedom of movement along the groove [D], so the only net motion of the tray is from left to right.

2.3.2 HALF TURN DETECTION



Half turn detection is performed through a combination of two components: the slip disc [A] and half turn sensor [C].

The slip disc has a rim extending below the top surface. However, the rim only extends 180° around the disc. The half turn sensor is below the edge of the disc, opposite the tray motor. The sensor is positioned so that the rim of the disc passes between the LED and the photodiode when the disc turns.

While the motor [B] is rotating the disc and moving the tray cover, the disc rim is not between the diode and LED. After the disc has turned its maximum 180°, the rim passes between these two parts and blocks the signal to the LED, stopping the motor. The tray stays in place until the motor is activated again to move the tray across to receive another copy of the original.

B490
BY-PASS TRAY UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

BY-PASS TRAY UNIT B490

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CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

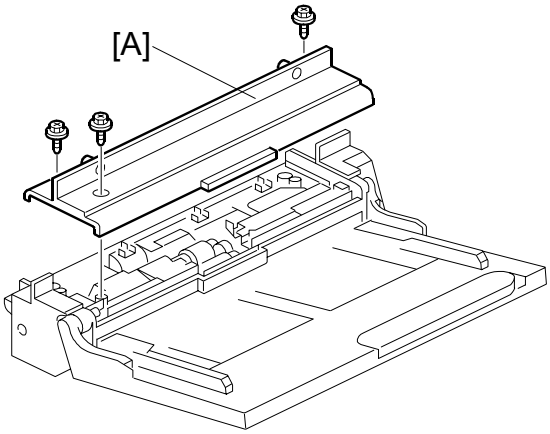
1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

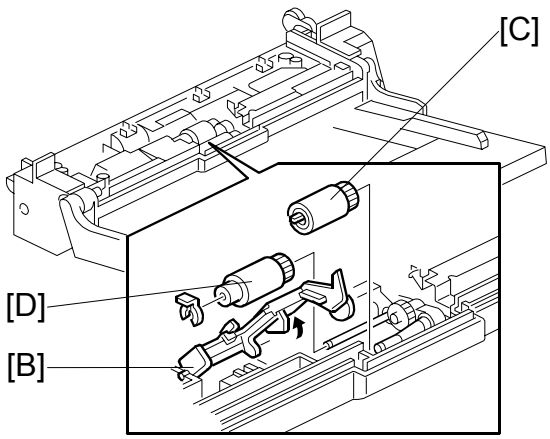
NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

1.1 PICKUP/FEED ROLLER

1. Bypass tray (x 3)
2. Upper cover [A] (x 3)

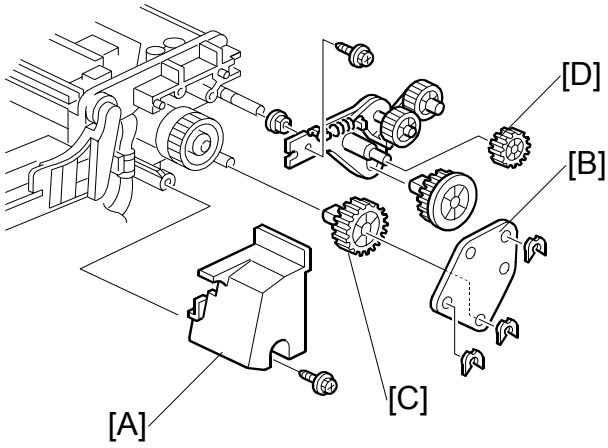


3. Lift the paper end sensor feeler [B].
4. Pick-up roller [C] (1 hook)
5. Paper feed roller [D] (x 1)

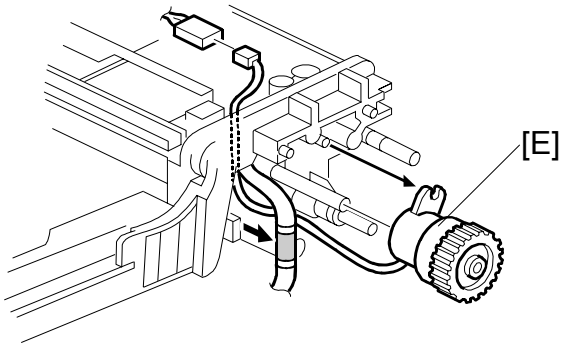


1.2 PAPER FEED CLUTCH

1. Upper cover (☛ 1.1)
2. Rear cover [A] (x 1)
3. Gear holder [B] (x 3)
4. Gears [C][D]

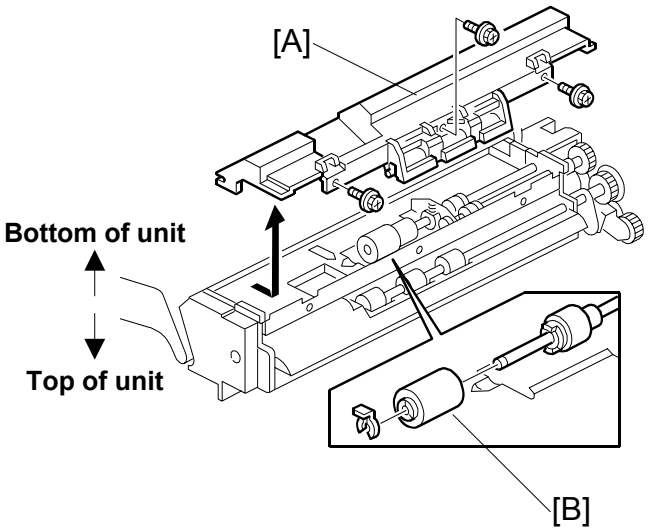


5. Clutch [E] (x 1)



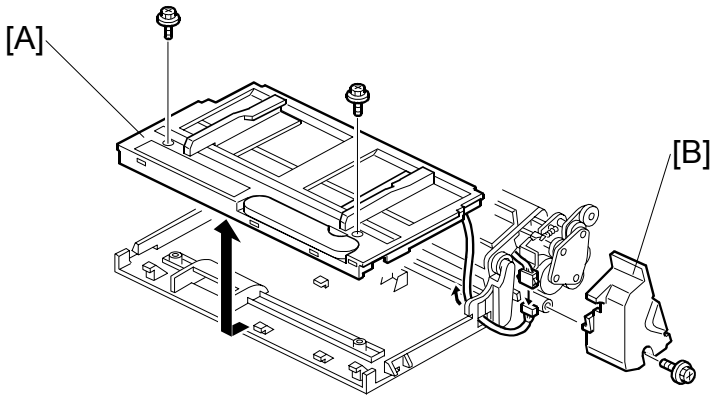
1.3 REVERSE ROLLER

1. Bypass tray (☛ 1.1)
2. Turn the unit upside down.
3. Bottom cover [A] (x 3)
4. Reverse roller [B] (x 1)

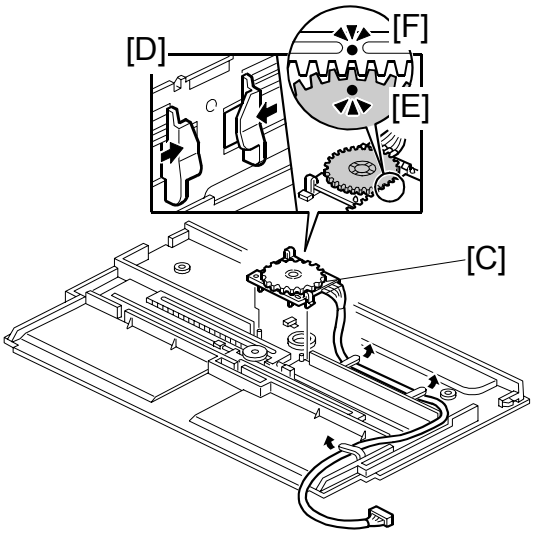


1.4 PAPER SIZE SENSOR BOARD

1. Paper tray [A] (☞ x 2)
2. Rear cover [B] (☞ x 1)



3. Paper size sensor board [C]

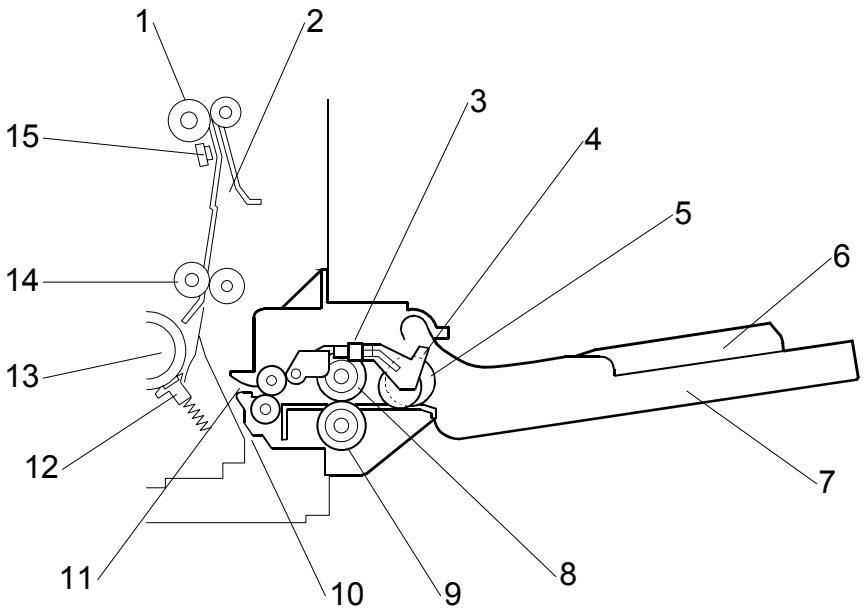


Reassembling

1. Move the side fences to the centermost positions [D].
2. Align the sensor-board position mark [E] with the side-fence position mark [F] and install the sensor board.

2. DETAILED DESCRIPTIONS

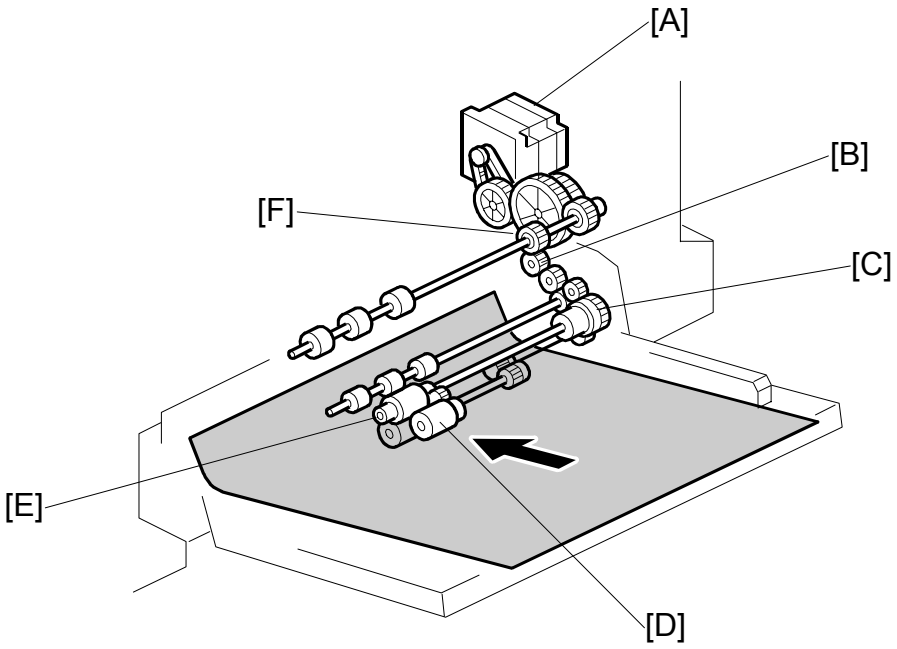
2.1 MECHANICAL COMPONENT LAYOUT



1. Registration roller (copier)
2. Registration guide
3. Paper end sensor
4. Feeler link
5. Pickup roller
6. Side fence
7. Bypass tray
8. Feed roller
9. Reverse roller
10. Paper path (optional paper tray)
11. Paper path (bypass tray)
12. Friction pad (copier)
13. Feed roller (copier)
14. Vertical transport roller (copier)
15. Registration sensor (copier)

2.2 PAPER FEED

2.2.1 DRIVE



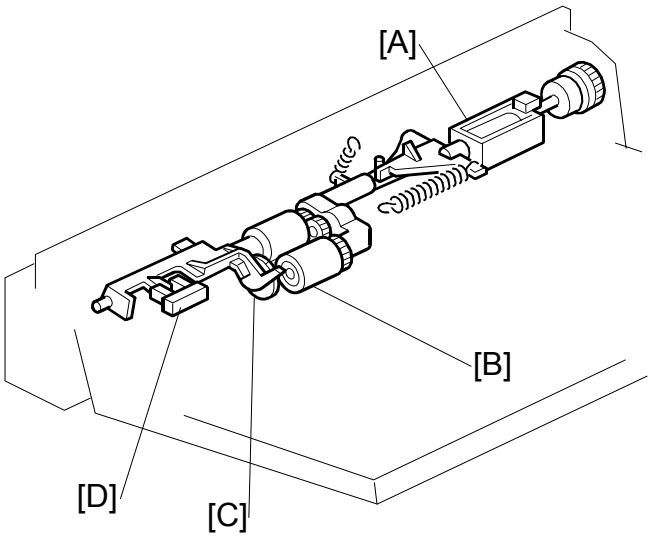
Power Source

The paper feed motor [A] inside the copier drives all the rollers and gears in the bypass tray unit by way of a timing belt and gears. The transport roller gear [F] (in the copier) contacts the leftmost gear [B] (in the bypass unit).

Rollers

An FRR (feed and reverse roller) feed mechanism is used (☛ CT *Paper Feed Methods*). The pickup roller [D] and feed roller [E] turn only when the clutch [C] transmits the drive power.

2.2.2 PAPER FEED MECHANISM



Pickup Roller Mechanism

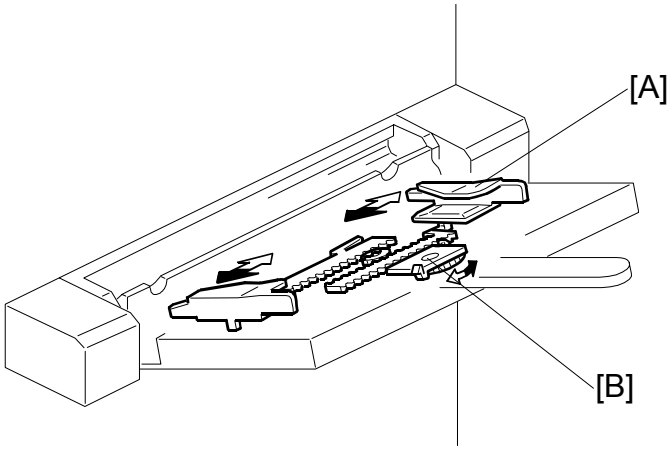
When paper is not being fed, the pickup roller [B] stays away from the paper stack. When paper feed starts, the pickup solenoid [A] turns on and lowers the pickup roller by way of a mechanical link.

Paper End Detection

When the paper on the tray is all used, the feeler [C] falls into the cutout. This action is detected by the paper end sensor [D] by way of a mechanical link.

The paper end sensor also functions as a paper set sensor.

2.3 PAPER SIZE DETECTION



The side fences [A] are mechanically linked with the gear on the paper size sensor board [B]. The gear turns when the fences are moved. The gear has terminals which make different electric circuits when the gear is turned, so the machine determines the width of the paper in the by-pass tray by the signals from the paper size sensor board.

The paper length is not detected by this sensor (see Original Size Detection in the manual for the base copier).

CÓPIA NÃO CONTROLADA

B509
DUPLEX UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

DUPLEX UNIT B509

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CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

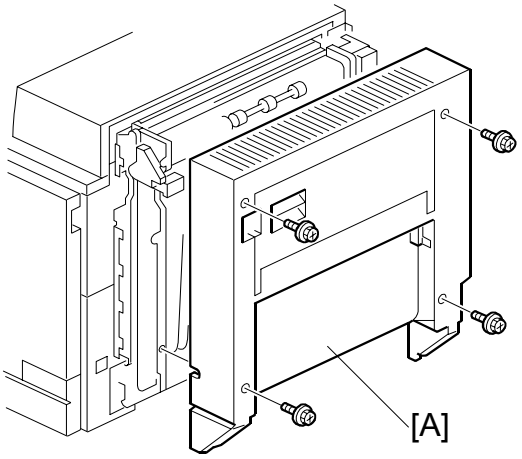
⚠CAUTION

Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

1.1 EXTERIOR COVER

1. Exterior cover [A] (x 4)



1.2 ENTRANCE/EXIT SENSORS

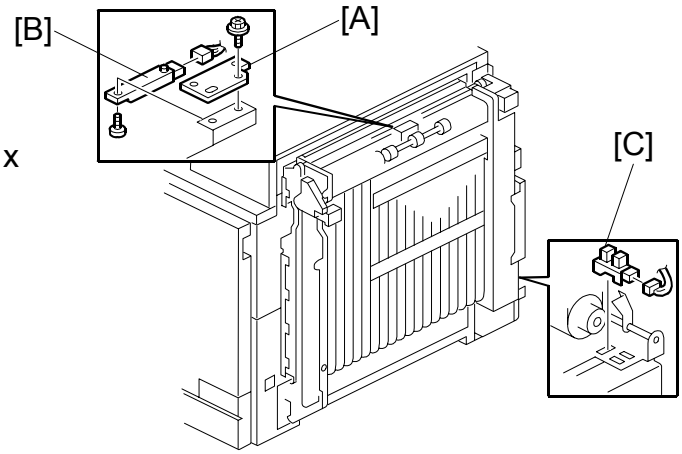
1. Exterior cover (☛ 1.1)

Entrance Sensor

2. Sensor bracket [A] (x 1)
3. Entrance sensor [B] (x 1, x 1)

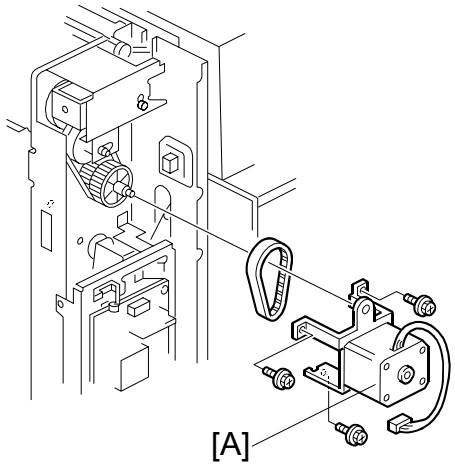
Exit Sensor

4. Exit sensor [C] (x 1)



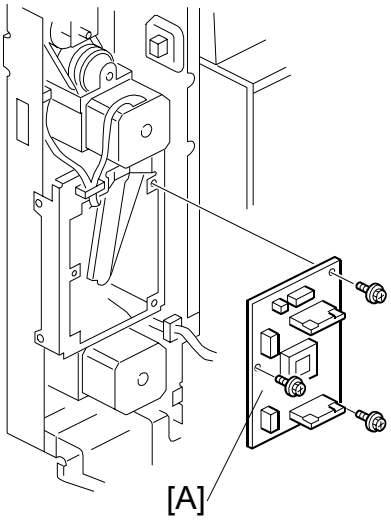
1.3 INVERTER MOTOR

1. Exterior cover (☛ 1.1)
2. Inverter motor [A] (✋ x 1, 🔩 x 3)



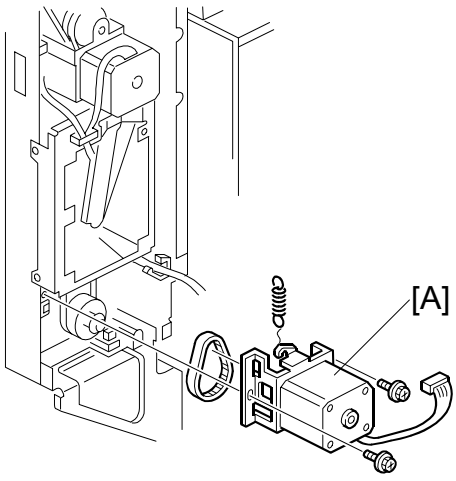
1.4 CONTROLLER BOARD

1. Exterior cover (☛ 1.1)
2. Controller board [A] (✋ x 5, 🔩 x 3)



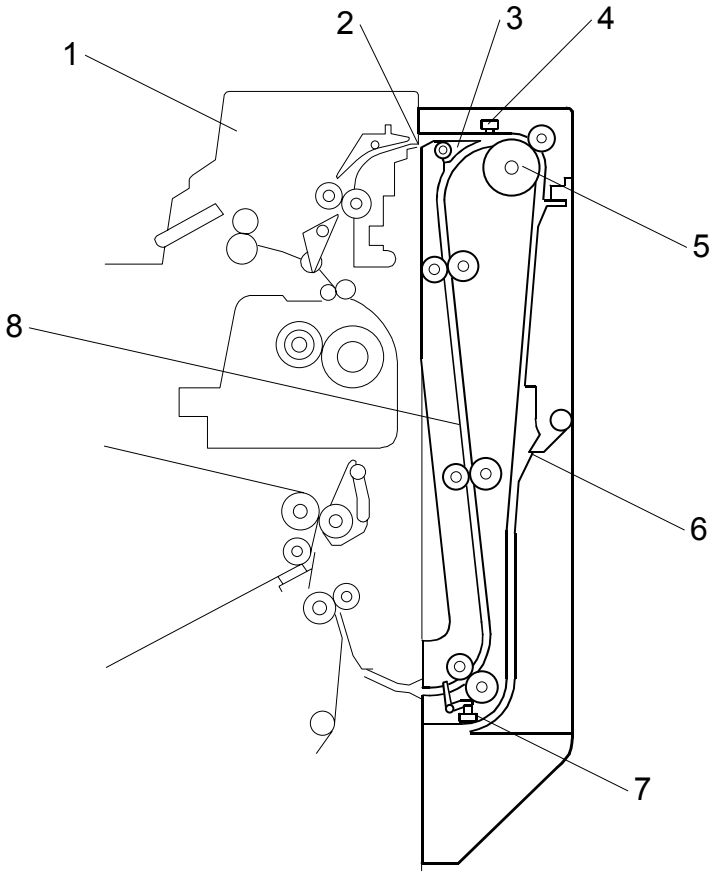
1.5 TRANSPORT MOTOR

1. Exterior cover (☛ 1.1)
2. Controller board (☛ 1.4)
3. Transport motor [A] (1 spring, ✋ x 1, 🔩 x 2)



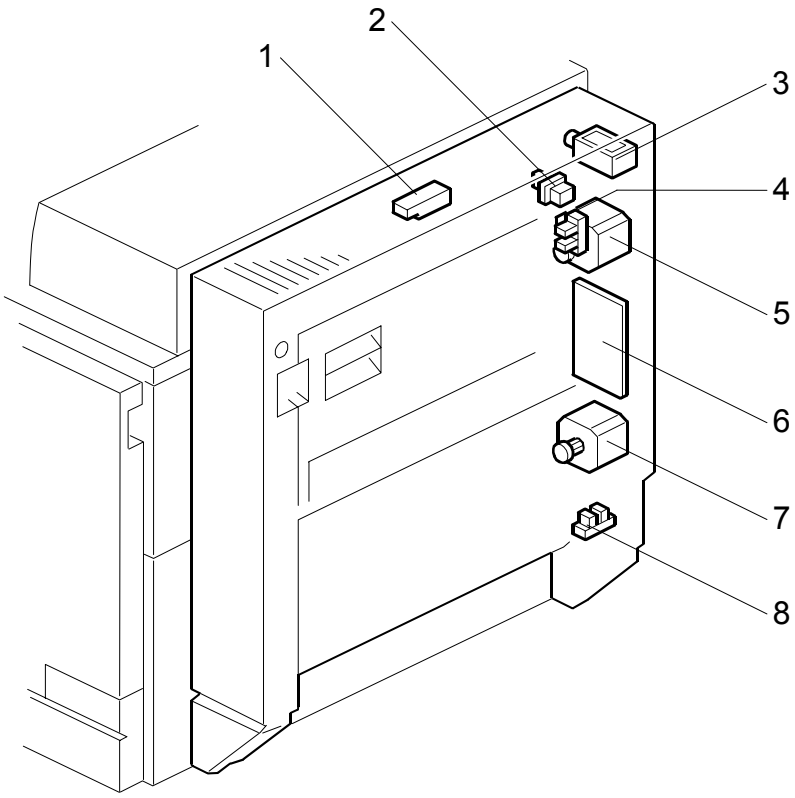
2. DETAILED DESCRIPTIONS

2.1 OVERVIEW



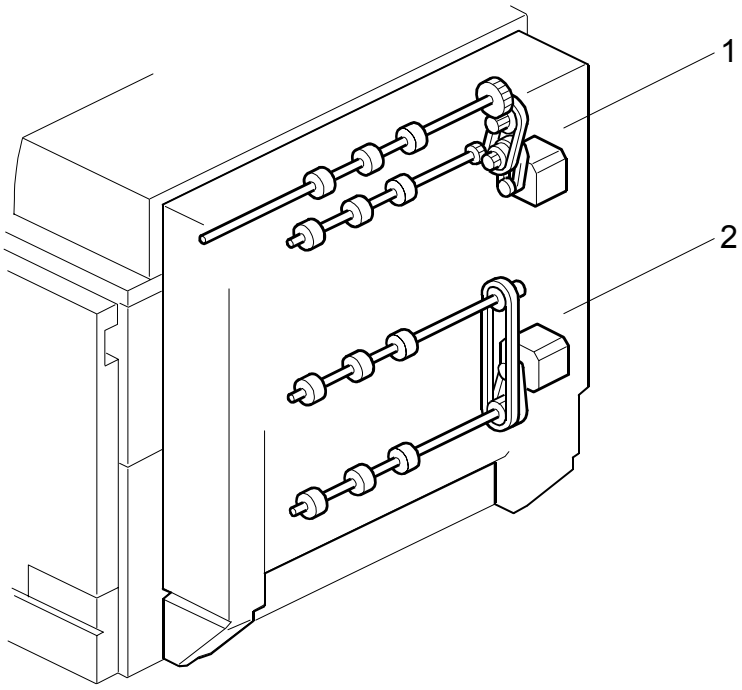
1. Interchange unit
2. Paper entrance
3. Inverter gate
4. Entrance sensor
5. Inverter roller
6. Inverter section
7. Exit sensor
8. Paper exit path

2.2 ELECTRICAL COMPONENT LAYOUT



1. Entrance sensor
2. Duplex unit open switch
3. Inverter gate solenoid
4. Cover sensor
5. Inverter motor
6. Controller board
7. Transport motor
8. Exit sensor

2.3 DRIVE LAYOUT



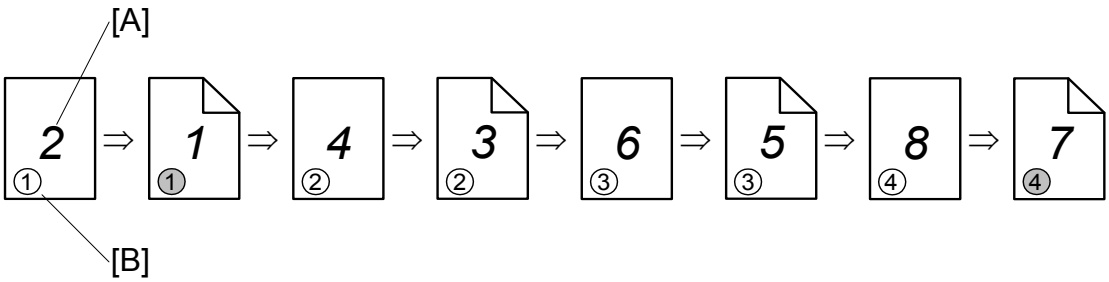
1. Inverter motor
2. Transport motor

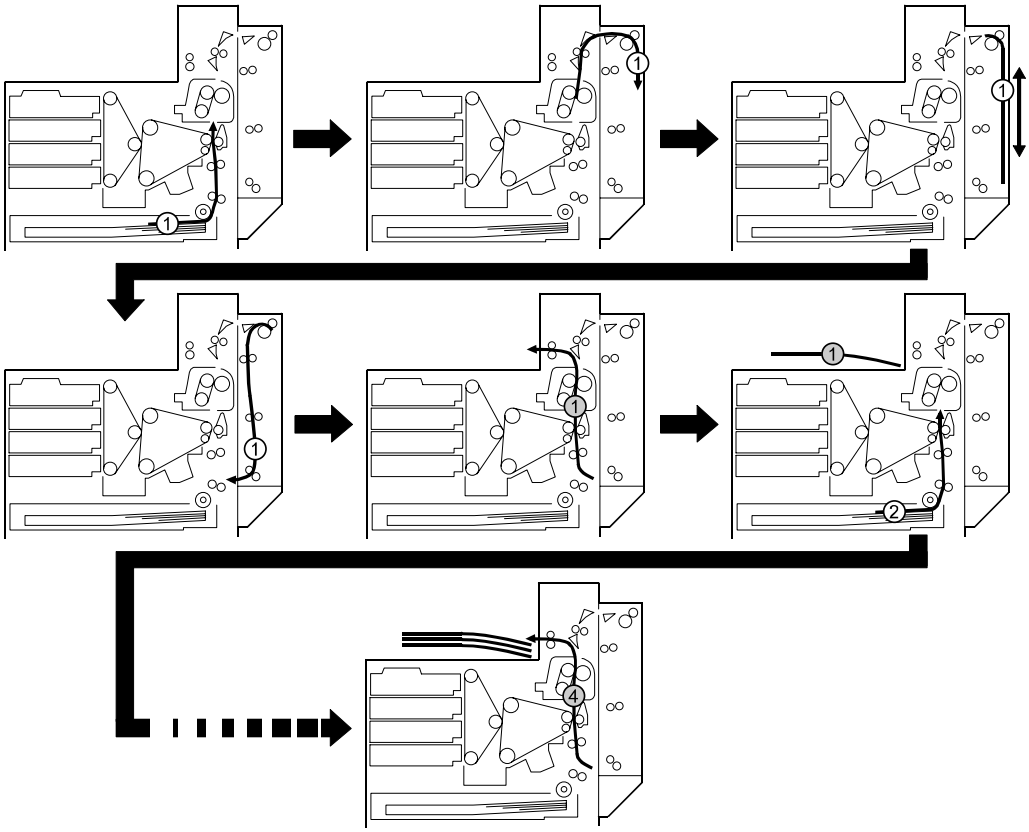
2.4 DUPLEX PAPER FEED ORDER

2.4.1 LONGER THAN A4/LT LEF

The feed path through the duplex unit can only hold one sheet of paper.

The example below shows how the paper is handled to print out 8 pages in mono color mode: The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of paper (if shaded, this indicates the second side).

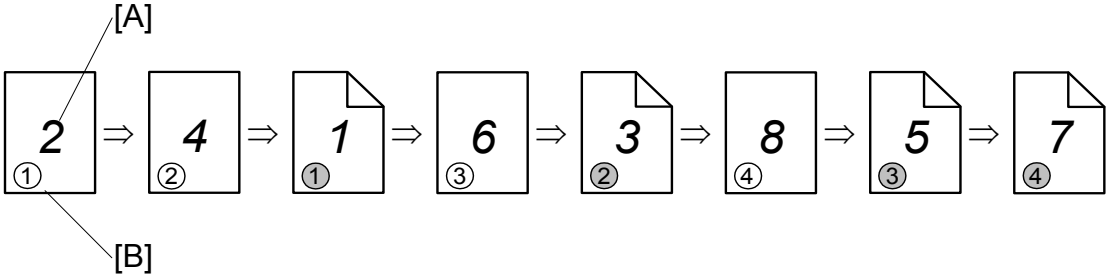


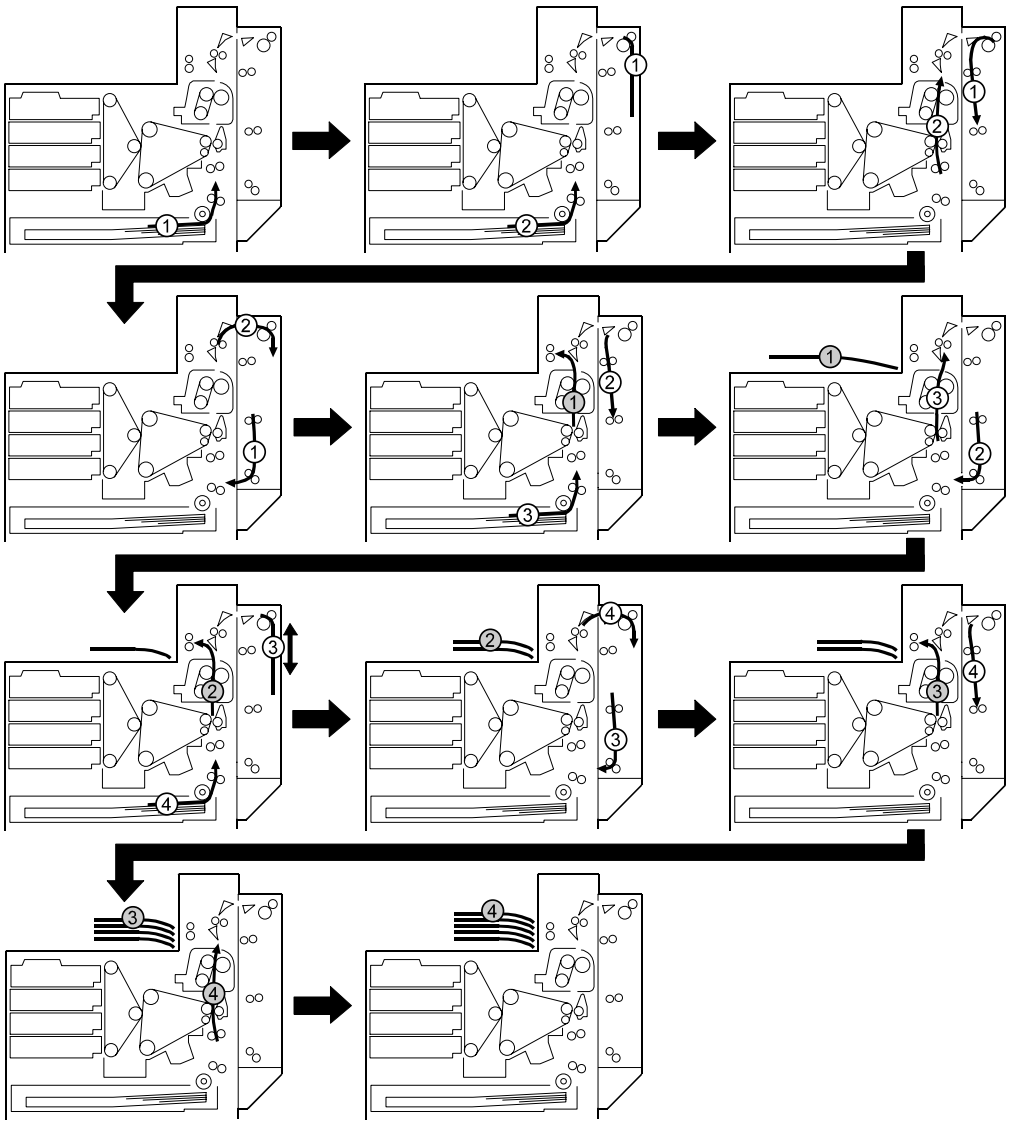


2.4.2 UP TO A4/LT LEF

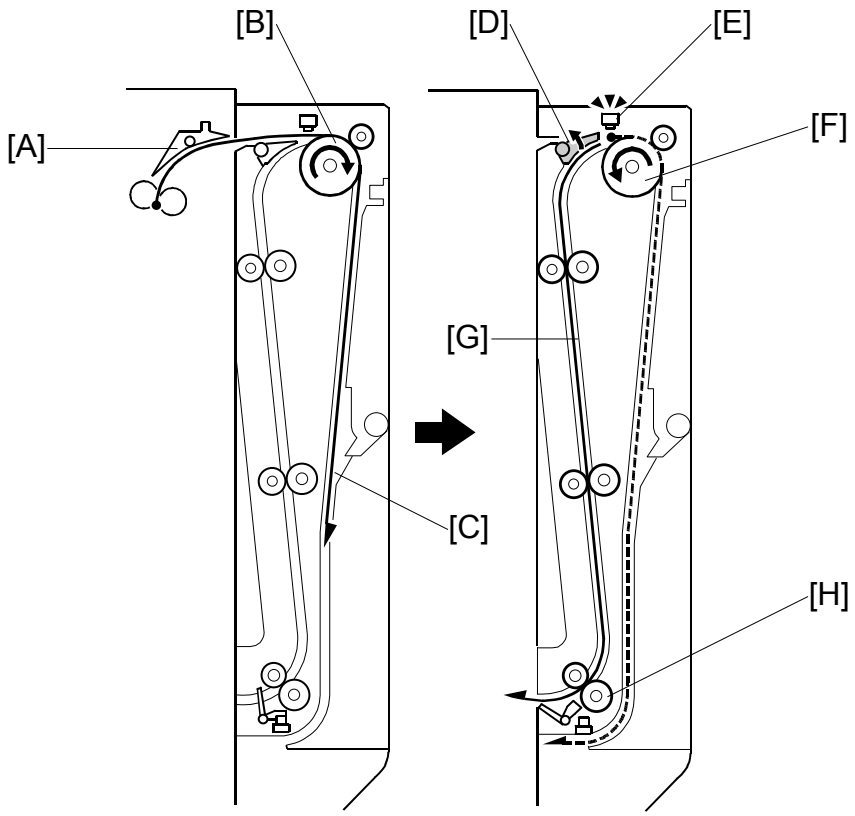
The feed path through the duplex unit can hold 2 sheets of paper

The example below shows how the paper is handled to print out 8 pages in mono color mode: The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of print paper (if shaded, this indicates the second side).





2.5 REVERSE MECHANISM



The duplex unit starts when the entrance sensor [E] detects paper coming in.

1. **Duplex junction gate [A] in the interchange unit**
   Directs the paper to the duplex unit (up to A3 SEF)
2. **Inverter roller [B]**
   Sends the paper to the inverter section [C]
3. **Entrance sensor [E]**
   Detects the trailing edge of the paper
4. **Inverter gate solenoid (behind [D])**
   Activates the inverter gate [D]
5. **Inverter gate [D]**
   Switches the paper path
6. **Inverter roller [F]**
   Changes its rotation direction (sends the paper to the exit path [G])
7. **Transport roller [H]**
   Sends the paper to the main unit registration roller

B482
BRIDGE UNIT

CÓPIA NÃO CONTROLADA

CÓPIA NÃO CONTROLADA

BRIDGE UNIT B482

TABLE OF CONTENTS

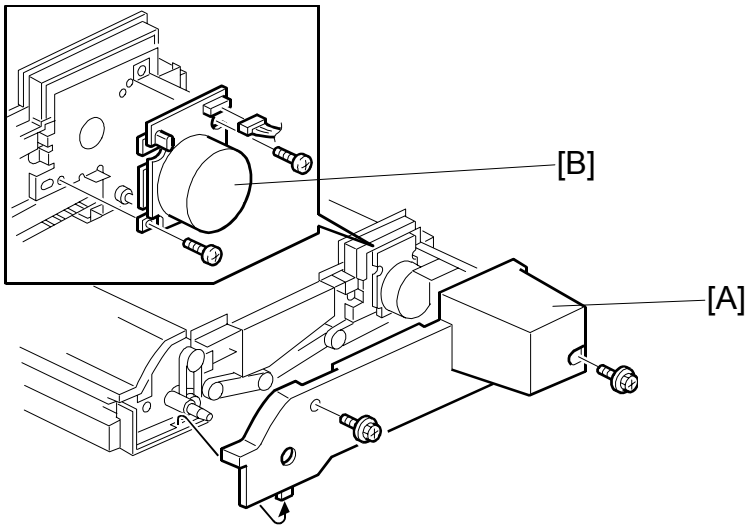
CÓPIA NÃO CONTROLADA

1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

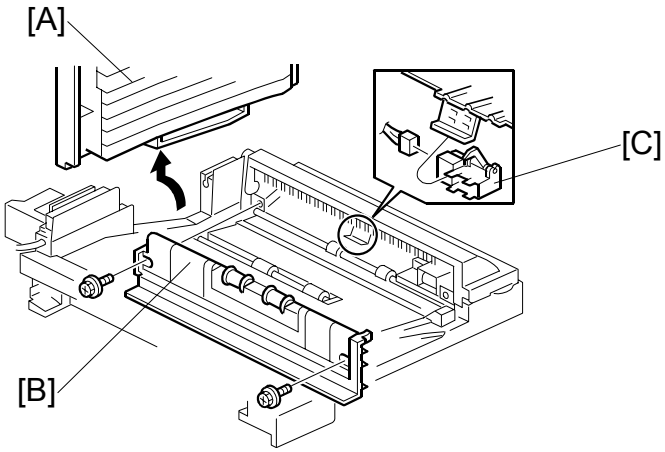
1.1 BRIDGE UNIT DRIVE MOTOR REPLACEMENT



NOTE: When taking apart the bridge unit, first take the unit out of the copier.

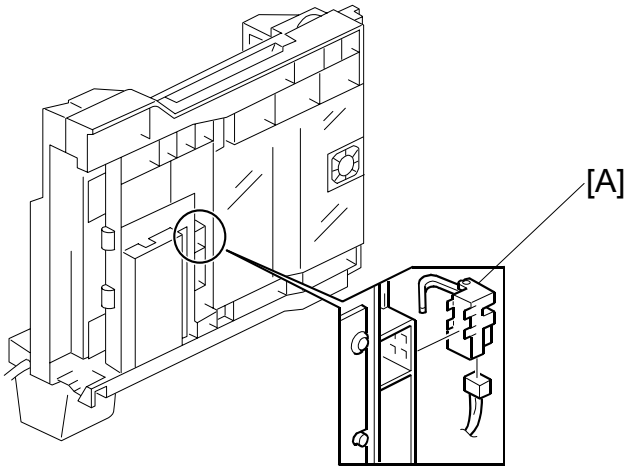
1. Bridge unit (☛ Installation Procedure in the base copier manual)
2. Rear cover [A] (x 2)
3. Bridge unit drive motor [B] (x 2, x 1)

1.2 TRAY EXIT SENSOR REPLACEMENT



1. Bridge unit (☛ Installation Procedure in the base copier manual)
2. Rear cover (☛ 1.1)
3. Paper tray [A]
4. Exit guide [B] (☞ x 2)
5. Tray exit sensor [C] (☞ x 1)

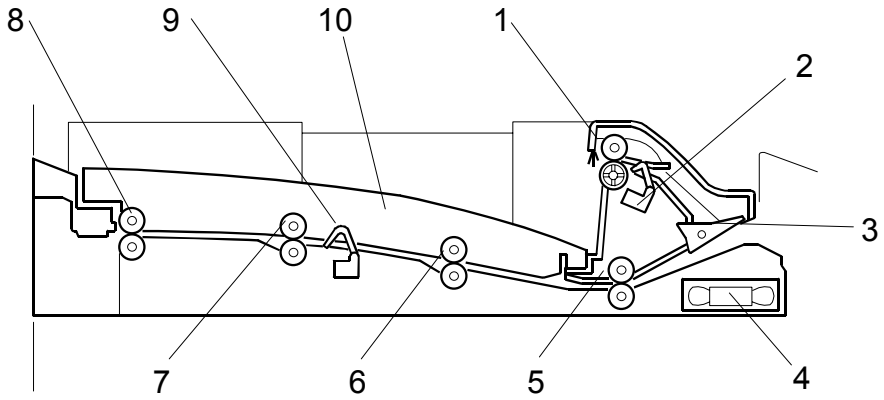
1.3 RELAY SENSOR REPLACEMENT



1. Bridge unit (☛ Installation Procedure in the base copier manual)
2. Stand the bridge unit up as shown in the illustration and remove the sensor [A].

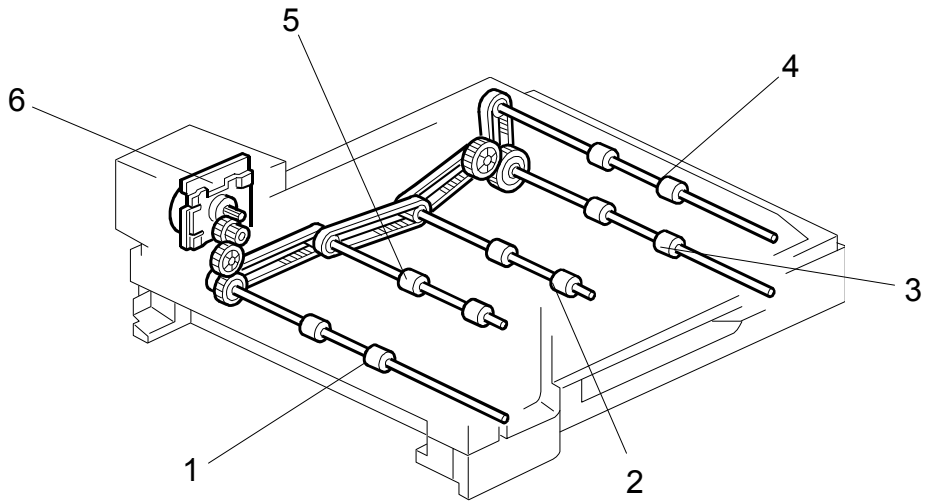
2. DETAILED DESCRIPTIONS

2.1 MECHANICAL COMPONENT LAYOUT



1. Upper Exit Roller
2. Tray Exit Sensor
3. Junction Gate
4. Cooling Fan
5. 1st Transport Roller
6. 2nd Transport Roller
7. 3rd Transport Roller
8. Left Exit Roller
9. Relay Sensor
10. Paper Tray

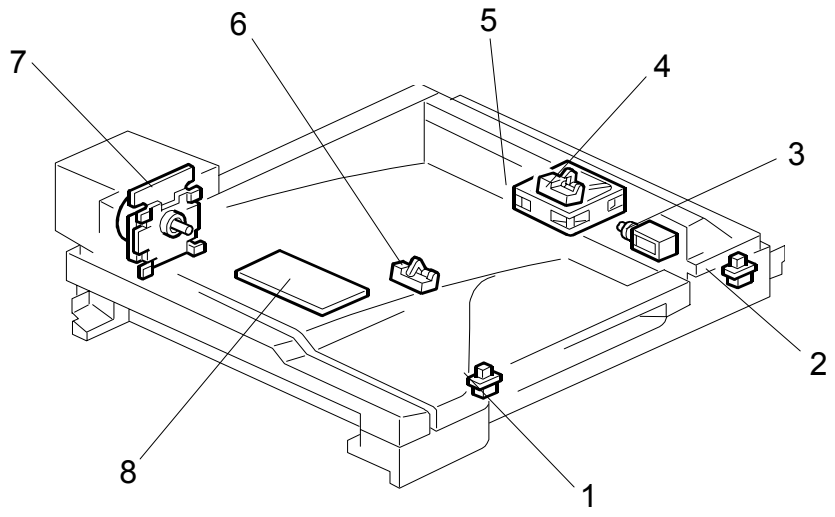
2.2 DRIVE LAYOUT



1. Left Exit Roller
2. 2nd Transport Roller
3. 1st Transport Roller
4. Upper Exit Roller
5. 3rd Transport Roller

Bridge Unit Drive Motor

2.3 ELECTRICAL COMPONENT LAYOUT

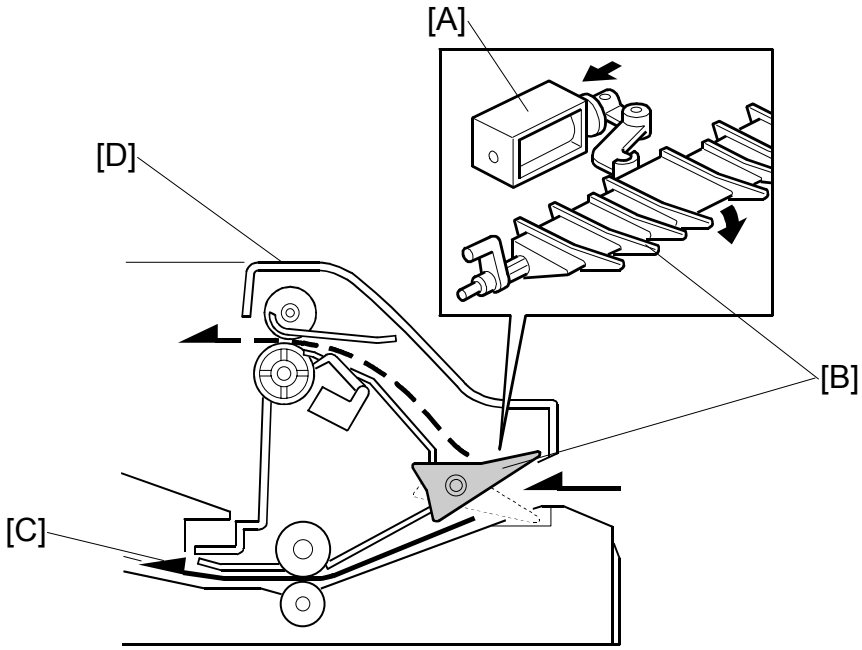


1. Left Guide Switch
2. Right Guide Switch
3. Junction Gate Solenoid
4. Tray Exit Sensor
5. Cooling Fan Motor
6. Relay Sensor
7. Bridge Unit Drive Motor
8. Bridge Unit Control Board

2.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Cooling Fan	Cools the transport unit.	5
M2	Drive Motor	Drives the bridge unit.	7
Sensors			
S1	Tray Exit	Checks for misfeeds.	4
S2	Relay	Checks for misfeeds.	6
Switches			
SW2	Right Guide	Detects when the right guide is opened.	2
SW3	Left Guide	Detects when the left guide is opened.	1
Solenoids			
SOL1	Junction Gate	Moves the junction gate to direct the paper to the upper tray (on top of the bridge unit) or to the finisher.	3
PCBs			
PCB1	Bridge Unit Control Board	Controls the bridge unit.	8

2.5 JUNCTION GATE MECHANISM



The junction gate [B] directs any paper reaching the bridge unit to either the upper tray (on top of the bridge unit) or to the finisher, depending on which has been selected.

If the junction gate solenoid [A] has been activated, the junction gate [B] points downward and directs the paper to the upper tray [D] (dotted line path in illustration). When the solenoid is off, the junction gate points upward and the paper is fed out to the finisher [C] by the transport and left exit rollers (solid line).

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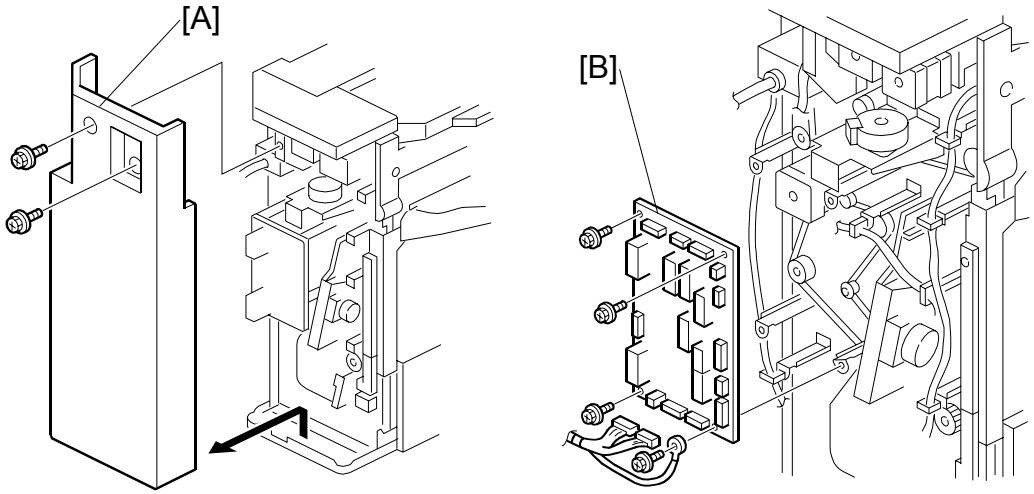
1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

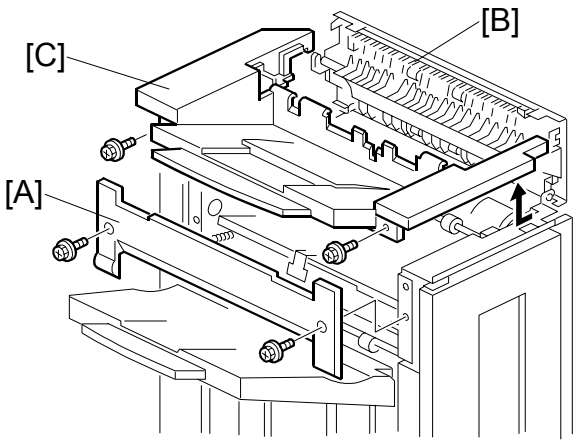
1.1 MAIN PCB



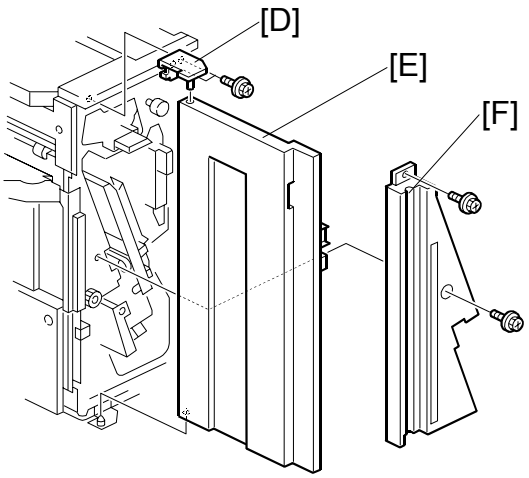
1. Rear cover [A] (x 2)
2. Main PCB [B] (x 4, All)

1.2 STAPLER UNIT

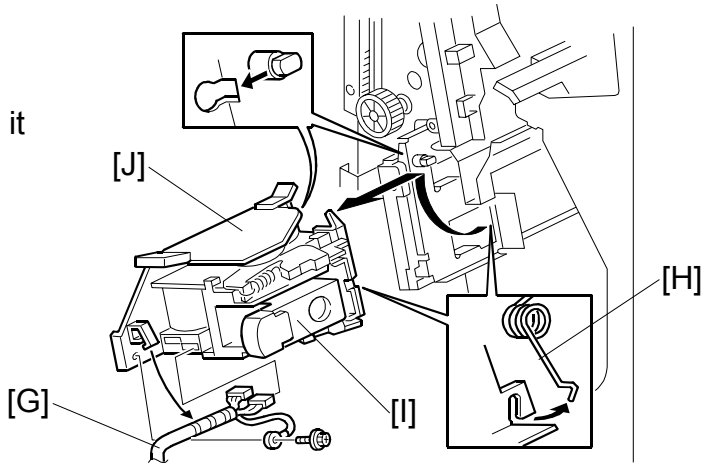
1. Side cover [A] (x 2)
2. Open exit guide plate [B]
3. Upper side cover [C] (x 2)



4. Front cover support plate [D] (x 1)
5. Front cover [E]
6. Front inner cover [F] (x 2)



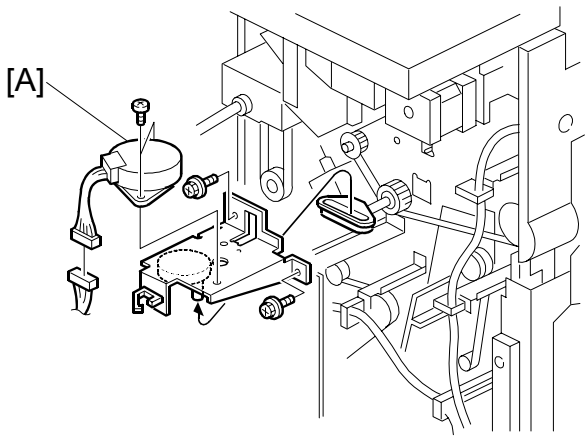
7. Harness [G]
8. Unhook the spring [H]
9. Turn the stapler unit [I] and take it out.
10. Bracket [J] (x 2)



1.3 MOTORS

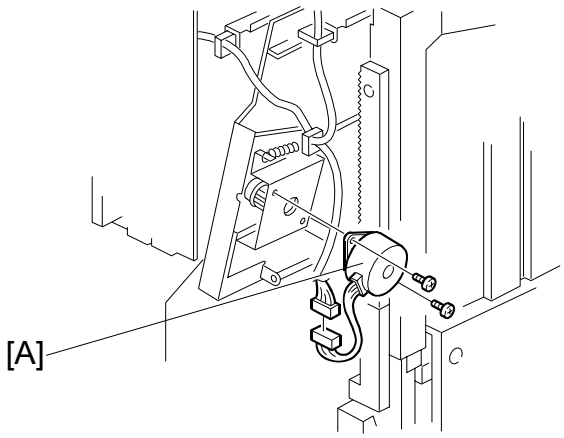
1.3.1 SHIFT MOTOR

1. Rear cover (☛1.1)
2. Shift motor [A] (🔩 x 2, 🖐 x 1)



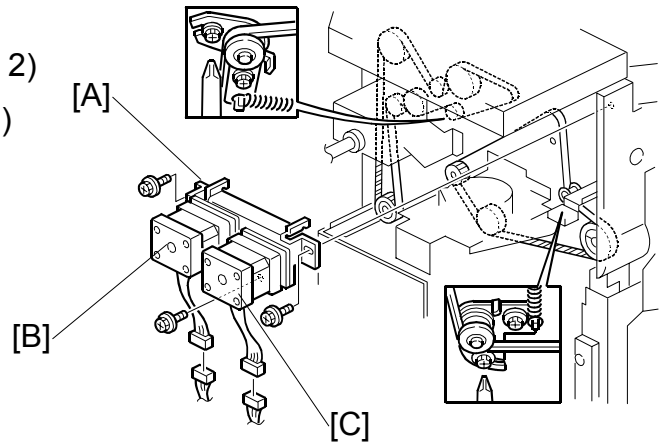
1.3.2 STAPLER MOTOR

1. Rear cover (☛1.1)
2. Stapler motor [A] (🔩 x 2, 🖐 x 1)



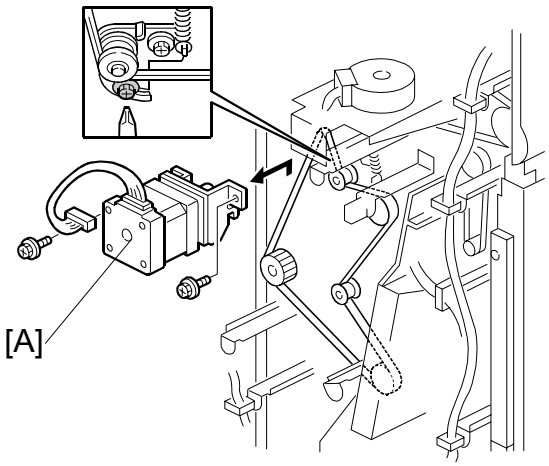
1.3.3 UPPER TRANSPORT MOTOR AND EXIT MOTOR

1. Rear cover (☛1.1)
2. Motor assembly [A] (🔩 x 4, 🖐 x 2)
3. Upper transport motor [B] (🔩 x 4)
4. Exit motor [C] (🔩 x 4)



1.3.4 LOWER TRANSPORT MOTOR

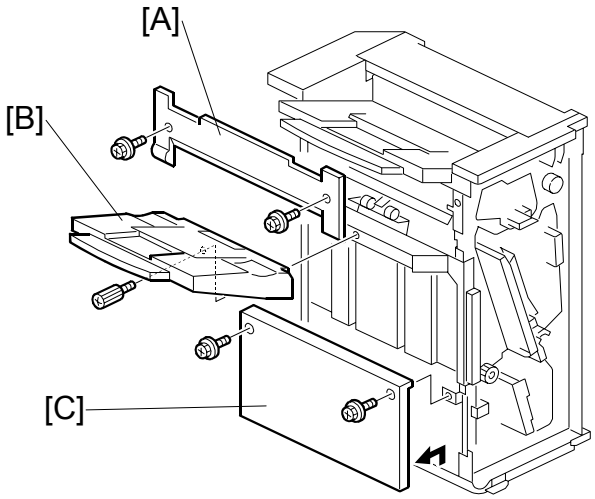
1. Main PCB (☛1.1)
2. Lower transport motor [A] (🔩 x 2, 🖐 x 1)



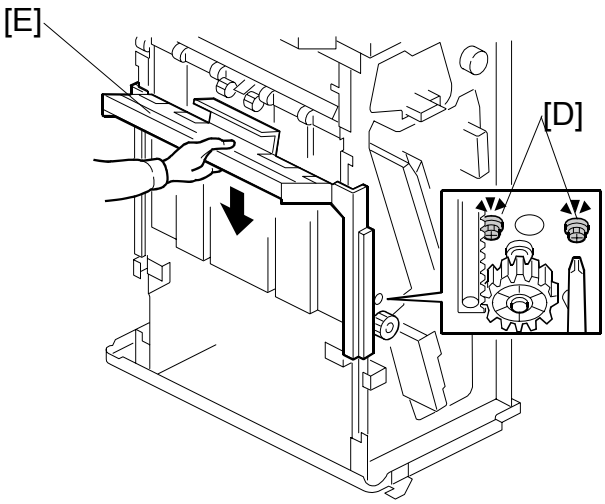
1.4 MOTORS AND SENSORS

1.4.1 PREPARATION

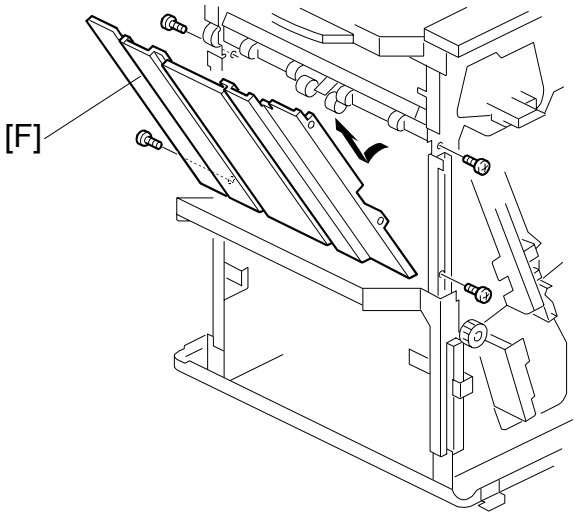
1. Front cover and inner cover (☛1.2)
2. Upper side cover [A] (☞ x 2)
3. Upper tray [B] (☞ x 1)



4. Lower side cover [C] (☞ x 2)
5. Loosen the 2 screws [D].
6. Lower the lower tray guide plate [E].

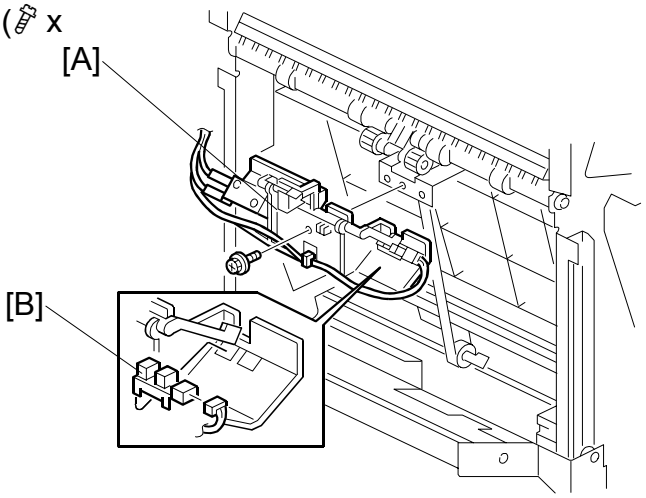


7. Guide plate [F] (☞ x 4)



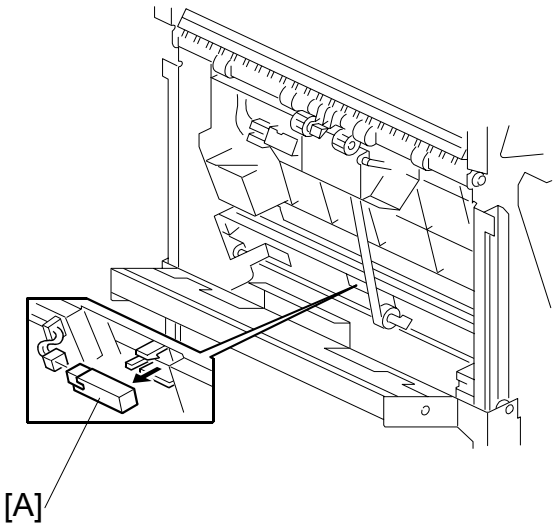
1.4.2 STACK HEIGHT SENSOR

1. Stack height sensor assembly [A] (🔩 x 1)
2. Stack height sensor [B] (✋ x 1)



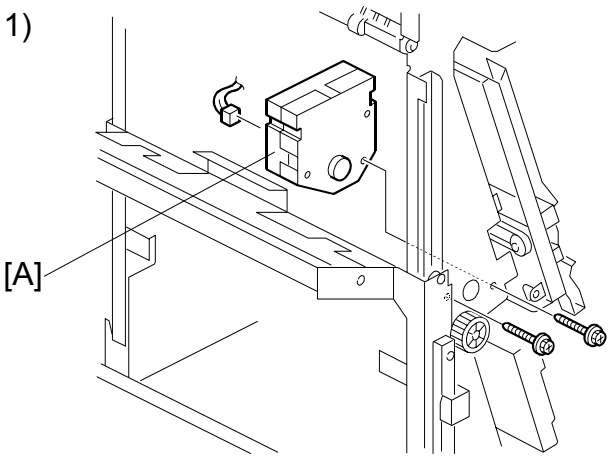
1.4.3 STAPLER TRAY PAPER SENSOR

1. Stapler tray paper sensor [A] (✋ x 1)



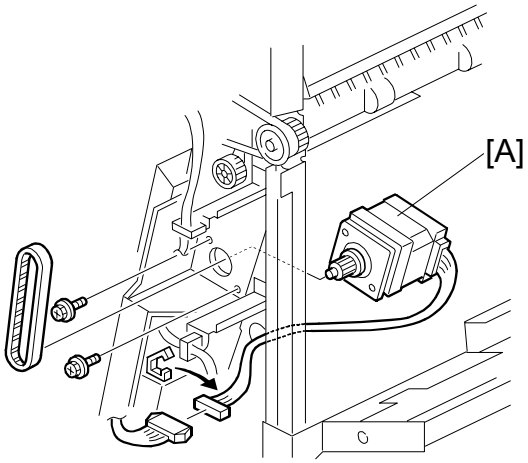
1.4.4 LOWER TRAY LIFT MOTOR

1. Lower tray lift motor [A] (🔩 x 2, 🔌 x 1)



1.4.5 STACK FEED-OUT MOTOR

1. Stack feed-out motor [A] (🔩 x 2, 🔌 x 1)



2. TROUBLESHOOTING

2.1 JAM DETECTION

Mode		Jam	Content
Shift	Staple		
✔	✔	Entrance sensor: On check	The entrance sensor does not turn on within the normal time after the main machine exit sensor turns on
✔	✔	Entrance sensor: Off check	The entrance sensor does not turn off within the normal time after it turns on.
✔		Lower tray exit sensor: On check	The lower tray exit sensor does not turn on within the normal time after the entrance sensor turns off.
✔		Tray exit sensor: Off check	The tray exit sensor does not turn off within the normal time after it turns on.
	✔	Stapler tray entrance sensor: On check	The stapler tray entrance sensor does not switch on within the normal time after the entrance sensor switched on.
	✔	Stapler tray entrance sensor: Off check	The staple tray entrance sensor does not turn off within the normal time after it turns on.
	✔	Lower tray exit sensor: On check	The lower exit sensor does not turn on after the feed-out pawl feeds out the outputs.
	✔	Lower tray exit sensor: Off check	The lower exit sensor turns on when the feed-out pawl returns to its home position after feeding out the outputs.

3. SERVICE TABLES

3.1 DIP SWITCH SETTINGS

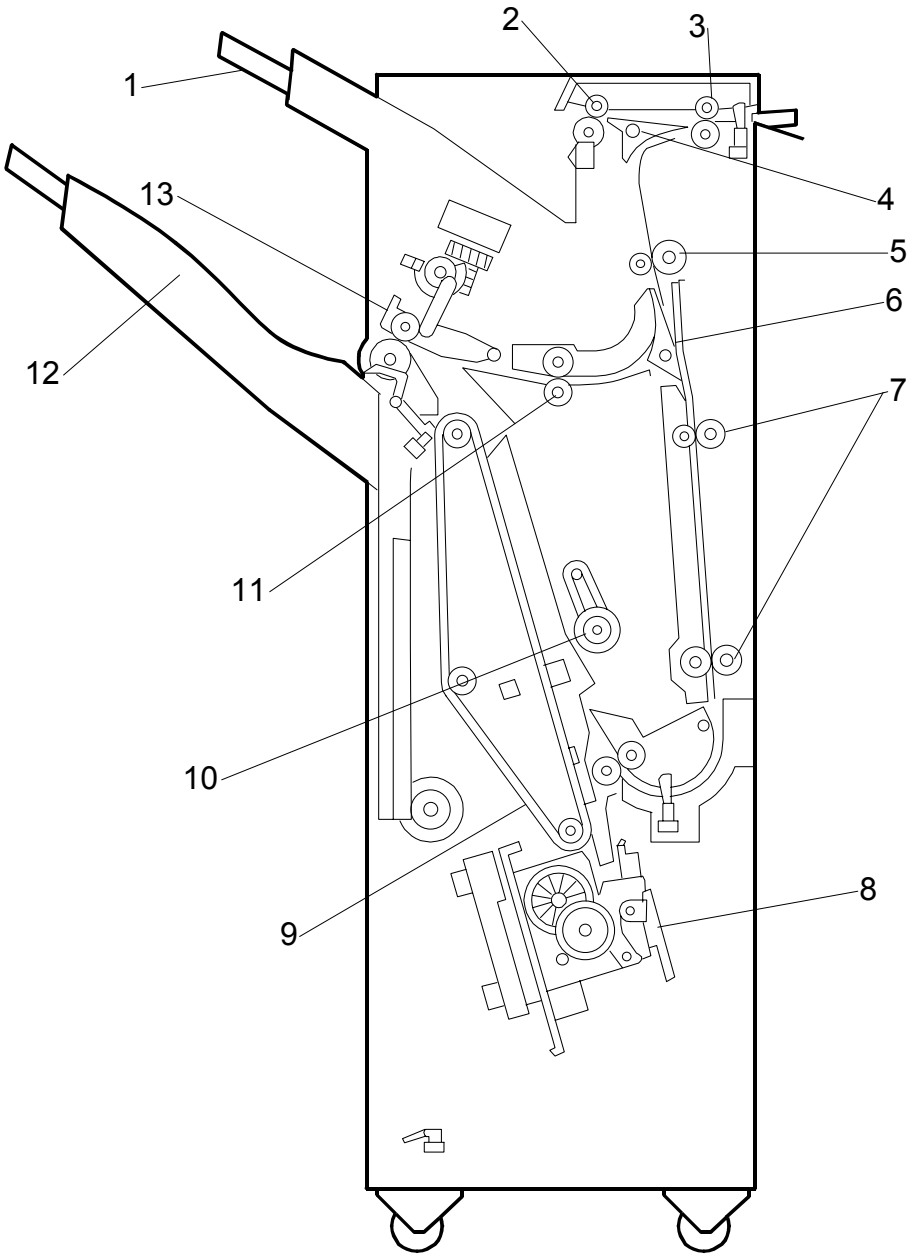
The DIP switches should not be set to any combination other than those listed in the table below.

SW100		Description
1	2	
0	0	Normal operation mode (Default)
1	0	Packing mode.

- Before packing the machine, do the following: Set switch 1 to 1 then back to zero. The lower tray moves to the lowest position. Then turn off the main switch.
- After unpacking the machine, do the following: After turning the main switch back on, the lower tray returns to home position automatically.

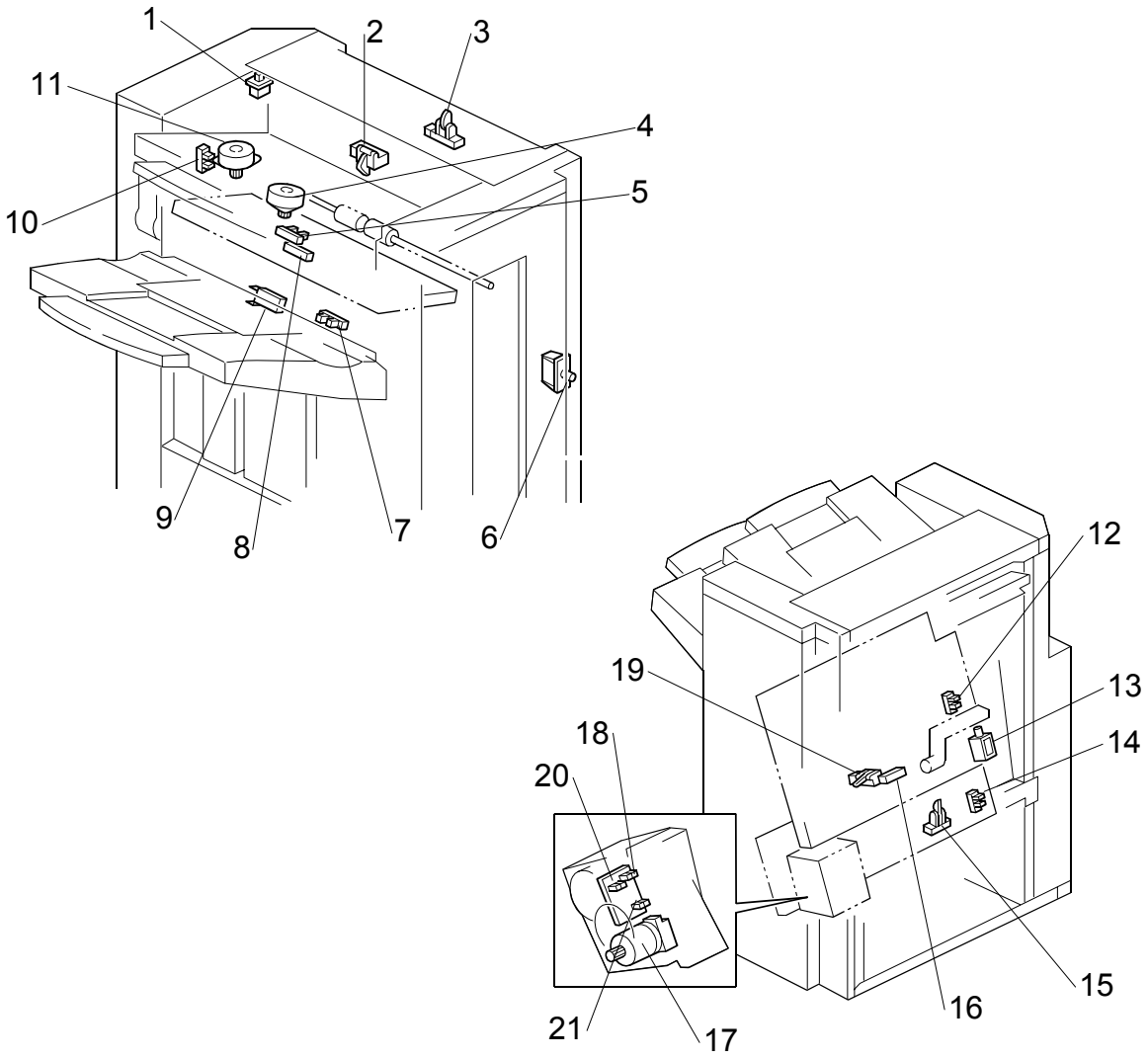
4. DETAILED DESCRIPTIONS

4.1 GENERAL LAYOUT



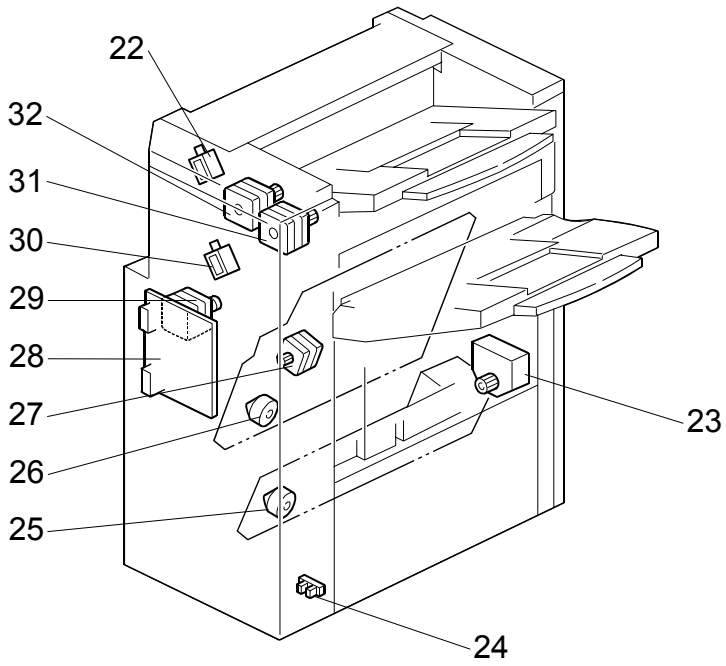
1. Upper Tray
2. Upper Tray Exit Roller
3. Entrance Roller
4. Tray Junction Gate
5. Upper Transport Roller
6. Stapler Junction Gate
7. Lower Transport Rollers
8. Stapler
9. Stack Feed-out Belt
10. Positioning Roller
11. Shift Roller
12. Lower Tray
13. Lower Tray Exit Roller

4.2 ELECTRICAL COMPONENT LAYOUT



1. Upper Cover Switch
2. Paper Limit Sensor
3. Entrance Sensor
4. Exit Guide Plate Motor
5. Exit Guide Plate HP Sensor
6. Front Door Safety Switch
7. Stack Height Sensor
8. Lower Tray Exit Sensor
9. Lower Tray Upper Limit Switch
10. Shift HP Sensor
11. Shift Motor
12. Jogger Fence HP Sensor
13. Positioning Roller Solenoid
14. Stapler HP Sensor
15. Stapler Tray Entrance Sensor
16. Stapler Tray Paper Sensor
17. Stapler Hammer Motor
18. Staple Sheet Sensor
19. Stack Feed-out Belt HP Sensor
20. Stapler Rotation HP Sensor
21. Staple Sensor

ELECTRICAL COMPONENT LAYOUT



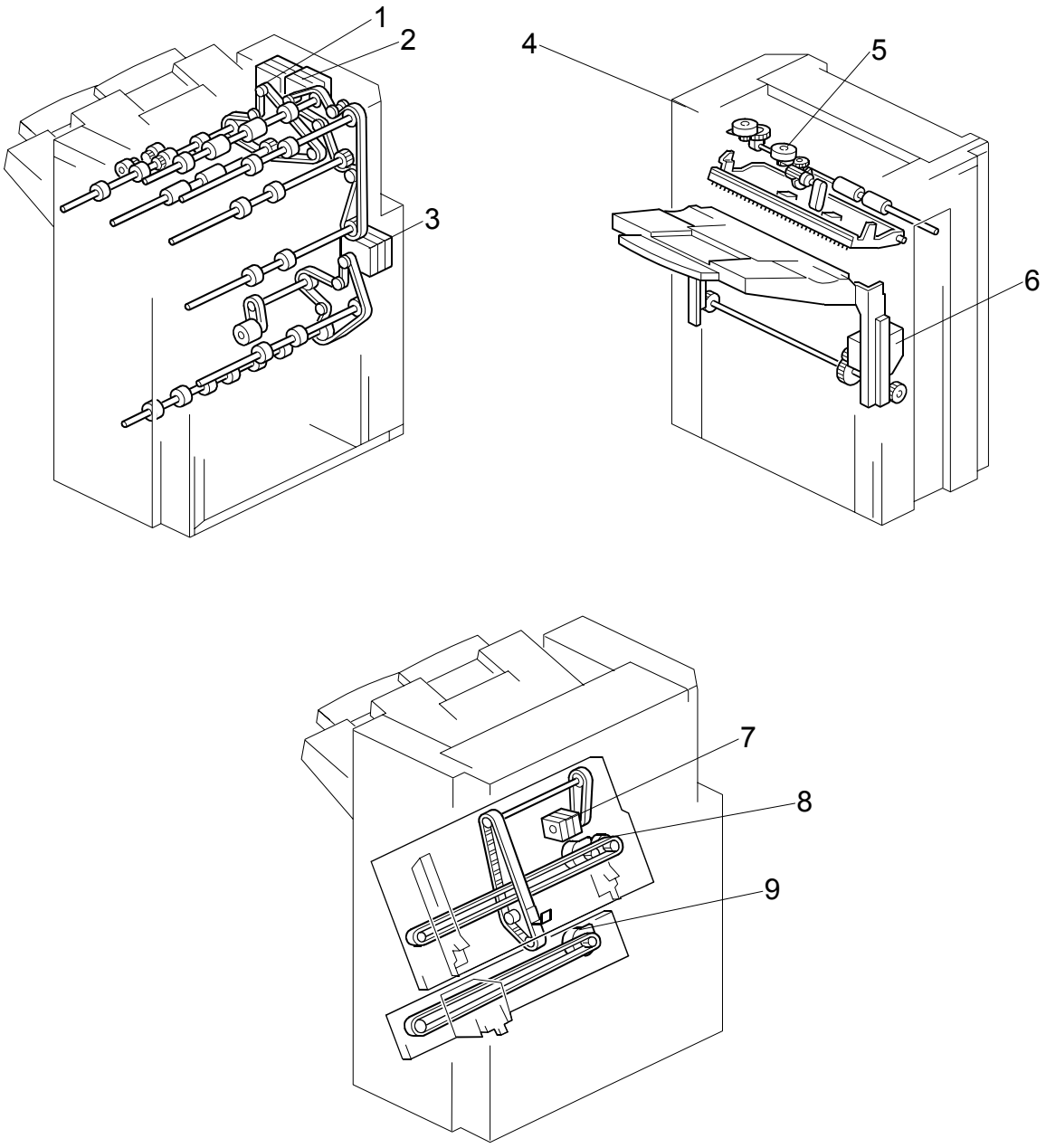
22. Tray Junction Gate Solenoid
23. Lower Tray Lift Motor
24. Lower Tray Lower Limit Sensor
25. Stapler Motor
26. Jogger Fence Motor
27. Stack Feed-out Motor
28. Main Board
29. Lower Transport Motor
30. Stapler Junction Gate Solenoid
31. Exit Motor
32. Upper Transport Motor

4.3 ELECTRICAL COMPONENT DESCRIPTION

Symbol	Name	Function	Index No.
Motors			
M1	Upper Transport	Drives the entrance roller and upper transport rollers.	32
M2	Lower Transport	Drives the lower transport rollers and the positioning roller.	29
M3	Jogger Fence	Drives the jogger fences.	26
M4	Staple Hammer	Drives the staple hammer.	17
M5	Stack Feed-out	Drives the stack feed-out belt.	27
M6	Exit Guide Plate	Opens and closes the exit guide plate.	4
M7	Exit	Drives the exit roller.	31
M8	Lower Tray Lift	Moves the lower tray up or down.	23
M9	Shift	Moves the shift roller from side to side.	11
M10	Stapler	Moves the stapler unit from side to side.	25
Sensors			
S1	Entrance	Detects copy paper entering the finisher and checks for misfeeds.	3
S2	Paper Limit	Detects when the paper stack height in the upper tray is at its limit.	2
S3	Jogger Fence HP	Detects when the jogger fence is at home position.	12
S4	Shift HP	Detects when the shift roller is at home position.	10
S5	Stack Feed-out Belt HP	Detects when the stack feed-out belt is at home position.	19
S6	Stapler HP	Detects when the stapler is at home position.	14
S7	Exit Guide Plate HP	Detects when the exit guide plate is at home position.	5
S8	Stapler Tray Entrance	Detects copy paper entering the stapler tray and checks for misfeeds.	15
S9	Lower Tray Exit	Checks for misfeeds.	8
S10	Stack Height	Detects the top of the copy paper stack.	7
S11	Lower Tray Lower Limit	Detects when the lower tray is at its lower limit position.	24
S12	Stapler Tray Paper	Detects when there is copy paper in the stapler tray.	16
S13	Staple Sheet	Detects the leading edge of the staple sheet.	18
S14	Stapler Rotation HP	Detects when the staple hammer is at home position.	20
S15	Staple	Detects whether there are staples in the staple cartridge.	21
Solenoids			
SOL1	Tray Junction Gate	Drives the tray junction gate.	22
SOL2	Stapler Junction Gate	Drives the stapler junction gate.	30

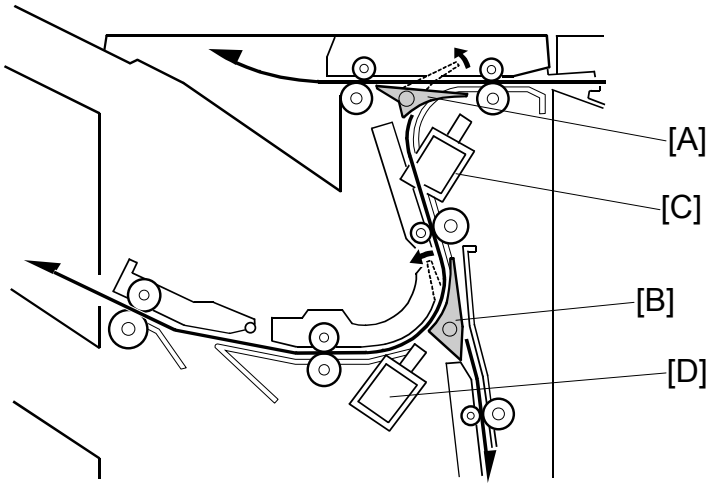
Symbol	Name	Function	Index No.
SOL3	Positioning Roller	Moves the positioning roller.	13
Switches			
SW1	Lower Tray Upper Limit	Detects when the lower tray is at its upper limit position.	9
SW2	Front Door Safety	Cuts the dc power when the front door is opened.	6
SW3	Upper Cover	Cuts the dc power when the upper cover is opened.	1
PCBs			
PCB1	Main	Controls the finisher and communicates with the copier/printer.	28

4.4 DRIVE LAYOUT



1. Exit Motor
2. Upper Transport Motor
3. Lower Transport Motor
4. Shift Motor
5. Exit Guide Plate Motor
6. Lower Tray Lift Motor
7. Stack Feed-out Motor
8. Jogger Motor
9. Stapler Motor

4.5 JUNCTION GATES



Depending on the finishing mode, the copies are directed up, straight through, or down by the combination of the tray junction gate [A] and stapler junction gate [B]. These gates are controlled by the tray junction gate solenoid [C] and stapler junction gate solenoid [D].

Upper Tray Mode

The tray junction gate solenoid remains off. The copies go up to the upper tray.

Sort/Stack Mode

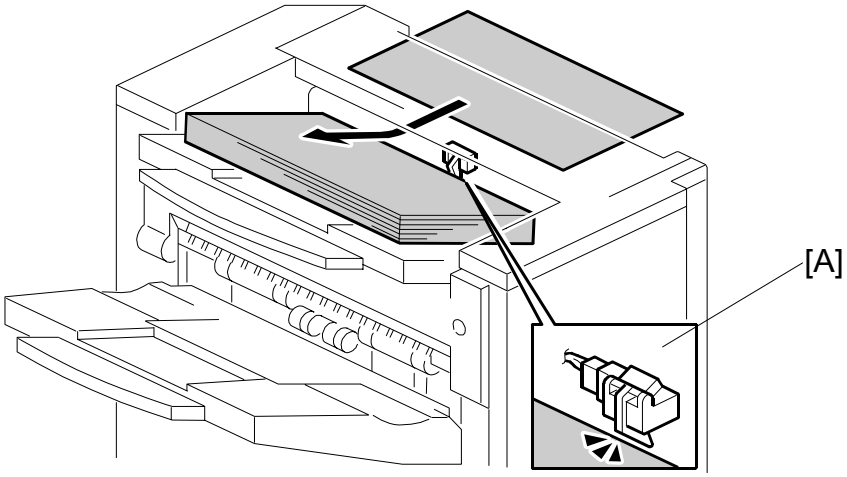
The tray junction gate solenoid turns on and the stapler junction gate solenoid remains off. The copies are sent to the lower tray directly.

Staple Mode

The tray junction gate solenoid and the stapler junction gate solenoid both turn on.

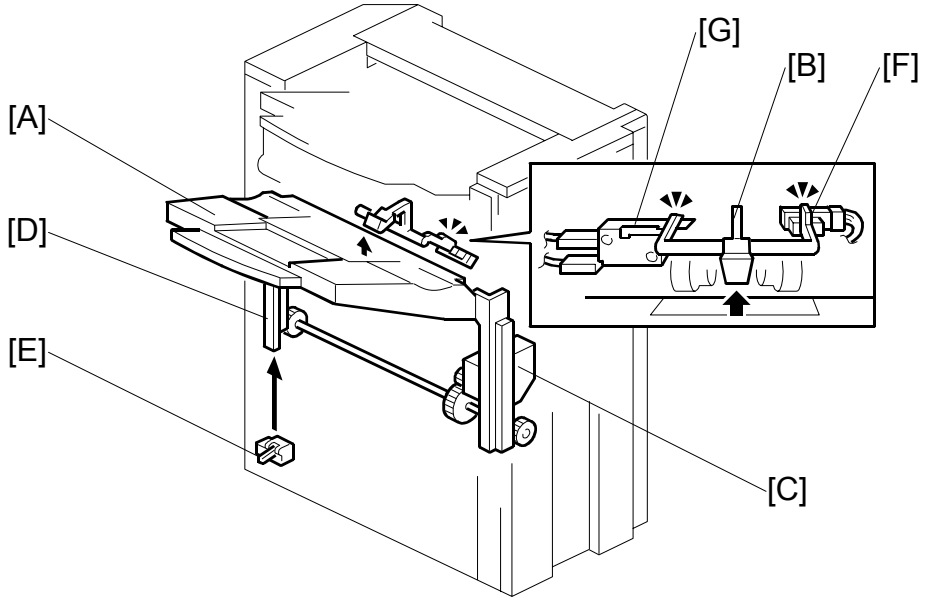
The copies go down to the jogger unit.

4.6 UPPER TRAY



When the paper limit sensor [A] switches on during feed-out for each of three consecutive sheets of paper, paper overflow is detected.

4.7 LOWER TRAY UP/DOWN MECHANISMS



The vertical position of the lower tray [A] depends on the height of the copied paper stack on the lower tray. The stack height sensor feeler [B] contacts the top of the stack, and the lower tray lift motor [C] controls the tray height.

When the lower tray reaches its lowest possible position, the actuator [D] turns on the lower tray lower limit sensor [E], and copying stops.

Tray Up

When the copy paper on the tray is removed, the stack height sensor [F] turns off and the tray lifts up. Then, the tray stops when the sensor turns on again (the tray pushes up the feeler).

If the stack height sensor fails, the lower tray upper limit switch [G] detects the tray and stops the motor. This is a safety measure against stack height sensor failure.

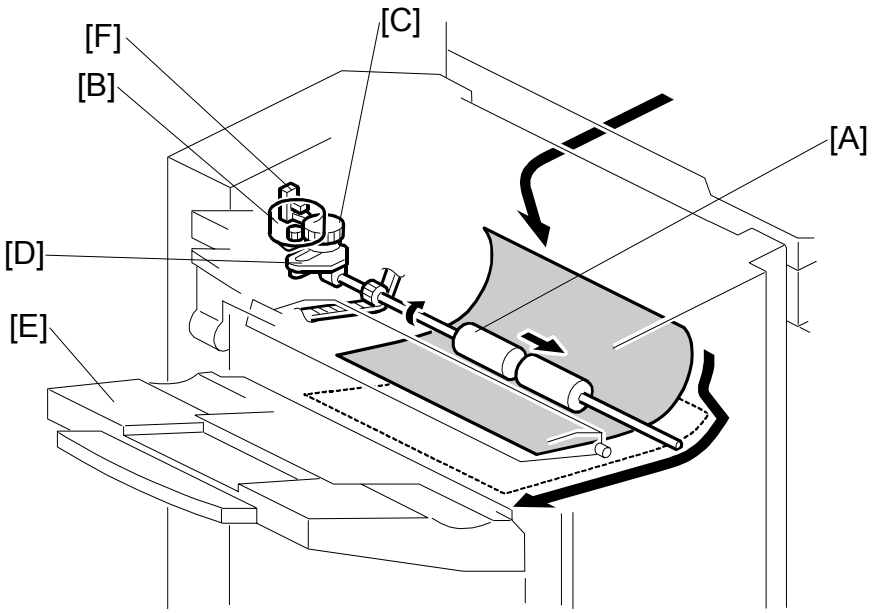
Sort/Stack Mode (Tray Down)

Every five sheets of paper, the tray goes down until the sensor turns off again. Then, it goes up until the sensor is on again.

Staple Mode (Tray Down)

After a stapled copy is fed out, the tray goes up for 220 ms and stops for 300 ms. Then, it goes down for 1 second, waits for 500 ms, then goes up until the sensor turns on.

4.8 PAPER SHIFT MECHANISM



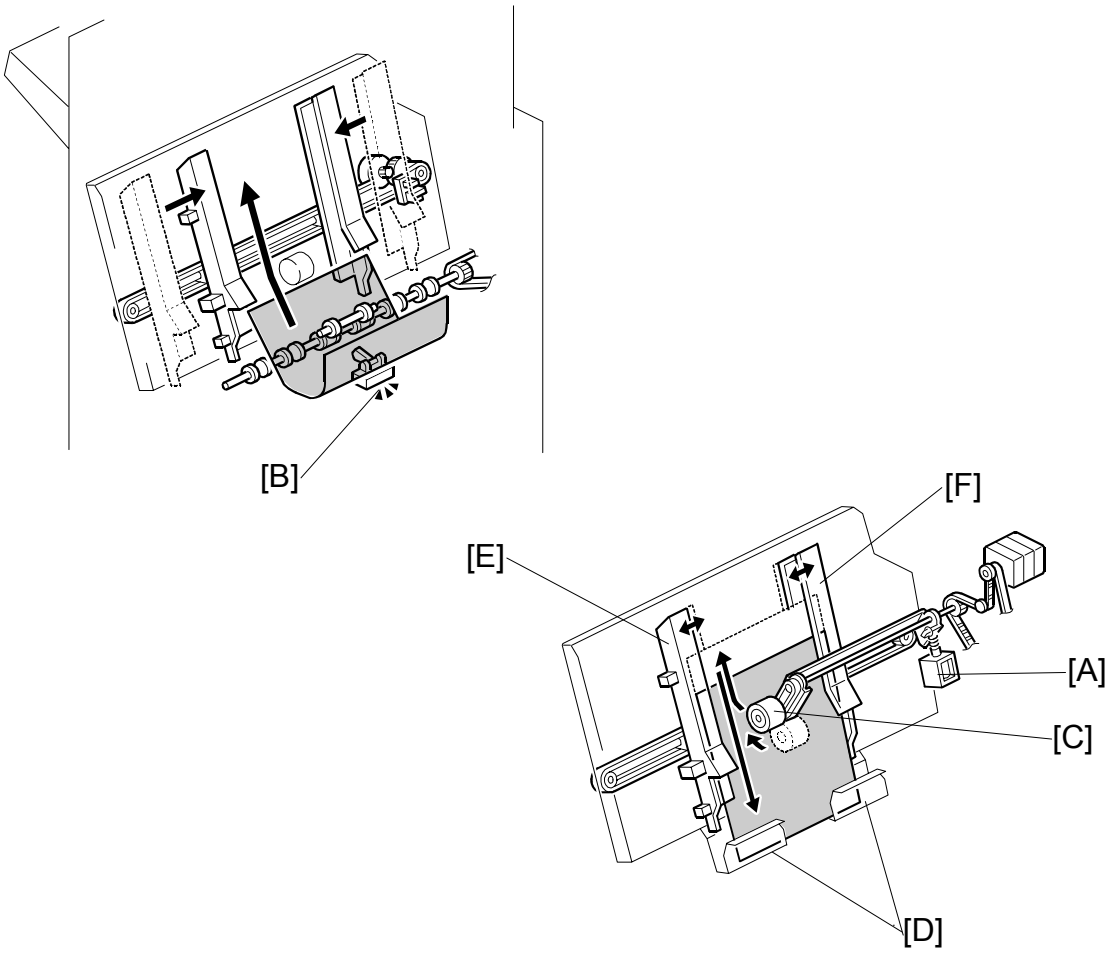
In the sort/stack mode, the shift roller [A] moves from side to side to separate the sets of copies.

The horizontal position of the shift roller is controlled by the shift motor [B] and the shift gear disk [C]. After the trailing edge of the copy passes the upper transport roller, the shift motor turns on, driving the shift gear disk and the link [D].

After the paper is delivered to the lower tray [E], the shift roller moves to its home position, which is detected by the shift HP sensor [F]. Then, when the trailing edge of the next copy passes the upper transport roller, the shift roller shifts again. This operation is done every sheet.

When the trailing edge of each page in the next set of copies passes the upper transport roller, the shift roller shifts in the opposite direction.

4.9 JOGGER UNIT PAPER POSITIONING MECHANISM

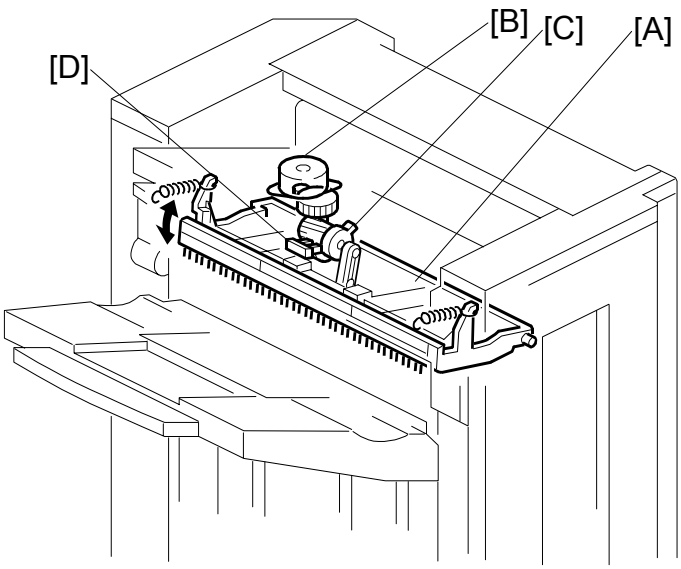


In staple mode, each sheet of copy paper is vertically and horizontally aligned when it arrives in the jogger unit.

For the vertical paper alignment, the positioning roller solenoid [A] turns on shortly after the stapler tray entrance sensor [B] turns off, and the positioning roller [C] pushes the copy against the bottom of the stack stopper [D].

For the horizontal paper alignment, the jogger front fence [E] and the rear fence [F] move to the waiting position, which is 18 mm away from the side of the paper. When aligning the paper vertically, the jogger fence moves in 14 mm from the waiting position. After the vertical position has been aligned, the jogger fence pushes the paper 4 mm against the rear fence to align the paper horizontally. Then the jogger fence moves back to the previous position.

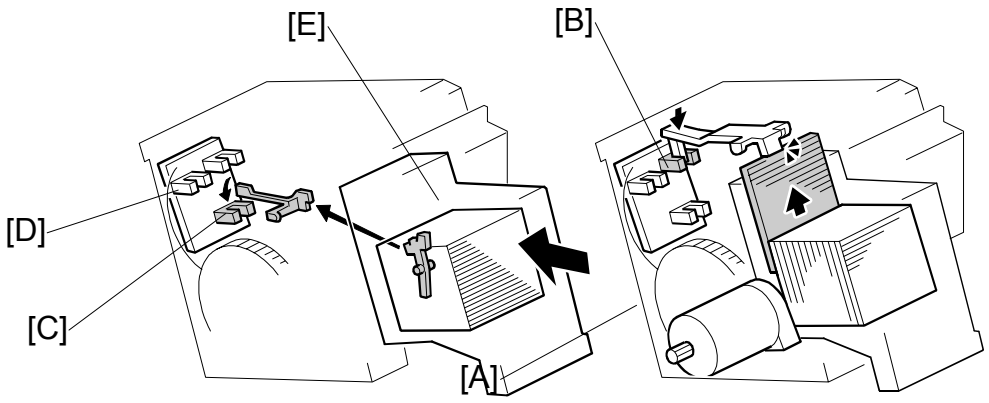
4.10 EXIT GUIDE PLATE



When stacking a large size of paper (such as A3, DLT) in the jogger unit, the leading edge of the paper reaches the exit rollers. To prevent the paper from running into the exit rollers and not being aligned correctly, the exit guide plate [A] is moved up to make a gap between the exit rollers. This operation is done for all paper sizes, but is only needed for the larger sizes.

The exit guide plate motor [B] and exit roller release cam [C] control the exit guide plate movement. When the exit guide plate motor starts, the cam turns and the exit guide plate moves up. When stapling is finished, the exit guide plate motor turns on again to close the exit guide plate. When the exit guide plate HP sensor [D] turns on, the motor stops.

4.11 STAPLER MECHANISM



The staple hammer motor [A] drives the staple hammer.

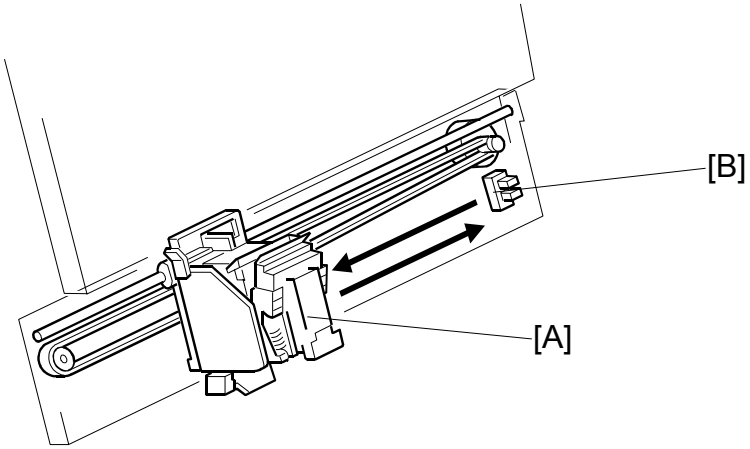
The staple sheet sensor [B] detects the leading edge of the staple sheet at the stapling position to prevent the hammer from operating if there are no staples at the stapling position.

If there is no staple cartridge in the stapler unit or no staples in the staple cartridge, staple end is indicated on the operation panel. The stapler sensor [C] detects this.

The stapler rotation HP sensor [D] checks whether the staple hammer mechanism returns to home position after each stack has been stapled.

When excessive load is applied to the staple hammer motor, the copier detects a staple jam. When a staple jam has occurred, the jammed staple is inside the staple cartridge [E]. Therefore, the jammed staple can be removed easily after pulling out the staple cartridge.

4.12 STAPLER UNIT MOVEMENT MECHANISM

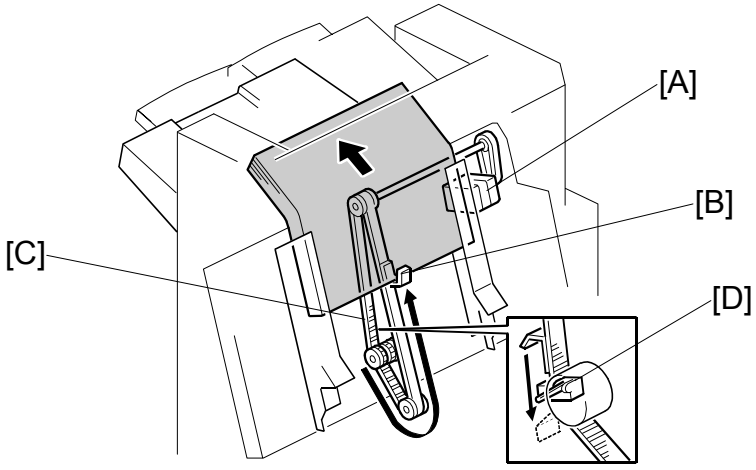


The stapler motor moves the stapler [A] from side to side. After the start key is pressed, the stapler moves from its home position to the stapling position.

If two-staple-position mode is selected, the stapler moves to the front stapling position first, then moves to the rear stapling position. However, for the next copy set, it staples in the reverse order (at the rear side first, then at the front side).

After the job is completed, the stapler moves back to its home position. The stapler HP sensor [B] detects this.

4.13 PAPER FEED-OUT MECHANISM



After the copies have been stapled, the stack feed-out motor [A] starts. The pawl [B] on the stack feed-out belt [C] transports the set of stapled copies up and feeds it to the shift roller. The shift roller takes over stack feed-out after the leading edge reaches this roller.

Just before the stapled stack passes through the lower tray exit sensor, the stack-feed-out motor turns off until the shift rollers have completely fed the stack out to the lower tray. Then, the stack-feed-out motor turns on again until the pawl [B] actuates the stack feed-out belt home position sensor [D].

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500-SHEET FINISHER B458

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CÓPIA NÃO CONTROLADA

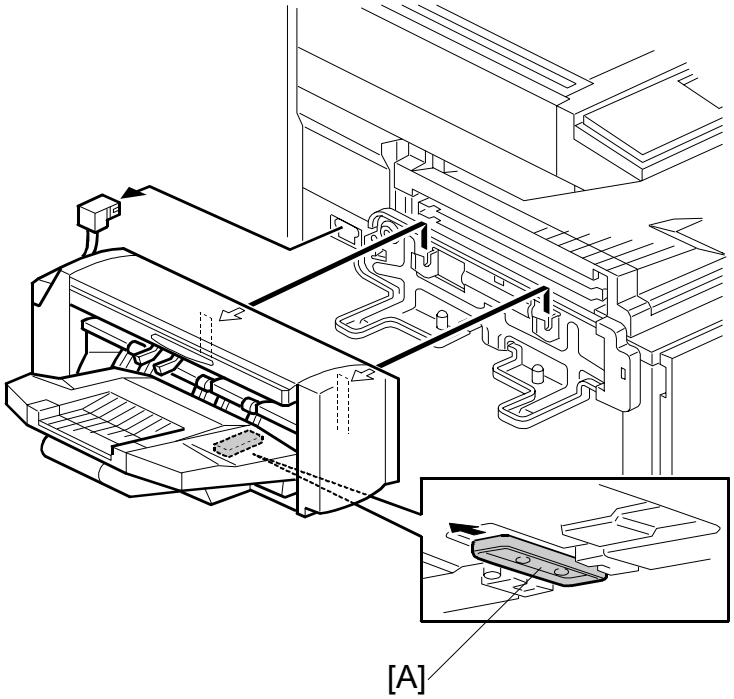
1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION

Turn off the main power switch and unplug the machine before beginning any of the procedures in this section.

NOTE: This manual uses the following symbols.
☛ : See or Refer to : Screws : Connector : Clip ring
 : E-ring

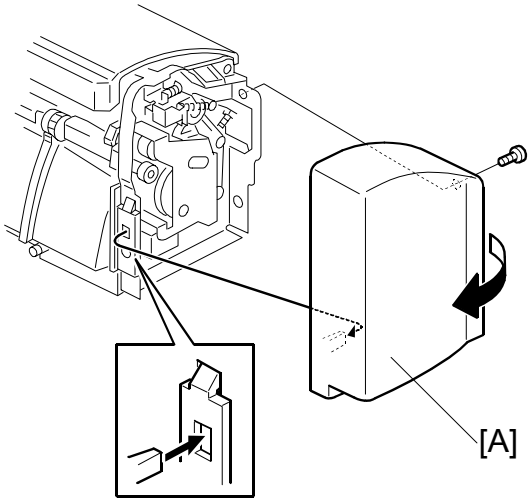
1.1 EXTERIOR



Pull out the lever [A] under the finisher while lifting the finisher off the machine.

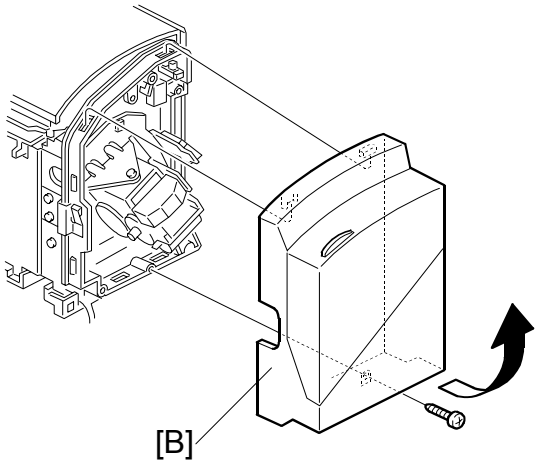
Front Cover

[A]: : Front cover (☞ x 1)



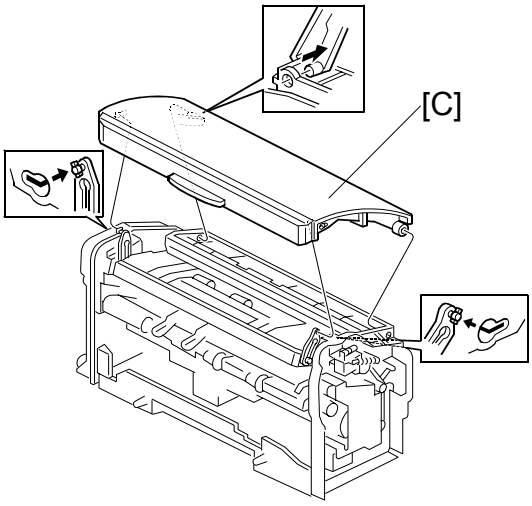
Rear Cover

[B]: Rear cover (☞ x 1)

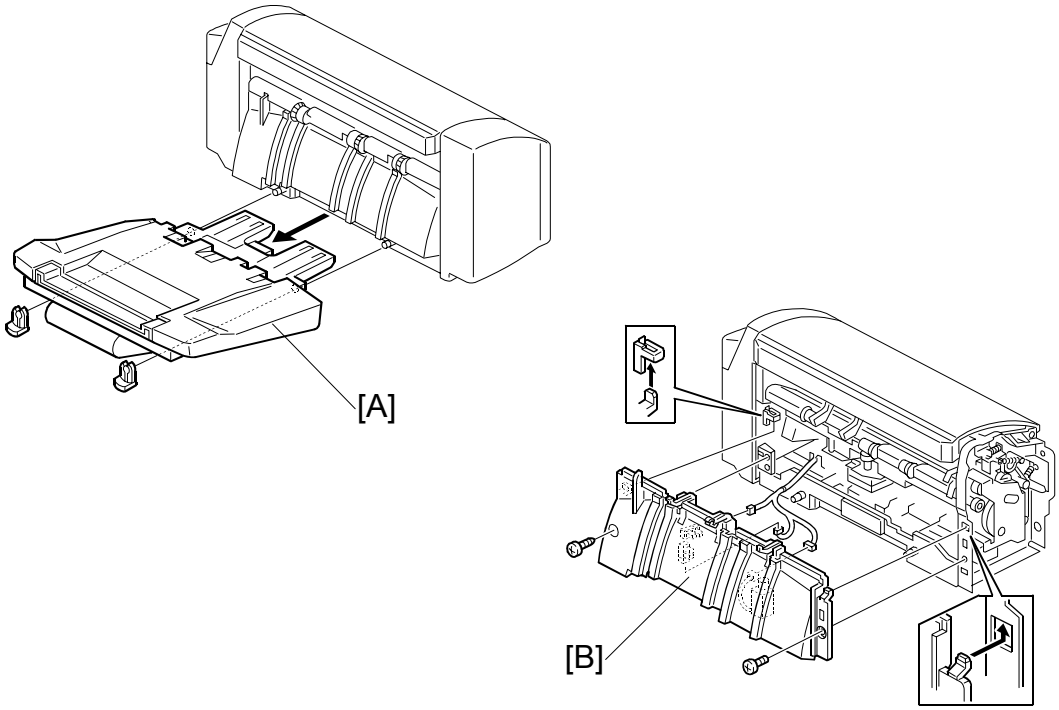


Top Cover

[C]: Top cover (2 links)



Front Lower Guide

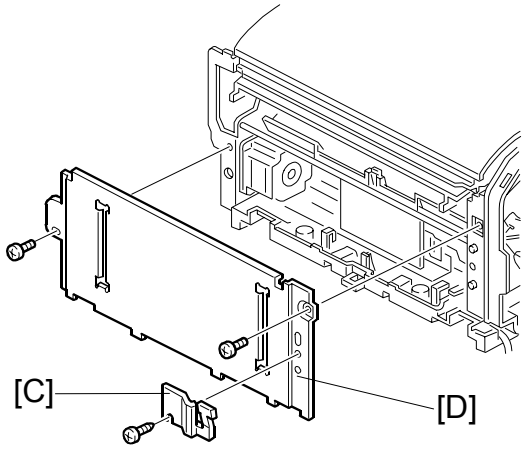


[A]: Output tray (x 2)
[B]: Front lower guide (x 2)

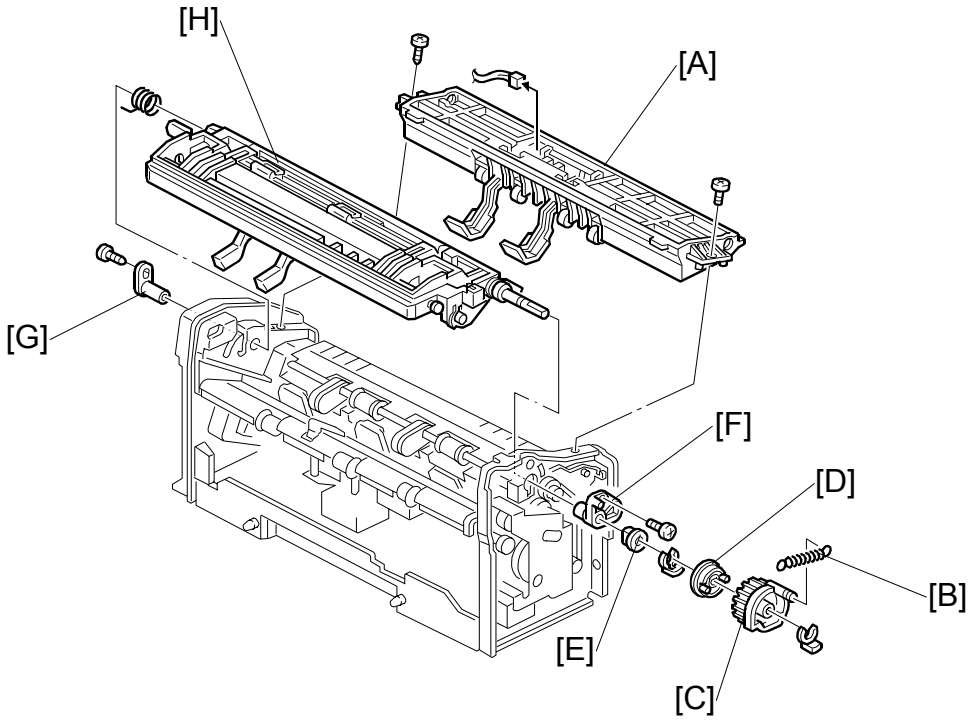
NOTE: 1) When re-attaching the lower guide, be sure that it is not in contact with the exit lower guide and that the exit lower guide moves smoothly.
2) Make sure that the blue and black cables are in the correct position, as engraved on the inside of the front lower guide.

Right Cover

[C]: Grounding plate (x 1)
[D]: Right cover (x 2)



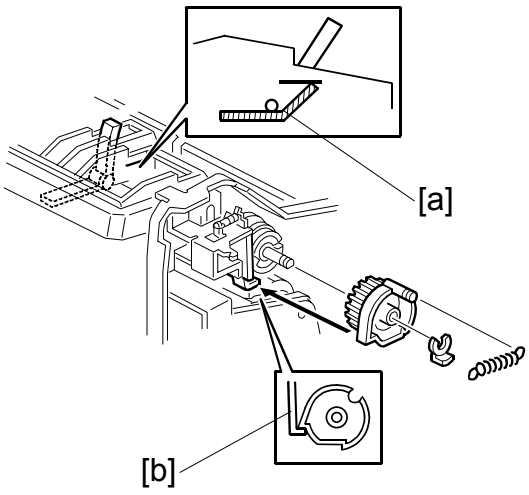
1.2 ENTRANCE UPPER GUIDE/PAPER EXIT UNIT



- Front, rear, and top covers and front lower guide (☛ 1.1 Exterior)

[A]: Entrance upper guide (x 2, x 1)
[B]: Paddle gear spring
[C]: Paddle gear (x 1)
[D]: Paddle gear holder
[E]: Bushing (x 1)
[F]: Paper exit unit holder (x 1)
[G]: Rear paper exit unit holder (x 1)
[H]: Exit unit

NOTE: Keep the paper exit unit stays in the upper position. Rotate the paddle roller into the position shown in the illustration [a]. Then, insert the paddle gear, making sure that the pawl on the gear's outer frame is resting on the clutch link [b].

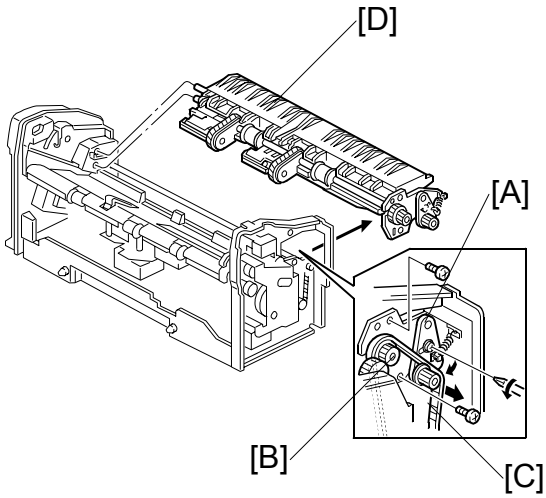


1.3 ENTRANCE LOWER GUIDE

- Entrance upper guide (☛ 1.2 Entrance upper guide/Exit unit)
- Exit unit (☛1.2 Entrance upper guide/ Exit unit)

[A]: Release tension bracket (🖉 x 1)
[B]: Reverse roller gear bracket (🖉 x 2)
[C]: Timing belt
[D]: Entrance lower guide

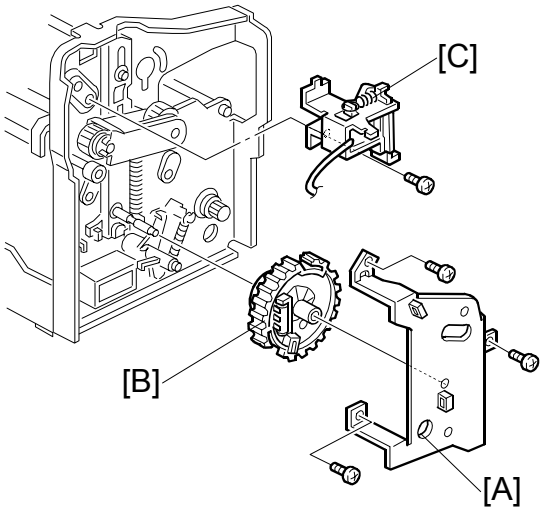
NOTE: When re-attaching the tension bracket, rotate the main motor counterclockwise to tighten the timing belt.



1.4 PAPER EXIT UNIT GEAR/PADDLE ROLLER SOLENOID

- Front cover (☛ 1.1 Exterior)

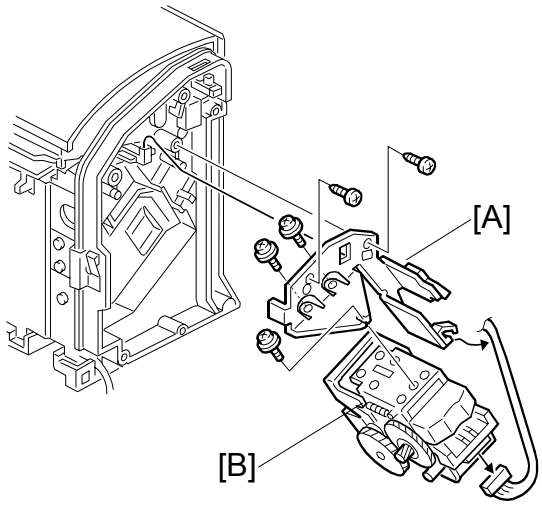
[A]: Gear bracket (🖉 x 3)
[B]: Paper exit unit gear
[C]: Paddle roller solenoid (🖉 x 1)



1.5 STAPLER UNIT

- Rear cover (☛ 1.1 Exterior)

[A]: Stapler unit bracket (🔩 x 2, 🖐 x 1)
[B]: Stapler unit (🔩 x 3)

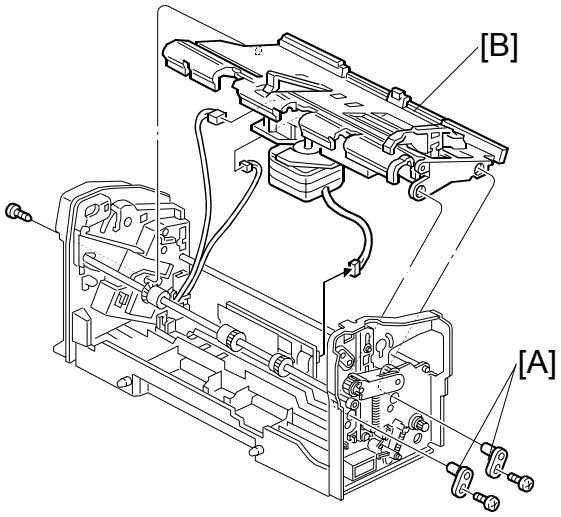


1.6 JOGGER TRAY UNIT

- Entrance upper guide and paper exit unit (☛ 1.2 Entrance upper guide / paper exit unit)
- Entrance lower guide (☛ 1.2 Entrance lower guide)
- Paper exit unit gear and Paddle roller solenoid (☛ 1.4 Paper exit unit gear/ Paddle roller solenoid)
- Stapler unit (☛ 1.5 Stapler unit)

[A]: Jogger tray unit holders (🔩 x 2)
[B]: Jogger tray unit (🔩 x 1, 🖐 x 3)

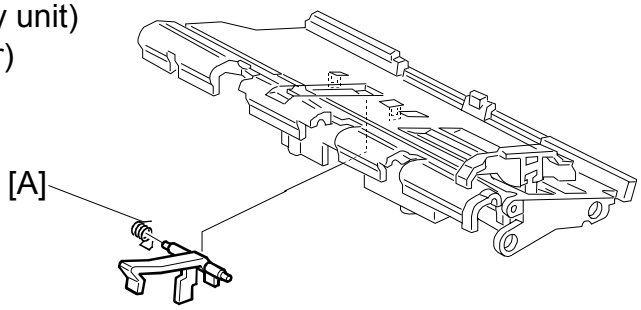
NOTE: Be sure to connect the black cable to the paper exit sensor and the blue one to the jogger home position sensor.



1.7 PAPER EXIT SENSOR FEELER

- Jogger tray unit (☛ 1.6 Jogger tray unit)
- Jogger motor (☛ 1.9 Jogger motor)

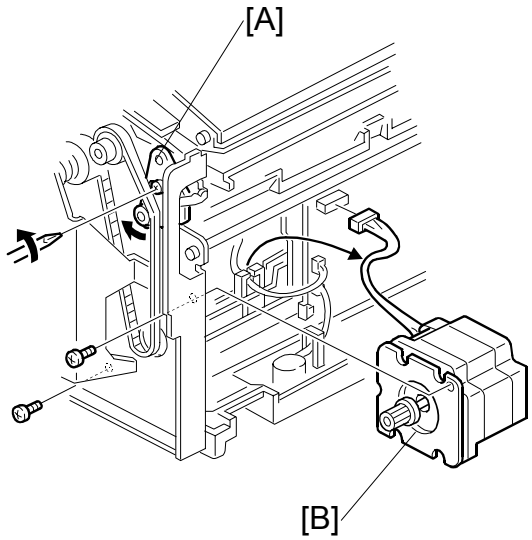
[A]: Paper exit sensor feeler



1.8 MAIN MOTOR

- Right cover (☛ 1.1 Exterior)

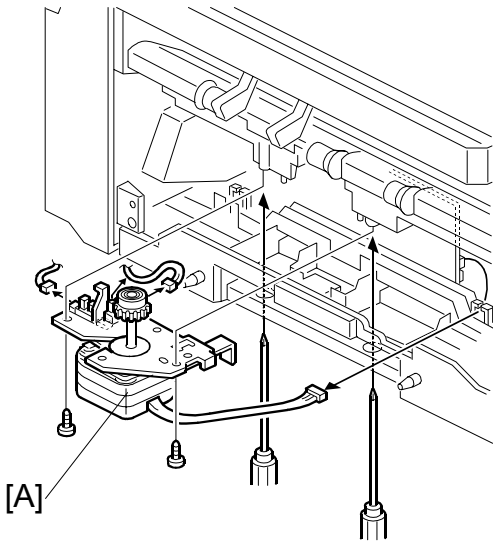
[A]: Release tension bracket (🔩 x 1)
[B]: Main motor (🔩 x 2, 🔌 x 1)



1.9 JOGGER MOTOR

- Front lower guide (☛ 1.1 Exterior)

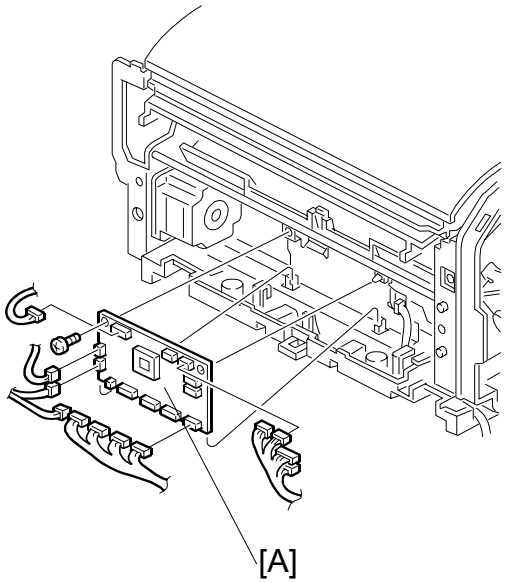
[A]: Jogger motor (🔩 x 2, 🖐 x 3)



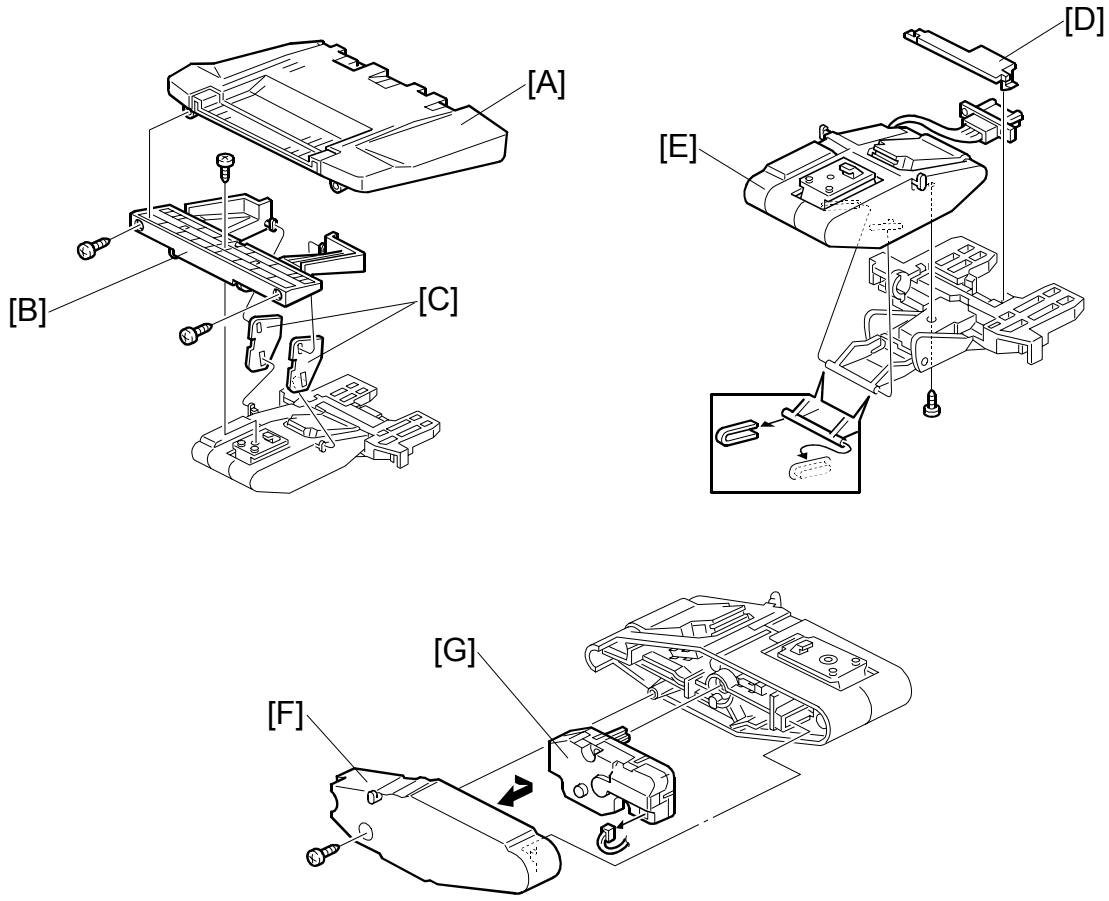
1.10 CONTROL BOARD

- Front lower guide (☛ 1.1 Exterior)

[A]: Control board (🔩 x 1, 🖐 x 12)

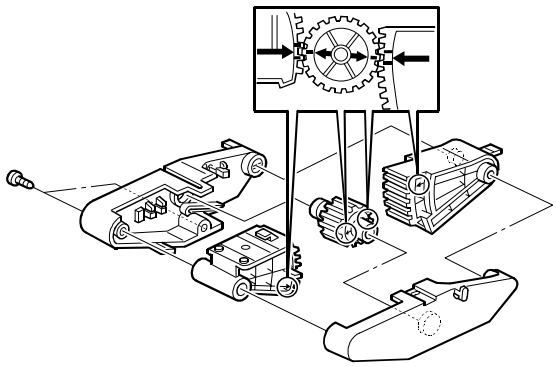


1.11 OUTPUT TRAY UNIT



[A]: Output tray cover (☞ x 2)
[B]: Tray holder (☞ x 1)
[C]: Links
[D]: Connector cover
[E]: Output tray motor link unit (☞ x 1)
[F]: Rear cover (☞ x 1)
[G]: Output tray motor (☞ x 1)

NOTE: When re-attaching the motor link unit, the arrows on each of the gears need to face each other as shown in the illustration.

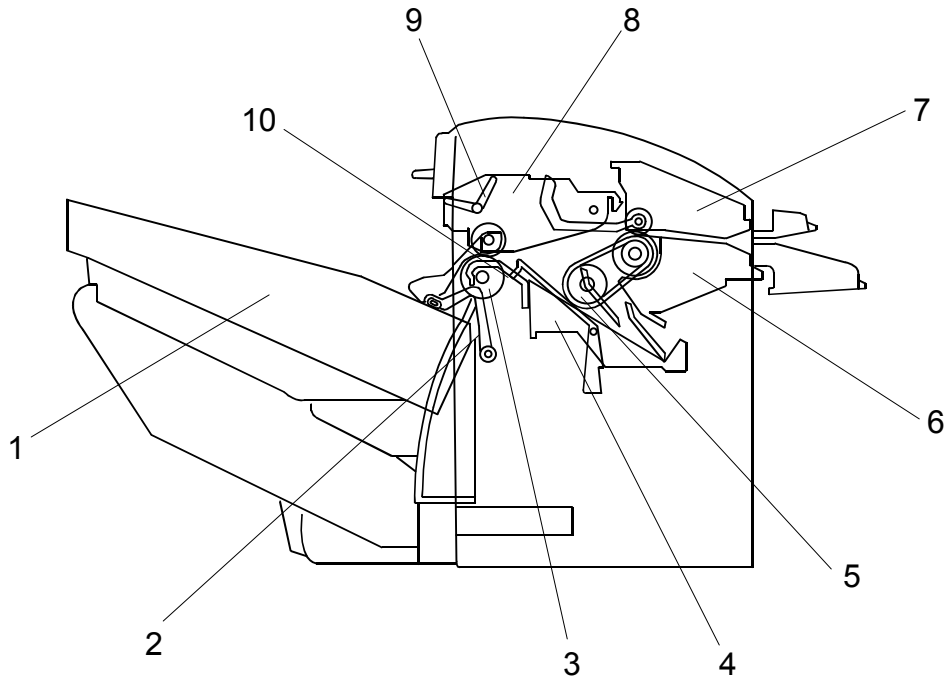


2. DETAILED DESCRIPTIONS

2.1 OVERALL MACHINE INFORMATION

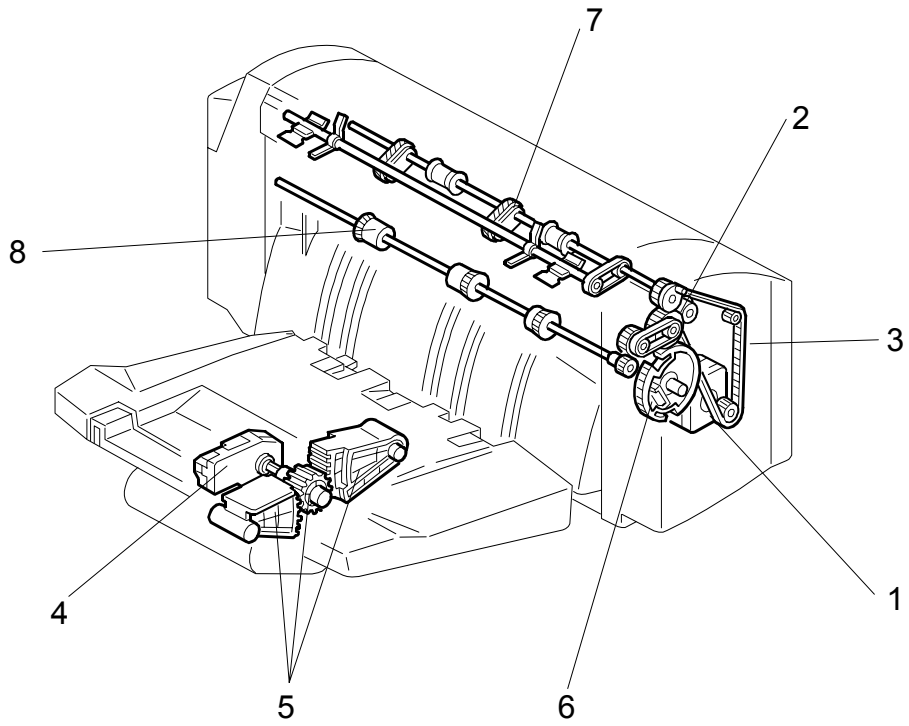
2.1.1 COMPONENT LAYOUT

Mechanical Component Layout



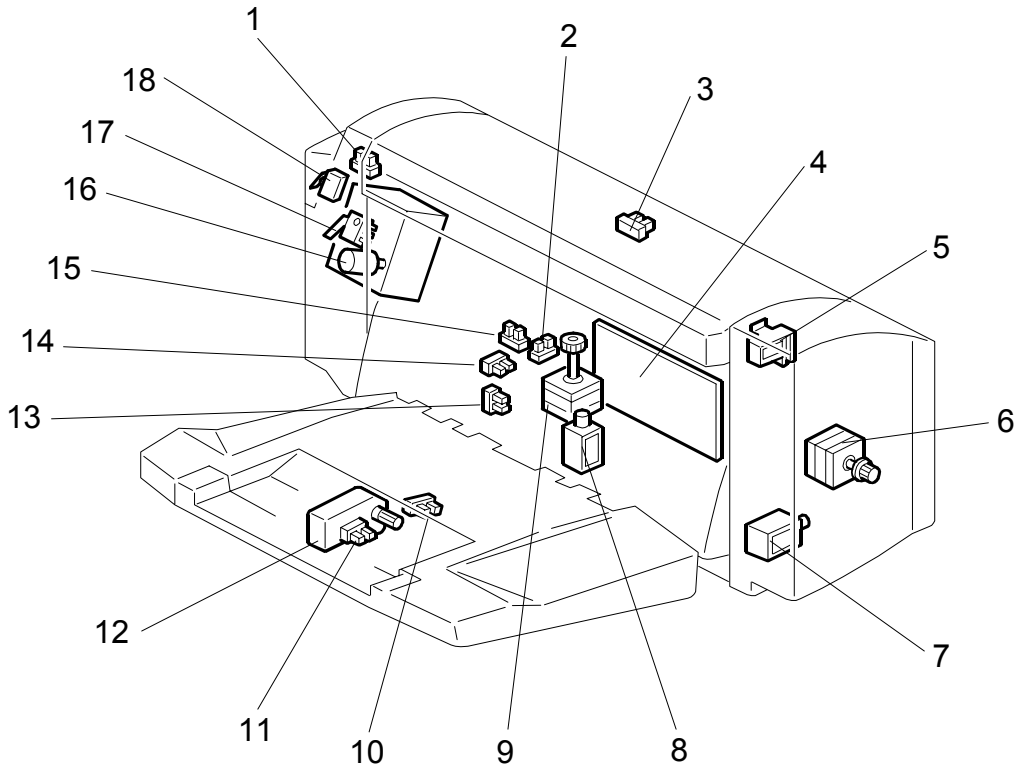
1. Output tray
2. Stack height detection lever
3. Paper exit roller
4. Jogger tray
5. Reverse roller
6. Lower entrance guide
7. Upper entrance guide
8. Paper exit unit
9. Paddle roller
10. Lower exit guide

Drive Layout



1. Main motor
2. Exit roller timing belt
3. Main motor timing belt
4. Output tray motor
5. Output tray link gears
6. Paper exit unit drive gear
7. Reverse roller
8. Paper exit roller

2.1.2 ELECTRICAL COMPONENT LAYOUT



See the next page for the component description table.

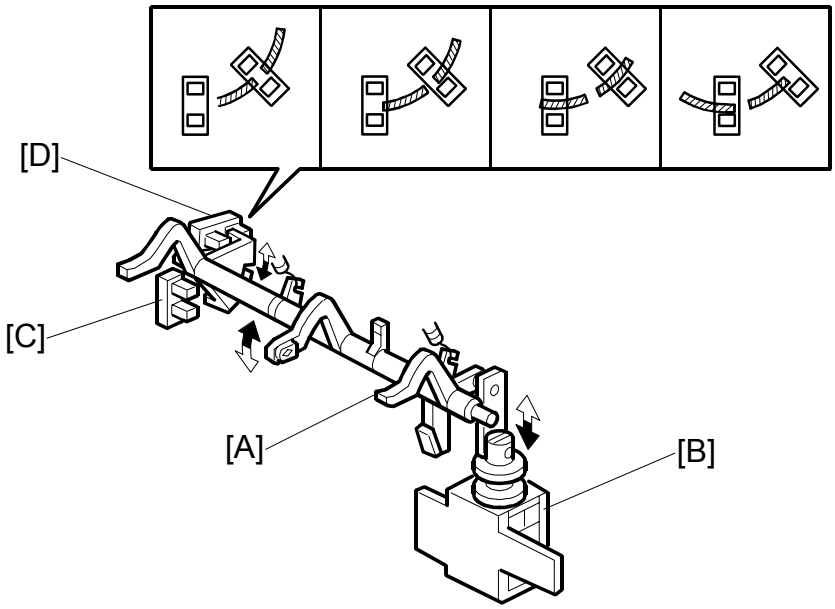
2.1.3 ELECTRICAL COMPONENT DESCRIPTIONS

Symbols	Name	Function	Index No.
Motors			
M1	Main	Drives all the rollers	6
M2	Jogger	Drives the jogger fence	9
M3	Output Tray	Drives the tray up and down	12
M4	Stapler	Drives the stapler	16
Sensors			
S1	Entrance	Detects paper at the entrance	3
S2	Exit	Detects paper at the exit	15
S3	Stack height	Detects the top of the paper stack	13
S4	Lever	Detects the position of stack height lever	14
S5	Jogger home position	Detects the position of the jogger fence	2
S6	Top cover	Detects if the top cover is open	1
S7	Tray upper limit	Detects when the tray is lifted to the upper limit	11
S8	Stack near-limit	Detects when the tray is at its lowest limit (almost full)	10
Solenoids			
SOL1	Exit unit gear	Moves the paper exit unit up and down	7
SOL2	Paddle roller	Switches paddle roller rotation on and off.	5
SOL3	Stack height lever	Moves the stack height lever into contact with the top of the stack.	8
Switches			
SW1	Paper exit unit	Switches DC for the stapler unit on and off.	18
SW2	Staple unit cover	Cuts DC when staple unit cover is open.	17
PCBs			
PCB1	Main control	Controls all finisher functions	4

2.2 DETAILED SECTION DESCRIPTIONS

2.2.1 OUTPUT TRAY MECHANISM

Stack Height Detection



Stack height detection lever [A]: Driven by stack height lever solenoid [B].

Two sensors detect the height of the stack in the output tray: the stack height [C] and lever [D] sensors.

Stack height sensor	Lever sensor	Status
Off	Off	The stack height is below the target. The output tray is then lifted to the target position.
Off	On	Target stack height position
On	On	The stack height is above the target. The output tray is then lowered to the target position.
On	Off	The stack height detection lever is at home position.

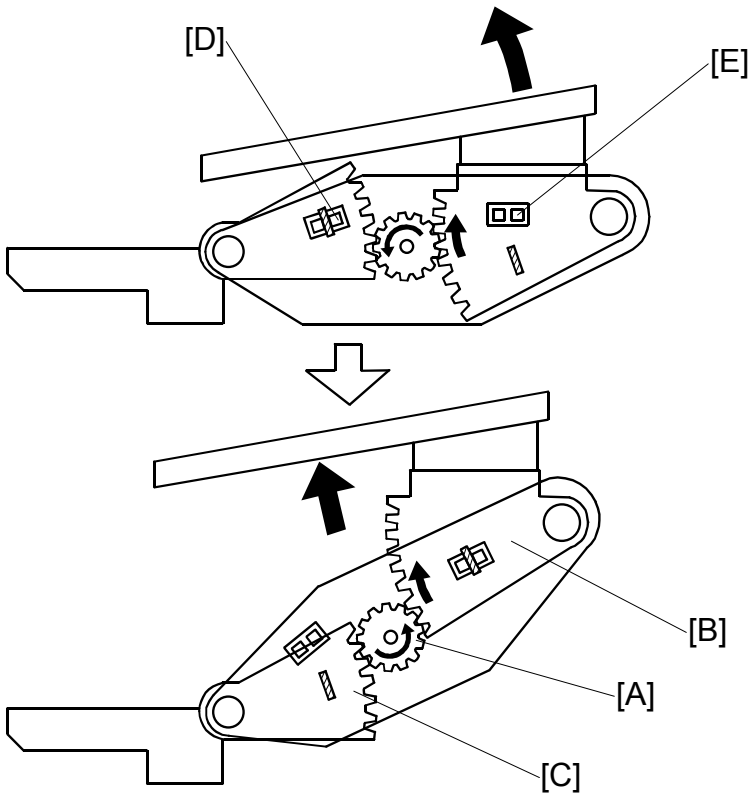
Off: Actuator not in sensor

At the start of a print job, the solenoid turns off. The stack height detection lever comes down, to detect the current stack level.

When a sheet of paper is being fed out, the solenoid turns on and the lever goes back up to home position (inside the unit).

After paper has been fed out, the solenoid turns on again, and the lever detects the level of the stack.

Output Tray Up/Down Mechanism



Overview

The output tray motor gear [A] lifts/lowers the tray if the stack height is not at the target position.

Gears [B] and [C] keep the angle of the tray constant at any tray position.

Output Tray Downward Movement

The top of the paper stack is checked after every page (or set of pages) has been fed out. If the top of the stack is higher than the target level, the output tray motor moves the tray down.

When the stack near-limit sensor [D] detects the actuator on gear [C], a stack near-limit signal is transferred to the main frame. The tray cannot move any lower. The next time the top of the stack height is above the target level, printing stops.

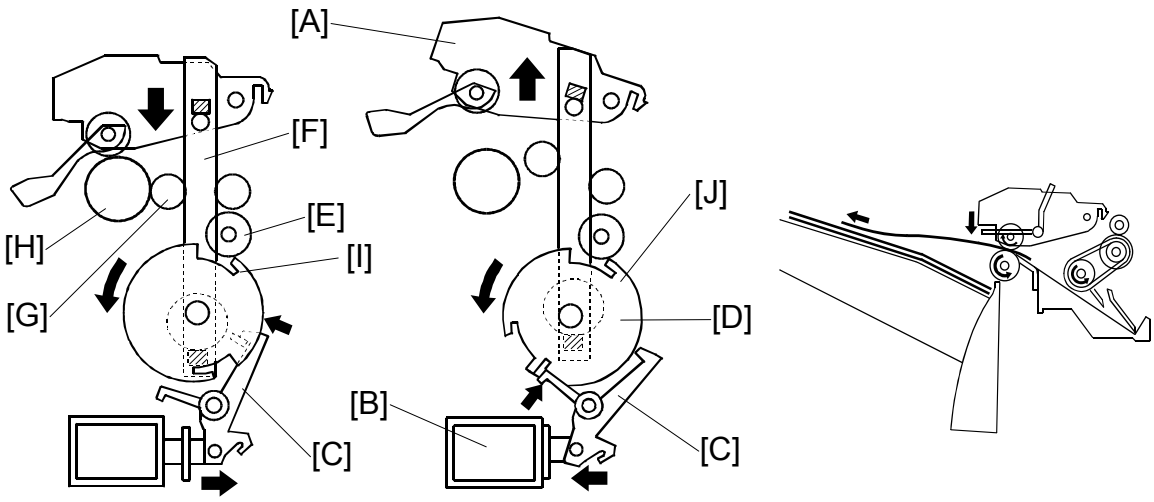
Output Tray Upward Movement

If paper is removed from the stack, the top of the stack will be lower than the target level, and the output tray motor moves the tray up.

When the tray upper limit sensor [E] detects the actuator on gear [B], the tray cannot be moved up any more, so the motor stops.

2.2.2 PAPER FEED

Straight Feed Out Mode



Before the job, the exit unit [A] is up, and the exit unit gear solenoid [B] is on, pulling lever [C] away from the exit unit gear [D].

At the start of the job, the stack height detection lever detects the top of the stack. The tray moves up or down if the top of the stack is not at the correct level.

When the paper exit sensor in the main frame turns on, the finisher main motor starts. It drives the exit unit gear [D] through idle gear [E]. The gear pulls paper exit unit [A] down, using the paper exit link [F]. The link also moves the paper exit roller [H] up through the exit roller drive gear [G].

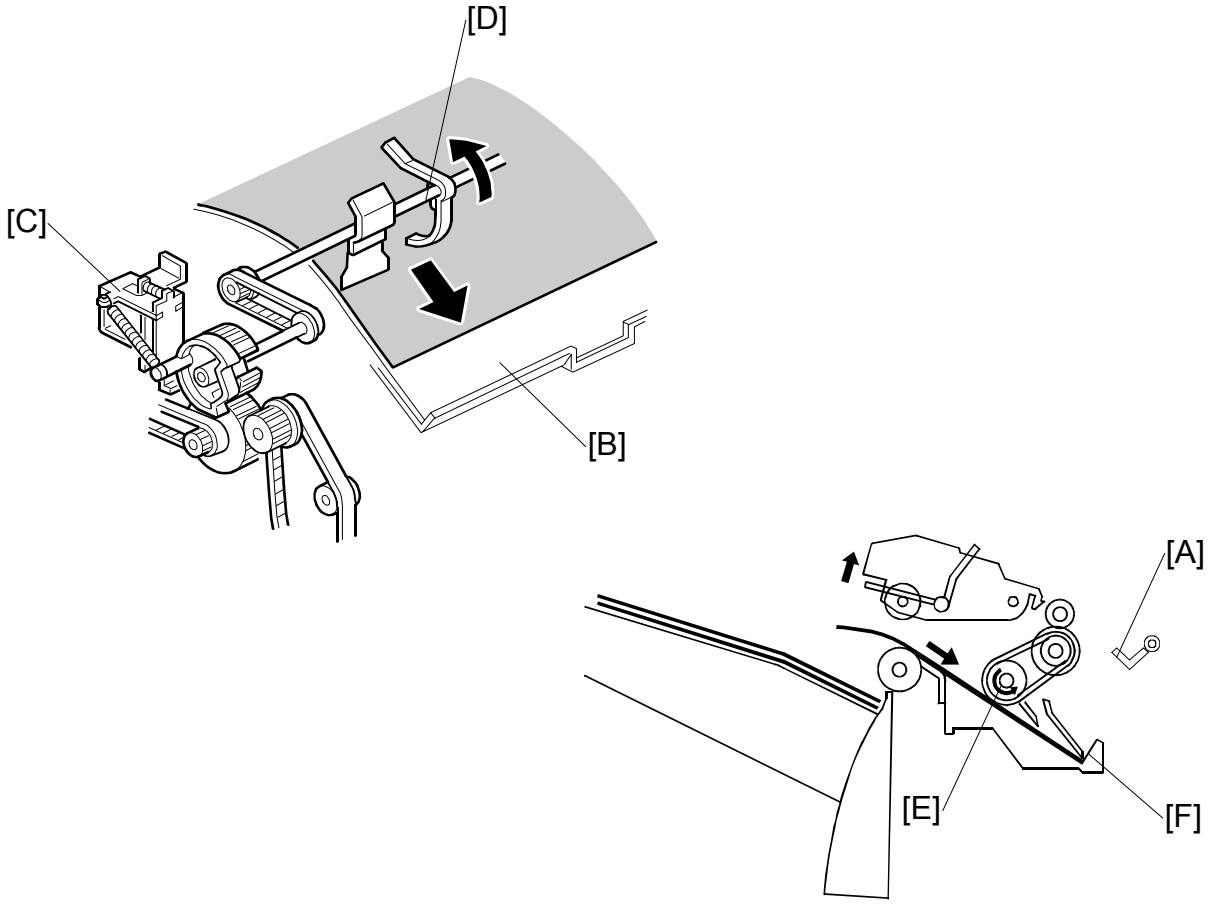
When the motor starts, the solenoid switches off and a spring pushes lever [C] into contact with the exit unit gear [D].

When a part of the exit unit gear without threads [I] faces the idle gear, the gear stops turning (see the left-hand diagram). The lever [C] catches a peg on the exit unit gear, to make sure that it stops at the correct position. The paper exit rollers [H] now contact each other and the main motor feeds out the paper.

When the last page has been fed out, the solenoid turns on to pull the lever away from the gear. The gear starts turning, to lift the exit unit to the standby position.

When the other part of the exit unit gear without threads [J] faces the idle gear, the exit unit gear stops. Then, the main motor stops and the solenoid turns off.

Shift Sorting Mode

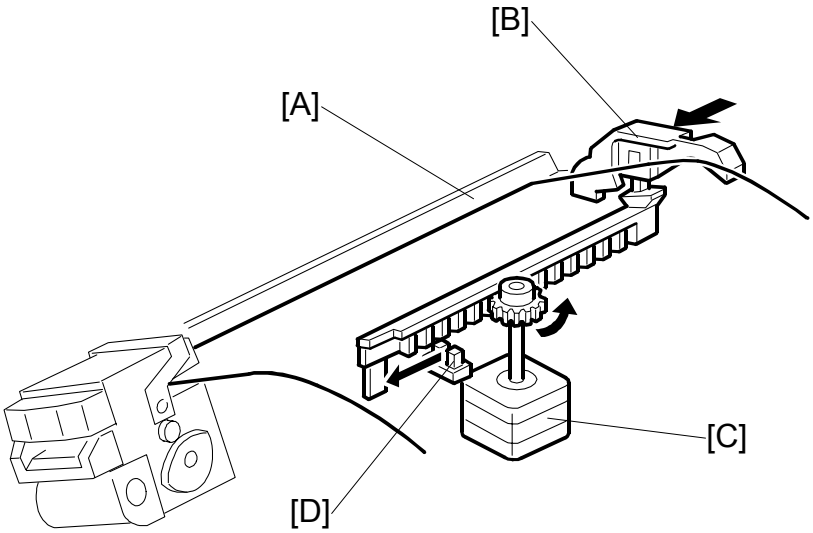


At the start of the job, and for odd numbered sets of copies, the mechanism is the same as the straight feed out mode. However, even numbered sets are fed back to the jogger tray, which shifts the sets to one side before feeding them out.

This section describes what happens for even-numbered sets (sets 2, 4, 6 etc) of the job.

A short time after the entrance sensor [A] detects the first page of the set, the paper exit unit solenoid turns on to restart the rotation of the paper exit unit gear, raising the paper exit unit to the standby position. It stays there until after the last page of the set.

The paper cannot feed out (because the feed rollers are not contacting each other), so it drops into the jogger tray [B]. The paddle roller solenoid [C] turns on and the paddle roller [D] feeds the paper to the reverse roller [E]. The reverse roller feeds the paper to the end fence [F] of the jogger tray.



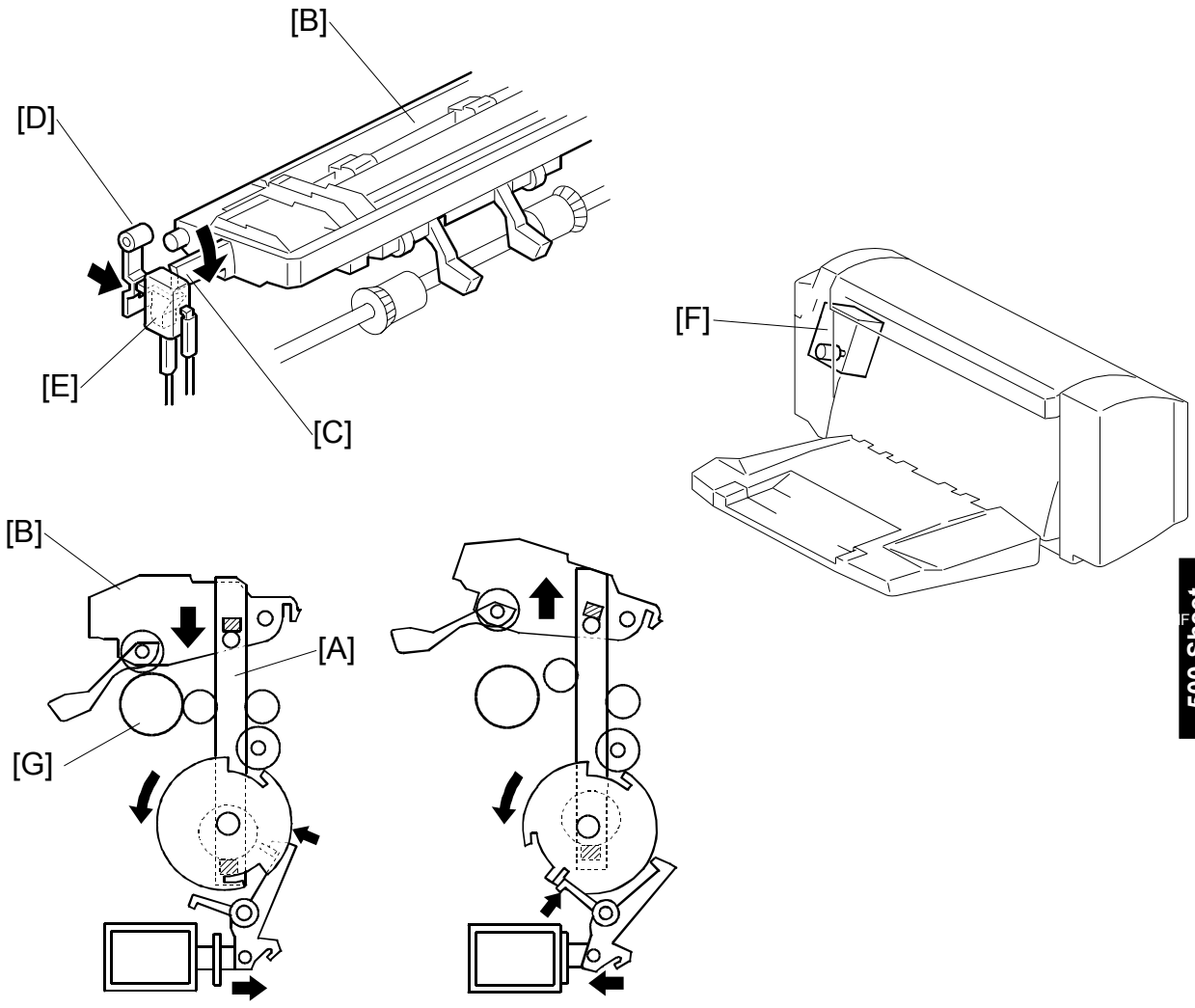
After the paper reaches the end fence [A], the jogger fence [B] shifts the paper across. The jogger motor [C] drives the jogger fence. The home position sensor [D] detects when the jogger fence has returned to home position.

When the next set begins, the paper exit unit moves down, and the machine operates the same way as straight feed out mode. At this time, the entire set in the jogger tray is fed out at the same time as the first page of the next set. However, the set coming from the jogger tray has been shifted to one side.

If the last set is an even-numbered set, the paper exit unit must be pulled down to feed the final set out of the jogger tray. Then the exit unit moves back up to the standby position.

The capacity of the jogger tray is 30 sheets. If the set contains more than 30 sheets, the machine feeds out the first 30 from the jogger tray, then continues with the rest of the set, using the jogger tray.

Stapling Mode



The stapler is attached to the jogger tray, so all sets go to the jogger tray.

After all pages of a set have entered the jogger tray and been shifted across, the paper exit link [A] pulls the paper exit unit [B] down until knob [C] on the exit unit pushes the link lever [D] for the exit unit switch [E]. This turns on the exit unit switch. When this switch is on, dc is supplied to the stapler unit [F] and the main motor is turned off.

The exit unit switch is activated when the exit unit is pulled part-way down. After stapling the set of prints, the paper exit unit is pulled down again until the unit comes in contact with the paper exit roller [G], and the stapled set is fed out.

2.2.3 JAM CONDITIONS

	Sensors	Conditions
Remaining paper detection	Entrance Exit	Either the entrance or exit sensor detects paper just after the unit is initialized.
Non-feed at the entrance	Entrance	The entrance sensor is not activated within a certain period after the paper exit sensor detects paper.
Jamming at the entrance	Entrance	The entrance sensor is not de-activated after paper is fed 1.3 times the length of the paper.
Non-feed inside the unit (Straight feed out mode only)	Exit	The exit sensor is not activated within a certain period after the entrance sensor detects paper.
Jamming at the exit	Exit	The exit sensor is not de-activated after paper is fed for a certain period.
Jogger tray	Exit	The exit sensor is de-activated during paper shifting or stapling.

2.2.4 ERROR DETECTION

	Conditions
Jogger motor error	The jogger home position sensor does not shut off after the jogger motor starts.
Jogger motor home position detection error	The jogger home position sensor does not turn on after paper shifting.
Stapler error	The stapler home position sensor (inside the stapler unit) does not turn on after stapling.
Output tray upper limit error	The tray upper limit sensor is activated.
Output tray motor error	The output tray is away from the target position for more than 10 seconds.
Stack height detection error	The stack height detection lever does not return to its home position before going to detect the stack height.

NOTE: The above errors are indicated as “Finisher jam” at the first occurrence. If the same error happens again in the next job, “finisher error” is indicated.

TECHNICAL SERVICE BULLETINS

CÓPIA NÃO CONTROLADA

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 001 **03/05/2003**

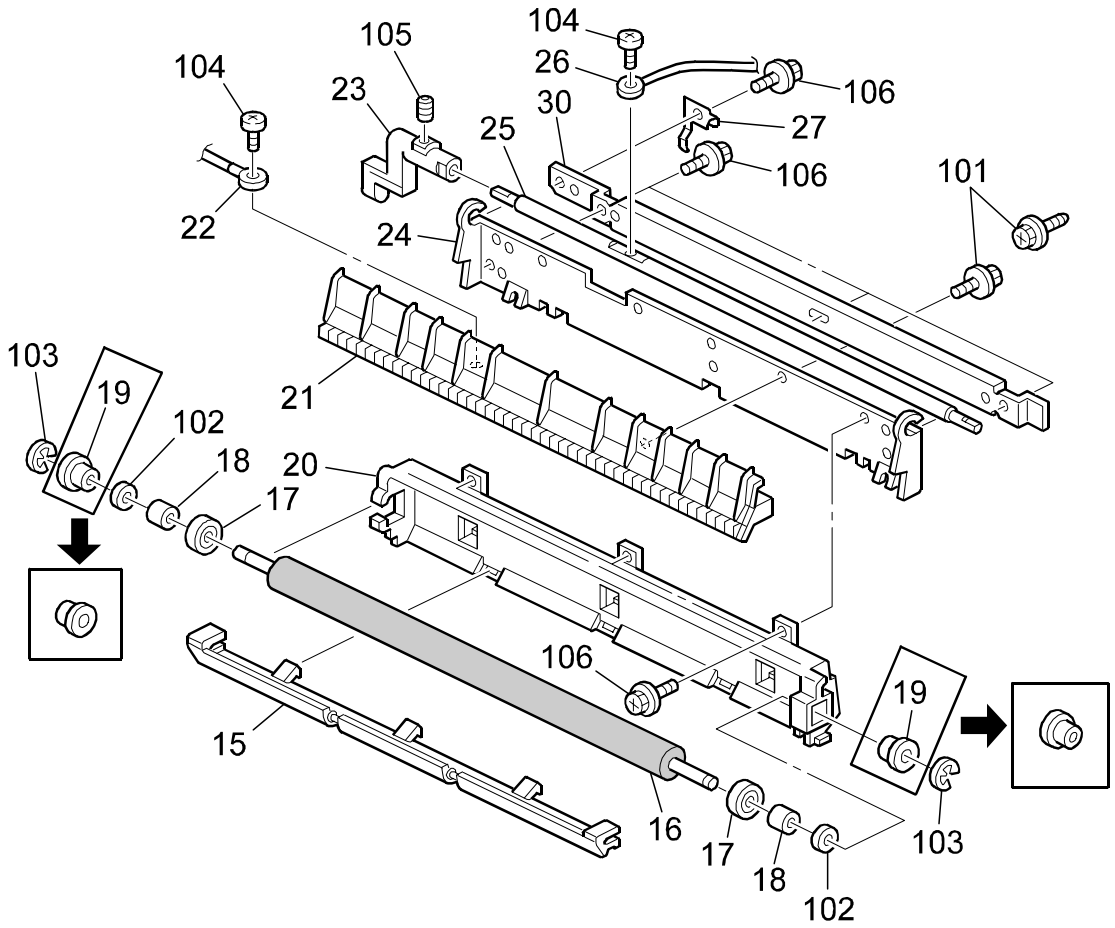
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: ILLUSTRATION CORRECTION – TRANSFER ROLLER

GENERAL:

The following illustration change is being issued for all B051/B052 Parts Catalogs.
The orientation of the bearings (Index #19; Page 28) shown below should be reversed.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 002 **03/17/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL – INSERT

GENERAL:

The Service Manual pages listed below must be replaced with the pages supplied. Each bulletin package contains 1 set of replacement pages.

PAGES:

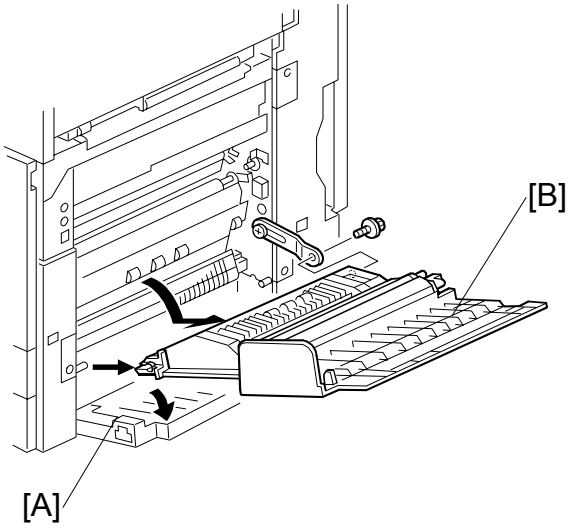
The revised areas have been highlighted by an arrow ⇒.

- 3-24 Updated Information (Transfer Roller)
- 3-43 Updated Information (EX I/O Board)
- 3-46 through 3-52 Updated Information (Electrical Components and Drive Units)

3.7 PAPER TRANSFER UNIT

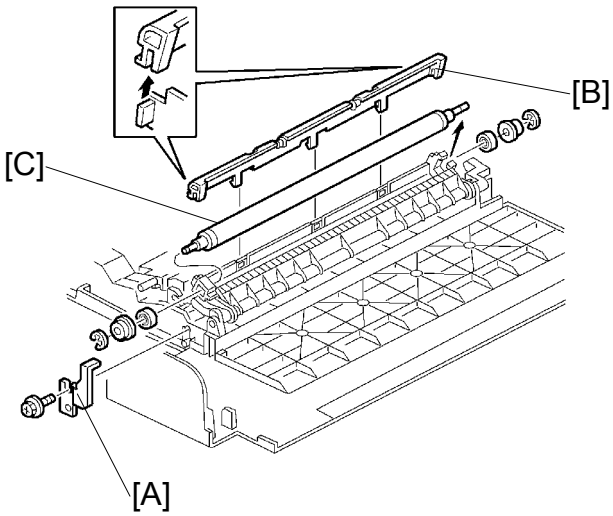
3.7.1 VERTICAL TRANSPORT UNIT

1. Open the right lower cover [A].
2. Right cover [B] (🔩 x 1)



⇒ 3.7.2 TRANSFER ROLLER

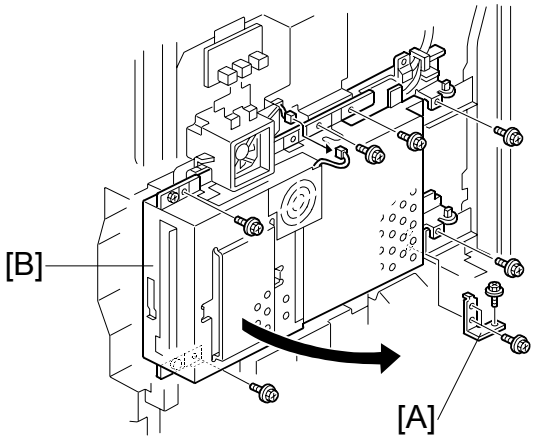
1. Brace [A] (🔩 x 1)
2. Guide [B]
   NOTE: To remove the screws, turn the roller unit on its pivot.
3. Transfer roller [C]
   (C x 2, Bushing x 2, Bearing x 2)



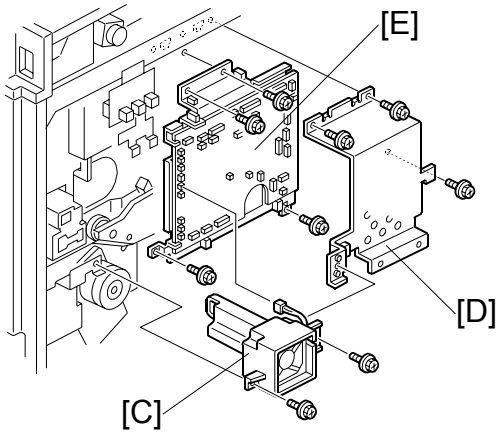
3.10 ELECTRICAL COMPONENTS

3.10.1 EXHAUST FAN AND I/O BOARD

1. Rear cover (☛ 3.4.2)
2. Bracket [A] (☞ x 3)
3. Open the controller box [B] (☞ x 6)

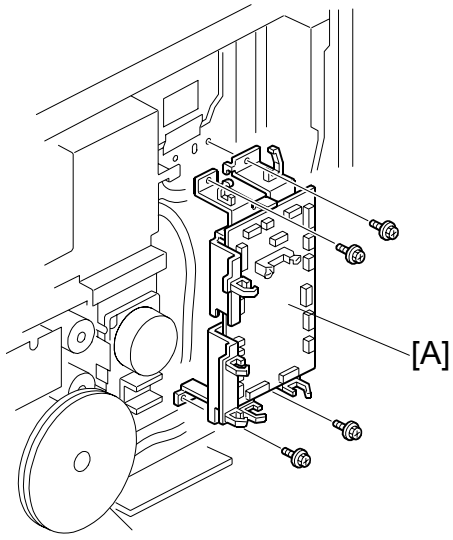


4. Exhaust fan [C] (☞ x 2)
5. I/O board cover [D] (☞ x 3)
6. I/O board [E] (☞ x 29, ☞ x 4)



3.10.2 EX I/O BOARD

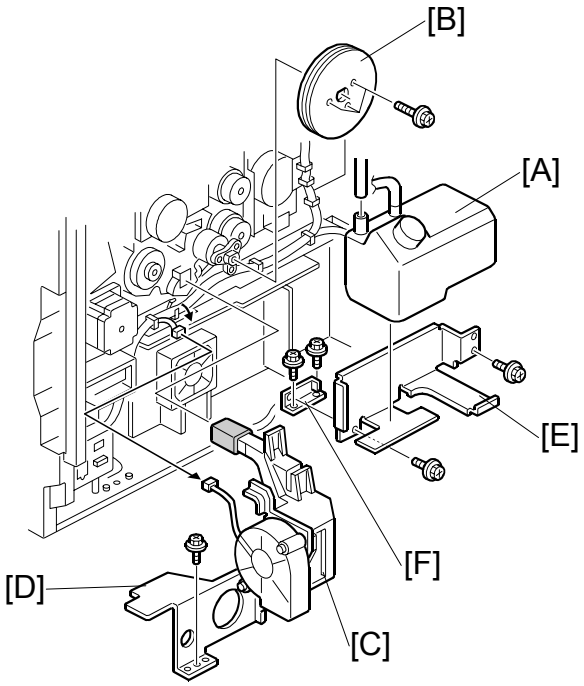
⇒ 1. Open the controller box (☛ 3.10.1)
2. Ex I/O board [A] (☞ x 14, ☞ x 4)



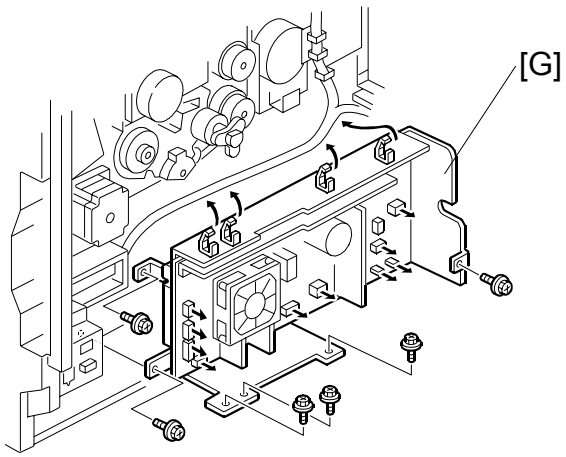
3.10.6 POWER SUPPLY UNIT

NOTE: When having removed the oil pipe from the oil tank, lift the end of the pipe and stick it to the right side of the machine with tape. See if oil does not drip from the pipe.

⇒ 1. Open the controller box (☛ 3.10.1).
2. Oil tank [A]
3. Flywheel [B] (x 3)
4. Duct [C] with bracket [D] (x 1, x 1)
5. Oil tank holder [E] (x 2)
6. Bracket [F] (x 2)



7. Power supply unit [G] (x 10, x 6)

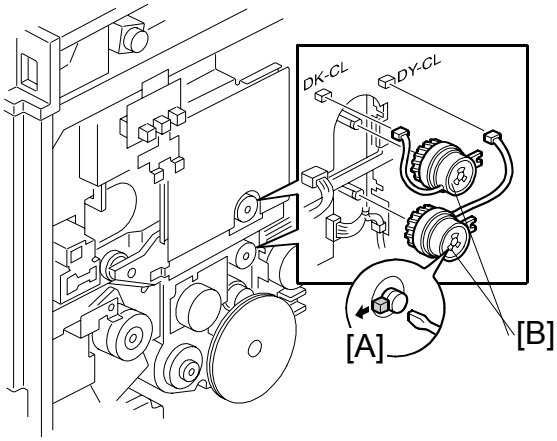


3.11 DRIVE UNITS

3.11.1 DEVELOPMENT CLUTCHES

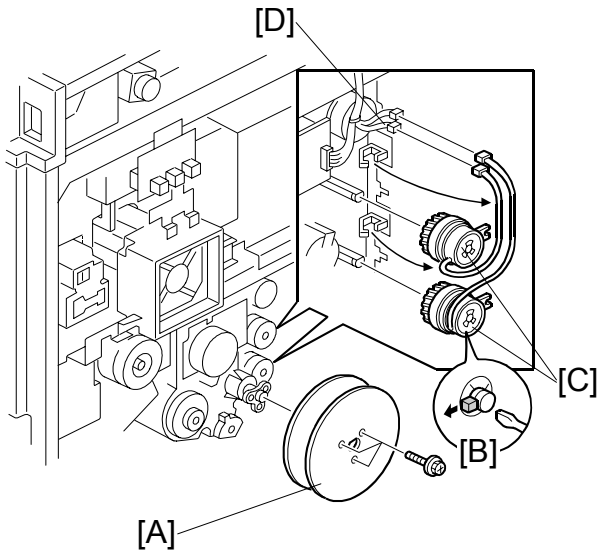
K and Y Development Units

⇒ 1. Open the controller box (☛ 3.10.1).
2. I/O board cover (☛ 3.10.1)
3. Unhook the locks [A] and pull out the clutches [B] (✋ x 1).
   NOTE: When reassembling, connect the black clutch connector to the DK-CL coupler and the yellow clutch connector to the DY-CL coupler.



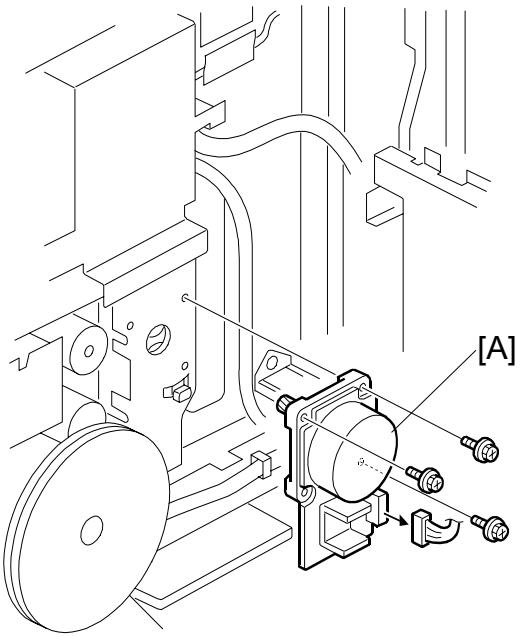
C and M Development Units

1. Flywheel [A] (🔧 x 3)
2. Unhook the locks [B] and pull out the clutches [C] (✋ x 1).
   NOTE: When reassembling, connect the cyan clutch connector to the blue coupler [D].



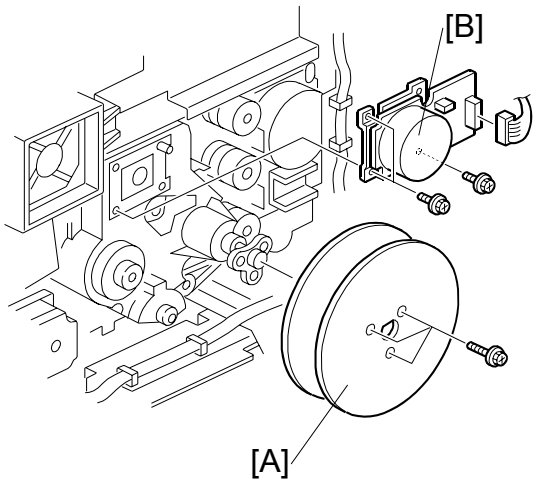
3.11.2 DEVELOPMENT MOTOR

⇒1. Open the controller box (☛ 3.10.1).
2. Remove the screws from the EX I/O board (☛ 3.10.2).
   NOTE: You need not remove the connectors.
3. Development motor [A] (x 1, x 3)



3.11.3 MAIN MOTOR

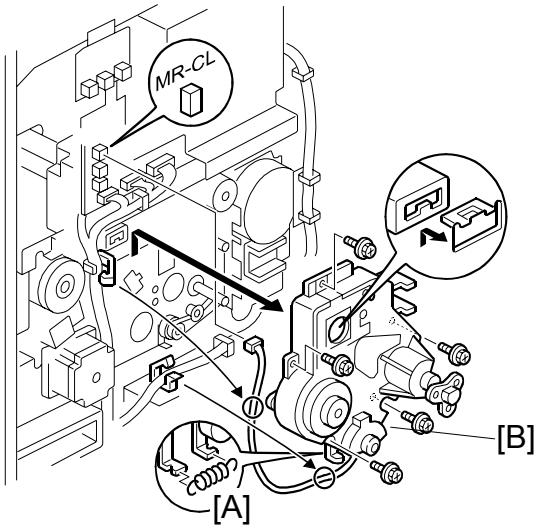
⇒1. Open the controller box (☛ 3.10.1).
2. Flywheel [A] (x 3)
3. Main motor [B] (x 1, x 3)



3.11.4 PCU GEAR BOX

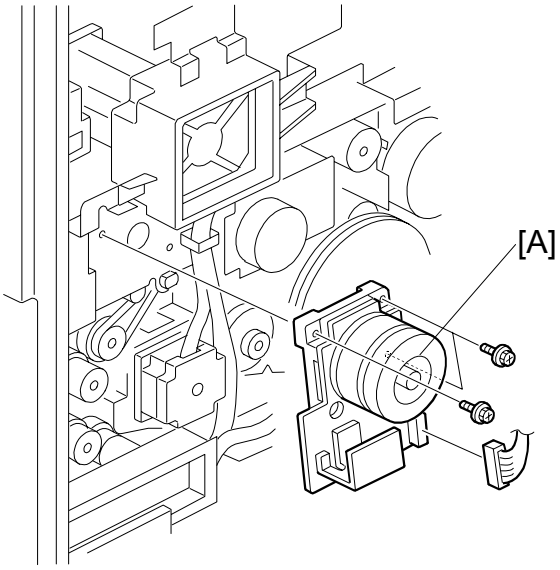
⇒ 1. Open the controller box (☛ 3.10.1).
2. Main motor (☛ 3.11.3)
3. C and M development unit clutches (☛ 3.11.1)
4. Tension spring [A]
5. PCU gear box assembly [B] (✋ x 1, 🔩 x 5)

NOTE: When reassembling, make sure the tension spring [A] is correctly installed. The spring maintains the tension of the timing belt that transfers the drive power to the gear box.



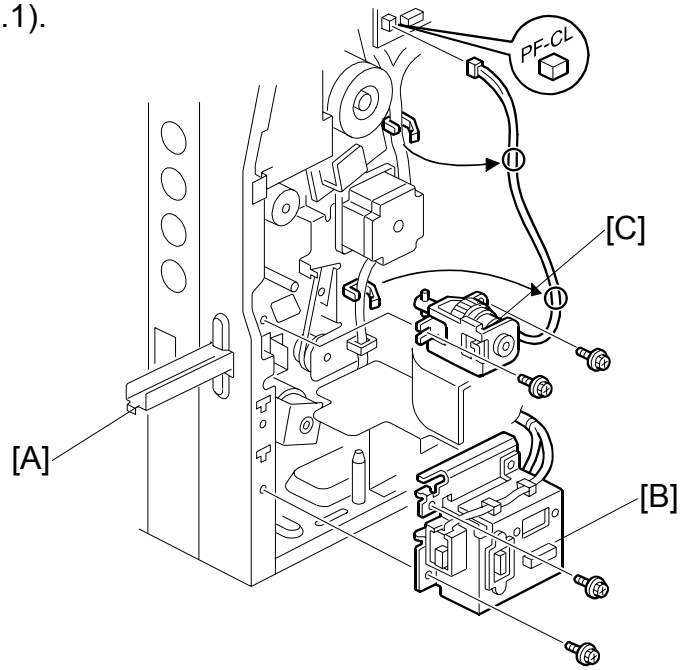
3.11.5 FUSING UNIT MOTOR

⇒ 1. Open the controller box (☛ 3.10.1).
2. Fusing unit motor [A] (✋ x 1, 🔩 x 3)



3.11.6 PAPER FEED CLUTCH 1

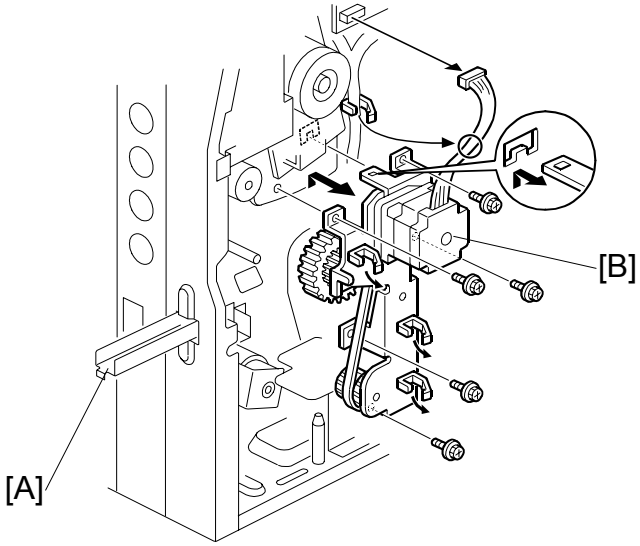
⇒ 1. Open the controller box (☛ 3.10.1).
2. Handle guard (☛ 3.9.2)
3. Pull out the handle [A].
4. Connector bracket [B] (x 2)
5. Paper feed clutch 1 [C] (x 1, x 2)



3.11.7 PAPER FEED MOTOR

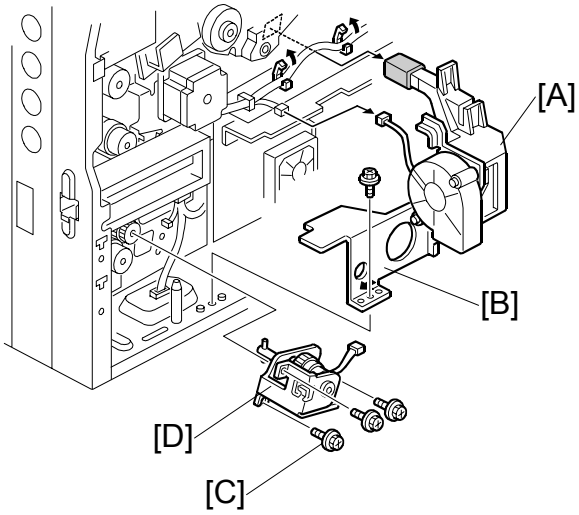
1. Rear cover (☛ 3.4.2)
⇒ 2. Open the controller box (☛ 3.10.1).
3. Handle guard (☛ 3.9.2)
4. Pull out the handle [A].
5. Connector bracket (☛ 3.11.6)
6. Paper feed motor [B] with gears (x 1, x 5)

NOTE: When reassembling, make sure the vertical transport clutch is in position.



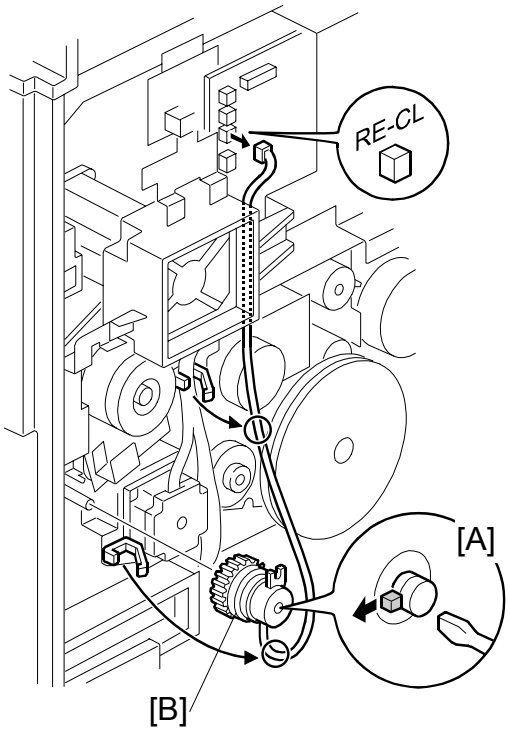
3.11.8 PAPER FEED CLUTCH 2

⇒1. Open the controller box (☛ 3.10.1).
2. Flywheel (🔩 x 3)
3. Duct [A] with bracket [B] (✋ x 1, 🔩 x 1)
4. Pull out the lower tray.
5. Loosen the lower-left screw [C] on the paper feed clutch.
6. Paper feed clutch [D] (✋ x 1, 🔩 x 2)

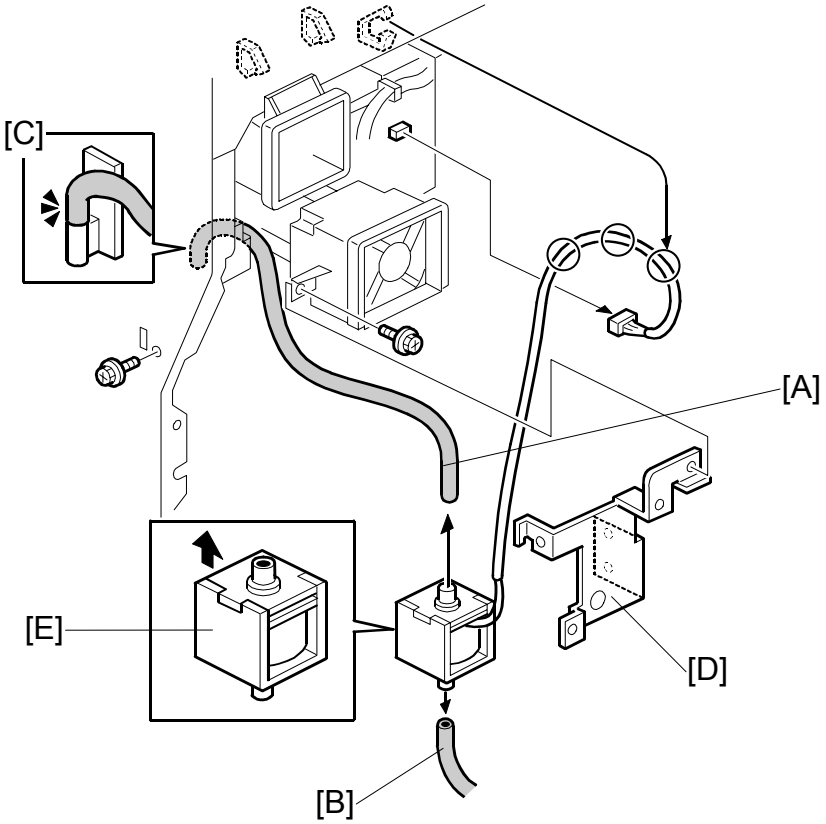


3.11.9 REGISTRATION CLUTCH

1. Loosen the screws on the paper feed clutch 1 (☛ 3.11.6).
2. Unhook the lock [A] and pull the clutch out [B] (✋ x 1).



3.11.10 OIL PUMP



⟹1. Open the control box (☛ 3.10.1)

2. Pipes [A, B]
   NOTE: 1) Keep a piece of waste cloth at hand. Oil may drip from the pipe.
   2) When reinstalling the pump, make sure to attach the upper tube correctly to the oil exit [C]. If not, oil may leak inside the machine.

3. Oil pump bracket [D] (🔩 x 3)

4. Oil pump [E] (🔩 x 2, 🖐 x 1)
   Install the correct way up. There are two tabs at the top of the pump.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 003 **03/21/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: BYPASS AND DUPLEX REGISTRATION MAY BE OFF

PAPER PATH

SYMPTOM:

Registration may be incorrect on the Bypass and Duplex units.

CAUSE:

Some machines were not adjusted at the factory and may need to be adjusted to meet specifications.

FIELD COUNTERMEASURE:

For units with the serial number range listed below, test the Duplex and Bypass units, and perform the following adjustments at installation. If adjustments are necessary for the Bypass unit, use SP 1- 001 # 9,10,11; SP 1 –002 # 1 and SP 1 – 003 # 5,6,7. If adjustments are necessary for the Duplex unit, use SP 1-001 # 12; SP 1-002 # 6, SP 1-003 #8. See B051/B052 Service Manual pages 5-4 and 5-5 for descriptions of the above SP Modes.

The following Serial Numbers may need to have the above adjustments performed:
B051: : J2527100693 - J2527200778 (1141 units)
B052: : J2627100047 - J2627200946 (1456 units)

PRODUCTION COUNTERMEASURE:

All units starting in February 2003 production with serial numbers listed below have been adjusted by the factory:
B051: : J25361xxxxx
B052: : J26361xxxxx

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 004 **03/21/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

SERVICE MANUAL

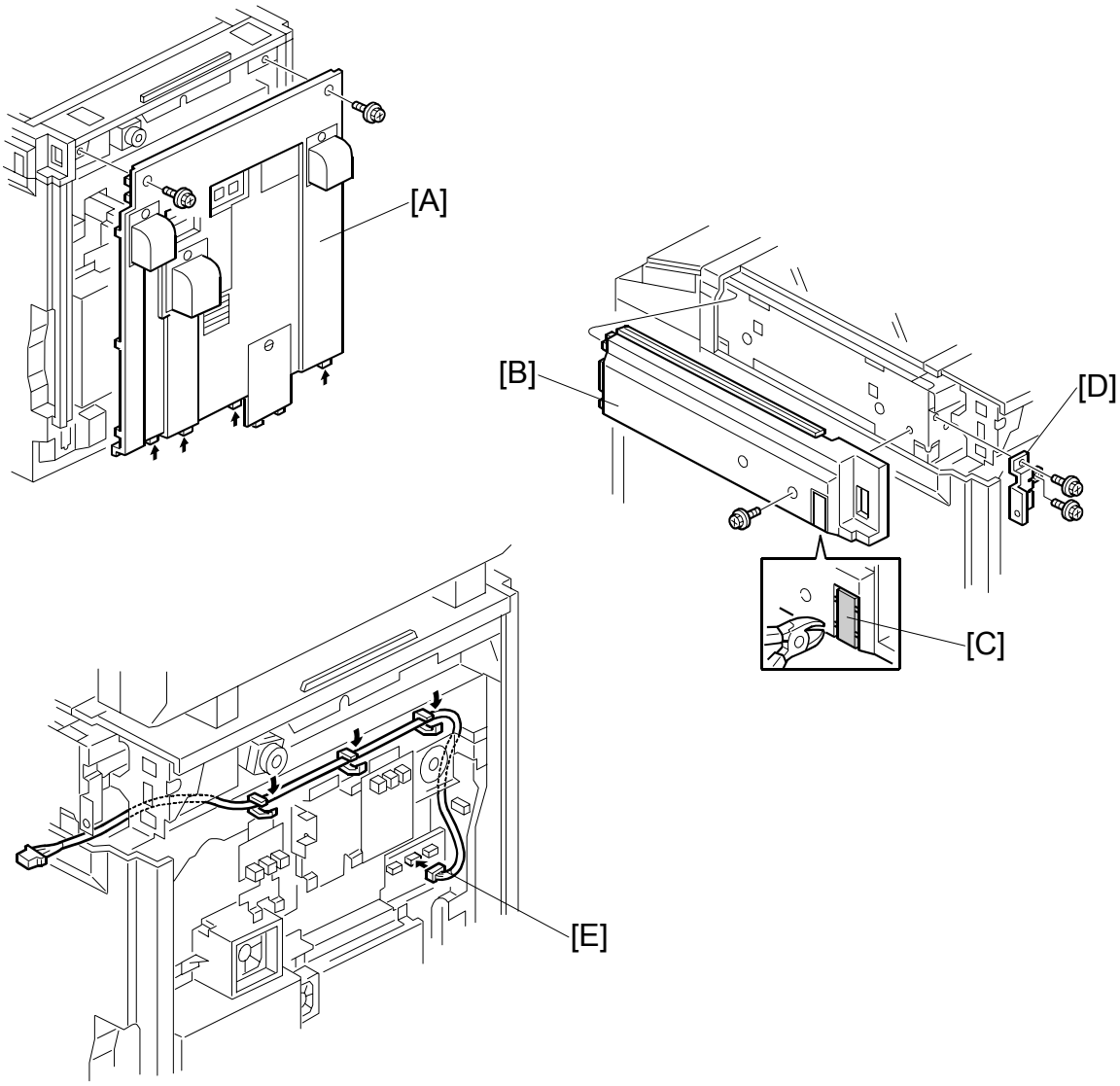
The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

- 1-51 Updated Information (Key Counter Installation)

1.16 KEY COUNTER INSTALLATION



⚠CAUTION
Unplug the main machine power cord before starting the following procedure.

1. Remove the rear cover [A] (🔩 x 2).
2. Remove the upper right cover [B] (🔩 x 1).
3. Remove the cap [C].
4. Install the bracket [D] (🔩 x 2).

⟹5. Connect the cable [E] to the EX I/O board CN 379 and route it as shown.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 005 **03/21/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: INCOMPATIBLE MAINFRAME & PRINTER/SCANNER KIT FIRMWARE

SYMPTOMS:

1. Unable to send email.
2. Multi-TIFF or PDF files sent with Scan-to-Email cannot be opened on the PC side.
3. The file can be opened on the PC side but the image is corrupted.
4. Other scanning problems

CAUSE:

The Mainframe firmware and the Printer/Scanner Kit firmware are incompatible.

SOLUTION:

When updating the firmware listed below in machines or kits produced up until January 2003, the firmware must always be updated together, **as a set,** with the versions listed in the table below. You may update individual firmware with a later version as long as the remaining firmware is minimally at the versions listed in the table below.

Firmware Type	Version	File name on TSC website
Controller	2.01.2	B051_B052_controller.exe
Fax	2.00	B051_52_BICU_Service Pack.exe
Printer	2.00	B051_52_Printer_Service Pack.exe
NIB	3.07	B051_52_Printer_Service Pack.exe
NFA	1.66	B051_52_Printer_Service Pack.exe
Scanner	2.00	B051_52_Scanner_PS3_Service Pack.exe
Delivery	2.00	B051_52_Scanner_PS3_Service Pack.exe
BICU	1.233	B051_52_BICU_Service Pack.exe

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 006 **03/25/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: IMAGE SKEW

SYMPTOM:

Image skew when feeding from mainframe Trays 1 and 2.

CAUSE:

The operator does not set the side fence flush against the paper stack.

SOLUTION:

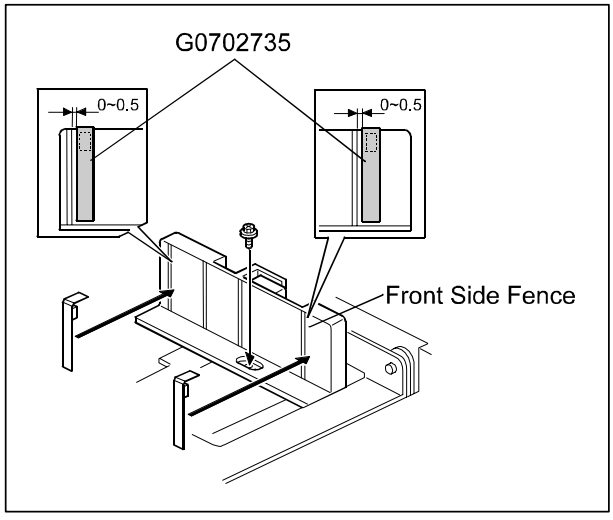
Production Countermeasure:

The two sheets of Mylar have been added to the side fence from the September production.
For the field machines, please refer to the procedure below.

NOTE: ***The following field machines require the Mylar to be attached:***
August 2002 production serial numbers are as follows.
J2526800001 to J2526800023
J2626800001 to J2626800042

Procedure:

1. Clean the attachment surface on the Front Side Fence (AF016097) with alcohol.
2. Attach the Mylar (G0702735) to the Front Side Fence as shown in the illustration.



Field Countermeasure:

1. Advise customers that the side fence should be set flush against the loaded paper stack, or in cases where the customer gives approval; secure the side fences in place by two screws.

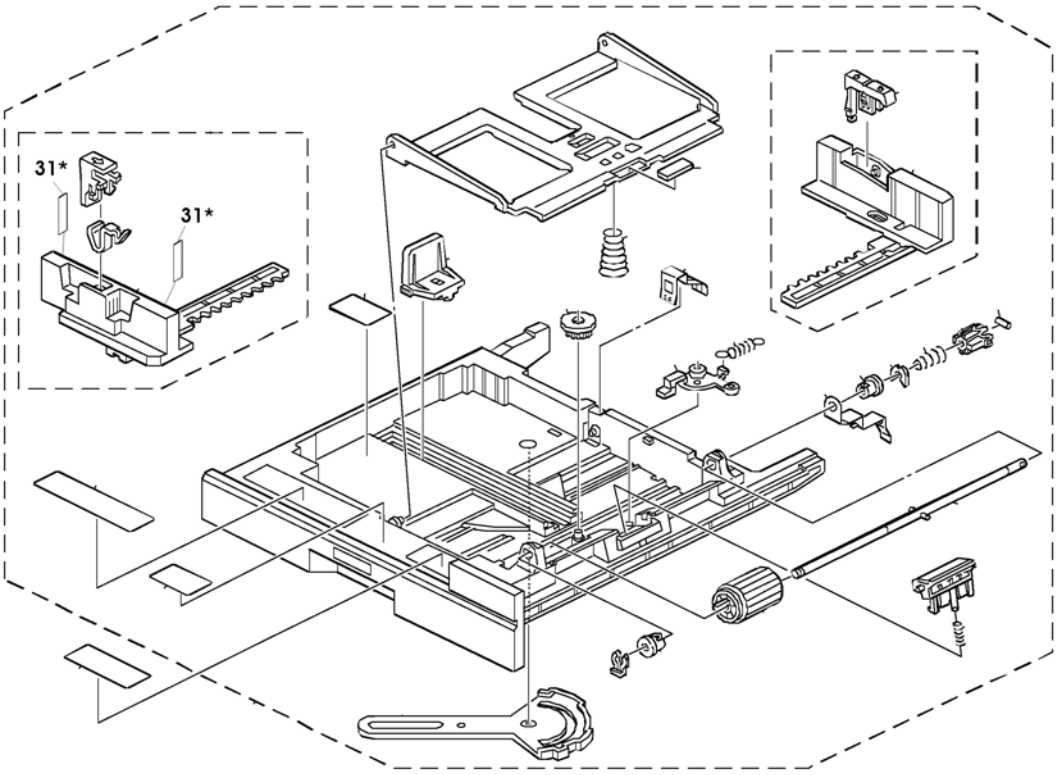
NOTE: *The level of skew will increase twofold if there is a 1mm gap between the paper and side fence.*

2. As a supplement, increasing the paper buckle in SP1-003 can further minimize the level of skew. Try adjusting this value several times while checking the level of skew on the printouts, keeping in mind that a higher value tends to cause Z-folds and a lower value tends to cause paper jams.

NOTE: *It is recommended after the mylars are installed that the paper buckle adjustment is set back to normal.*

GENERAL:

The following part update is being issued for all B051/B052 Parts Catalogs.



				REFERENCE	
NEW PART NUMBER	**DESCRIPTION**		**QTY**	**PAGE**	**ITEM**
G0702735	2/Tray	Guide Plate - Side Fence	2/Tray	21/23	31*

*** DENOTES NEW ITEM NUMBER**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 007 **03/25/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: CHARGE CORONA ASSEMBLY/PHOTOCONDUCTOR UNIT

GENERAL:

The following parts updates are being issued for all B051/B052 Parts Catalogs.

Charge Corona Assembly:

The following changes have been applied to the production line to ensure even image density:

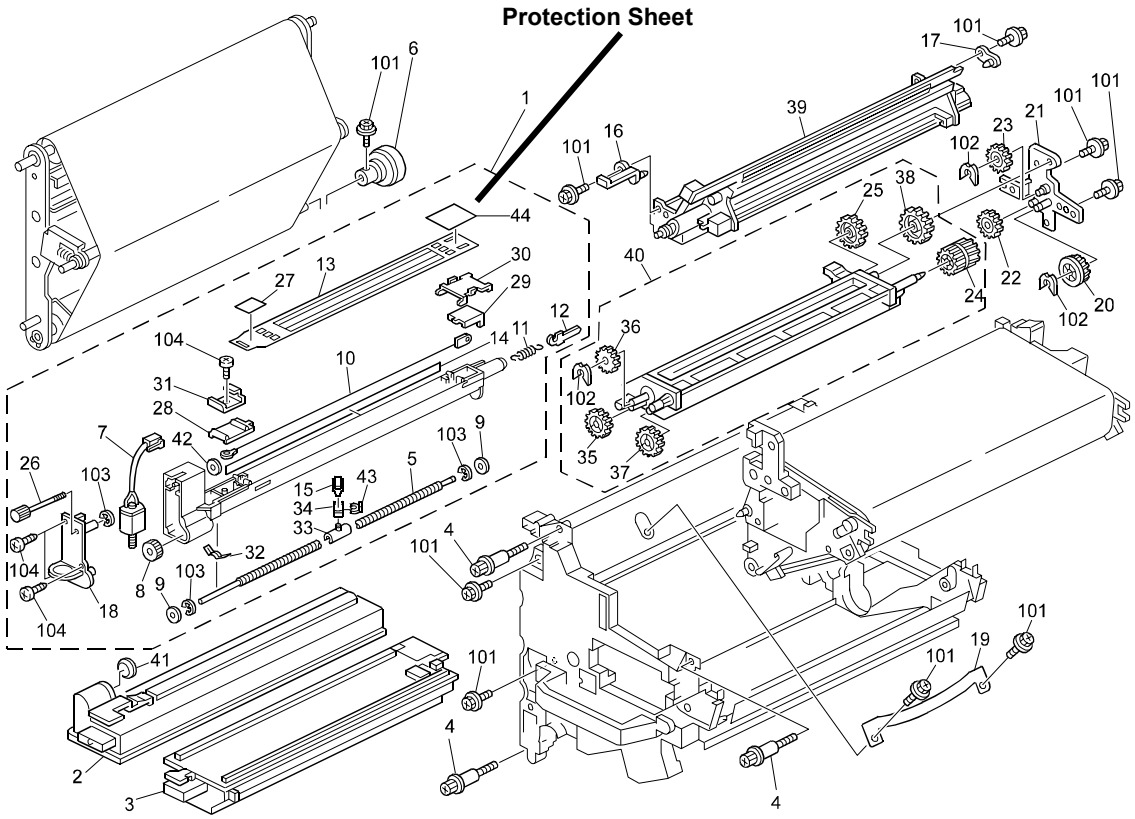
- The charge corona wire has been changed from a gold-plated to a platinum-plated wire.
- The material of the charge corona seal has been changed to reduce the friction between the seal and OPC belt.
- To reduce the possibility of damaging the OPC belt when the charge corona unit is removed from and installed into the PCU, a protection sheet has been added to the rear end of the charge corona grid (see Fig.1)

Photoconductor Unit:

To ensure the roller for the image transfer belt (PCU) unit does not damage the belt and cause vertical lines or uneven image density, the surface of the roller has been smoothed out.

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.		



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0512210	B0519100	Photo Conductor Unit	1 - 1	1	33	*
B0512151	B0512160	Charge Corona Assembly	1 - 1	1	33	1
G0702178	G0702110	Charge Corona Wire	1 - 1	1	33	10
G0702177	G0702142	Seal – Charge Corona	1 - 1	1	33	14
---	G0702116	Protection Sheet	0 - 1		33	44*

*** DENOTES NEW ITEM NUMBER**

UNITS AFFECTED:

The serial number cut-in information was not available at time of this publication.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 008 **03/31/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

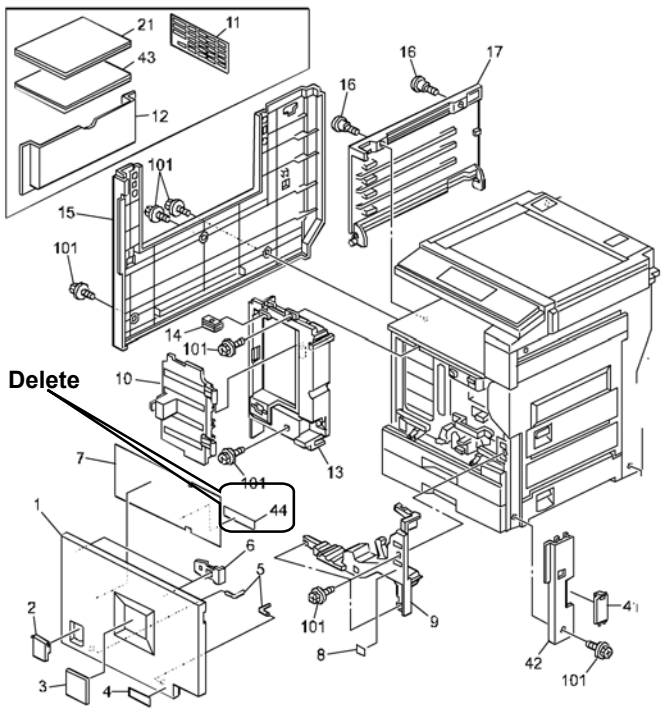
The following parts updates are being issued for all B051/B052 Parts Catalogs.

● UPDATE 1:

Page 8 & 9:

- Delete Index #44 Operate Mask Decal.
- Updated Part Number Index #7 Operate Sheet.

1.EXTERIOR 1 (B051/B052)

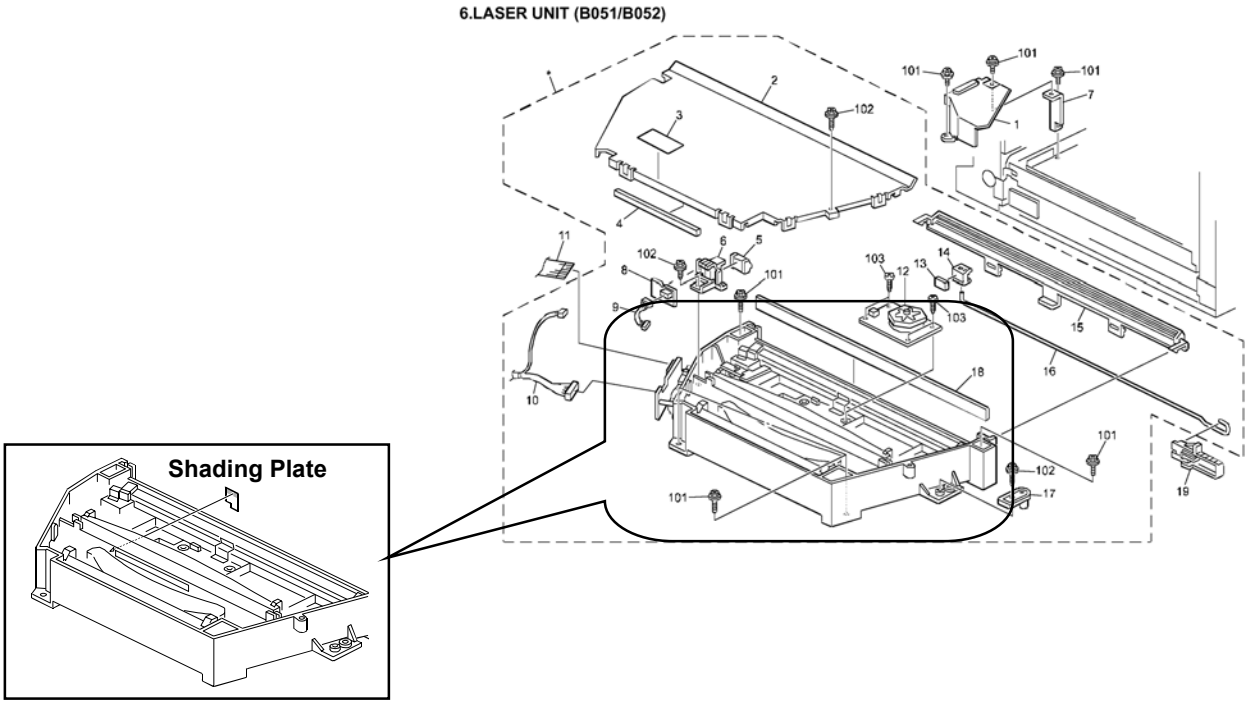


					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0511392	B0511393	Operation Sheet	1-1	--	9	7
B0511399		Operation Mask Decal **(DELETED)**	1-0	--	9	44

- **UPDATE 2:**

Page 18 & 19:

- To improve image quality, a shading plate has been added for filtering out excessive light.



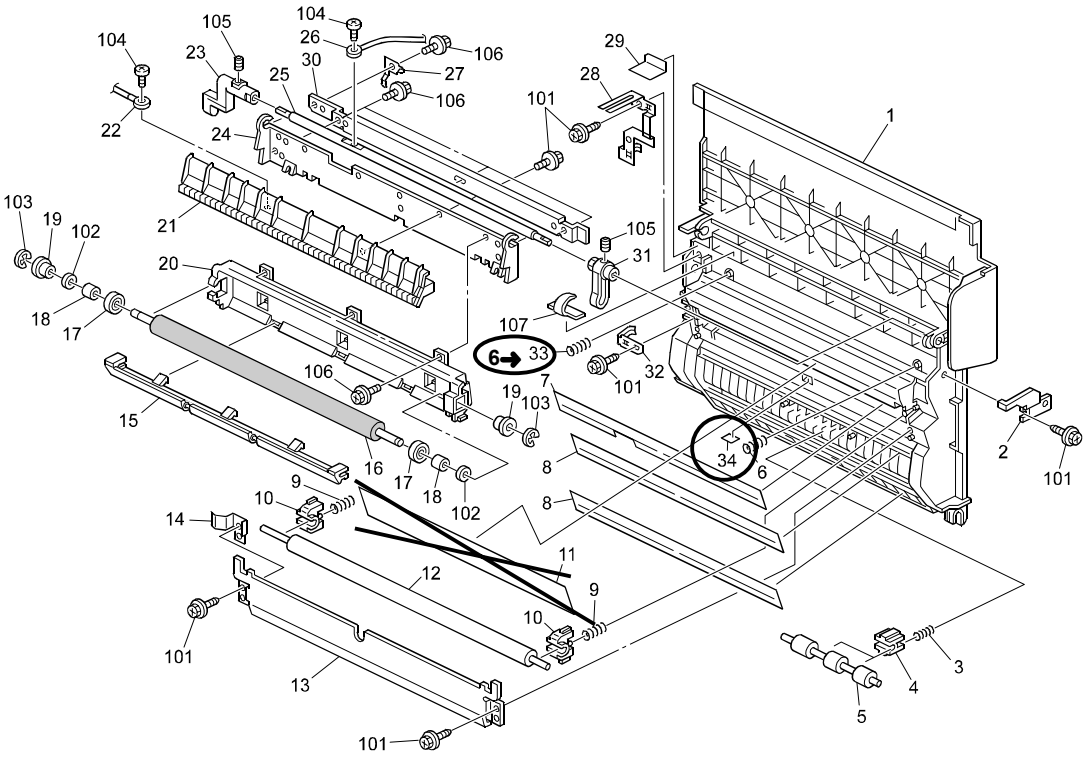
			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
B0511969	Shielding Plate	1	19	20*

*** DENOTES NEW ITEM NUMBER**

- **UPDATE 3:**

Page 28 & 29:

- Updated Part Number for Index # 16 & 21
- Add Index # 34 Grid Shading Plate
- Reduce the quantity for index #6 from 2 to 1
- Index # 6 changes to index # 33 and add index # 33 Transfer Unit Spring – 16N
- Delete Index # 11 Vertical Transport Sheet.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
G0706200	B0516200	Transfer Roller	1-1	--	29	16
G0706231	B0516231	Transport Guide W/T Discharge Pins	1-1	--	29	21
AA063876		Transfer Unit Spring – 10N	2-1	--	29	6
	AA063896	Transfer Unit Spring – 16N	0-1	--	29	33
G0706229		Vertical Transport Sheet (DELETED)	1-0	--	29	11
	G0702136	Grid Shading Plate	0-1	--	29	34

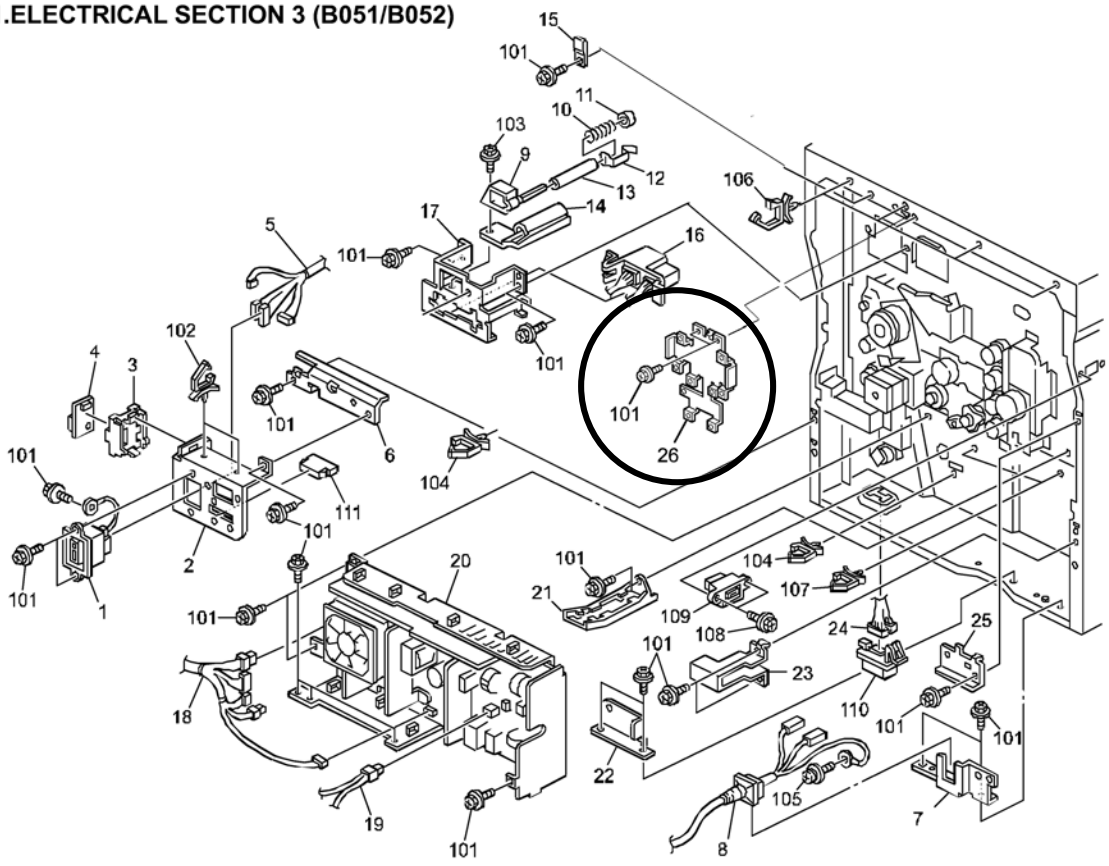
*** DENOTES NEW ITEM NUMBER**

- **UPDATE 3:**

Page 48 & 49:

- Updated Part Numbers for Index # 20 Power Supply Unit (120v & 22v units.)
- Add Index # 26 CSS Bracket

21.ELECTRICAL SECTION 3 (B051/B052)



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
AZ240074	AZ240088	Power Supply Unit – 120V	1-1	--	49	20
AZ240076	AZ240090	Power Supply Unit – 230V	1-1	--	49	20
	B0515873	CSS Bracket	0-1	--	49	26*

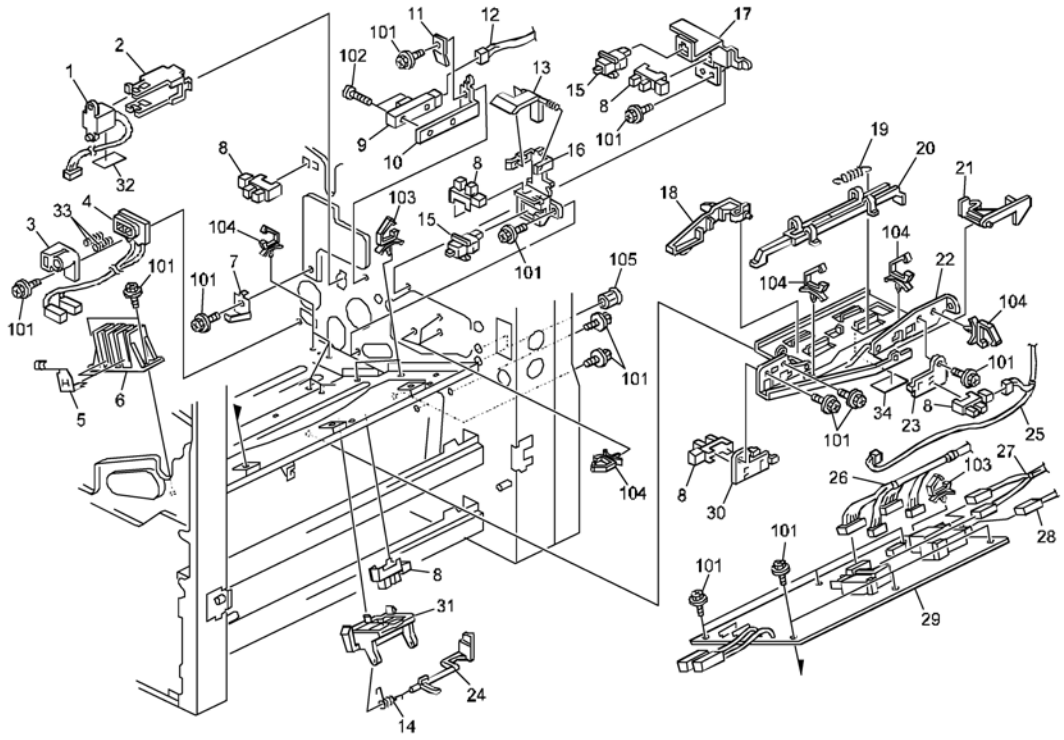
*** DENOTES NEW ITEM NUMBER**

- **UPDATE 3:**

Page 52 & 53:

- Updated Part Numbers for Index # 29 Power Pack BCTCLD; The power packs for each models B051and B052, were previously separate parts, the power pack are standardized to AZ320117 and can be used in both machines. Please delete one of the index numbers in your parts catalog.
- Updated Part Number for Index #10 Positioning Sensor Bracket

23.ELECTRICAL SECTION 5 (B051/B052)



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
G0706160	B0516160	Positioning Sensor Bracket	1-1	--	53	10
AZ320113	AZ320117	Power Pack – BCTCLD (B051/B052)	1-1	--	53	29
AZ320114	AZ320117	Power Pack – BCTCLD (B051/B052)	1-0	--	53	29

- **UPDATE 3:**

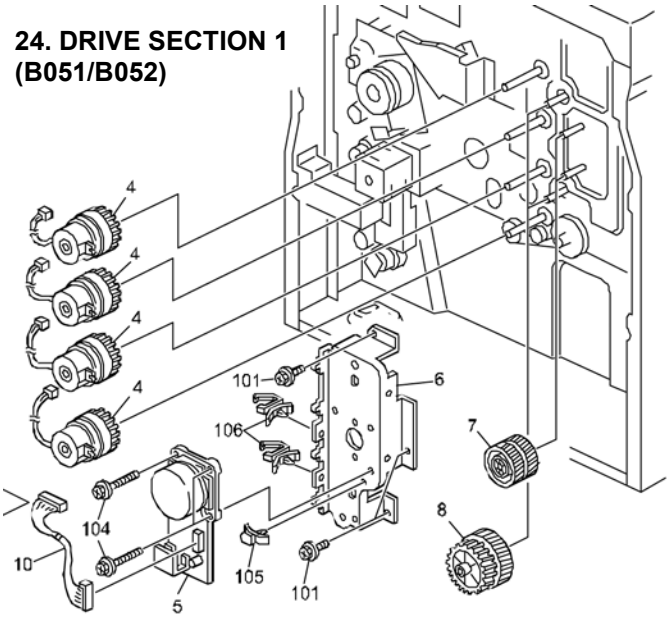
Page 54 & 55:

- Updated Part Number for Index #106 Harness Clamp

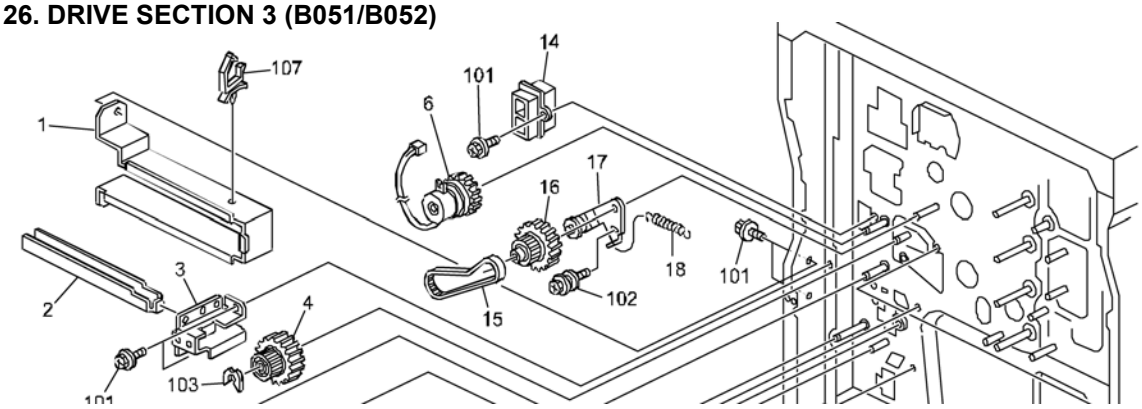
Page 58 & 59:

- Updated Part Number for Index #107 Harness Clamp

24. DRIVE SECTION 1 (B051/B052)



26. DRIVE SECTION 3 (B051/B052)



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
11050487	11050516	Harness Clamp	2-2	--	55	106
11050488	11050563	Clamp – LWSS 2N	1-1	--	59	107

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 009 **03/31/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

SERVICE MANUAL

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

- 5-5 through 5-7 Updated Information (Service Program Mode)
- 5-10 through 5-15 Updated Information (Service Program Mode)
- 5-17 through 5-18 Updated Information (Service Program Mode)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
003*	4	Tray: Small Size	[–4 ~ 6 / **0** / 1 mm/step] *Small Size includes LT long edge feed and smaller.*
	5	By-pass: Plain	[–4 ~ 6 / **0** / 1 mm/step]
	6	By-pass: Thick	[–4 ~ 6 / **–2** / 1 mm/step]
	7	By-pass: OHP	[–4 ~ 6 / **–2** / 1 mm/step]
	8	Duplex	[–4 ~ 6 / **0** / 1 mm/step]
105*	Fusing Temperature		
	1	Heating: Idling	Sets the temperature at which the heating roller starts idling. [100 ~ 180 / **145** / 1°C/step]
	2	Heating: Ready	Sets the temperature at which the heating roller enters the print ready condition. [100 ~ 180 / **155** / 1°C/step]
	3	Heating: Standby	Sets the heating roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Pressure roller: SP1-105-16 [100 ~ 180 / **160** / 1°C/step]
	4	Heating: Plain/1 Color	Sets the heating roller temperature for thin paper in single-color mode. [120 ~ 190 / **155** / 1°C/step]
	5	Heating: Plain/Full Color	Sets the heating roller temperature for thin paper in full-color mode. [120 ~ 190 / **160** / 1°C/step]
	6	Heating: Middle Thick/1 Color	Sets the heating roller temperature for normal plain paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	7	Heating: Middle Thick/Full Color	Sets the heating roller temperature for normal plain paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	8	Heating: Thick/1 Color	Sets the heating roller temperature for thick paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	9	Heating: Thick/Full Color	Sets the heating roller temperature for thick paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	10	Heating: OHP/1 Color	Sets the heating roller temperature for OHP sheets in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	11	Heating: OHP/Full Color	Sets the heating roller temperature for the OHP sheets in full-color mode. [120 ~ 190 / **175** / 1°C/step]
	12	Heating: Duplex/1 Color	Sets the heating roller temperature for duplex printing (both sides) in single-color mode. [120 ~ 190 / **150** / 1°C/step]

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
105*	13	Heating: Duplex/Full Color	Sets the heating roller temperature for duplex printing (both sides) in full-color mode. [120 ~ 190 / **155** / 1°C/step]
	14	Pressure: Idling	Sets the temperature at which the pressure roller starts idling. [30 ~ 100 / **10** / 1°C/step]
	15	Pressure: Ready	Sets the temperature at which the pressure roller becomes ready for printing. [60 ~ 150 / **65** / 1°C/step]
	16	Pressure: Standby	Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3 [60 ~ 150 / **115** / 1°C/step]
	27	Heating: OFFSET +	Sets the heating roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **5** / 1°C/step]
	28	Pressure: OFFSET +	Sets the pressure roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **0** / 1°C/step]
	29	Heat: OFFSET –	Sets the heating roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **5** / 1°C/step]
	30	Pressure: OFFSET –	Sets the pressure roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **0** / 1°C/step]
106	Temperature Display		
	1	Heating Roller	Displays the current temperature of the heating and pressure rollers.
	2	Pressure Roller	
109	Fusing Nip		
	1	Execute Mode	Checks the fusing nip width using an OHP sheet. • *The OHP sheet stops in the fusing unit for the specified time (☛ SP1-109-2).* • *The nip width should be 9 ± 0.5 mm at front and rear. If this requirement is not met, change the fusing unit.*
	2	Stop Duration	Adjusts the stoppage time for the OHP sheet in the fusing unit (☛ SP1-109-1). [0 ~ 100 / **10** / 1 s/step]
905	Pressure Roller Type		
	1	Pressure Roller Type	0: 2.1 mm Type (New)
			1: 1.5 mm Type (Old)
920	Exit Full Timer		
	1	Exit Full Timer	[10 ~ 60 / **10** / 1 s/step] **DFU**

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
930	Fusing Oil Add		
	1	Fusing oil add	Forces the oil pump to supply silicone oil up from the oil tank to the tank in the oil supply unit. If the oil end sensor detects oil in the oil supply unit, this SP will not start the pump.
940	LEF Priority–Bypass		
	1	LEF Priority–Bypass	Selects the default paper feed direction of the by-pass tray. [0 ~ 1 / **0** / 1 /step] • *0: SEF* • *1: LEF* *The machine detects only the width, but detects the size based on this information.* *If the setting is 0 (SEF): When A4 LEF is placed in the bypass tray, the machine detects this as A3. A4 SEF will be detected as A4.* *If the setting is 1 (LEF): The machine will detect A4LEF as A4. However, if A4 SEF is placed in the bypass tray, it will be detected as A5.*

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
305*	Transfer Belt Start		
	1	Bias On Off	Sets the bias for the image transfer start to on or off. [0 ~ 1 / 1 / 1/step] **DFU** • *0: Bias off* • *1: Bias on*
306	Trans Belt First		
	1	1 Color	Adds the transfer current to the first page to improve insufficient transfer of the whole solid image. [3.0 ~ 14.0 / **9.0** / 1/step]
	2	2/3/4 Colors	[3.0 ~ 14.0 / **13.0** / 1/step]
⇒ 310*	1Paper Trans_LL1 (Paper Transfer LL1) LL1: Absolute humidity AH (g/m^3) is 0 < AH ≤ 3.5 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL1' humidity range (Note: The current for the LL1 range is also affected by SP2-903.) Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. [0 ~ 70.0 / **25.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
	16	Normla/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **12.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **20.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
310*	29	Thick/2nd/129-209	[0 ~ 70.0 / **24.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
311*	Paper Trans_LL2 (Paper Transfer LL2) LL2: Absolute humidity AH (g/m^3) is $3.5 < AH \leq 8.0$ The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **27.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **13.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **19.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 312*	Paper Trans_NN1 (Paper Transfer NN1) NN1: Absolute humidity AH (g/m^3) is 8.0 < AH ≤ 14 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN1' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **28.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]
⇒ 313*	Paper Trans_NN2 (Paper Transfer NN2) NN2: Absolute humidity AH (g/m^3) is 14 < AH ≤ 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **29.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 313*	5	Normal/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
⇒ 314*	Paper Trans_HH (Paper Transfer HH). HH: Absolute humidity AH (g/m^3) is > 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'HH' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **30.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
314*	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **36.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **37.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **35.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
320*	Paper Trans_Col (Paper Transfer Correction) The display indicates: Paper Type/Side 1 or 2/Printing mode		
	1	Normal/1st/1 Color	Corrects the electric current for paper transfer. **DFU** [0 ~ 100 / **45** / 1%/step]
	2	Normal/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	3	Normal/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	4	Normal/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	5	Normal/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	6	Normal/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	7	Thick/1st/1 Color	[0 ~ 100 / **45** / 1%/step]
	8	Thick/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	9	Thick/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	10	Thick/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	11	Thick/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	12	Thick/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	13	OHP/1 Color	[0 ~ 100 / **60** / 1%/step]
	14	OHP/2 Colors	[0 ~ 100 / **90** / 1%/step]
	15	OHP/3 Colors	[0 ~ 100 / **100** / 1%/step]
321	Paper Transfer Bias of Edge		
	1	Normal/1st/Leading edge	Adjusts the paper transfer current at the paper edges. [10.0 ~ 20.0 / **10.0** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	2	Normal/2nd/Leading edge	
	3	Thick/1st/Leading edge	
	4	Thick/2nd/Leading edge	
	5	OHP/Leading edge	
	6	Normal/1st/Trailing edge	

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
321	7	Normal/2nd/Trailing edge	Adjusts the paper transfer current at the paper edges. [0.0 ~ 1.0 / **0.8** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	8	Thick/1st/Trailing edge	
	9	Thick/2nd/Trailing edge	
	10	OHP/Trailing edge	
322	Paper Transfer Charge		
	1	Leading edge	Adjusts the width at the paper edges where the current specified with SP2–321 is applied. [0 ~ 30 / **30** / 1 mm/step] **DFU** *The values indicate the distance from the paper edges.*
	2	Trailing Edge	
323	Paper Transfer Cleaning		
	1	Cleaning Negative	Adjusts the transfer belt cleaning current. The current is applied before and after printing jobs and during jam recovery. [0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	2	Cleaning Positive	[0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	3	Cleaning Negative Lubrication	[0 ~ 255 / **50** / 0.1 μA/step] **DFU**
331	Print Start Cleaning		
	1	Print Start Cleaning	Enables/disables cleaning before printing jobs. [0 ~ 1 / **0** / 1 /step] **DFU** • *0: Disables* • *1: Enables*
400*	Cleaning Bias LL1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $0 < AH \leq 3.5$ (this is the 'LL1' humidity range) **DFU** [0 ~ 2000 / **1200** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1200** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
401*	Cleaning Bias LL2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $3.5 < AH \leq 8.0$ (this is the 'LL2' humidity range) **DFU** [0 ~ 2000 / **1600** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1600** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]

Service Tables

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
501*	Fusing Bias Switch		
	1	Fusing Bias Switch	Switches the fusing and discharge pin bias control on or off. [0 ~ 1 / **1** / 1/step] **DFU** • *0: Control off* • *1: Control on*
502	Discharge Bias		
	1	H	Adjusts the discharge plate voltage (paper separation from transfer belt). [–4000 ~ –1000 / –**2500** / 100 Volt/step]
	2	L	
801*	Charge Cleaning Interval		
	1	Charge Cleaning Interval	Sets the charge corona unit cleaning interval. [0 ~ 5000 / **600** / 100 counts/step] *See section 6 for details. SP7-925 displays the number of counts since the last cleaning.*
⇒	3	Additional Charge Corona Cleaning Interval	Sets the additional charge corona unit cleaning interval. [0 ~ 5000 / **100** / 100 counts/step] The cleaning is carried out after 600, at job end or after 700 (-3 setting).
802	Charger Cleaning		
	1	Charger Cleaning	Executes a forced charge corona unit cleaning. Set to 1 to start cleaning.
901*	Environment Control		
	1	Environment Control	Switches environment control on or off. [0 ~ 1 / **1** / 1/step] **DFU** • *0: Control off (The paper transfer and cleaning bias environments are set to NN1. The image transfer bias environment is set to MM.)* • *1: Control on*
902	Charge Cleaning Status		
	1	Charge Cleaning Status	[0 ~ 9 / **0** / 1/step] 0: Cleaner has stopped 1: Cleaner moving from front to rear 3: Cleaner moving from rear to front (back to the home position)
903	Paper Transfer Adjustment		
⇒	1	LL1: Plain	Specifies the difference from the LL1 paper transfer current (SP2-310). [0 ~ 7.0 / **1.0** / 1 μA/step] *The specified value is subtracted from the value specified by SP2-310 under the following conditions:* • *The machine is in the LL1 environment.* • *400 images or less are created after the machine starts.*
904	1C Bias Adjustment		
	1	M	Default 50V **DFU**
	2	C	Default 0V **DFU**
	3	Y	Default 0V **DFU**
	4	K	Default 0V **DFU**
⇒ 905	Paper Transfer Roller Type		
	1	Paper Transfer Roller Type	0: Drum Type (New) 1: Straight Type (Old)

Service Tables

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
912*	Temperature Humidity Display		
	1	Temperature	Displays the temperature measured by the temperature sensor inside the machine. [–127 ~ 127 / **0** / 1°C/step]
	2	Humidity 1	Displays the humidity measured by the humidity sensor inside the machine. [0 ~ 255 / **0** / 1%/step]
	3	Humidity 2	Displays the absolute humidity calculated from the temperature/humidity sensor readings. [0 ~ 65535 / **0** / 0.1 g/m^3/step]
	4	Environment Level ** AH = absolute humidity*	Displays the current humidity level calculated from the absolute humidity. [0 ~ 1 / **0** / 1/step] • *LL1: 0 < AH ≤ 3.5* • *LL2: 3.5 < AH ≤ 8.0* • *NN1: 8.0 < AH ≤ 14* • *NN2: 14 < AH ≤ 19* • *HH: 19 < AH*
939	OPC lubricant interruption (Forced OPC lubrication)		
	1		Enables/disables forced OPC lubrication at a certain interval. **DFU** [0 ~ 1 / **0** / 1 /step] • *0: Disabled* • *1: Enabled* *The OPC lubrication interval is specified with SP2-942-1.*
940	OPC Lubricant Mode		
	1	OPC Lubricant Mode	Executes a forced OPC lubrication to reduce the friction on the OPC belt. **DFU** *The OPC belt and the lubricant brush operate for 2 mins.*
941	OPC Lubricant Time		
	1	Interrupt	Determines how long the OPC belt is lubricated for after the end of every job (☛ SP3–940). [0 ~ 30 / **20** / 1 s/step]
	2	No Interrupt	Determines how long the OPC belt is lubricated at the forced lubrication. [0 ~ 60 / **10** / 1 s/step]
942	OPC Lubricant Interval		
	1	OPC Lubricant Interval	The machine lubricates the OPC belt and image transfer belt at the interval (number of prints) set with this SP. Incoming print jobs do not interrupt the lubrication. [10 ~ 65535 / **50** / 10/step] **DFU** *Set SP2-939-1 to 1 to execute the forced OPC lubrication.*
944	OPC Lubrication: High Coverage		
	1	Setting	Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5. [0 ~ 1 / **1** / 1 /step] • *0: Disables 1: Enables* *When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing (lubrication time: around 34 seconds).*

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 010 **03/31/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: PARTS CATALOG CORRECTION - FUSING UNIT ASSEMBLY

GENERAL:

The following parts updates are being issued for all B051/B052 Parts Catalogs.

Supplemental Information:

For clarification on the structural makeup of the Fusing Unit Assembly and its components, please refer to the diagram below.

- The Fusing Unit Assembly (B0514025) includes the components shown on pp. 36, 38, and 40 (B0514300 Oil Supply Unit).
- The Fusing Sub Unit (120V: B0514026, pg. 37, #24) includes components shown on pp. 36 and 38.(EXCEPTION: B0514103, index 2 and 07200040B, index 101 pg.36)

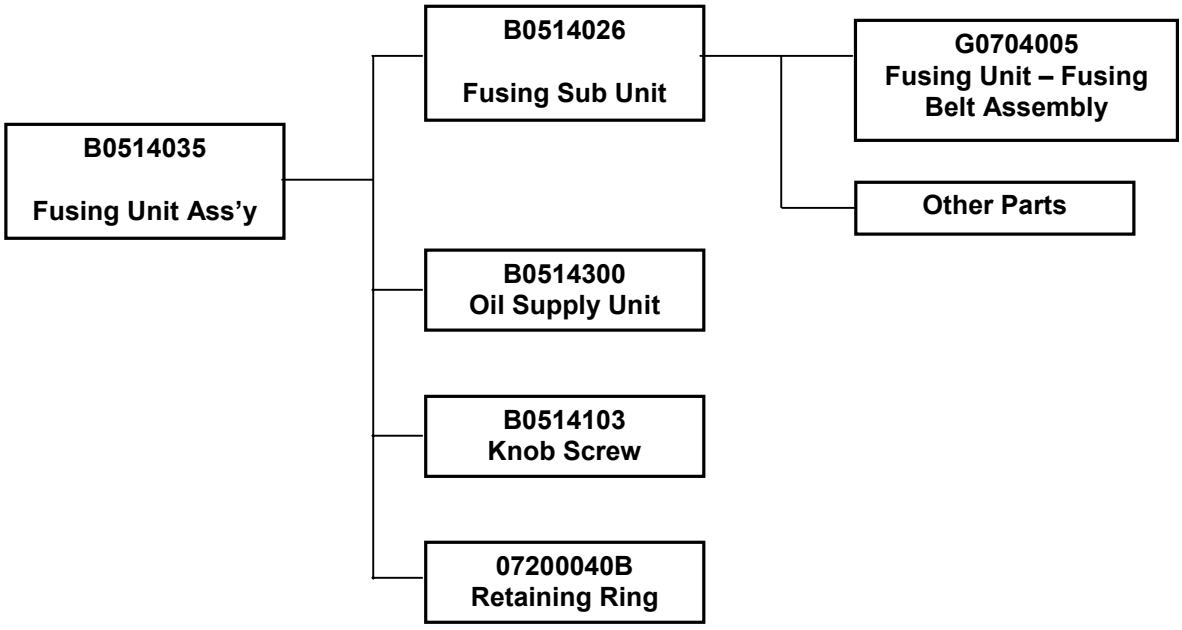
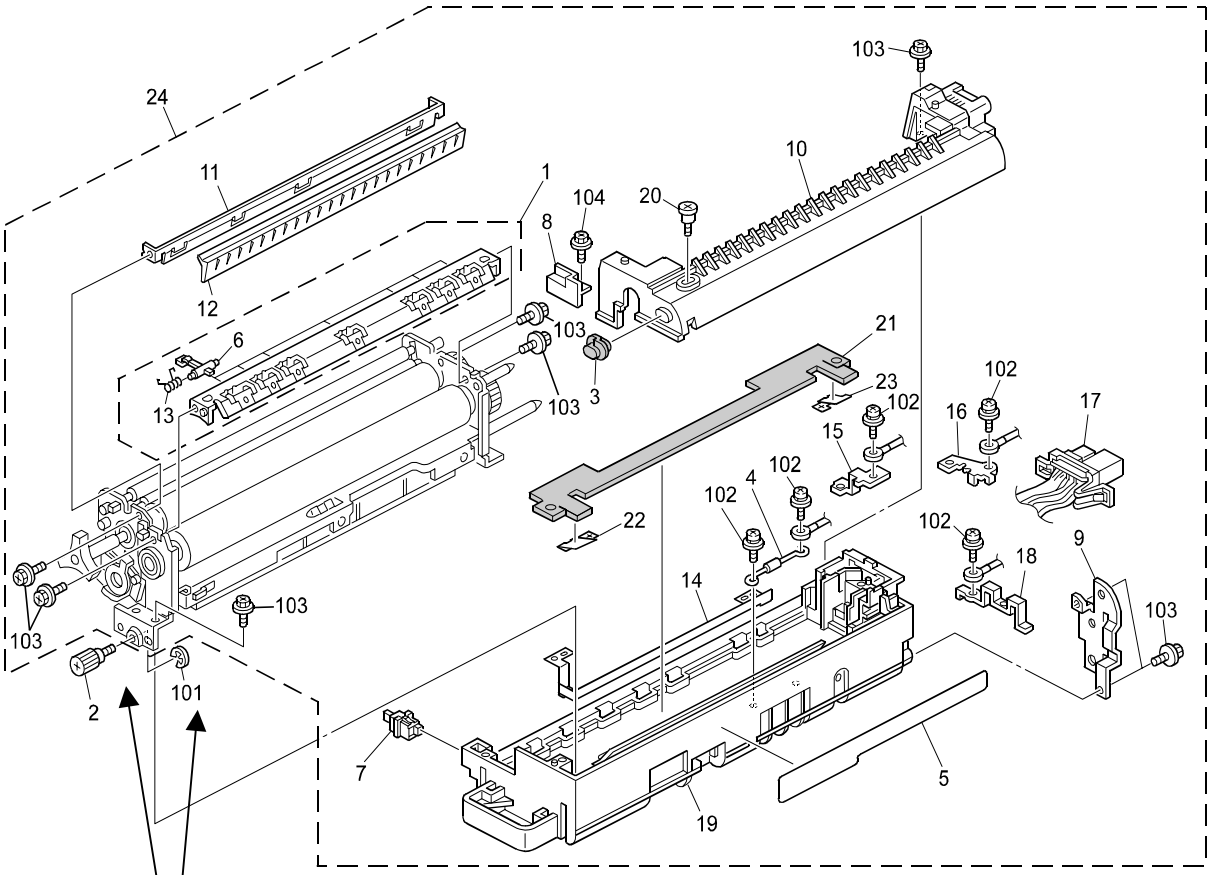


Illustration corrections (pg. 36, 38 & 40):

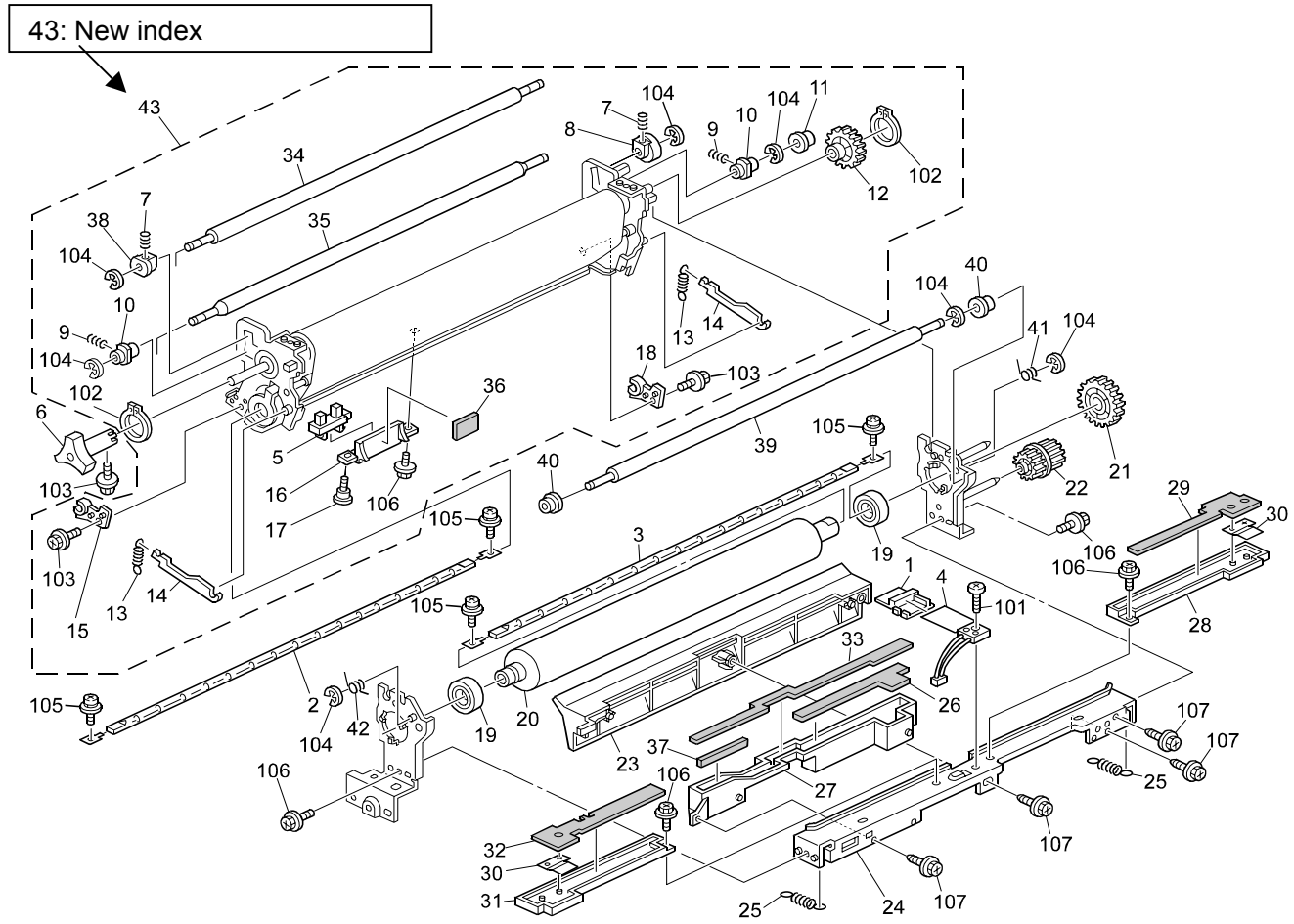
15. FUSING UNIT 1 (pg. 36)



Indices 2 and 101 are not part of index 24.

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0514025	B0514035	Fusing Unit Assembly (120V)	1		37 39	*
B0514030	B0514040	Fusing Unit Assembly (230V)	1		37 39	*
AE020119	AE020132	Pressure Roller - Assembly	1		39	20

16. FUSING UNIT 2 (pg. 38)



OLD INDEX NUMBER	NEW INDEX NUMBER	PART NUMBER	DESCRIPTION	REFERENCE QTY	REFERENCE PAGE
*	#43	G0704005	Fusing Unit – Fusing Belt Assembly	1	39

17. FUSING UNIT 3 (pg. 40)

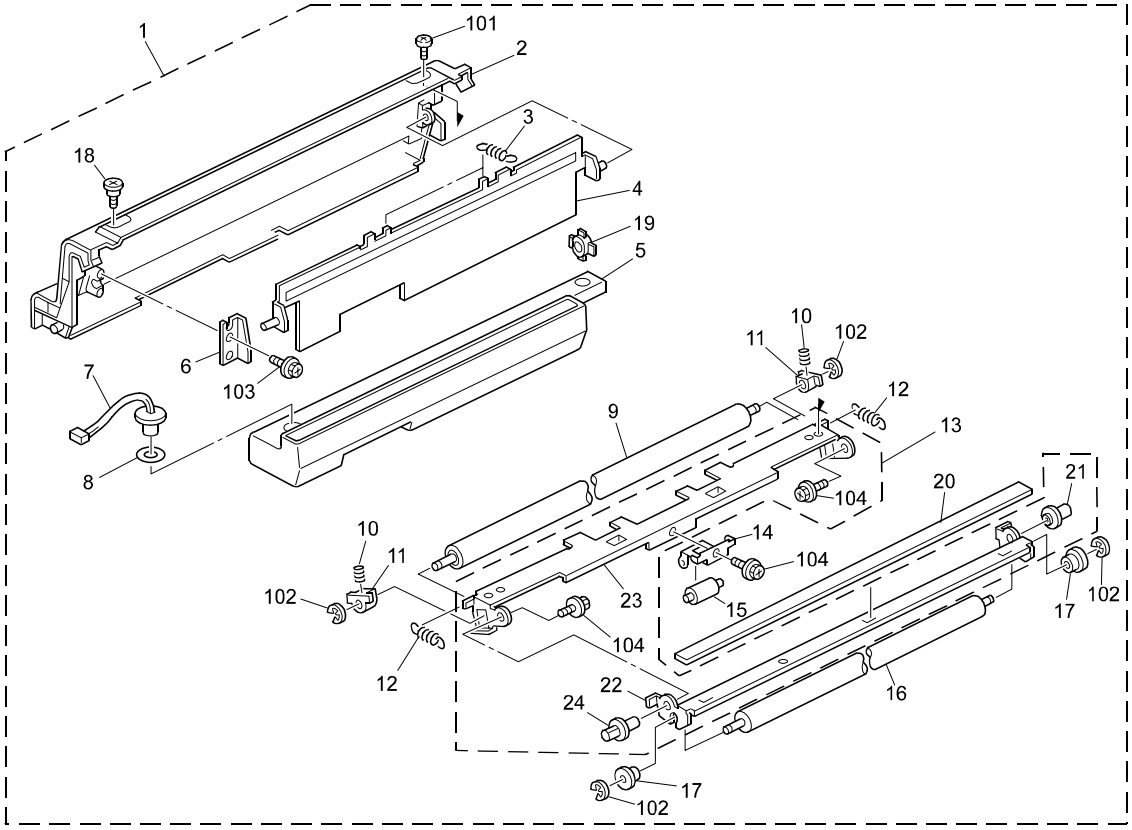
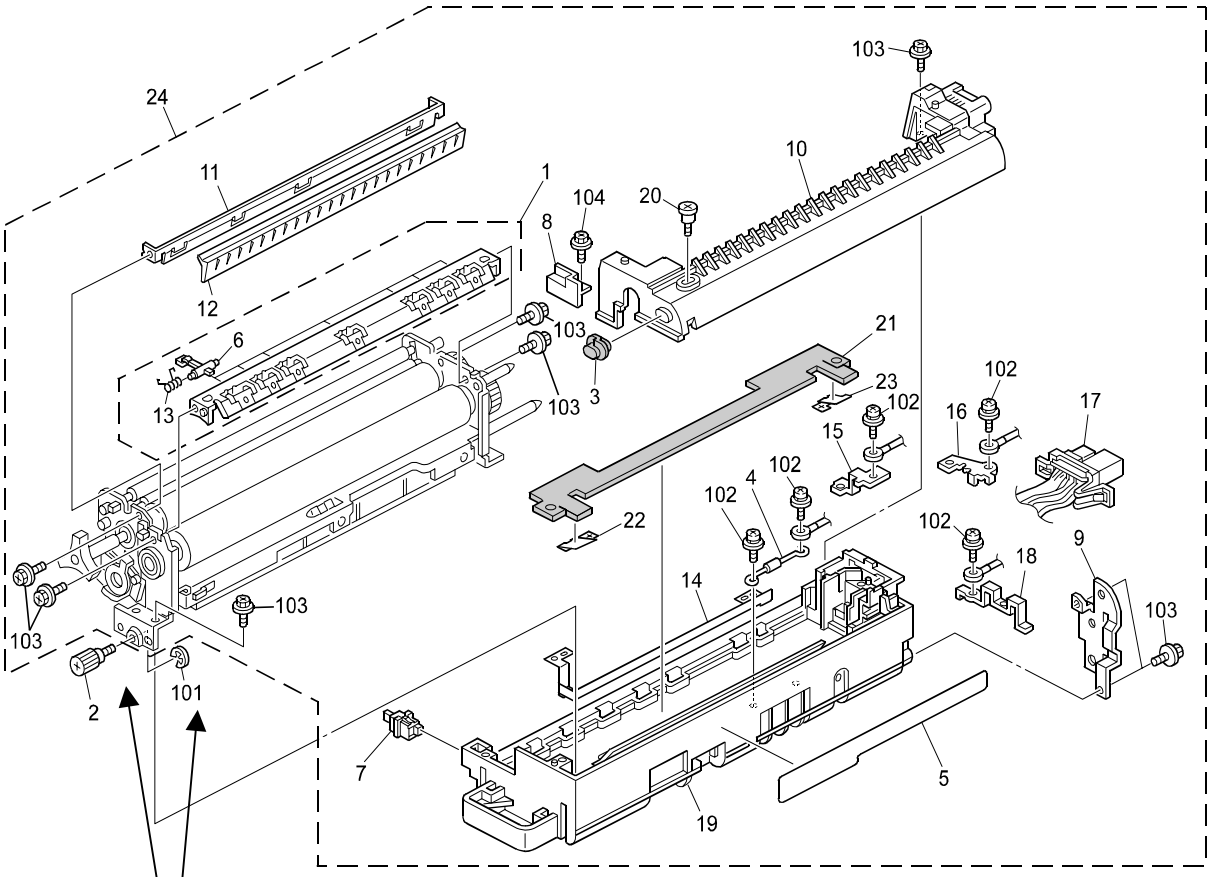


Illustration corrections (pg. 36, 38 & 40):

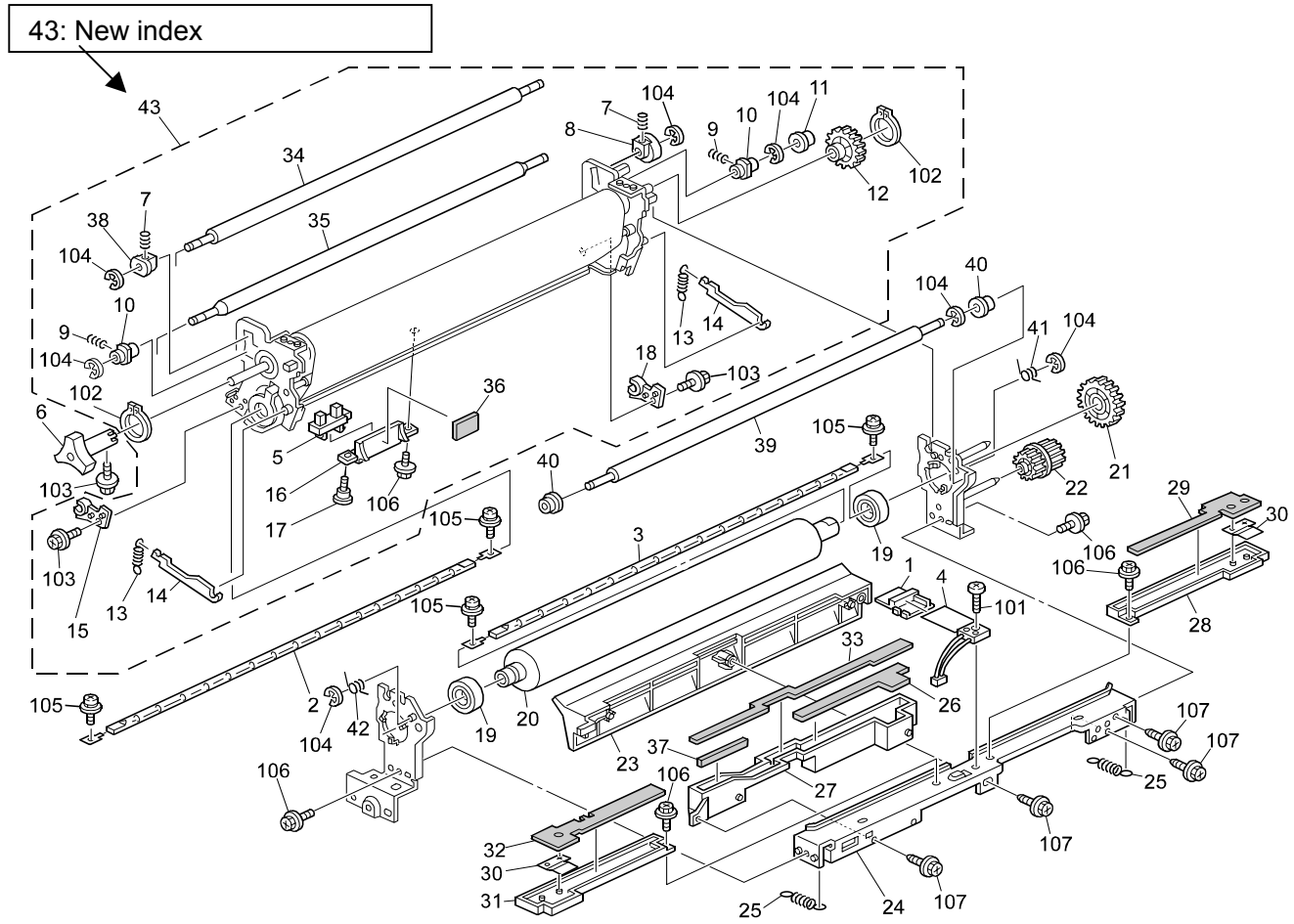
15. FUSING UNIT 1 (pg. 36)



Indices 2 and 101 are not part of index 24.

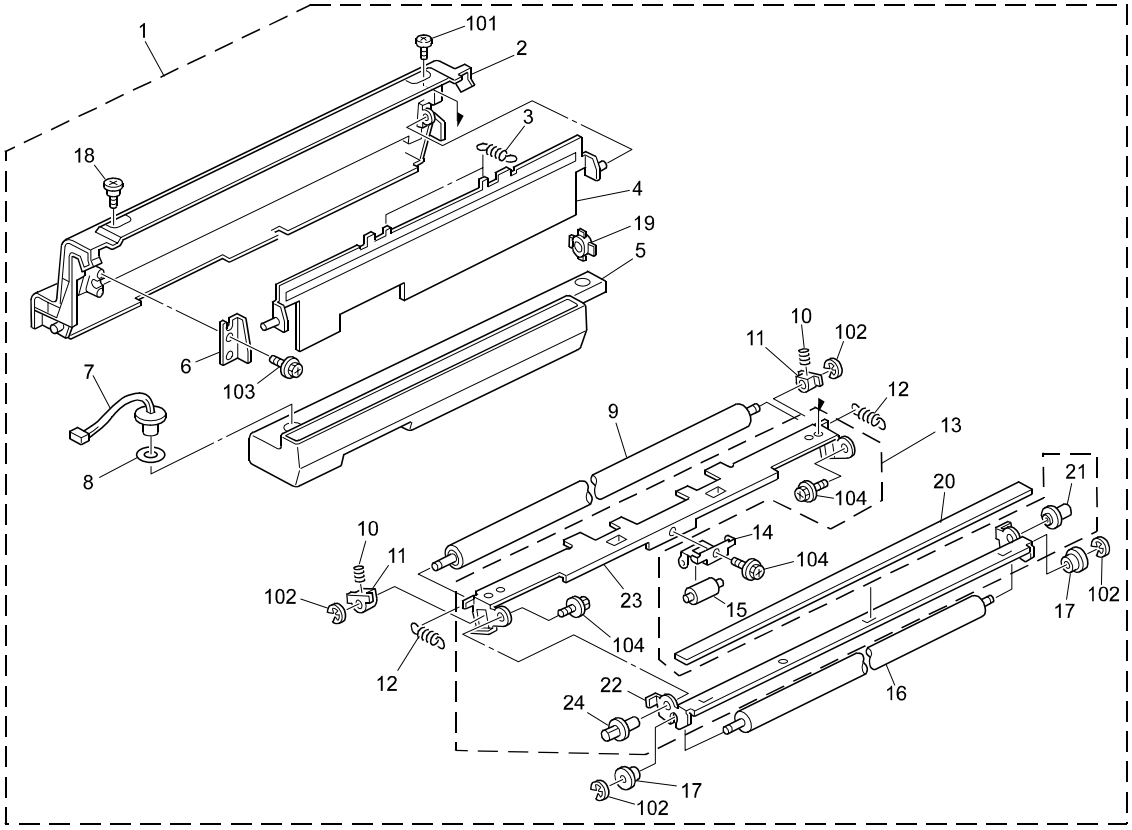
					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0514025	B0514035	Fusing Unit Assembly (120V)	1		37 39	*
B0514030	B0514040	Fusing Unit Assembly (230V)	1		37 39	*
AE020119	AE020132	Pressure Roller - Assembly	1		39	20

16. FUSING UNIT 2 (pg. 38)



				REFERENCE	
OLD INDEX NUMBER	**NEW INDEX NUMBER**	**PART NUMBER**	**DESCRIPTION**	**QTY**	**PAGE**
*	#43	G0704005	Fusing Unit – Fusing Belt Assembly	1	39

17. FUSING UNIT 3 (pg. 40)



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 011 **04/11/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE CODE SC672, SC827, SC836, SC990, & SC819 PROBLEMS

SYMPTOM:

- SC672, SC827, SC836, SC990, or SC819 is displayed.
- Printer or Scanner function does not respond.
- No display on the operation panel.

CAUSE:

Poor contact between the controller board DIMMs and connectors, caused by dust and other particles that can be attracted to the contact areas.

SOLUTION:

Check the contact points described below for each symptom, then remove the DIMMs and clean the DIMM terminals with alcohol.

Symptom:	Contact Points to Check/Clean:
SC672: Controller-to-operation panel communication error at startup. This may display SC672 but on SMC reads SC670.	CN4: Memory DIMM CN6 (Slot 1): Printer / Scanner controller ROM DIMM
SC827: Self-diagnostic Error: RAM	CN4: Memory DIMM
Printer function cannot be used. The machine does not respond, even when the Printer key is pressed.	CN6 (Slot 1): Printer / Scanner controller ROM DIMM
SC836: Self-diagnostic Error: Resident Font ROM	CN6 (Slot 1): Printer / Scanner controller ROM DIMM
No display on the operation panel LCD.	CN6 (Slot 1): Printer / Scanner controller ROM DIMM CN8 (Slot 3): NIB ROM DIMM
Scanner function cannot be used. The machine does not respond, even when the Scanner key is pressed.	CN8 (Slot 3): NIB ROM DIMM
SC990: Software performance error	CN6 (Slot 1): Printer / Scanner controller ROM DIMM CN8 (Slot 3): NIB ROM DIMM
SC819: Kernel abnormal end error	CN8 (Slot 3): NIB ROM DIMM

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 012 **04/15/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER - LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SC672

■ FIRMWARE

SYMPTOM:

The machine goes into "*Energy Saver*" mode and an SC672 will be displayed after about 5 minutes.

CAUSE:

There is a software conflict between the controller (system) version 2.01.2 firmware and Document Mall version 1.31 (MFP Browser) firmware.

SOLUTION:

Upgrade the Document Mall firmware to version 1.31a.

CAUTION: Please be sure the machine's firmware is the firmware levels listed below or newer.

Firmware Type	Firmware Versions	Name of file on TSB website
Document Mall	**1.31a**	**Docmall1.31a_24c_32c.exe**
Controller	**2.01.2**	**B051_52_controller.exe**
BICU	**1.242:01**	**B051_52_BICU_Service Pack.exe**
LCDC	**1.19**	**B051_52_BICU_Service Pack.exe**
Printer	**2.01**	B051_MFPSP_V201F.exe
NIB	**3.70**	B051_MFPSP_V201F.exe
Scanner	**2.00**	B051_52_Scanner_PS3_Service Pack.exe
Netfile	**1.66**	B051_MFPSP_V201F.exe
Fax application	**2.00**	**B051_52_BICU_Service Pack.exe**
FCU	**04.00.01**	**B051_52_BICU_Service Pack.exe**
Delivery	**2.00**	B051_MFPSP_V201F.exe

EFFECTED SERIAL NUMBERS:

Please verify the serial numbers that are effected on the chart located on page 2 of this TSB.

Prod. Code	SERIAL NUMBER	Prod. Code	SERIAL NUMBER	Prod. Code	SERIAL NUMBER	Prod. Code	SERIAL NUMBER	Prod. Code	SERIAL NUMBER
B051	J2536200721	B051	J2536200920	B052	J2636200859	B052	J2636200971	B052	J2636201072
B051	J2536200722	B051	J2536200921	B052	J2636200860	B052	J2636200974	B052	J2636201074
B051	J2536200737	B051	J2536200922	B052	J2636200865	B052	J2636200977	B052	J2636201075
B051	J2536200738	B051	J2536200925	B052	J2636200870	B052	J2636200978	B052	J2636201076
B051	J2536200755	B051	J2536200929	B052	J2636200871	B052	J2636200981	B052	J2636201078
B051	J2536200757	B051	J2536200950	B052	J2636200872	B052	J2636200982	B052	J2636201079
B051	J2536200762	B051	J2536200951	B052	J2636200875	B052	J2636200983	B052	J2636201081
B051	J2536200766	B051	J2536200961	B052	J2636200877	B052	J2636200993	B052	J2636201084
B051	J2536200770	B051	J2536201003	B052	J2636200878	B052	J2636200994	B052	J2636201085
B051	J2536200772	B051	J2536201028	B052	J2636200879	B052	J2636201000	B052	J2636201087
B051	J2536200773	B051	J2536201032	B052	J2636200883	B052	J2636201001	B052	J2636201115
B051	J2536200786	B051	J2536201034	B052	J2636200884	B052	J2636201002	B052	J2636201125
B051	J2536200800	B051	J2536201035	B052	J2636200886	B052	J2636201004	B052	J2636201127
B051	J2536200807	B051	J2536201140	B052	J2636200888	B052	J2636201005	B052	J2636201147
B051	J2536200808	B051	J2536201164	B052	J2636200889	B052	J2636201012	B052	J2636201148
B051	J2536200811	B052	J2627200268	B052	J2636200897	B052	J2636201013	B052	J2636201153
B051	J2536200813	B052	J2627200709	B052	J2636200898	B052	J2636201016	B052	J2636201155
B051	J2536200816	B052	J2636200706	B052	J2636200903	B052	J2636201017	B052	J2636201165
B051	J2536200817	B052	J2636200708	B052	J2636200904	B052	J2636201018	B052	J2636201170
B051	J2536200818	B052	J2636200710	B052	J2636200907	B052	J2636201020	B052	J2636201172
B051	J2536200820	B052	J2636200715	B052	J2636200908	B052	J2636201025	B052	J2636201174
B051	J2536200821	B052	J2636200718	B052	J2636200909	B052	J2636201026	B052	J2636201176
B051	J2536200822	B052	J2636200727	B052	J2636200913	B052	J2636201027	B052	J2636201189
B051	J2536200823	B052	J2636200731	B052	J2636200914	B052	J2636201028	B052	J2636201211
B051	J2536200827	B052	J2636200734	B052	J2636200916	B052	J2636201029	B052	J2636201212
B051	J2536200828	B052	J2636200738	B052	J2636200917	B052	J2636201030	B052	J2636201213
B051	J2536200832	B052	J2636200750	B052	J2636200919	B052	J2636201034	B052	J2636201216
B051	J2536200833	B052	J2636200754	B052	J2636200922	B052	J2636201036	B052	J2636201237
B051	J2536200838	B052	J2636200765	B052	J2636200923	B052	J2636201041	B052	J2636201240
B051	J2536200839	B052	J2636200767	B052	J2636200924	B052	J2636201042	B052	J2636201247
B051	J2536200841	B052	J2636200800	B052	J2636200925	B052	J2636201043	B052	J2636201257
B051	J2536200847	B052	J2636200809	B052	J2636200930	B052	J2636201044	B052	J2636201267
B051	J2536200849	B052	J2636200829	B052	J2636200931	B052	J2636201047	B052	J2636201271
B051	J2536200850	B052	J2636200834	B052	J2636200933	B052	J2636201055	B052	J2636201292
B051	J2536200851	B052	J2636200838	B052	J2636200934	B052	J2636201056	B052	J2636201293
B051	J2536200852	B052	J2636200839	B052	J2636200936	B052	J2636201057	B052	J2636201297
B051	J2536200855	B052	J2636200840	B052	J2636200939	B052	J2636201059	B052	J2636201298
B051	J2536200856	B052	J2636200841	B052	J2636200940	B052	J2636201060	B052	J2636201301
B051	J2536200858	B052	J2636200842	B052	J2636200945	B052	J2636201061	B052	J2636201329
B051	J2536200859	B052	J2636200843	B052	J2636200946	B052	J2636201062	B052	J2636201335
B051	J2536200863	B052	J2636200844	B052	J2636200949	B052	J2636201063	B052	J2636201384
B051	J2536200864	B052	J2636200847	B052	J2636200952	B052	J2636201064		
B051	J2536200865	B052	J2636200850	B052	J2636200953	B052	J2636201065		
B051	J2536200866	B052	J2636200852	B052	J2636200954	B052	J2636201066		
B051	J2536200901	B052	J2636200853	B052	J2636200961	B052	J2636201067		
B051	J2536200907	B052	J2636200854	B052	J2636200963	B052	J2636201068		
B051	J2536200910	B052	J2636200857	B052	J2636200965	B052	J2636201070		
B051	J2536200913	B052	J2636200858	B052	J2636200968	B052	J2636201071		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 013 **04/15/2003**

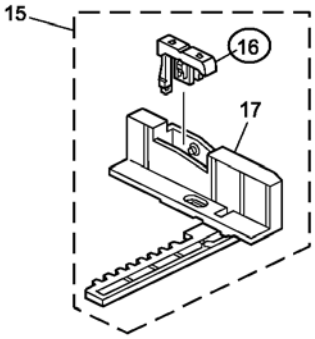
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: REAR LEVER - STOPPER

GENERAL:

To prevent skewing, the shape of the top portion of the Rear Side Fence has been changed to ensure that the fence is not pulled by the weight of the paper stack when the 1st/2nd trays are set. The following part update is being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
G0702717	G0702718	Rear Lever - Stopper	1	1	21	16

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Rear Lever - Stopper installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Ricoh Aficio 1224C Savin C2408	J2527200079
Gestetner DSc232 Lanier LD032c Ricoh Ricoh Aficio 1232C Savin C3210	J2627200048

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: B051/B052 – 014 **04/17/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC324
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: CORRECTING IMAGE PROBLEMS

GENERAL:

Use this bulletin for correcting image problems. First determine which image problem you have by reviewing the image samples on pages 2 and 3, and then follow the procedures outlined in the flowcharts for correcting that symptom.

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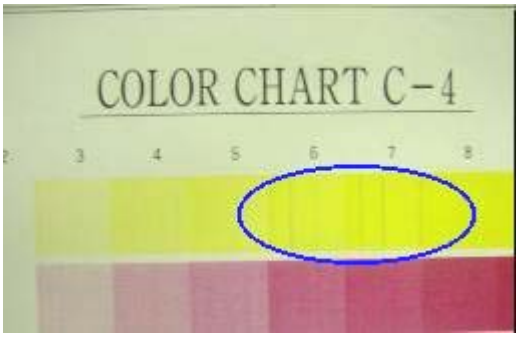
Paper Feed Direction

Sample 2 (Uneven image density caused by scratch on the OPC belt)

Paper Feed Direction

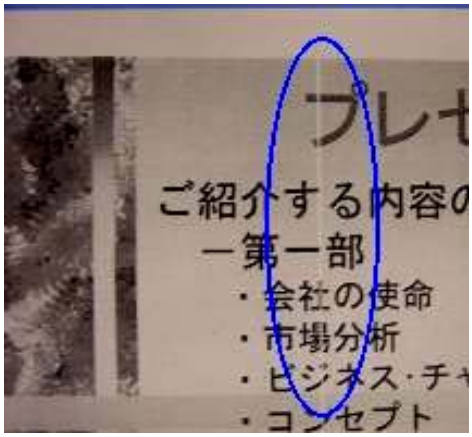
Sample 3 (Uneven image density caused by insufficient cleaning of the OPC belt)



Paper Feed Direction

Image Samples continued

Sample 4 (White line caused by toner on the development roller

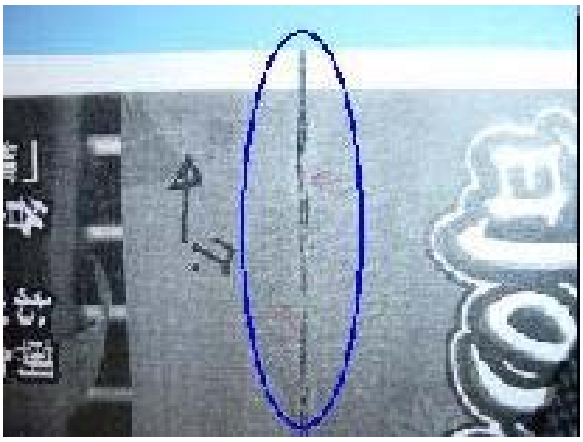


Paper Feed Direction

Sample 5 (Uneven image density caused by toner filming on the development roller)

Paper Feed Direction

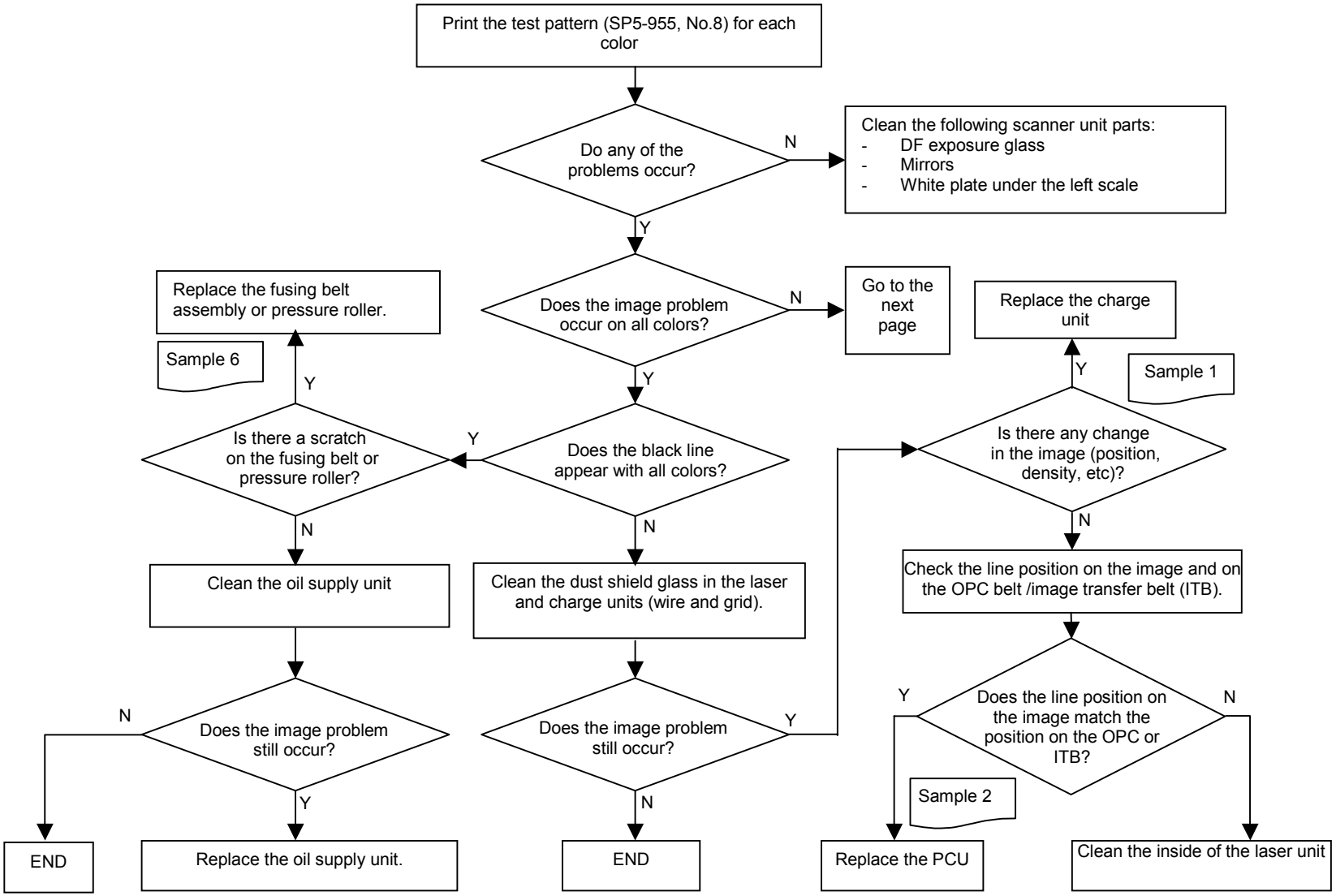
Sample 6 (Black line caused by scratch on the fusing belt/pressure roller)

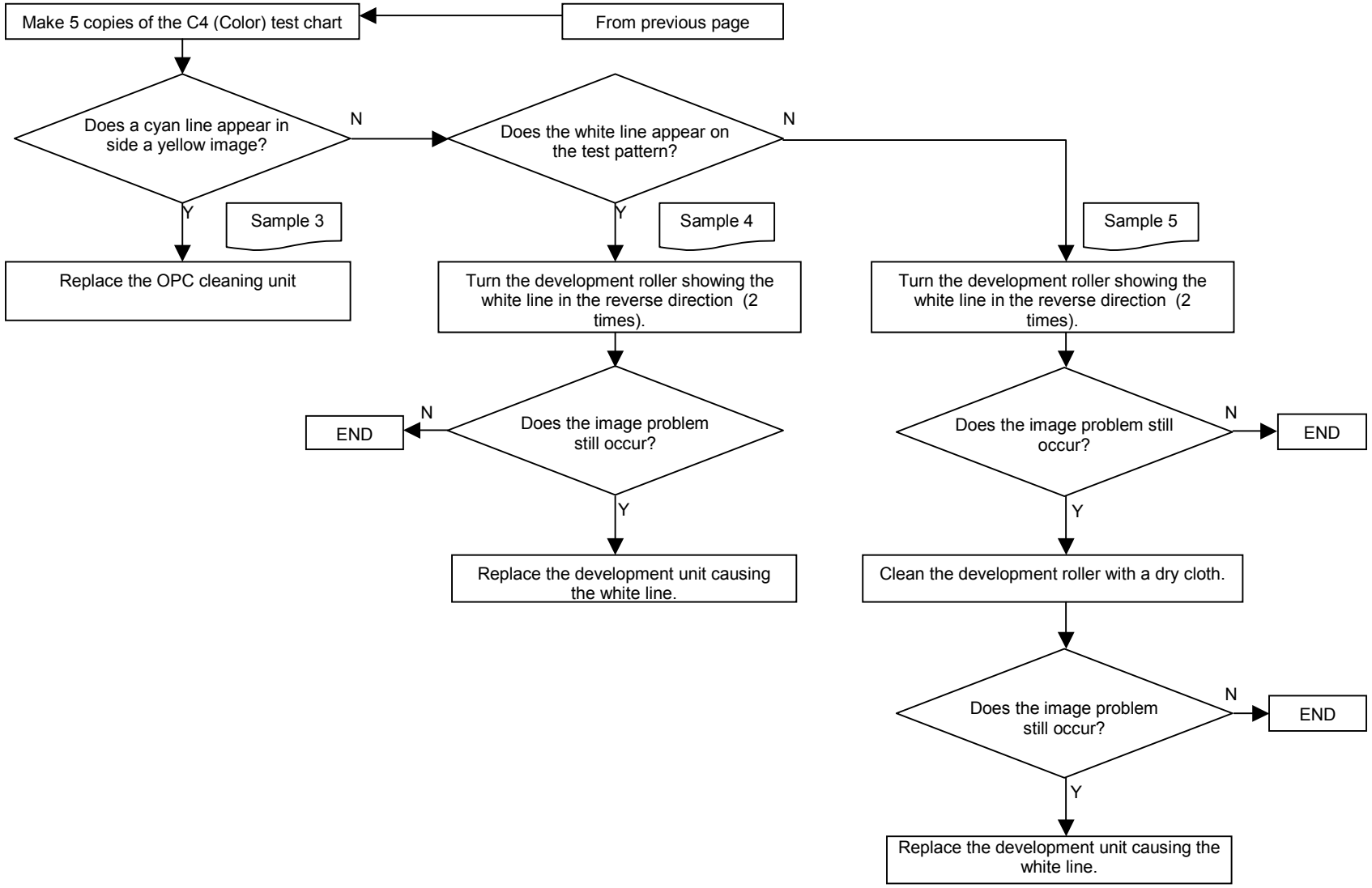


Paper Feed Direction

TROUBLESHOOTING

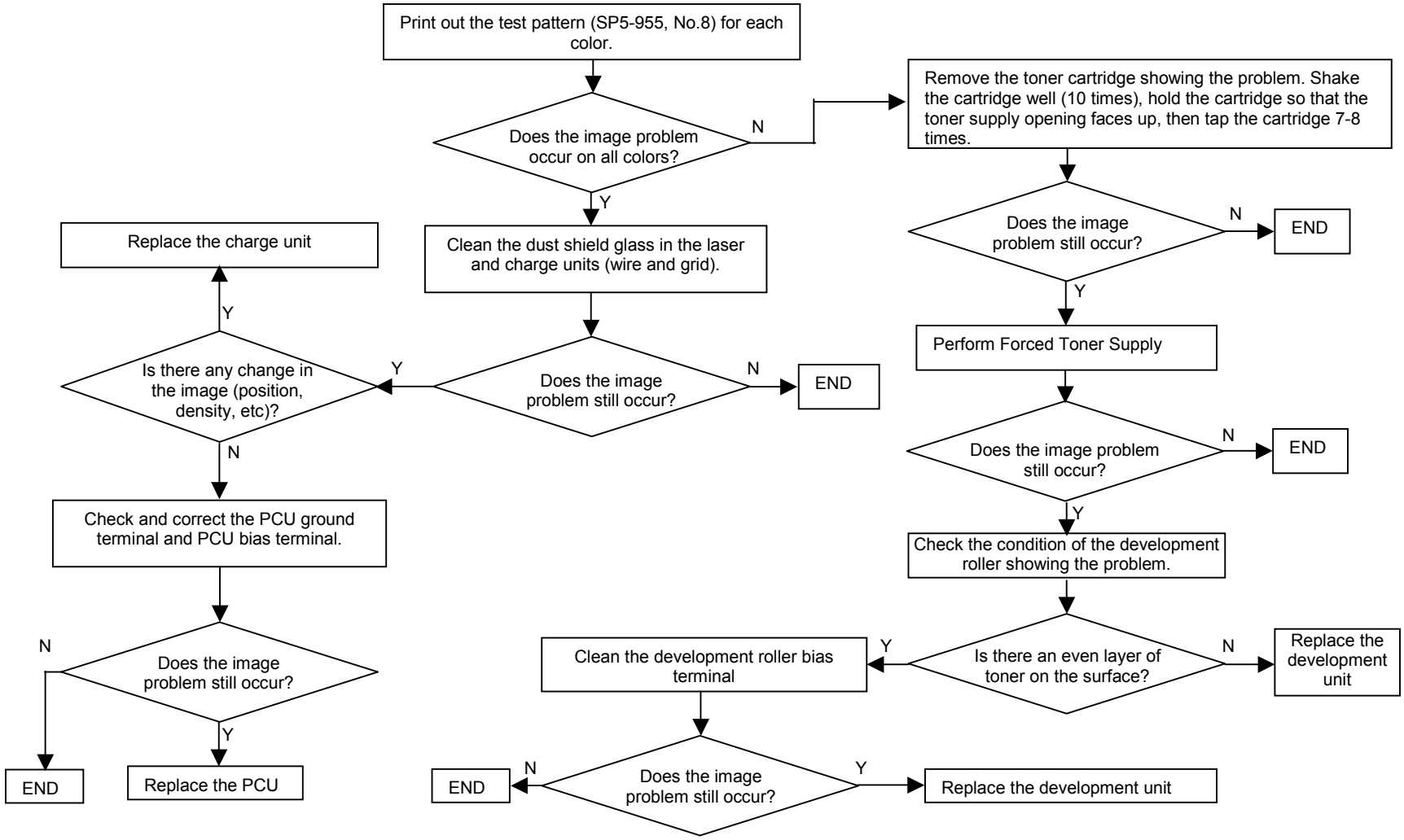
Please use the following flowchart to take action in response to the six image problems on pages 2 and 3.



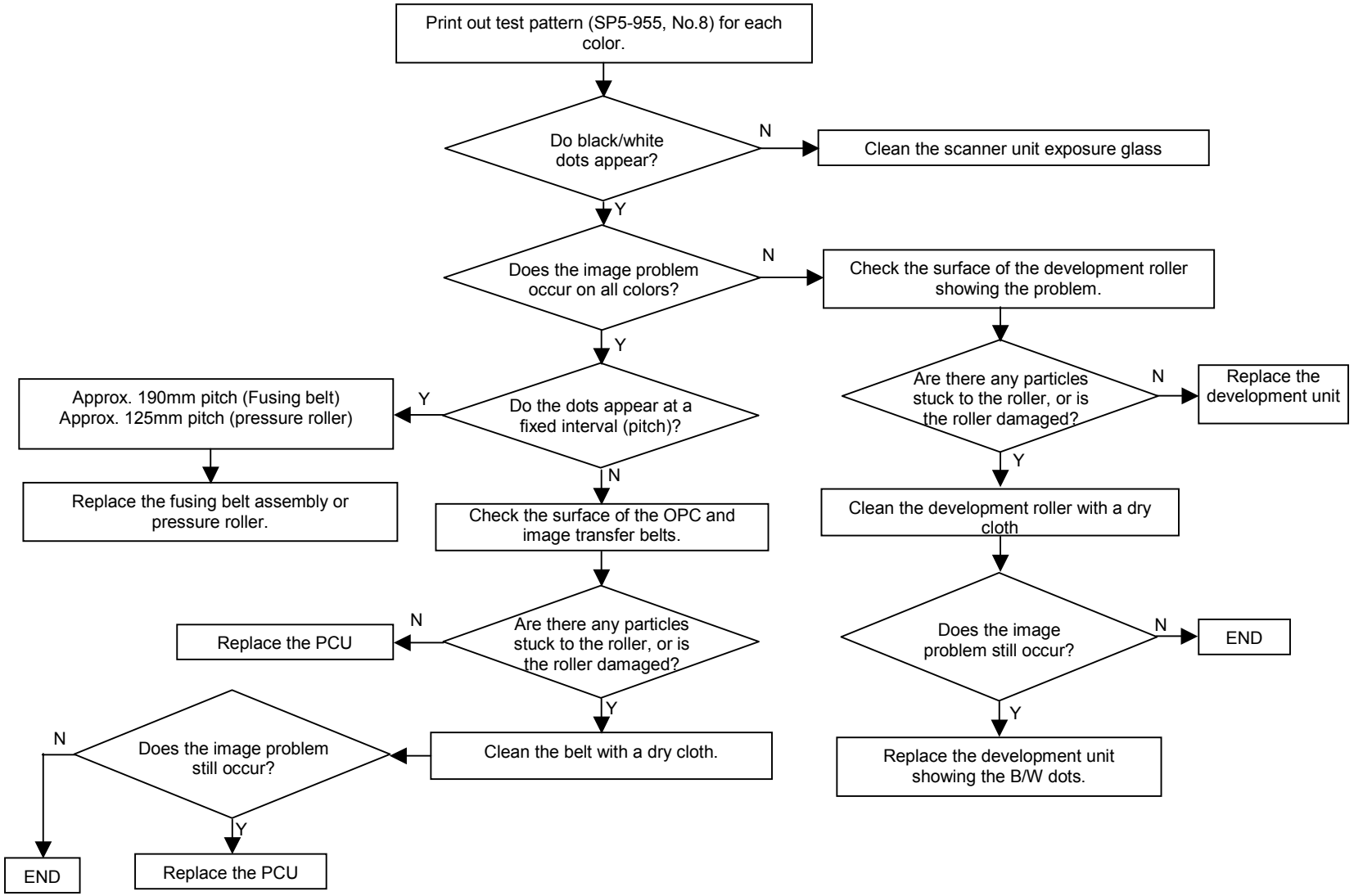


CÓPIA NÃO CONTROLADA

UNEVEN IMAGE DENSITY AT THE SIDE OF THE IMAGE

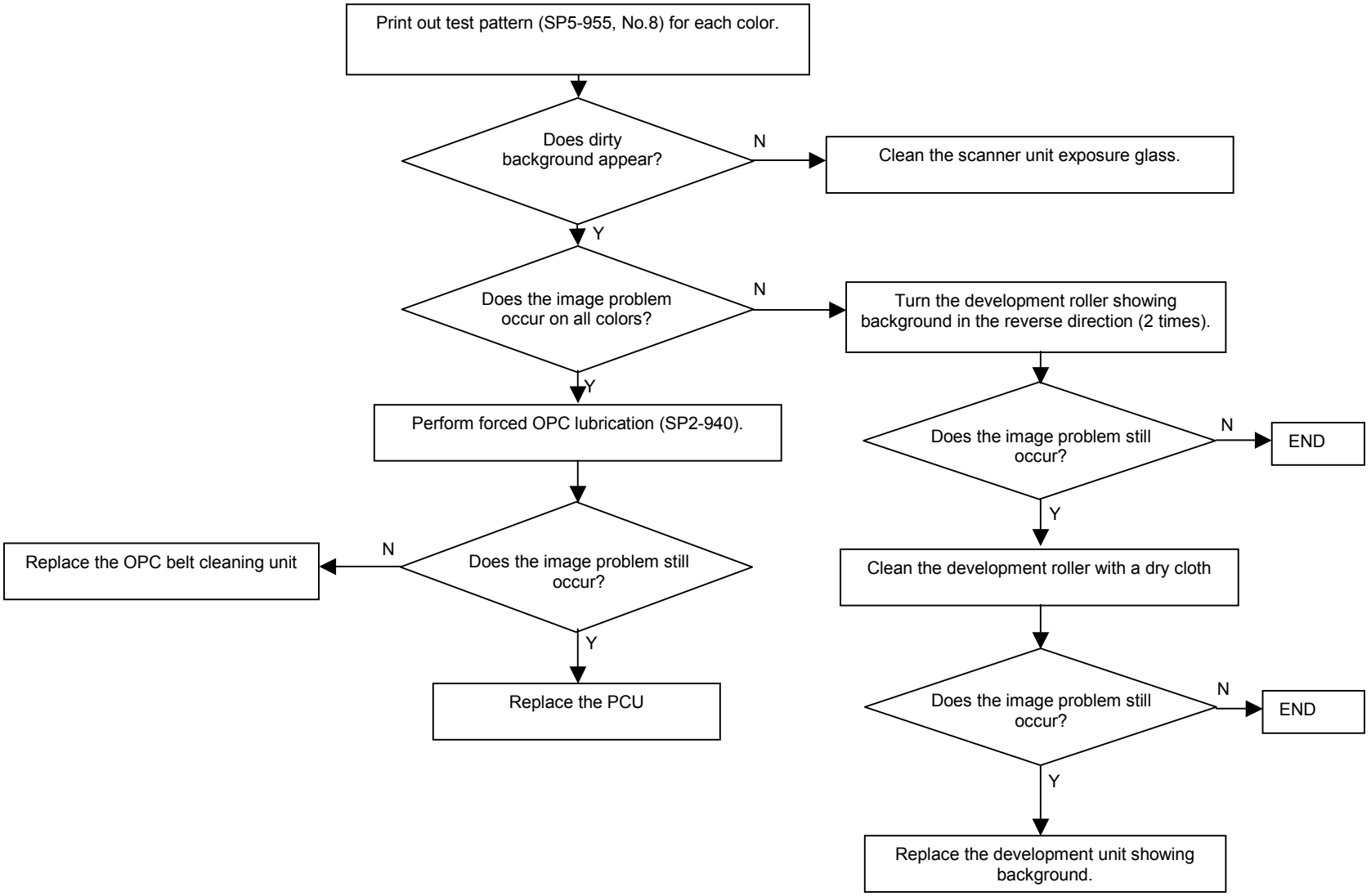


BLACK AND WHITE DOTS



CÓPIA NÃO CONTROLADA

DIRTY BACKGROUND



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 014 REISSUE ★ **01/14/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

COPY QUALITY

SUBJECT: CORRECTING IMAGE PROBLEMS

GENERAL:

Use this bulletin for correcting image problems. First determine which image problem you have by reviewing the image samples on pages 2 and 3, and then follow the procedures outlined in the flowcharts for correcting that symptom.

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Paper Feed Direction

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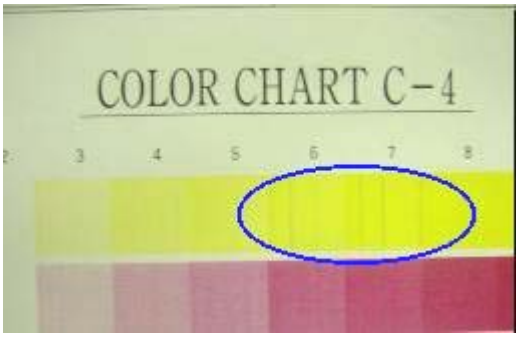
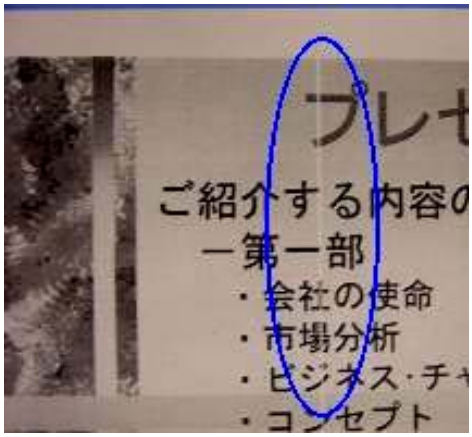


Paper Feed Direction

Image Samples continued

Sample 4 (White line caused by toner on the development roller

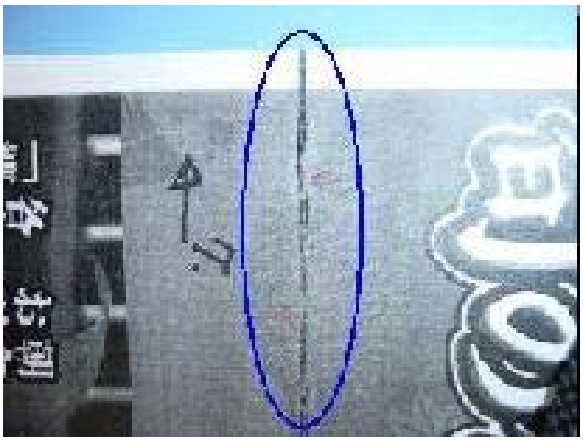


Paper Feed Direction

Sample 5 (Uneven image density caused by toner filming on the development roller)

Paper Feed Direction

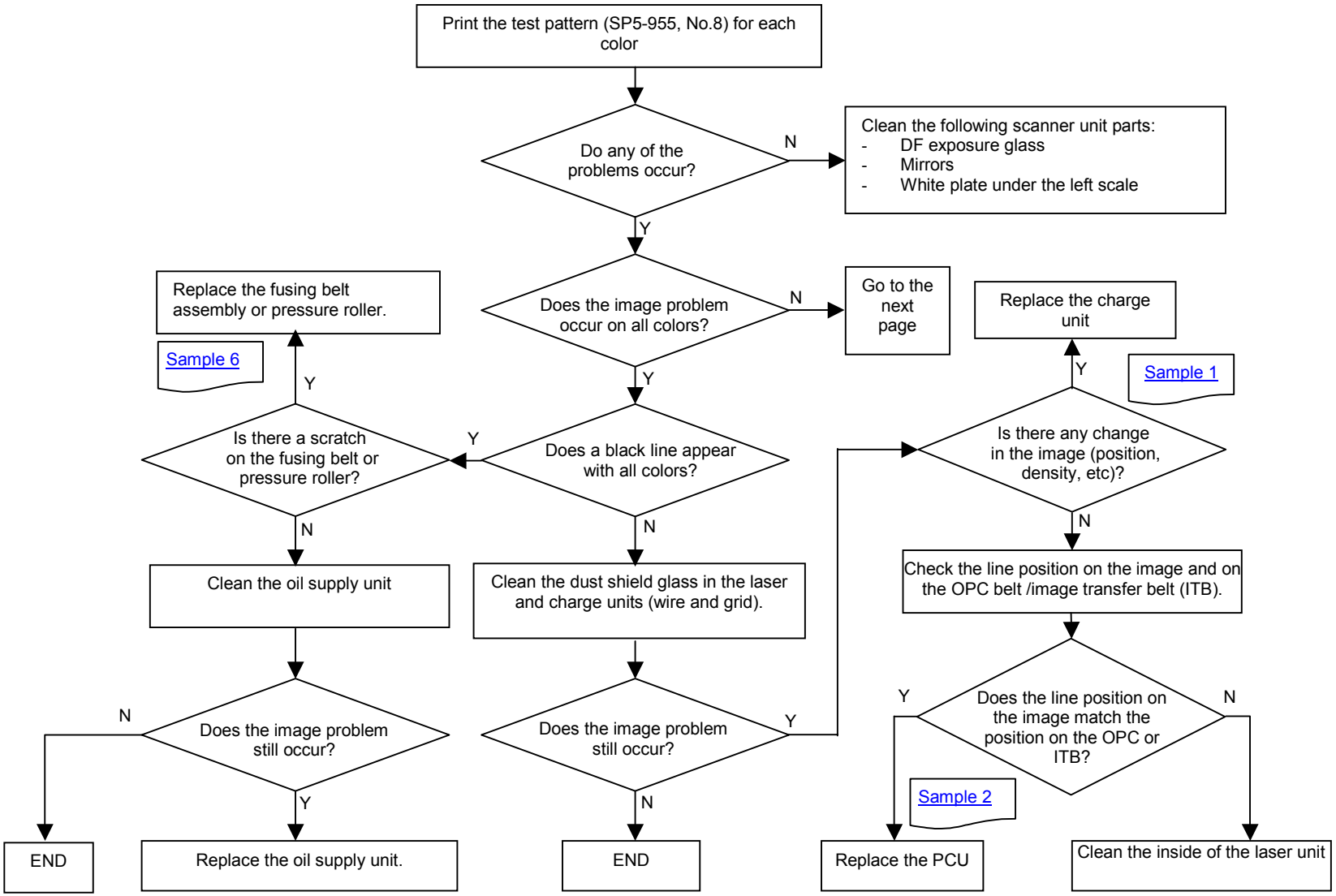
Sample 6 (Black line caused by scratch on the fusing belt/pressure roller)

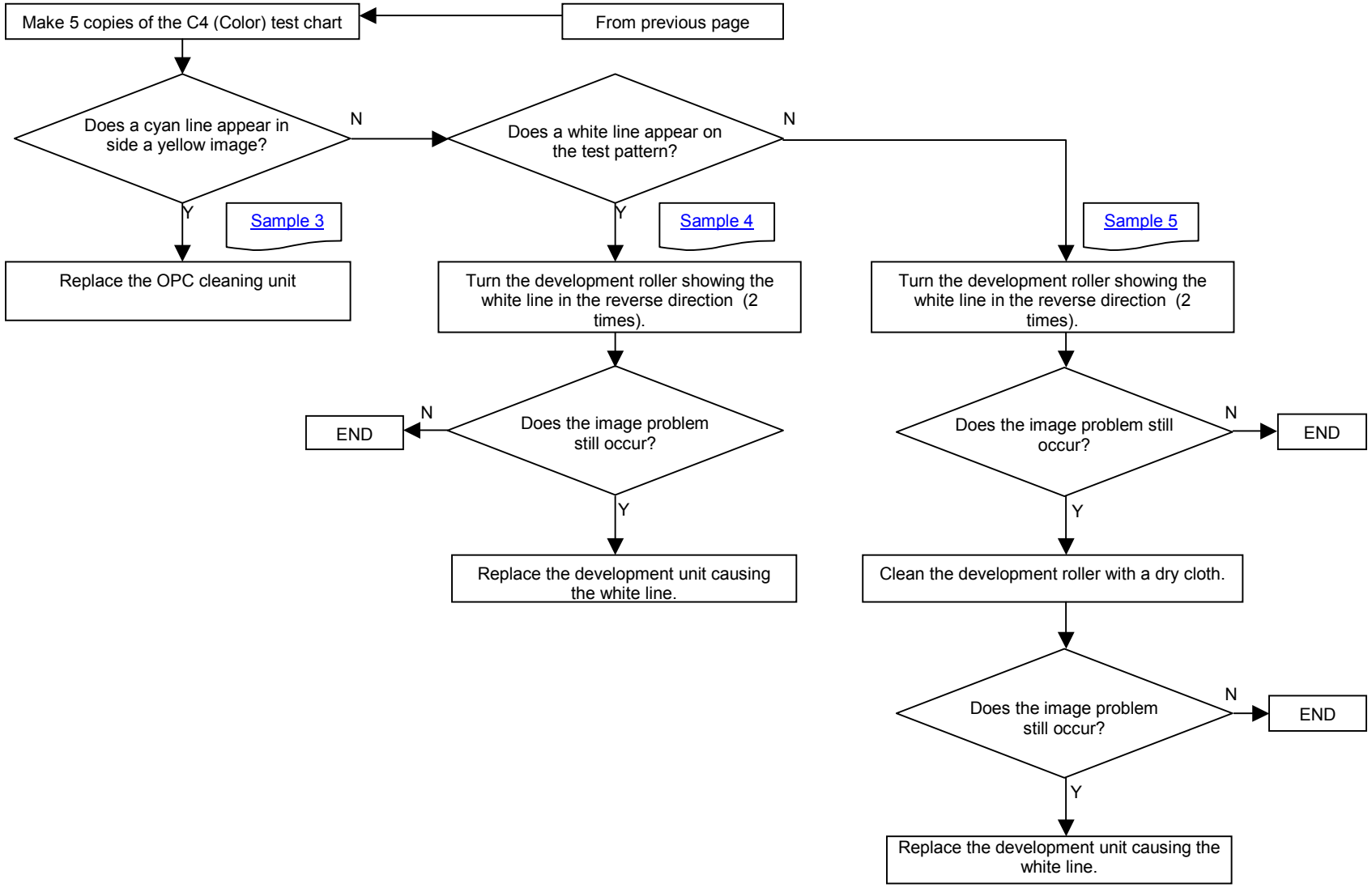


Paper Feed Direction

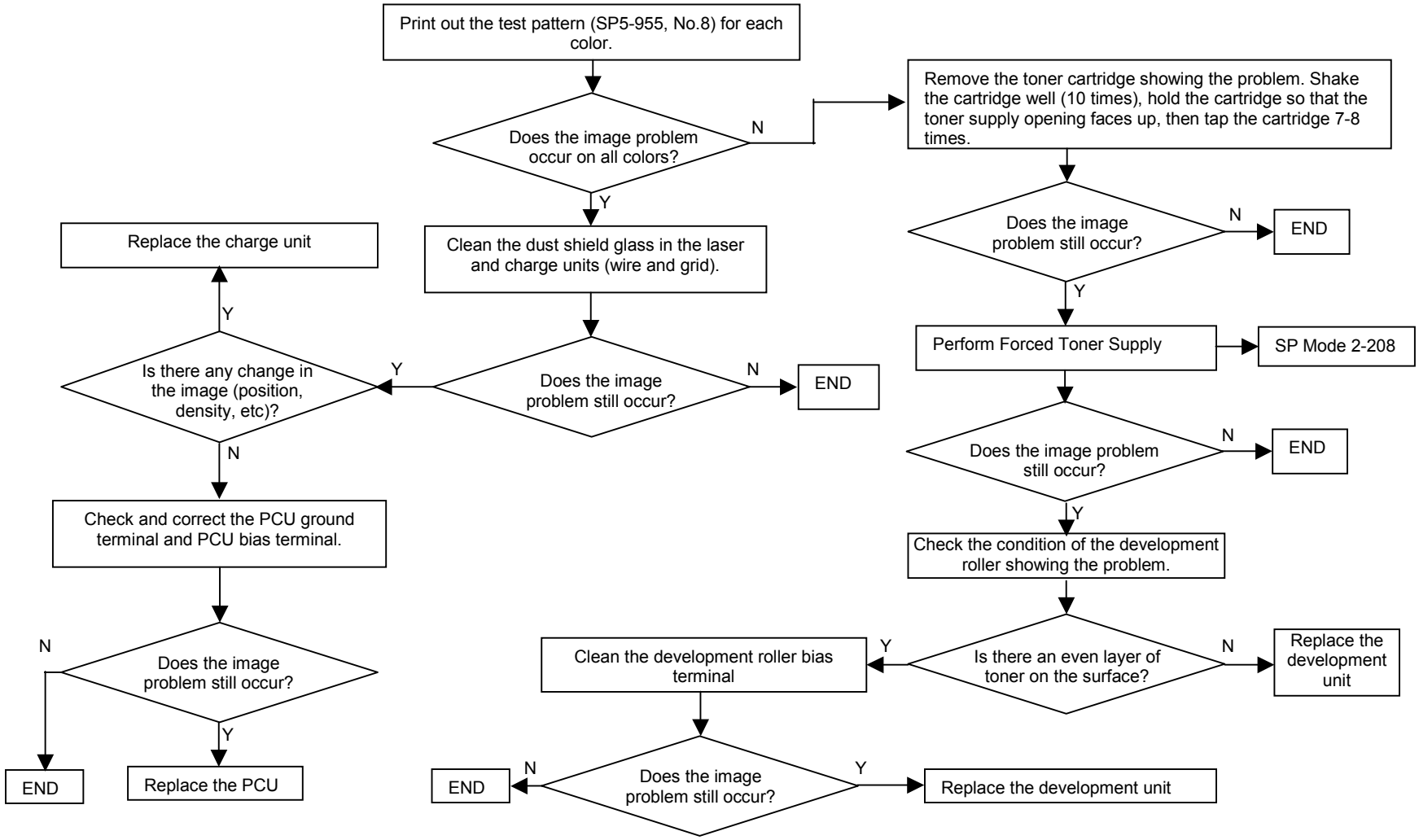
TROUBLESHOOTING

Please use the following flowchart to take action in response to the six image problems on pages 2 and 3.

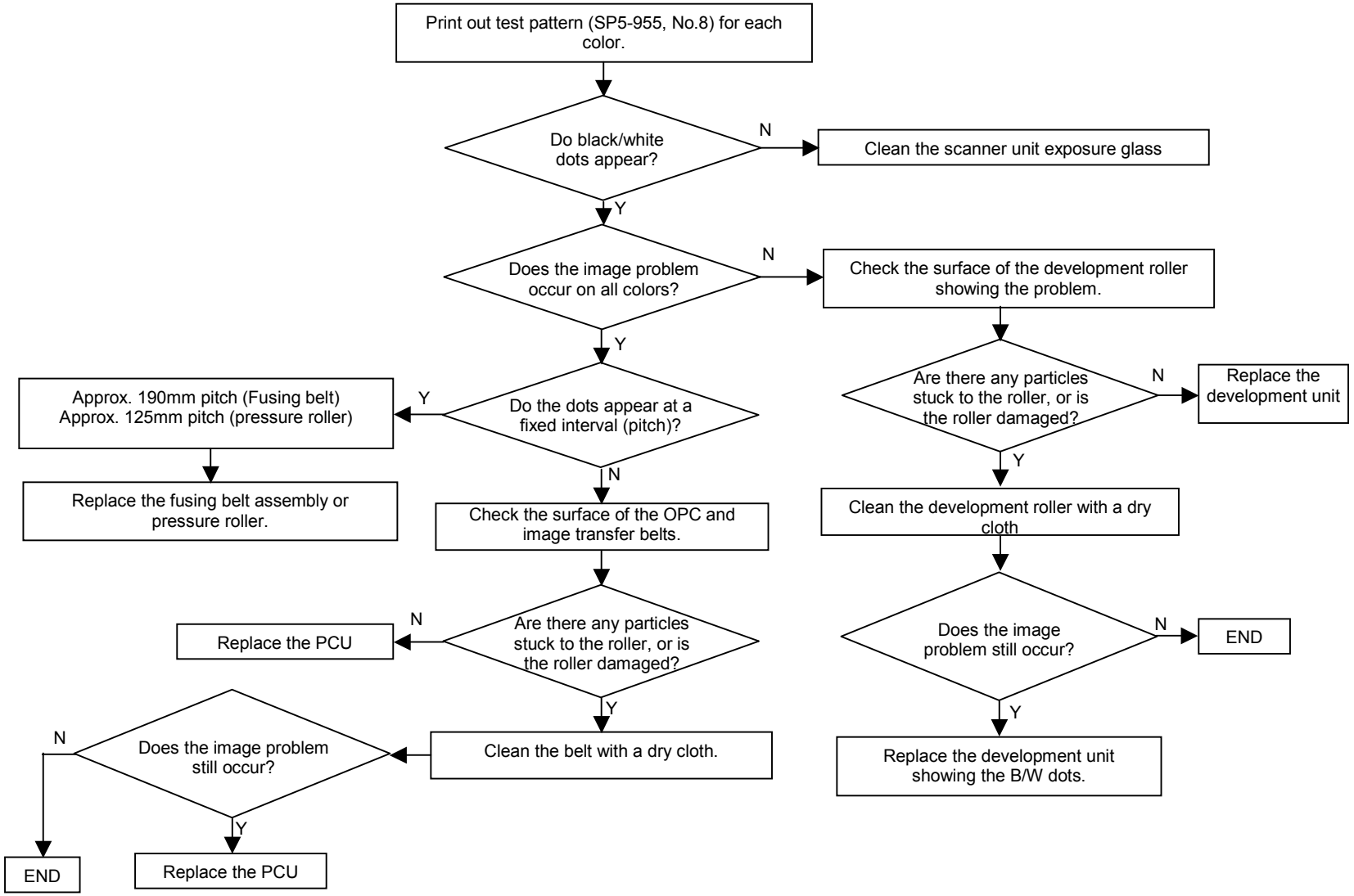




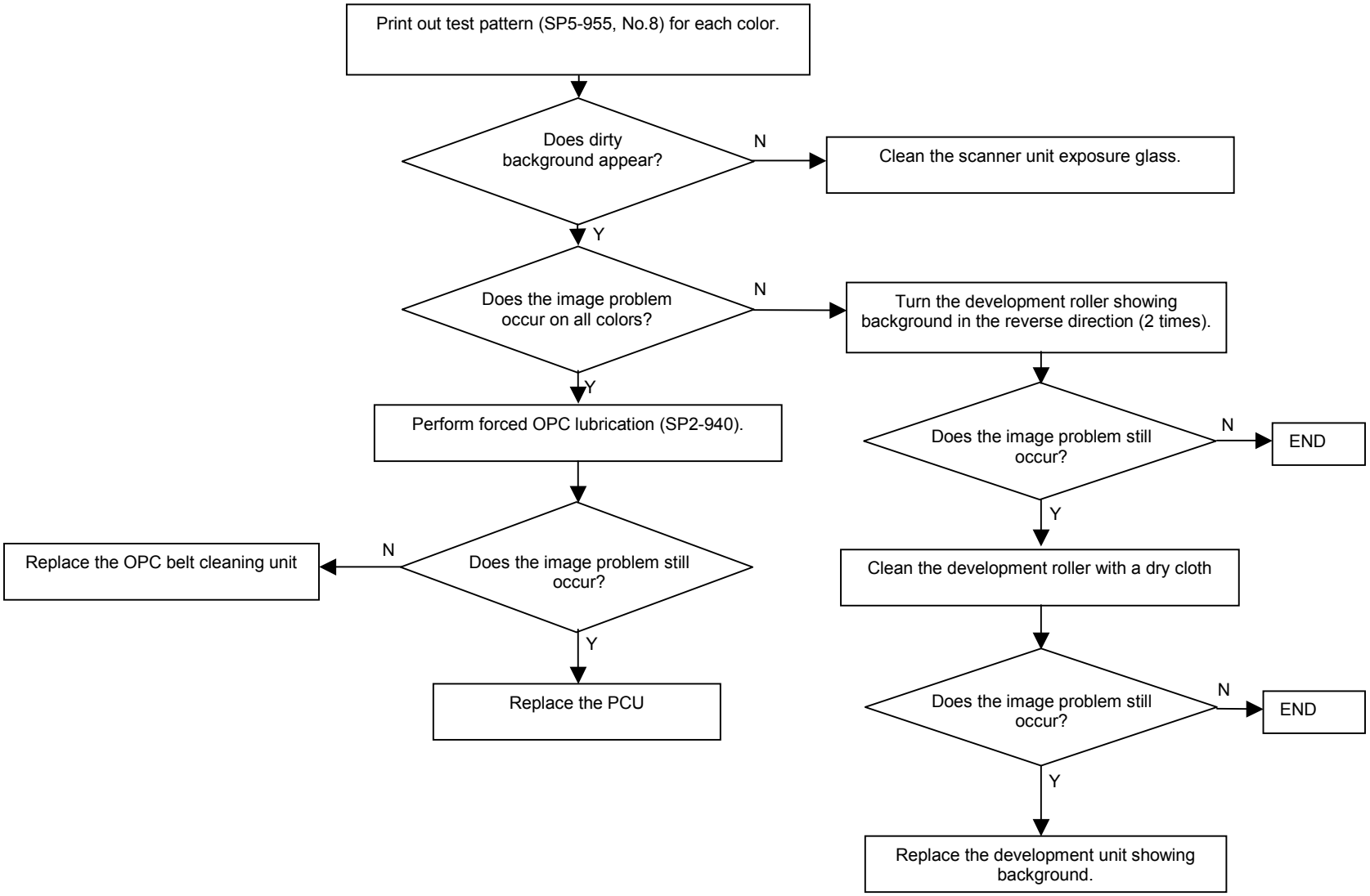
UNEVEN IMAGE DENSITY AT THE SIDE OF THE IMAGE



BLACK AND WHITE DOTS



DIRTY BACKGROUND



★LIGHT COPIES, WHITE LINES, FAINT IMAGES, UNEVEN IMAGE DENSITY

SYMPTOM:

Light copies, white lines, faint images, uneven image density (KMCY) from Cyan toner dropping.
Cyan toner drops from the development unit onto the toner shield glass of the LD unit, which may cause the outputs to show uneven image density, faint images, or white lines (depending on the amount of fallen toner).

NOTE: *This can be confirmed by removing the PCU and checking inside the machine for fallen Cyan toner.*

CAUSE:

Insufficient toner charging due to the diameter of the Cyan Doctor Roller.

SOLUTIONS:

Production Countermeasure:

The diameter of the Cyan Doctor Roller has been increased from 10 mm to 12 mm from August 2003 production.
P/N change:
Cyan Development Unit: B0523207 → B0523217.

Field Countermeasure:

Clean any fallen toner off the toner shield glass and see if the symptom occurs. If there is no improvement, install the new Cyan Development Unit.

SYMPTOM:

Uneven image density (KMCY) from lines or scratches on the OPC belt (Sample 2). The uneven ID shows up as lines in image areas, which correspond to the positions of lines on the OPC or ITB. This symptom does not involve much toner dropping from the Development unit to the LD unit toner glass shield, and can be attributed to a PCU failure.

CAUSE:

Additives from the paper can be transferred onto the OPC surface via the transfer belt, which can cause the OPC surface to become slightly rough or uneven and develop a cloudy film. In addition, the rough surface of the image transfer roller can cause roughness on the rear side of the ITB, which can in turn be transferred to the OPC surface.

SOLUTIONS:

Production Countermeasure:

The following were applied from August 2003 production:

- A cleaning blade has been added to the ITB cleaning section to remove any additives on the ITB surface.
- The surface coating for the image transfer roller has been changed to stainless steel to ensure the ITB is not scratched.

NOTE: *A cloudy film on the OPC surface alone does not trigger this symptom, therefore in such a case there is no action required.*

P/N change:
PCU B0519100 → B0529100.

Field Countermeasure:

- Refer to this Technical Service Bulletin for the troubleshooting.

Refer to TSB B051/B052 - 030 for the action necessary when installing the new and old PCUs in the field.

SYMPTOM:

- White lines or uneven image density due to toner clumps in the development unit (Sample 4).
- Uneven image density from development roller filming (Sample 5) due to an insufficient amount of OPC lubricant. The low amount of lubricant causes the toner to melt easier and stick to the development roller surface.

NOTE: *This does not occur on all colors, so be sure to print out the test pattern (SP5-955, No.8) for each color to confirm which has the problem.*

SOLUTION:

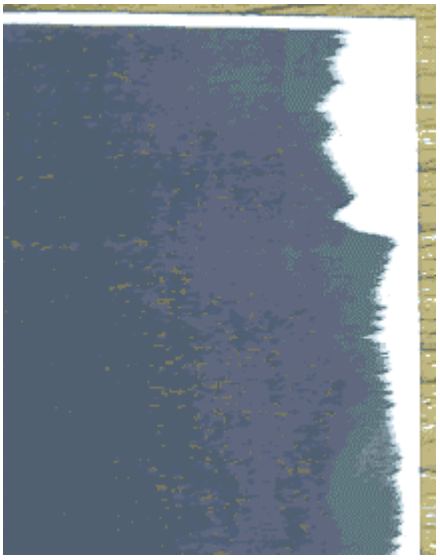
Please refer to this TSB for troubleshooting (Sample 4 and Sample 5).

NOTE: *Turning the Development Roller in the reverse direction (2 times) removes toner clumps in the Development Unit.*

SYMPTOM:

Blank area, faint image or uneven image density on one side of the copy (front or rear side of the Development Unit). In contrast to the black faint images described in TSB B051/B052 - 021, this symptom appears only on the development unit front or rear side, as shown below. See TSB B051/B052 - 015 for more information.

NOTE: *As with the above, this does not occur on all colors, so be sure to print out the test pattern (SP5-955, No.8) for each color to confirm which has the problem. (This is not mentioned in the flowchart in this TSB).*



CAUSE:

The development unit front gears engage their mainframe counterparts slightly differently than the rear gears.

SOLUTION:

Rotate the mainframe gears manually, removing the development unit(s) on which the symptom occurs. Then reinstall the unit(s).

NOTE: *It is not necessary to replace the Development Unit.*

★ CYAN LINES IN YELLOW BACKGROUND AREAS, CYAN SPOTS/LINES IN BACKGROUND AND MAIN IMAGE AREAS

SYMPTOM:

Cyan lines in yellow background areas (Sample 3).

NOTE: *Both development and cleaning are performed in the order: KMCY. If the previous cleaning was insufficient, a dirty image will appear on the next development. The symptom can therefore be easily identified by checking the yellow section of the C4 test chart.*

CAUSE:

Toner may pass between the OPC unit cleaning blade and OPC belt.

NOTE: *To distinguish between this symptom and Cyan Spots/Lines In Background And Main Image Areas (described next page), make multiple copies/prints of the same image.*

- Cyan lines in yellow background areas: Occurs consistently
- Cyan spots/lines in background and main image areas: Occurs, disappears, then sometimes reoccurs.

SOLUTION:

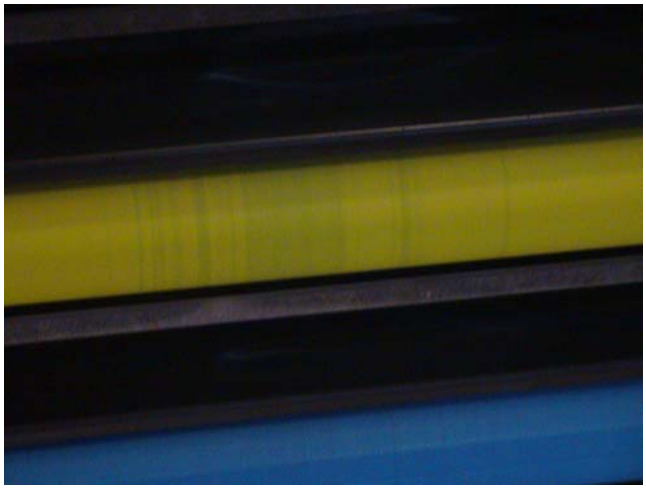
Production Countermeasure:

The material of the cleaning blade has been changed (from August 2003 production)

Field Countermeasure:

Refer to this TSB, i.e. replace the OPC Cleaning Unit.

NOTE: *Cyan toner may be attracted to the surface of the Y development roller after passing between the OPC unit, the cleaning blade or OPC belt. (See the following picture.)*
After you have taken action for the PCU unit, print out several sheets of the Y checker flag pattern with (SP5-955, No. 16). If the symptom disappears, the Y development unit can be used. It is not necessary to replace the Y development unit at this time.



SYMPTOM:

Cyan spots/lines in background and main image areas.

NOTE: *This does not depend on the color of the background area, but is more visible in background areas than in main image areas.*

CAUSE & SOLUTION:

Same as Dirty Spots/Lines In Background And Main Image Areas (described on next page).

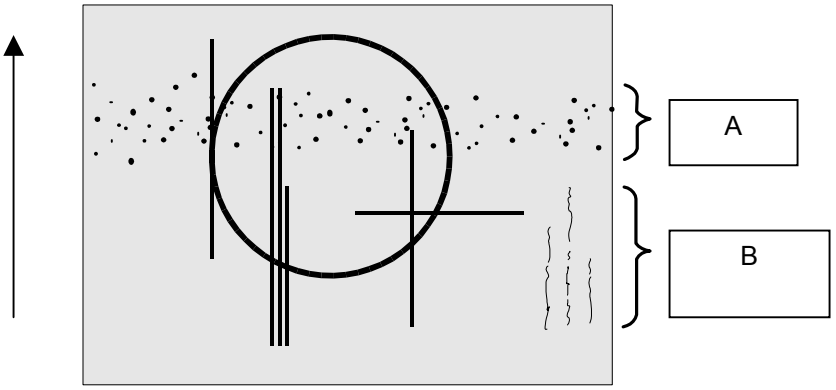
NOTE: *See the previous page for how to distinguish this symptom from Cyan Lines In Yellow Background Areas.*

★ DIRTY SPOTS/LINES IN BACKGROUND AND MAIN IMAGE AREAS

SYMPTOM:

Dirty spots [A] or lines [B] in background and main image areas.

NOTE: *This does not occur on all toner colors, and is more visible in background areas than in main image areas.*



CAUSE:

Insufficient toner charging inside the development unit causes some of the toner to be more easily attracted to the OPC surface.

SOLUTION:

Production Countermeasure:

The same bias that is applied to the Doctor Roller and Toner Supply Roller is now applied to the entrance seal bracket as well, in order to ensure a uniform charge across all three components (from Aug 2003 production).

Field Countermeasure:

Refer to this TSB, i.e. turn the Development Roller in the reverse direction and clean the roller surface with a dry cloth.

★ OTHERS

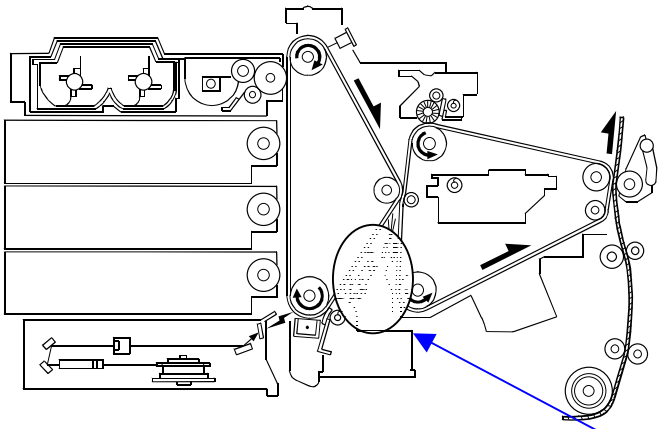
SYMPTOM:

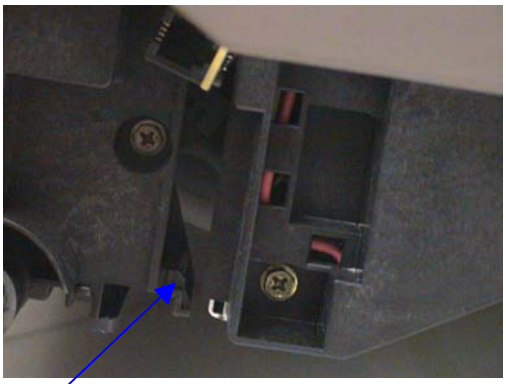
Text image is blurred, smear image occurs, or several white lines appear on printing image.

Many white lines appear.

CAUSE:

A jammed sheet of paper may sometimes get caught in the area between the OPC Belt and ITB in the PCU unit.





Paper caught in the PCU

SOLUTION:

Field Countermeasure:

Remove the OPC Belt-Cleaning Unit (☛ B051/B052 SM Section 3.6.6). Then, remove the paper caught in the PCU.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 014 REISSUE ★ **05/24/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: CORRECTING IMAGE PROBLEMS

COPY QUALITY

GENERAL:

Use this bulletin for correcting image problems. First determine which image problem you have by reviewing the image samples on pages 2 and 3, and then follow the procedures outlined in the flowcharts for correcting that symptom.

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Paper Feed Direction

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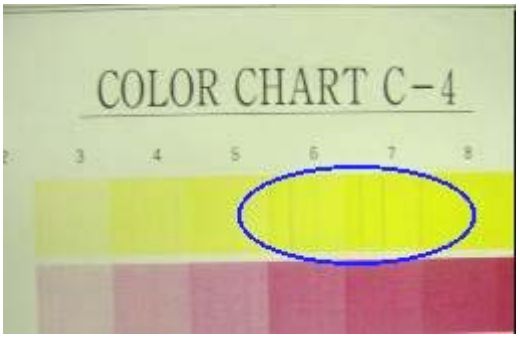
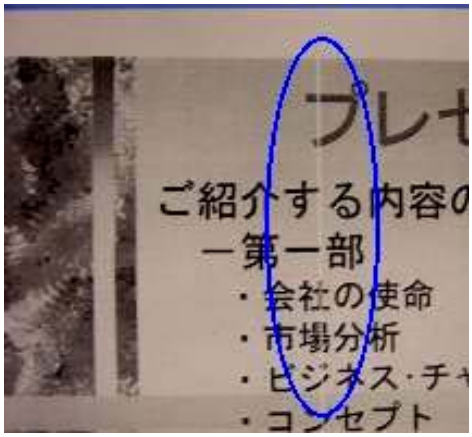


Paper Feed Direction

Image Samples continued

Sample 4 (White line caused by toner on the development roller

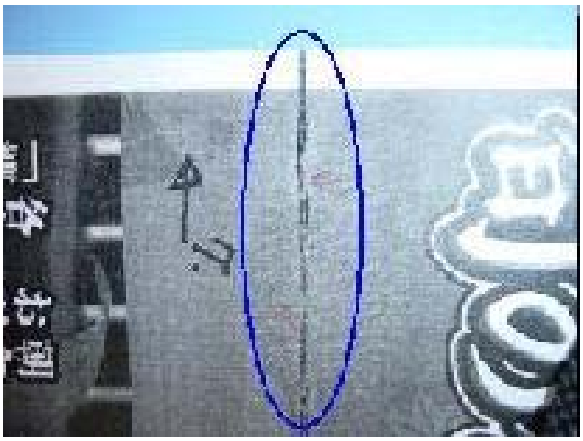


Paper Feed Direction

Sample 5 (Uneven image density caused by toner filming on the development roller)

Paper Feed Direction

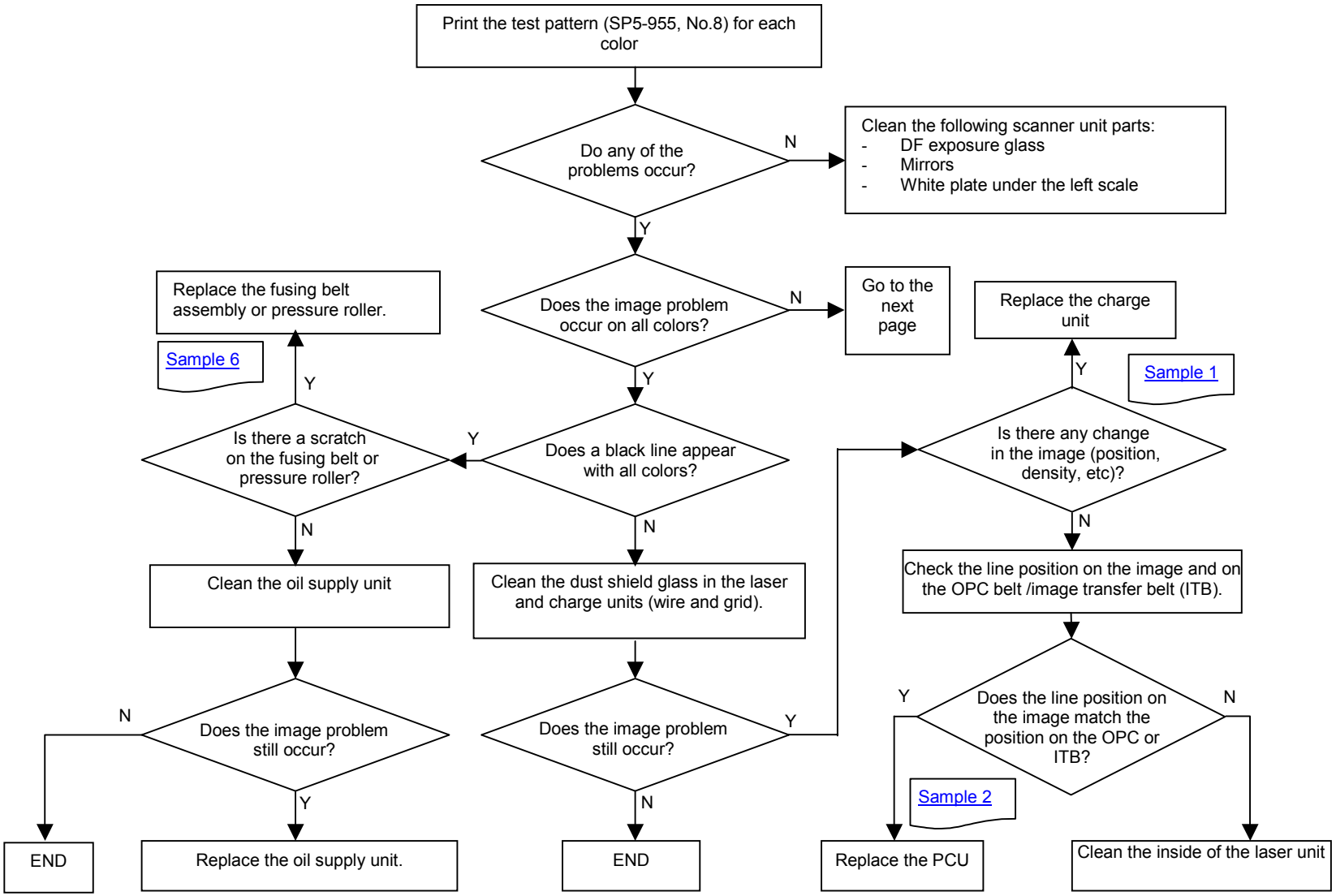
Sample 6 (Black line caused by scratch on the fusing belt/pressure roller)

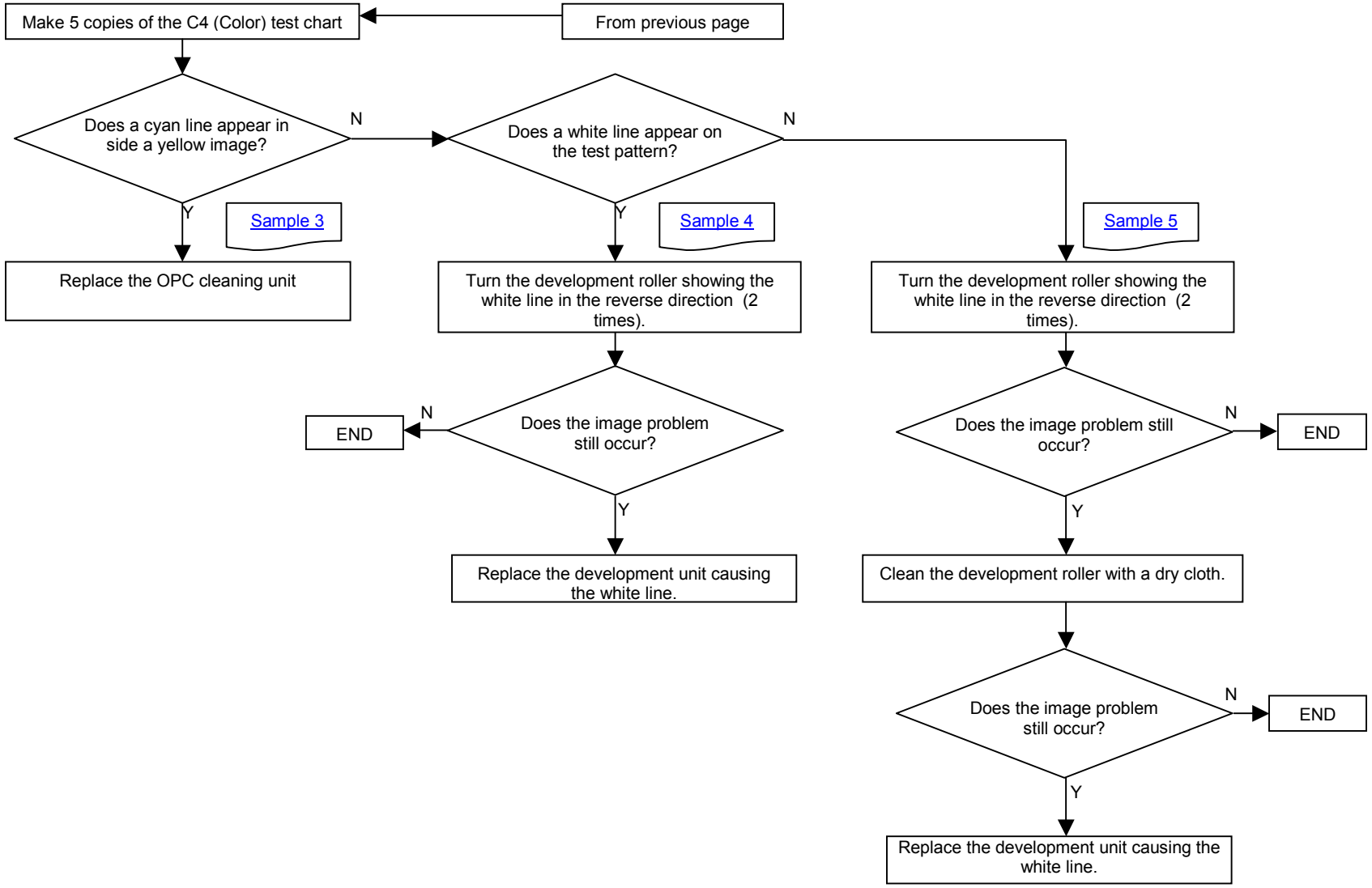


Paper Feed Direction

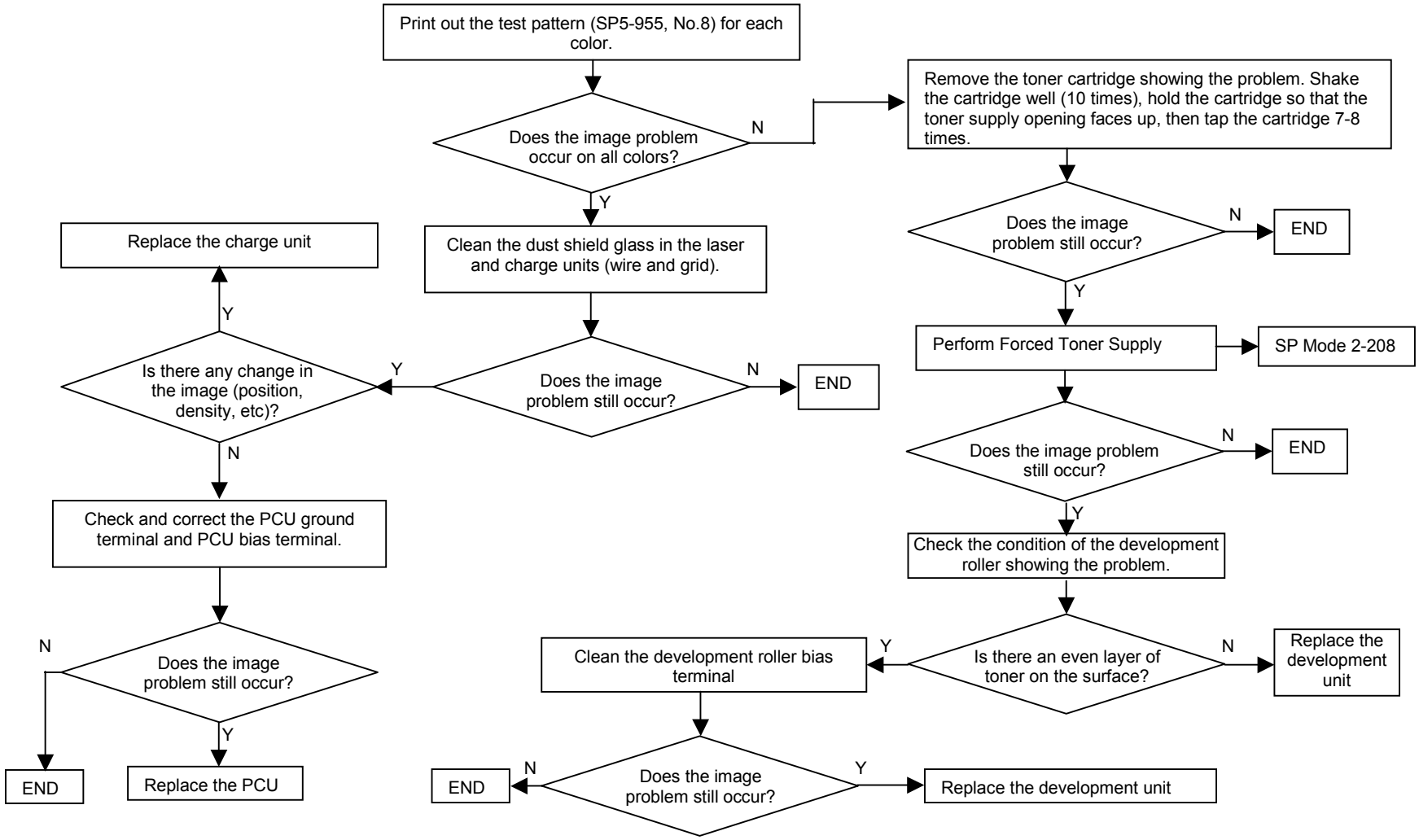
TROUBLESHOOTING:

Please use the following flowchart to take action in response to the six image problems on pages 2 and 3.

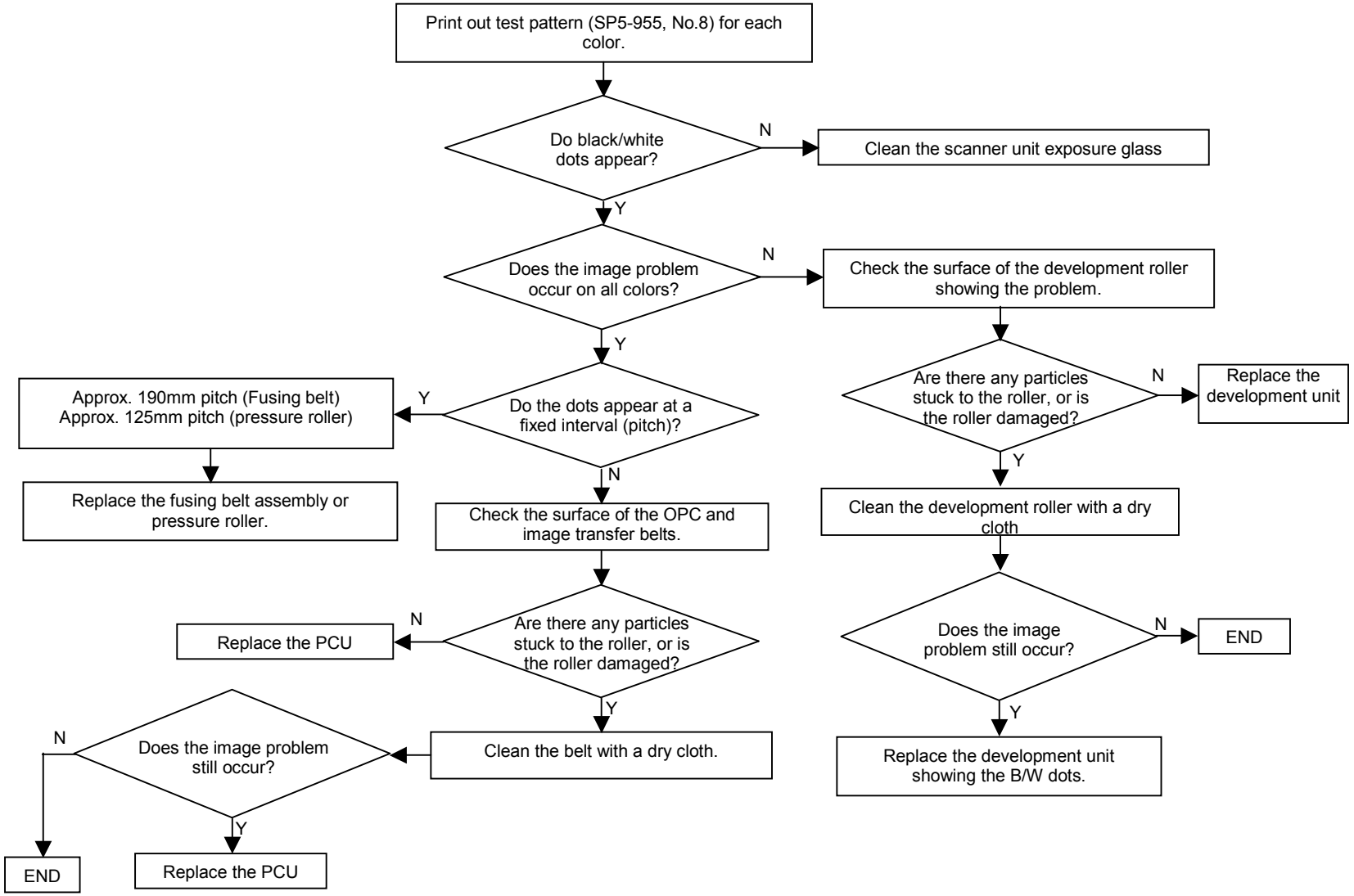




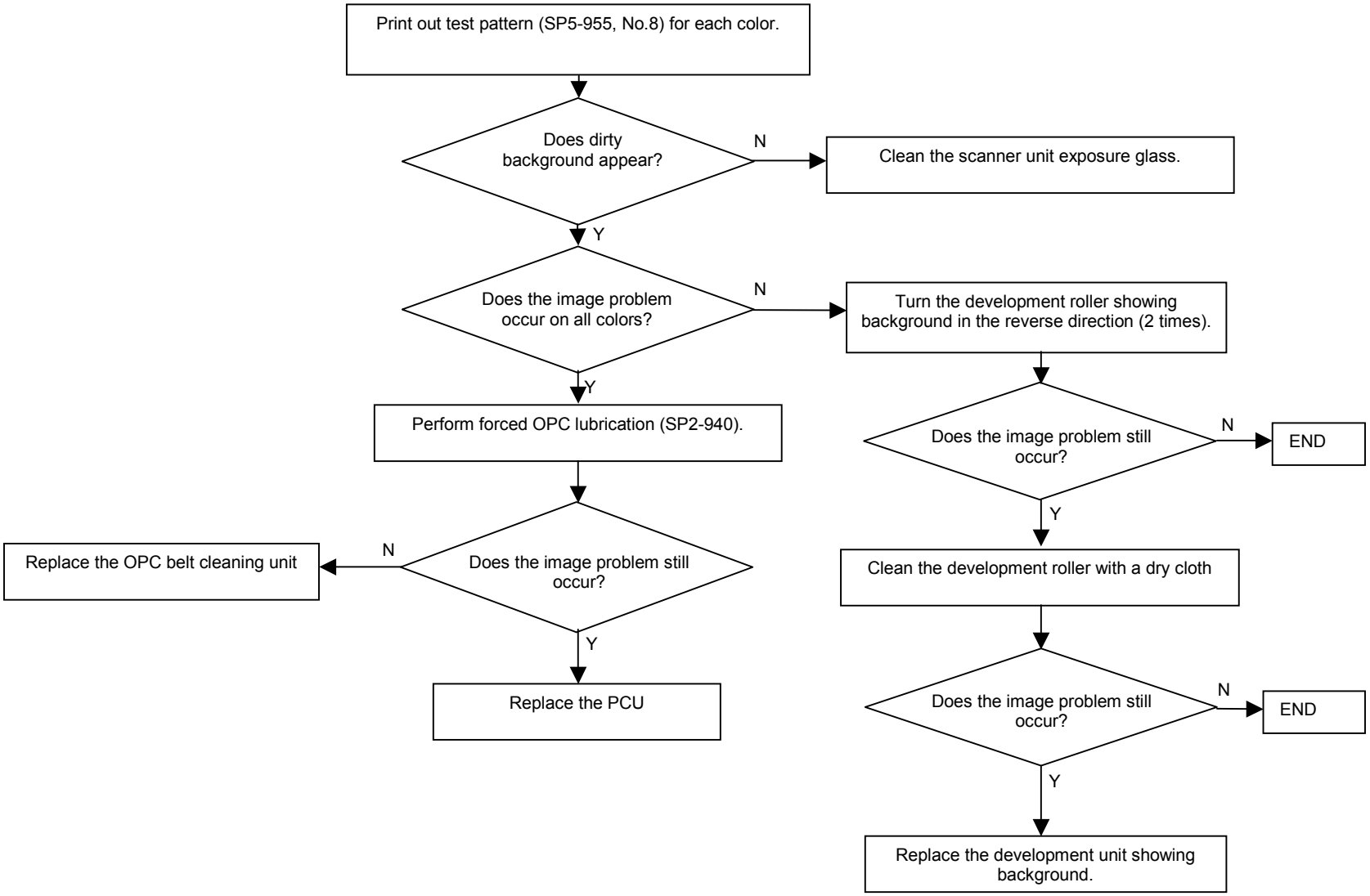
UNEVEN IMAGE DENSITY AT THE SIDE OF THE IMAGE:



BLACK AND WHITE DOTS:



DIRTY BACKGROUND:



LIGHT COPIES, WHITE LINES, FAINT IMAGES, UNEVEN IMAGE DENSITY:

SYMPTOM:

Light copies, white lines, faint images, uneven image density (KMCY) from Cyan toner dropping.
Cyan toner drops from the development unit onto the toner shield glass of the LD unit, which may cause the outputs to show uneven image density, faint images, or white lines (depending on the amount of fallen toner).

NOTE: *This can be confirmed by removing the PCU and checking inside the machine for fallen Cyan toner.*

CAUSE:

Insufficient toner charging due to the diameter of the Cyan Doctor Roller.

SOLUTIONS:

Production Countermeasure:

The diameter of the Cyan Doctor Roller has been increased from 10 mm to 12 mm from August 2003 production.
P/N change:
Cyan Development Unit: B0523207 → B0523217.

Field Countermeasure:

Clean any fallen toner off the toner shield glass and see if the symptom occurs. If there is no improvement, install the new Cyan Development Unit.

SYMPTOM:

Uneven image density (KMCY) from lines or scratches on the OPC belt (Sample 2). The uneven ID shows up as lines in image areas, which correspond to the positions of lines on the OPC or ITB. This symptom does not involve much toner dropping from the Development unit to the LD unit toner glass shield, and can be attributed to a PCU failure.

CAUSE:

Additives from the paper can be transferred onto the OPC surface via the transfer belt, which can cause the OPC surface to become slightly rough or uneven and develop a cloudy film. In addition, the rough surface of the image transfer roller can cause roughness on the rear side of the ITB, which can in turn be transferred to the OPC surface.

SOLUTIONS:

Production Countermeasure:

The following were applied from August 2003 production:

- A cleaning blade has been added to the ITB cleaning section to remove any additives on the ITB surface.
- The surface coating for the image transfer roller has been changed to stainless steel to ensure the ITB is not scratched.

NOTE: *A cloudy film on the OPC surface alone does not trigger this symptom, therefore in such a case there is no action required.*

P/N change:
PCU B0519100 → B0529100.

Field Countermeasure:

- Refer to this Technical Service Bulletin for the troubleshooting.

Refer to TSB B051/B052 - 030 for the action necessary when installing the new and old PCUs in the field.

SYMPTOM:

- White lines or uneven image density due to toner clumps in the development unit (Sample 4).
- Uneven image density from development roller filming (Sample 5) due to an insufficient amount of OPC lubricant. The low amount of lubricant causes the toner to melt easier and stick to the development roller surface.

NOTE: *This does not occur on all colors, so be sure to print out the test pattern (SP5-955, No.8) for each color to confirm which has the problem.*

SOLUTION:

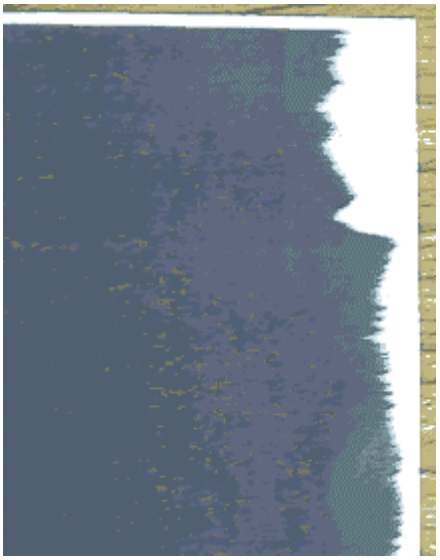
Please refer to this TSB for troubleshooting (Sample 4 and Sample 5).

NOTE: *Turning the Development Roller in the reverse direction (2 times) removes toner clumps in the Development Unit.*

SYMPTOM:

Blank area, faint image or uneven image density on one side of the copy (front or rear side of the Development Unit). In contrast to the black faint images described in TSB B051/B052 - 021, this symptom appears only on the development unit front or rear side, as shown below. See TSB B051/B052 - 015 for more information.

NOTE: *As with the above, this does not occur on all colors, so be sure to print out the test pattern (SP5-955, No.8) for each color to confirm which has the problem. (This is not mentioned in the flowchart in this TSB).*



CAUSE:

The development unit front gears engage their mainframe counterparts slightly differently than the rear gears.

SOLUTION:

Rotate the mainframe gears manually, removing the development unit(s) on which the symptom occurs. Then reinstall the unit(s).

NOTE: *It is not necessary to replace the Development Unit.*

CYAN LINES IN YELLOW BACKGROUND AREAS, CYAN SPOTS/LINES IN BACKGROUND AND MAIN IMAGE AREAS:

SYMPTOM:

Cyan lines in yellow background areas (Sample 3).

NOTE: *Both development and cleaning are performed in the order: KMCY. If the previous cleaning was insufficient, a dirty image will appear on the next development. The symptom can therefore be easily identified by checking the yellow section of the C4 test chart.*

CAUSE:

Toner may pass between the OPC unit cleaning blade and OPC belt.

NOTE: *To distinguish between this symptom and Cyan Spots/Lines In Background And Main Image Areas (described next page), make multiple copies/prints of the same image.*

- Cyan lines in yellow background areas: Occurs consistently
- Cyan spots/lines in background and main image areas: Occurs, disappears, then sometimes reoccurs.

SOLUTION:

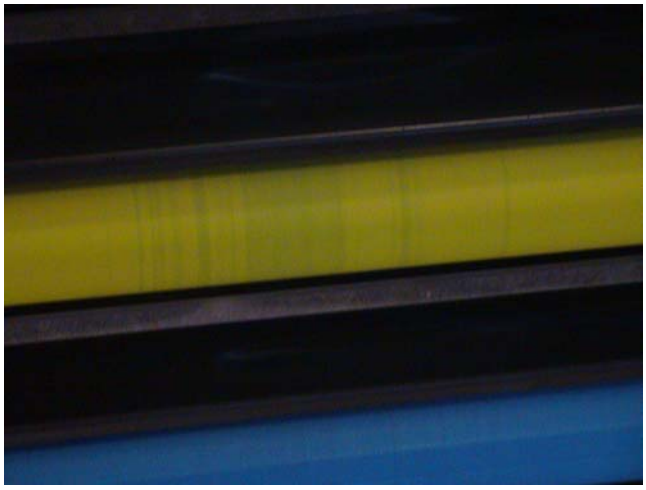
Production Countermeasure:

The material of the cleaning blade has been changed (from August 2003 production)

Field Countermeasure:

Refer to this TSB, i.e. replace the OPC Cleaning Unit.

NOTE: *Cyan toner may be attracted to the surface of the Y development roller after passing between the OPC unit, the cleaning blade or OPC belt. (See the following picture.)*
After you have taken action for the PCU unit, print out several sheets of the Y checker flag pattern with (SP5-955, No. 16). If the symptom disappears, the Y development unit can be used. It is not necessary to replace the Y development unit at this time.



SYMPTOM:

Cyan spots/lines in background and main image areas.

NOTE: *This does not depend on the color of the background area, but is more visible in background areas than in main image areas.*

CAUSE & SOLUTION:

Same as Dirty Spots/Lines In Background And Main Image Areas (described on next page).

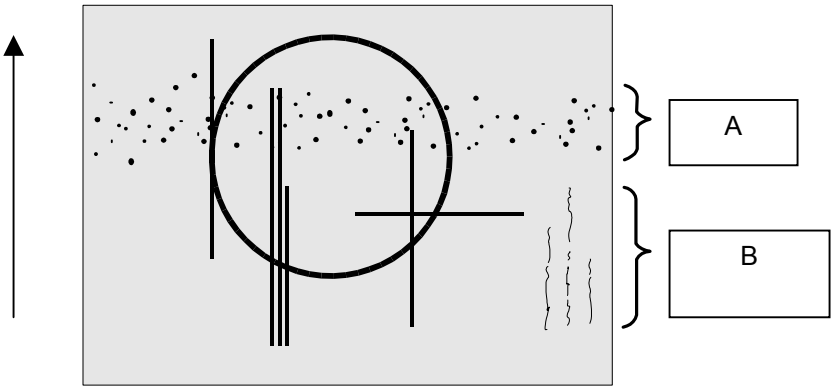
NOTE: *See the previous page for how to distinguish this symptom from Cyan Lines In Yellow Background Areas.*

DIRTY SPOTS/LINES IN BACKGROUND AND MAIN IMAGE AREAS:

SYMPTOM:

Dirty spots [A] or lines [B] in background and main image areas.

NOTE: *This does not occur on all toner colors, and is more visible in background areas than in main image areas.*



CAUSE:

Insufficient toner charging inside the development unit causes some of the toner to be more easily attracted to the OPC surface.

SOLUTION:

Production Countermeasure:

The same bias that is applied to the Doctor Roller and Toner Supply Roller is now applied to the entrance seal bracket as well, in order to ensure a uniform charge across all three components (from Aug 2003 production).

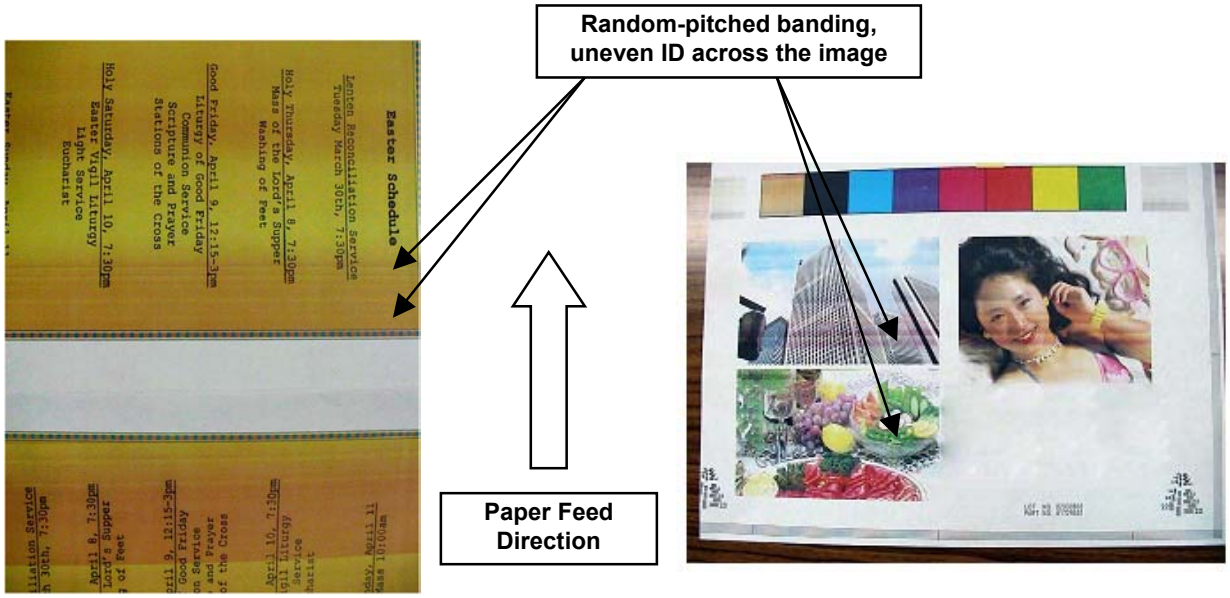
Field Countermeasure:

Refer to this TSB, i.e. turn the Development Roller in the reverse direction and clean the roller surface with a dry cloth.

★ RANDOM PITCHED BANDING:

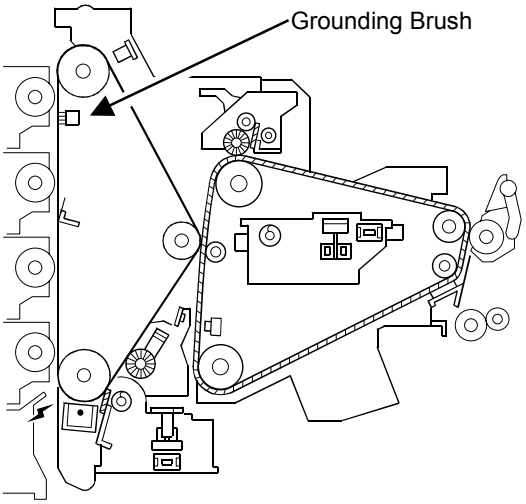
SYMPTOM:

As shown in the illustration, random-pitched banding appearing at random intervals .



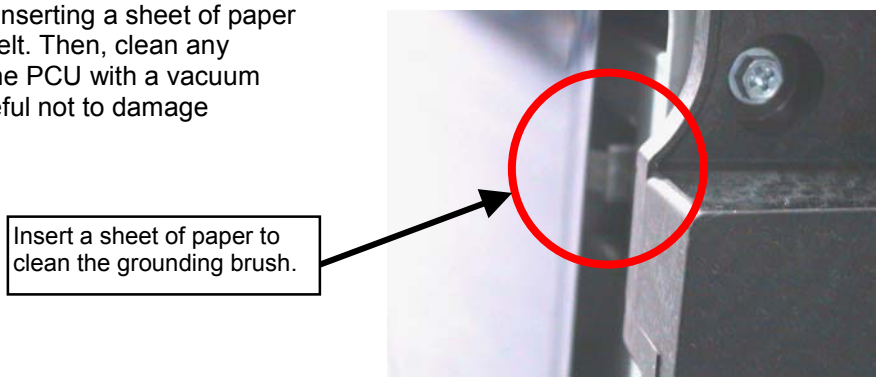
CAUSE:

Toner drops out from the development unit onto the OPC grounding brush, preventing the OPC belt from being properly grounded.



SOLUTION:

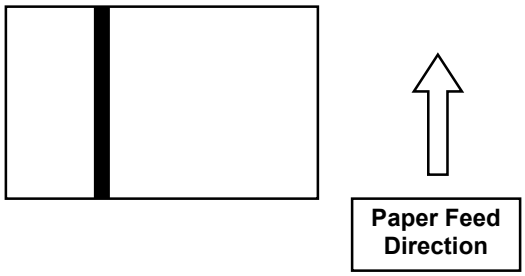
Clean the grounding brush by inserting a sheet of paper between the brush and OPC belt. Then, clean any dropped toner in and around the PCU with a vacuum or cotton cloth, being very careful not to damage the OPC surface.



★WIDE BAND ALONG THE PAPER FEED DIRECTION:

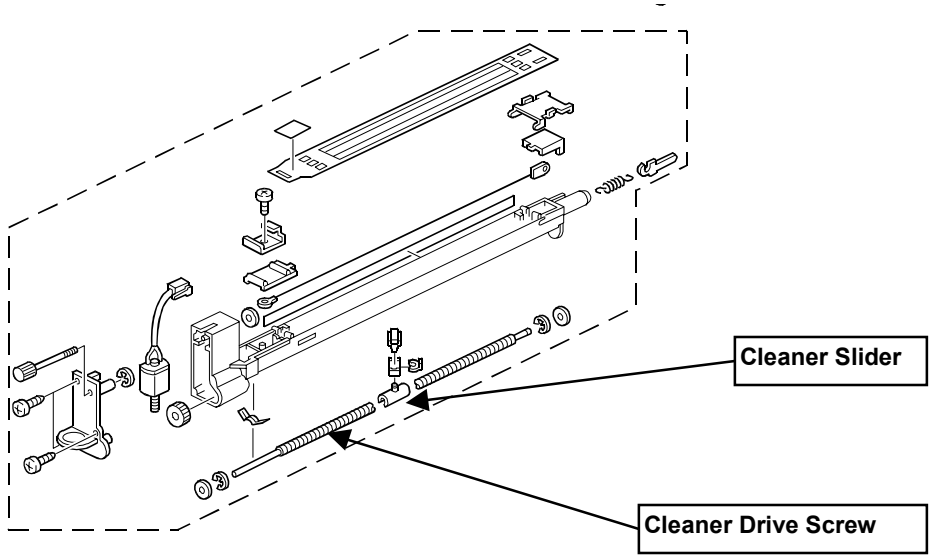
SYMPTOM:

A 15mm wide band along the paper feed direction and/or SC205 Charge Corona Cleaning Error.



CAUSE:

Toner drops from the development unit in between the charge corona cleaner slider and cleaner driving screw.



SOLUTION:

Clean the screw and slider with a damp cloth.

NOTE: *Since the slider needs to be removed to be cleaned. First try cleaning the screw, and then if there is no improvement remove and clean the slider.*

OTHERS:

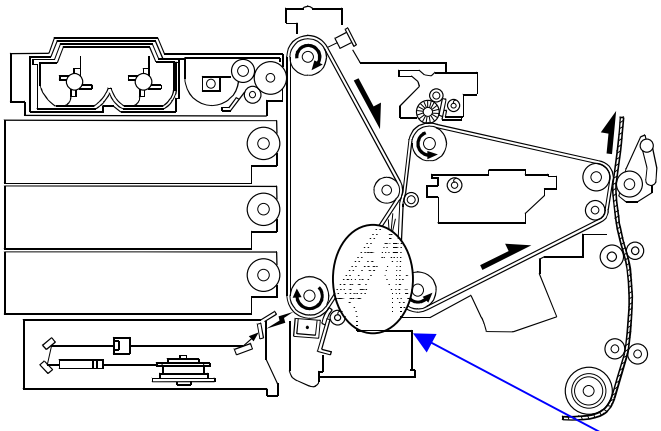
SYMPTOM:

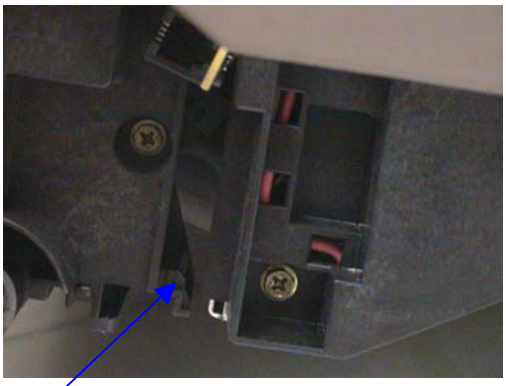
Text image is blurred, smear image occurs, or several white lines appear on printing image.

Many white lines appear.

CAUSE:

A jammed sheet of paper may sometimes get caught in the area between the OPC Belt and ITB in the PCU unit.





Paper caught in the PCU

SOLUTION:

Field Countermeasure:

Remove the OPC Belt-Cleaning Unit (☛ B051/B052 SM Section 3.6.6). Then, remove the paper caught in the PCU.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 015 **04/25/2003**

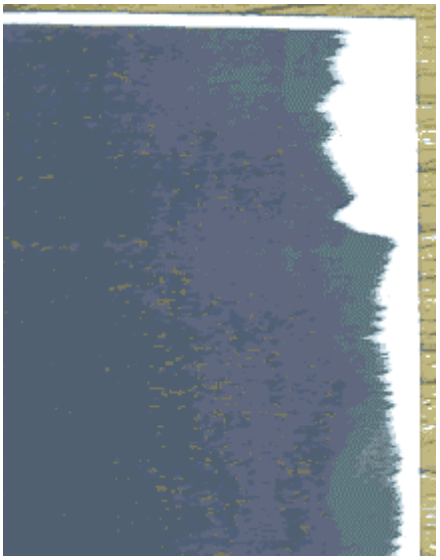
APPLICABLE MODEL:

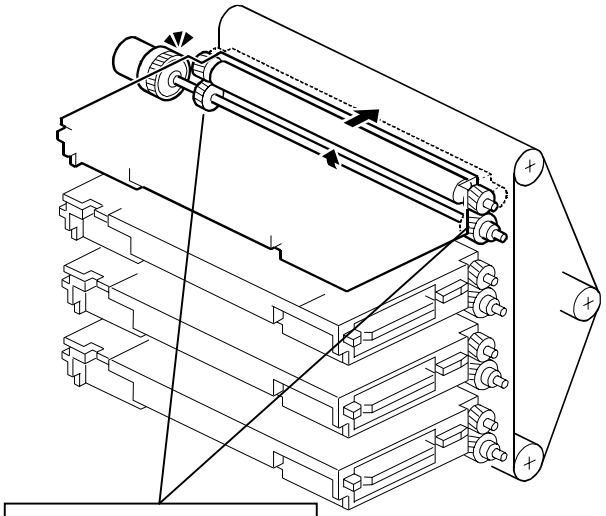
GESTETNER – DSC224/DSC324
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: BLANK AREA ON ONE SIDE OF DEVELOPMENT UNIT

SYMPTOM:

A blank area may appear on one side of the image (development unit front or rear). The blank area may only occur with one color.





CAUSE:

The development unit front gears engage their mainframe counterparts slightly out of alignment from the rear gears.

SOLUTION:

Rotate the mainframe gears manually if the development unit is not easily removed. Remove the development unit(s) on which the symptom occurs. Then reinstall the unit (s). Be sure the development unit(s) is inserted evenly from front to rear of the machine and is locked behind the tabs on the Front and Rear Side Plates.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 015 REISSUE ★ **01/29/2004**

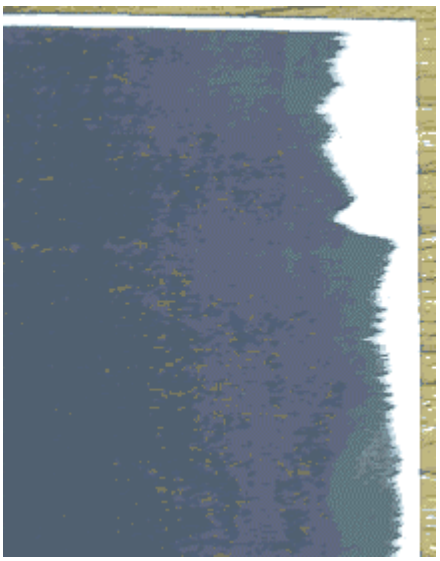
APPLICABLE MODEL:

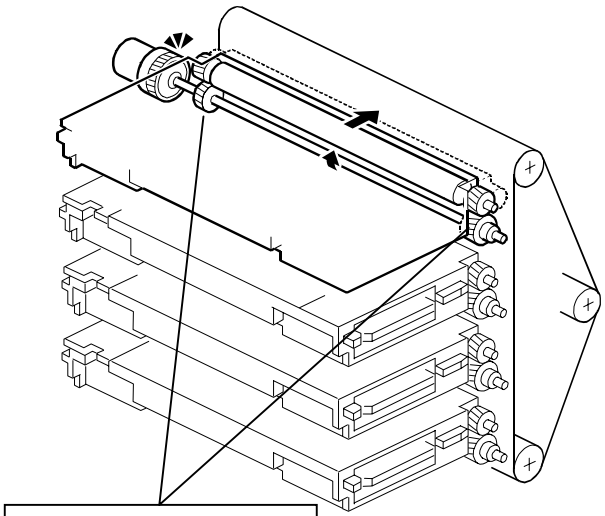
GESTETNER – DSC224/DSC324
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: BLANK AREA ON ONE SIDE OF DEVELOPMENT UNIT

SYMPTOM:

A blank area may appear on one side of the image (development unit front or rear). The blank area may only occur with one color.





★CAUSES:

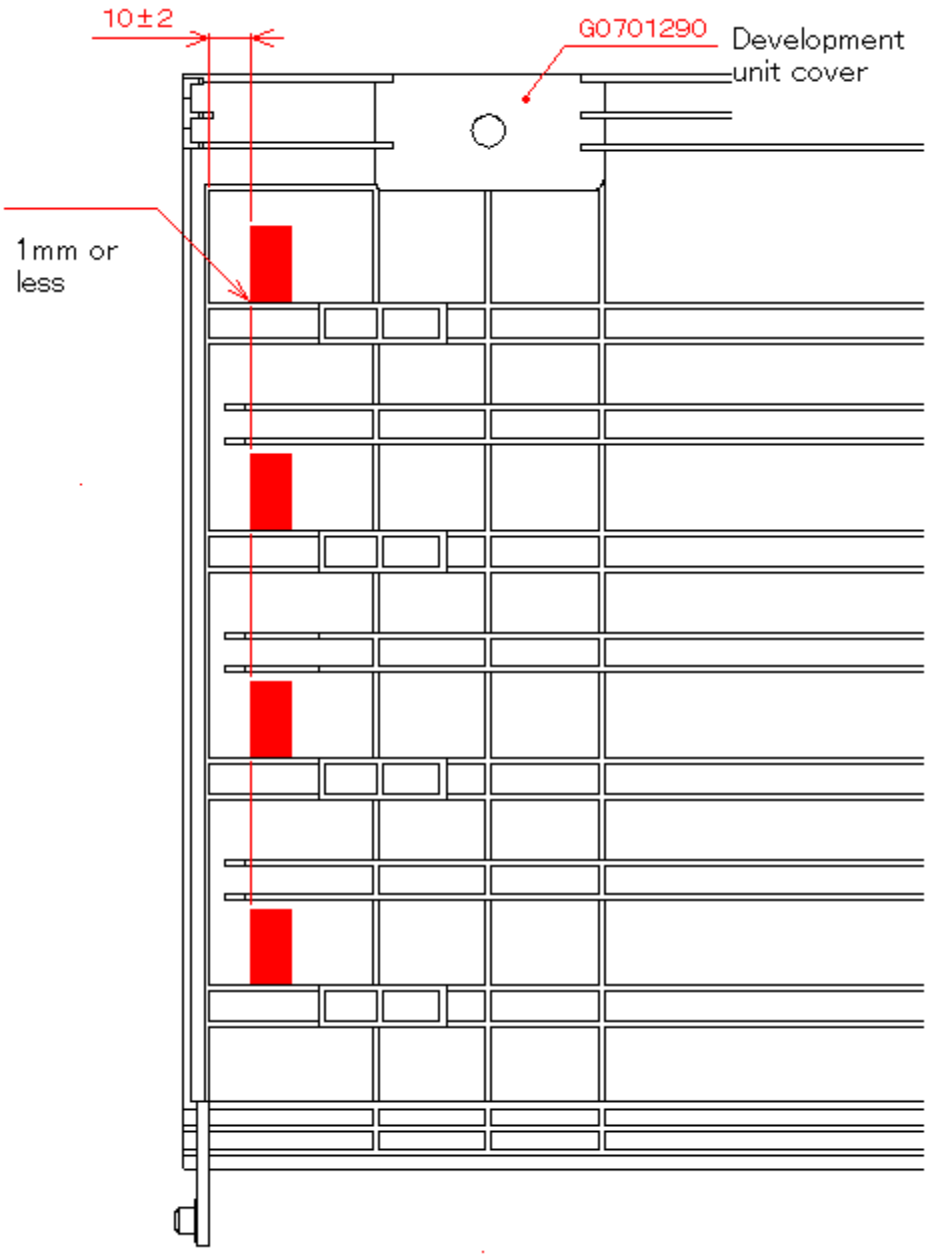
1. The development unit front gears engage their mainframe counterparts slightly out of alignment from the rear gears.
2. The above condition may occur due to the shock when the old toner cartridge is not pulled out correctly during toner replacement.

★SOLUTIONS:

1. Rotate the mainframe gears manually if the development unit is not easily removed. Remove the development unit(s) on which the symptom occurs. Then reinstall the unit (s). Be sure the development unit(s) is inserted evenly from front to rear of the machine and is locked behind the tabs on the Front and Rear Side Plates.

2. In the production line starting from February 2004, to absorb the shock during toner replacement (**CAUSE 2**), the production machines include 4-gap absorber seals (P/N: B0511273) stuck on the development unit cover (See illustration below).

Gap Absorber Seal



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 016 **05/16/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: JAMS FROM BYPASS FEED TRAY

PAPER PATH

SYMPTOM:

When the operator sets more than one sheet of 11 x 8 1/2 (A4) paper on the bypass tray, a paper jam occurs in the fusing unit.

NOTE: *Paper jams in the fuser unit if not properly removed, may cause damage to the pressure roller or fusing belt due to the close contact of the pressure roller strippers to the roller.*

CAUSE:

When the operator fails to remember to specify the paper size (with the "#" key) and an LEF feed direction with 11 x 8 1 /2 (A4), the machine regards the size as 11x17 SEF (A3), since it can only directly detect the width, causing it to sometimes feed two sheets at once.

NOTE: *As the machine is unable to detect the length of paper fed from the bypass tray, the default feed direction for the tray is SEF.*

SOLUTION:

Production Countermeasure:

1. To ensure the multi-feeds will not occur, the default setting for SP1-940 (Bypass paper feed priority) has been changed from 0 (SEF) to **1 (LEF). This has been applied from March 2003 production.** The LEF setting ensures that when 11 x 8 1/2 LEF (A4) is set in the bypass tray, the machine detects this as the size, even though it has the same width as a sheet of 11x17 (A3).
2. An instruction decal will be added to the bypass feed table advising customers to be sure and set the paper size and feed direction before feeding from the bypass tray.

Field Countermeasure:

1. Please advise the customer to set the paper size and feed direction before feeding from the bypass tray.
2. Inform the customer that setting SP1-940 from 0 (SEF) to 1 (LEF), will help prevent damage of the fuser the pressure roller or fusing belt when the paper is removed, change this setting only with the customer's consent. This setting should be done at the next service call.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 016 REISSUE ★ **01/22/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: JAMS FROM BYPASS FEED TRAY

SYMPTOM:

When the operator sets more than one sheet of 11 x 8 1/2 (A4) paper on the bypass tray, a paper jam occurs in the fusing unit.

NOTE: *Paper jams in the fuser unit if not properly removed, may cause damage to the pressure roller or fusing belt due to the close contact of the pressure roller strippers to the roller.*

CAUSE:

When the operator fails to remember to specify the paper size (with the "#" key) and an LEF feed direction with 11 x 8 1 /2 (A4), the machine regards the size as 11x17 SEF (A3), since it can only directly detect the width, causing it to sometimes feed two sheets at once.

NOTE: *As the machine is unable to detect the length of paper fed from the bypass tray, the default feed direction for the tray is SEF.*

SOLUTION:

Production Countermeasure:

1. To ensure the multi-feeds will not occur, the default setting for SP1-940 (Bypass paper feed priority) has been changed from 0 (SEF) to **1 (LEF). This has been applied from March 2003 production.** The LEF setting ensures that when 11 x 8 1/2 LEF (A4) is set in the bypass tray, the machine detects this as the size, even though it has the same width as a sheet of 11x17 (A3).

2. An instruction decal will be added to the bypass feed table advising customers to be sure to set the paper size and feed direction before feeding from the bypass tray.

★ ***The following decals will be added to the B490-17 bypass tray unit as accessories from November 2003 production. The English decal is used on the Standard bypass table unit (NA version only: B052-17, -51, -57).***

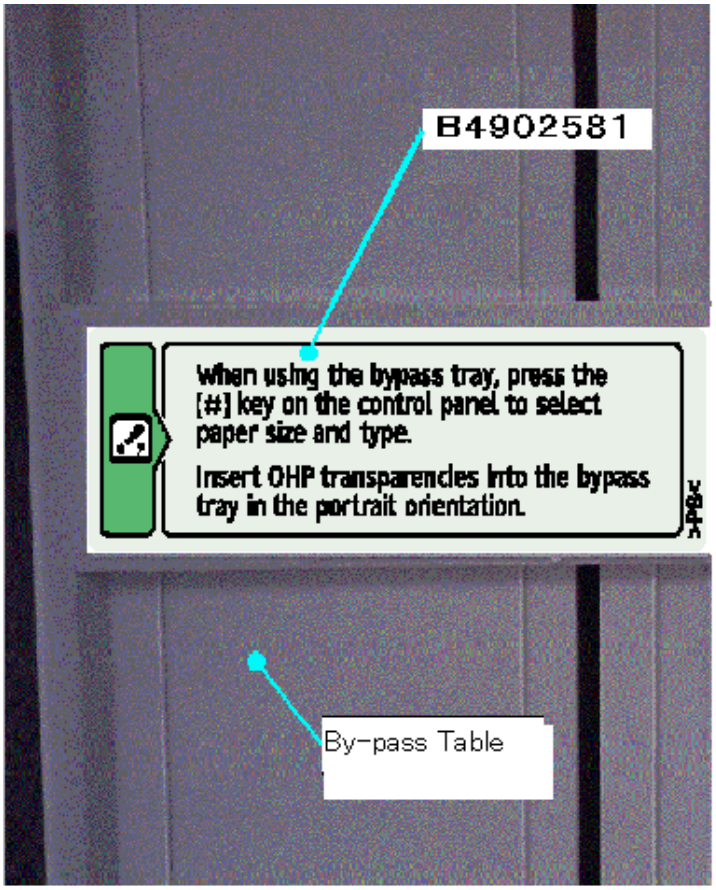
B4902581: Bypass feed decal - English
B4902582: Bypass feed decal - German
B4902583: Bypass feed decal - Italian
B4902584: Bypass feed decal - French
B4902585: Bypass feed decal - Spanish

CÓPIA NÃO CONTROLADA

Field Countermeasure:

1. Please advise the customer to set the paper size and feed direction before feeding from the bypass tray.
1. Inform the customer that setting SP1-940 from 0 (SEF) to 1 (LEF), will help prevent damage of the fuser the pressure roller or fusing belt when the paper is removed, change this setting only with the customer's consent. This setting should be done at the next service call.

★



When using the bypass tray, press the [#] key on the control panel to select paper size and type.

★ **Supplementary note for the Printer function:**

Whenever using the bypass tray with the Printer function, keep in mind that the paper size setting in the driver supersedes the setting in the machine. Therefore to avoid similar paper jams, please advise customers that with the Printer function, it is necessary to make sure the size of each sheet loaded in the bypass tray matches the bypass tray size settings in the driver for each page/sheet.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 017 **05/29/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

The Service Manual pages listed below must be replaced with the pages supplied.

An arrow has highlighted the revised areas ⇒.

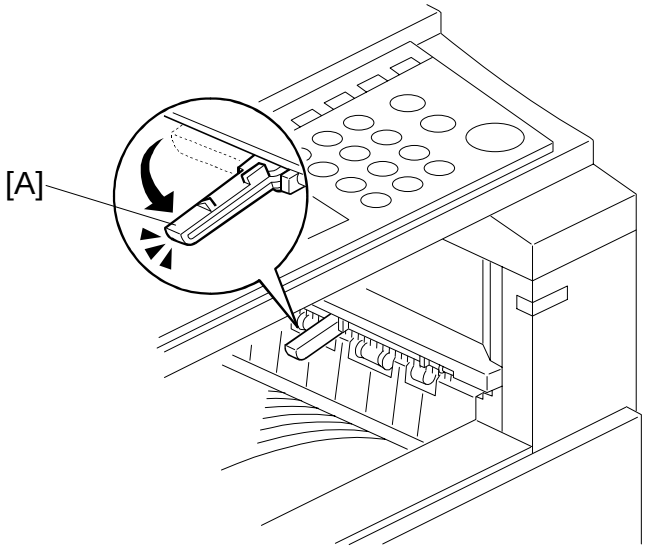
PAGES:

• v	TOC (Updated Information)
• vi	TOC (Updated Information)
• 1 – 12	SP5-907 information added (Updated Information)
• 5 – 41	SP5-836 added (Updated Information)
• 5 – 42	SP5-836 added (Updated Information)
• 5 – 43	SP5-836 added (Updated Information)
• 5 – 44	Only Page numbers changed.
• 5 – 45	Only Page numbers changed.
• 5 – 46	SP5-847 added (Updated Information)
• 5 – 47	SP5-848 added (Updated Information)
• 5 – 48 through 5 – 84	Only Page numbers changed
• 5 –85 through 5 – 87	Corrected font.
• 5 – 88	BICU board Switch 2 (Updated Information)

SERVICE TABLES

CÓPIA NÃO CONTROLADA

DETAILED SECTION DESCRIPTIONS



17. **If the optional bridge unit will not be installed:** Swing the sensor feeler [A] out.
18. Install the optional ARDF or the optional platen cover (see ARDF Installation or Platen Cover Installation).
19. Plug in the machine and turn the main power switch on. The machine automatically performs the initialization procedure. After this has finished, the Start button LED turns green.
20. Make copies of image samples (text, photo, and text/photo modes).
21. Perform Automatic Color Calibration (ACC).
    NOTE: Since this machine has been subject to color adjustment using Automatic Color Calibration (ACC) at the factory, there is no need to make automatic color calibration again if the customer is satisfied with the image sample. If the customer is not satisfied, do the following.
    1) Print the ACC test pattern (UP mode – Maintenance – ACC – Start).
    2) Place the printout on the exposure glass.
    3) Place 10 sheets of white paper on top of the test chart. Then, close the ADF or platen cover.
    4) Press “Start Scanning” on the LCD panel. The machine performs the ACC.
22. Make sure that the sample image has been copied normally.
23. After installing the machine and all options, and making all test copies, initialize the total counter (SP 7-825) if required by the service contract.

⟹ 24. Make sure SP 5 - 907 Plug and Play name is correct.

	9	HDD Formatting (Data for a Design)	
	11	HDD Formatting (Ridoc interface)	
833*	Job Log Transfer		
	7	Job Log Transfer	Saves the results of jobs in the job log. [0 ~ 1 / **0** / 1 /step] • *If this mode is enabled, the results of jobs are written on the HDD.* • *0: Disabled* • *1: Enabled*
835	File Transfer		
	1	Capture server IP address	Displays/specifies the capture server IP address. [00000000000h ~ FFFFFFFFFFF1 / **0** / 1 /step]
	10	Archive: Copier	Validates/invalidates auto-store functions. [0 ~ 1 / **0** / 1 /step] • *0: Invalidates* • *1: Validates*
	11	Archive: Fax Send	
	12	Archive: Fax: Receive	
	13	Archive: Printer	
	14	Archive: Scanner	
835	20	Server: Copier	Transfers or does not transfer data to servers. [0 ~ 1 / **0** / 1 /step] • *0: Not transferred* • *1: Transferred*
	21	Server: Fax Send	
	22	Server Transfer: Fax: Receive	
	23	Server: Printer	
	24	Server: Scanner	
	30	List File: Copier	Selects lists or files. [0 ~ 1 / **0** / 1 /step] • *0: Lists* • *1: Files*
	31	List File: Fax: Send	
	32	List File: Fax: Receive	
	33	List File: Printer	
	34	List File: Scanner	
⇒ 836	Capture Setting		
	001	Capture Function	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/0/1] 0: Disable 1: Enable
	002	Panel Setting	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] 0: Disable 1: Enable The setting for SP5-836- 001 has priority.
	051	Capture Setting: Cancel Document	Deletes the file(s) that could not send to a PC or waiting for sending.

Service Tables

5	Number/Name		Function/[Setting]
⇒ 836	071	Capture Setting: Resolution Conversion for Color	Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	072	Capture Setting: Resolution Conversion for Copy Text	Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	073	Capture Setting: Resolution Conversion for Copy (Others)	Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	074	Capture Setting: Resolution Conversion for Color Print	Determines the resolution conversion ratio when a color print image document is sent to the Document Server via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	075	Capture Setting: Resolution Conversion for Binary Print	Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	076	Capture Setting: Resolution Conversion for Dither Print (Grayscale processing mode)	Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the File Format Converter. [1~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
⇒ 836	081	Capture Setting: Format for Color Copy	Determines the image format for Color Copy images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	082	Capture Setting: Format for Copy Text	Determines the image format for Copy Text images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	083	Capture Setting: Format for Copy (Others)	Determines the image format for Copy (other than text) images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	084	Capture Setting: Format for Color Print	Determines the image format for Color Print images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	085	Capture Setting: Format for Binary Print	Determines the image format for Binary Print images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	086	Capture Setting: Format for Dither Print (1200dpi)	Determines the image format for Dither Print images sent to the Document Server via the File Format Converter. [0~3/2/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	091	Capture Setting: Page Quality for JPEG	Determines the quality level of JPEG images sent to the Document Server via the File Format Converter. [5~95/50/1]
839	IEEE1394		
	4	Device Name	Displays the 1394 device name. [Text up to 13 bytes / **NULL** / – /step]
	7	Cycle Master	• Validates/invalidates the cycle master function. [0 ~ 1 / **1** / 1 /step] *0: Invalidates* *1: Validates*

Service Tables

5	Number/Name		Function/[Setting
839	8	BCR mode	Select either 'Standard', 'IRM color copy', or 'Always effective'.
	9	IRM 1394a Check	[bit 0 ~ bit 1 / **0** / 1 /step] *bit 0: off* *bit 1: on*
	10	Unique ID	[bit 0 ~ bit 1 / **0** / 1 /step] • *bit 0: off* • *bit 1: on*
	11	Logout	Prevents initiators from logging on or makes initiators log off. [0 ~ 1 / **0** / 1 /step] *0: Prevents the initiators (having already logged on) to log on if they try to log on* *1: Makes initiators (having already logged on) to log off if they try to log on*
	12	Login	Allows/disallows an initiator to exclusively log on. [0 ~ 1 / **0** / 1 /step] • *0: Disallows* • *1: Allows*
	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / **8** / 1 /step]
840	IEEE 802.11b		
	6	Channel MAX	Specifies the maximum number of IEEE 802.11b channels. North America: [1 ~ 14 / **11** / 1 /step] Europe: [1 ~ 14 / **13** / 1 /step]
	7	Channel MIN	Specifies the minimum number of IEEE 802.11b channels. [1 ~ 14 / **1** / 1 /step]
	11	WEP Key Select	Selects the WEP key. [00, 01, 10, 11 / **00** / – /step] • *00: 1st key* • *01: 2nd key* • *10: 3rd key* • *11: 4th key*
841	Toner Name Setting		
	1	Black	Specifies supply names. These appear on the screen when the user presses the Inquiry button in the user tools screen.
	2	Cyan	
	3	Yellow	
	4	Magenta	
842	Net File Analysis Mode Setting		
	1	Net File Analysis Mode Setting	**DFU** Default: 00111111 – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
843	Input Check (Controller)		
	1	Input Check (Controller)	[0x00 ~ 0x07 / **–** / 1 /step] **DFU** Default: 00000001 – do not change

5	Number/Name		Function/[Setting
845	Delivery Server		
	1	FTP Port No.	Specifies the FTP port number. [0 ~ 65535 / **3670** / 1 /step]
	2	IP address	Specifies the distribution server IP address. [0 ~ 0xffffffff / **0x00** / – /step]
	3	Retry Timer	Specifies the distribution retry time. [60 ~ 900 / **300** / 1 /step]
	4	Retry Times	Specifies the distribution retry count. [0 ~ 99 / **3** / 1 /step]
	5	IP (Capture Server)	Specifies the distribution server address. [0 ~ 0xffffffff / **0x00** / 1 /step]
	6	Error Display Time	Specifies the display time of the distribution error. [0 ~ 999 / **300** / 1 /step]
	7	Delivery Option	Selects the distribution option. [0 ~ 1 / **0** / 1 /step] • *0: Data goes directly to the connected PC* • *1: Data goes to the Scan Router server*
846	UCS		
	1	Machine ID (Delivery Server)	Specifies the machine ID of the distribution server.
	2	Machine ID Clear (Delivery Server)	Clears the machine ID of the distribution server.
	3	Max Entry	Specifies the maximum entry count. [2000 ~ 5000 / **2000** / 1 /step]
	4	Delivery Server Model	Selects the distribution server model. [0 ~ 4 / **0** / 1 /step] • *0: Unknown* • *1: SG1 (distributed with the copier)* • *2: SG1 (distributed as a package)* • *3: SG2 (distributed with the copier)* • *4: SG2 (distributed as a package)*
	5	Delivery Server Capability	Specifies the distribution capability. [0 ~ 255 / **0** / 2 /step]
	6	Delivery Server Retry Timer	[0 ~ 255 / **0** / 1 /step]
	50	All Directory Clear	Initializes all directories.

5	Number/Name		Function/[Setting
⇒ 847	Net File Mag. Rate		
	001	Copy: Color	Changes the default settings of color copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [1~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	002	Copy: Text	Changes the default settings of copy text image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	003	Copy: Others	Changes the default settings of a copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	004	Print Color	Changes the default settings of color print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	005	Print: Binary	Changes the default settings of binary print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	006	Print: Dither (Grayscale processing mode)	Changes the default settings of dither print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting
⇒ 847	021	Netfile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by DeskTopBinder V2 sent via the File Format Converter. [5~95 / 50 / 1]
⇒ 848	Web Service		Sets the 4-bit switch assignment for the access control setting. 0000: No access control 0001: Denies access to Desk Top Binder V2. Has no effect on access and delivery from Scan Router. The lower 4 bits are used.
	001	Access Control: Net file	Net File: Job printed from the document server from a PC using DeskTopBinder V2. DocBox: Document Server Repository: Document Management area on the machine's hard disks
	002	Access Control: Repository	
	003	DocBox Print	
	004	User Directory	
	005	Delivery Input (Lower 4 Bits)	
	006	Fax Control (Lower 4 Bits)	
849	Counter Clear Day		
	1	Indication	Displays the date when the electrical counter was reset to zero.
	2	Display of Counter Clear Day	Allows or does not allow printing the counter clear day on the user counter list. [0 ~ 1 / **1** / 1 /step] • *0: Printed* • *1: Not printed*
850	Address Book Function		
	1	Switch Module	Selects which module is responsible for user information management. [0 ~ 1 / **1** / 1 /step] **DFU** • *0: SCS* • *1: UCS* *Having changed the setting, turn the main switch off and on to validate it.*
	2	Select Title	Selects the address book index style. [2 ~ 4 / **2** / 1 /step] • *2: Style 1* • *3: Style 2* • *4: Style 3*
852	SMTP		
	1	Server Name	
	2	Port Number	[0 ~ 65535 / **25** / 1 /step]
907	Plug and Play		
	1	Plug and Play	Specifies the Plug and Play setting. [0 ~ 11 / **0** / 1 /step] *Select the required setting from the menu.*

Service Tables

5	Number/Name		Function/[Setting
913	Switchover Permission Time		
	1	Indication Application	Specifies the switching time from the default application to another application. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the default application.*
	2	Print Application	Specifies the switching time from one application to another. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the running application.*
914	Counter Display		
			Allows/does not allow applications to display their counters. [0 ~ 1 / **0** / 1 /step] • *0: Allows* • *1: Does not allow*
919	ACS Mode		
	1	ACS Mode	Selects the ACS mode. **DFU** [0 ~ 1 / **0** / 1 /step] • *0: Standard mode* • 1: High performance mode
954	CSV Password Check		
	1	CSV Password Check	CSV: Copy server (document server) When a document is stored with a password on the copy server, and this document is selected later at the operation panel, this SP determines whether the password is displayed or greyed out. 0: Not displayed 1: Displayed [0 ~ 1 / **0** / 1 /step]
955	Test Pattern		
	1	Pattern	[0 ~ 255 / **0** / 1 /step] See section 5.1.3. for how to use.
	2	Density	[0 ~ 255 / **255** / 1 /step]
966	Document Clear Time		
	1	Document Clear Time	Specifies how many days the document server stores files. [0 ~ 180 / **3** / 1 /step]
970	Debug Serial		
	1	Debug Serial	**DFU**
971	Touch Panel Correction		
	1	Touch Panel Correction	Displays if the operation panel has been calibrated after an SP5-801 execution. [0 ~ 1 / **0** / 1 /step] • *0: Not calibrated* • *1: Calibrated*

5	Number/Name		Function/[Setting
974	Cherry Server Setting		
	1	Cherry Server Setting	Selects the Scan Router server light or full version. [0 ~ 1 / **0** / 1 /step] • *0: Light version* • *1: Professional version*
989	Loop Back Test		
	1	Duplex	Executes a loop back test. [0 ~ 1 / **0** / 1 /step] • *0: Does not execute* • *1: Executes*
	2	Bank	
	3	Exit Option	
	4	ARDF	
	5	Interchange Unit	
	6	By-pass Tray	
	7	1 Bin Tray	
990*	SMC Print		
	1	All (Data List)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] • SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. • All: All SP mode settings • Non-Default: SP settings that have been changed from the defaults
	2	SP (Mode Data List)	
	3	User Program	
	4	Logging Data	
	5	Diagnosis Report	
	6	Non-Default	
	7	NIB Summary (Configuration page, system log page NVRAM log page)	
	8	Net File Log	
990*	21	Copier UP Data (Copy Management Report)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] • SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. • All: All SP mode settings • Non-Default: SP settings that have been changed from the defaults
	22	Scanner SP	
	23	Scanner UP (Scanner Management Report)	
996	Density Adjustment		
	1	Bk	Adjusts the density. [–3 ~ 3 / **0** / 1 /step] –3: Image becomes lighter 3: Image becomes darker This setting changes the development bias and charge corona voltage to adjust the image density.
	2	Y	
	3	M	
	4	C	

SP6-XXX: (Peripherals)

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
006*	ADF Adjustment		
	1	S-to-S Registration	Adjusts the side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	2	Leading Edge Registration	Adjusts the sub-scan registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	3	Trailing Edge Erase	Adjusts the trail edge erase of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	4	S-to-S Registration (Rear)	Adjusts the rear-side side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	5	Sub-san Magnification	Adjusts the sub-scan magnification of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 %/step]
	6	Orig. Buckling	Enables/disables original buckling during rear side scanning. Disable if the customer is scanning fragile originals. [0 ~ 1 / **1** / 1 /step] • *0: Disabled* • *1: Enabled*
	7	Buckle Adjustment	Adjusts original buckling for rear side scanning. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
007	DF Input Check		
	1	Original Set	Displays the signals received from sensors and switches of the ARDF. See section 5.1.4 *Do not check another item before the result is returned.*
	2	Original Width 1	
	3	Original Width 2	
	4	Original Length 1	
	5	Original Length 2	
	6	Orig. Trailing Edge	
	7	Cover Open	
	8	DF Position	
	9	Registration	
	10	Original Exit	
	11	Original Reverse	
008	DF Output Check		
	1	Feed Motor (Forward)	Switches on each electrical component of the ARDF for testing. See section 5.1.5 *Do not start to check another item before ending the test that is in progress.*
	2	Feed Motor (Reverse)	
	3	Trans. Motor (Forward)	
	4	Feed Clutch	
	5	Pick-up Solenoid	
	6	Junction Gate Solenoid	
	7	Stamp Solenoid	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
009	ADF Free Run		
	1	ADF Free Run	Executes an ADF free run. [0 ~ 1 / **0** / 1 /step] • *0: End* *1: Start*
010	ADF Stamp Position		
	1	ADF Stamp Position	Adjusts the stamp position of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
016	ADF Size Change		
	1	ADF Size Change	Selects the paper size detected by the optional ADF original sensors. North America: [0 ~ 1 / **0** / 1 /step] Others: [0 ~ 2 / **0** / 1 /step] • *0: Regular* • *1: A4/LT* • *2: 8K/16K* *Number 2, "8K/16K", is valid for the models of the following regions: Europe, Asia. When number 2 is selected, the following paper sizes are not detected: A3, B4, A4, B5.*
050	Staple Position		
	1	Staple Position	Adjusts the staple position of the optional finisher. [–3.5 ~ 3.5 / **0.0** / 0.5 mm/step]
117	Finisher Input Check		
	1	Entrance	Displays the signals received from sensors and switches in the finisher. See section 5.1.4
	2	Tray Exit	
	4	Staple Entrance	
	5	Stapler Home Position	
	6	Jogger Fence Home Position	
	8	Feed-out Belt Home Position	
	9	Stapler Tray Paper	
	10	Stapler Rotation Home Position	
	11	Staple	
	14	Staple Sheet	
	17	Exit Plate Home Position	
	18	Tray Shift Home Position	
	21	Stack Height	
	23	Tray Lower Limit	
	35	Paper Limit	
	101	500 Fin Entrance	
	102	500 Fin Exit	
	103	500 Fin Jogger Home Position	
	104	500 Fin Top Cover	
	105	500 Fin Height	
	106	500 Fin Lever	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
117	107	500 Fin Upper Limit	
	108	500 Fin Near Limit	
	109	500 Fin Staple Cover	
	110	500 Fin Stapler Home Position	
	111	500 Fin Staple End	
	112	500 Fin Staple	
	113	500 Fin Stapler Lock	
118	Output Check		
	1	Fin All Off	Switches on each electrical component of the finisher. See section 5.1.5
	2	Upper Transfer Motor	
	3	Lower Transfer Motor	
	4	Exit Motor	
	5	Tray Gate Sol	
	6	Tray Lift Motor	
	7	Jogger Motor	
	12	Stapler Motor	
	13	Staple Hummer	
	15	Stapler Gate Sol	
	16	Pos. Roller Sol	
	18	Feed-out Motor	
	19	Shift Motor	
	22	Guide Plate Motor	
	23	Fin Free Run 1	
	24	Fin Free Run 2	
	101	500 Fin All Off	
	102	500 Fin Main Motor	
	103	500 Fin Jogger Motor	
	104	500 Fin Paddle Sol	
	105	500 Fin Gear Sol	
	106	500 Fin Lever Sol	
	107	500 Fin Tray Motor	
	108	500 Fin Stapler Motor	
	109	500 Fin Free Run 1	
	110	500 Fin Free Run 2	
990	ADF Read Position Adjustment		
	1	ADF Read Position Adjustment	Adjusts the reading position of the ADF. Moves the scanner under the glass to a different position. Use this if there is a scratch on the glass. [–10 ~ 10 / 0 / 0.1 mm/step]

SP7-XXX: (Data Log)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001*	Operation Time		
	1	Operation Time	Displays the main motor operation time. [0000000 ~ 9999999 / **0** / 1 minute/step] *Logging this operation time helps identify the cause of a difficulty by analyzing the correlation between the printing count and the OPC-belt operation time.*
002	Original Counter		
	1	Total Counter	Displays the original counters. [0000000 ~ 9999999 / **0** / 1 /step]
	2	Copier	
	3	Fax	
	4	Document Box	
	5	Scanner	
	6	Others	
003*	Print Counter		
	1	Total	Displays the color counters. [–9999 to 9999999 / **0** / 1/step]
	2	Copy: Black	
	4	Copy: Full Color	
	5	FAX: Black	
	6	FAX: Single Color	
	7	Print: Black	
	8	Print: Full Color	
	10	Development: CMY	• *10, 11: These SP modes are development counters.*
	11	Development: K	
	12	CPY: Single Color	
	13	CPY: Twin Color	
	20	Total Full color	• *These SP modes are used for the Japanese market only.*
	21	Total B/W Single Color	
	22	Total Single Color	
	23	Total B/W	
	24	Copy: Full Color	
	25	Print: Full Color	
	26	Copy: Color	
	27	Copy: B/W	
	28	Print: Color (except for B/W)	• *These SP modes are print counters.* • *These SP modes are used in all markets.*
	29	Print: B/W	
	30	Total: Color	
007*	Other Counter		
	1	Duplex	Displays other counter values. [–9999 ~ 9999999 / **0** / 0 sheet/step]
	2	A3/DLT	
	3	Staple	
101*	Paper Size Counter		
	4	A3	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT (11" x 17")	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
101*	36	LG (8 1/2" x 14")	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	38	LT (8 1/2" x 11")	
	44	HLT (5 1/2" x 8 1/2")	
	47	12 x 18	
	128	Other	
105	Paper type Counter		
	1	Normal	Displays the output counter for each paper type. [0 ~ 999999999 / **0** / 1 /step]
	2	Recycled	
	3	Special	
	4	Color	
	5	Letter head	
	6	Label	
	7	Thick	
	8	OHP	
	9	Others	
106*	Waste Toner Full		
	1	OPC	Displays the waste toner bottle counters. [0 ~ 65535 / **0** / 1 /step]
	2	Belt	[0 ~ 65535 / **0** / 1 /step]
201	Total Scan Counter		
	1	Total Scan Counter	
204*	Paper Tray Counter		
	1	Tray 1	Displays the number of sheets fed from each paper feed station. [0 ~ 9999999 / **0** / 0 sheet/step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Duplex	
205	ADF Total Counter		
	1	ADF Total Counter	Displays the ARDF original count. [0000000 ~ 9999999 / **0** / 1 /step]
206	Staple Counter		
	1	Staple Counter	Displays the stapling count. [0000000 ~ 9999999 / **0** / 1 /step]
209	Punch Counter		
	1	Punch Counter	Displays the punching count. [0 ~ 9999999 / **0** / 1 /step]
301	Copy Counter: Magnification		
	1	Reduce 25% <-->49 %	Displays the copy count for each magnification ratio. [0 ~ 9999999 / **0** / 1 /step]
	2	Reduce 50% <-->99 %	
	3	Full Size	
	4	Enlarge 101% <--> 200%	
	5	Enlarge 201% <--> 400%	
	6	Direct Magnification	
	7	Direct Size Magnification mm (inch)	
	8	Auto Reduce/Enlarge	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
304	Copy Counter: Copy Mode		
	1	Text	Displays the copy count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	T/P (Glossy Photo)	
	3	T/P (Printed Photo)	
	4	T/P (Copied Photo)	
	5	Photo (Glossy Photo)	
	6	Photo (Printed Photo)	
	7	Photo (Copied Photo)	
	8	Generation Copy	
	9	Pale	
	10	Map	
	12	Repeat	
	13	Sort	
	14	Staple	
	15	Series	
	16	Erase	
	17	Duplex	
	18	ADF	
	19	Double Copy	
	20	Duplex Original	
	21	Interrupt Copy	
	22	Combine 1 Side	
	23	Combine 2 Side	
	26	Batch	
	27	SADF	
	28	Mixed Sizes	
	29	Stamp	
	30	Cover Page	
	31	Chapter Page	
	32	Color Balance Adjustment	
	33	Adjust Color	
	34	Copy Quality	
	35	Erase Color	
	36	Convert Color	
	37	Color Background	
305	Copy Counter–Set number		
	1	1 to 1	Displays the multi-page job copy counters. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
306	Job Counter–Copy Mode		
	1	Sort	Displays the job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Staple	
	4	Reserve Copy	
	5	Check Copy	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
320	Document Server–Scan Counter		
	1	Document Server–Scan Counter	Displays the number of pages scanned into the document server. [0 ~ 9999999 / **0** / 1 /step]
321	Document Server–Original Size		
	4	A3	Displays the original count for each paper size when using the document server. [0 ~ 9999999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	128	Others	
323	Document Server–Print Size		
	5	A4 (sideways)	Displays the document server printing count for each paper size. [0 ~ 9999999 / **0** / 1 /step]
	6	A5 (sideways)	
	14	B5 (sideways)	
	38	LT (sideways)	
	44	HLT (sideways)	
	128	Other	
	132	A3 (lengthwise)	
	133	A4 (lengthwise)	
	134	A5 (lengthwise)	
	141	B4 (lengthwise)	
	142	B5 (lengthwise)	
	160	DLT (lengthwise)	
	164	LG (lengthwise)	
	166	HT (lengthwise)	
	172	HLT (lengthwise)	
324	Document Server–Print Job Counter		
	1	Duplex	Displays the document server printing job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Sort	
	3	Staple	
	5	Check Copy	
	6	Print 1st Page	
325	Document Server–Job Count (Page No)		
	1	1-page	Displays document server printing job counts for multi-page jobs.
	2	2-page	
	3	3<-->5 page	
	4	6<-->10 page	
	5	over 11 pages	
326	Document Server–Job Count (File No)		
	1	1 file	Displays document server printing job counts classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	2	2<-->5 files	
	3	6<-->10 files	
	4	Over 11 files	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
327	Document Server–Job Count (Set No)		
	1	1 to 1	Displays document server printing job counts classified by number of outputs. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
328	Document Server–Job Count (Print Mode)		
	8	Sort	Displays document server printing count classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	9	Staple	
	12	Duplex	
	24	Stamp	
	25	Cover Page	
	26	Slip Sheet	
401*	Total SC Counter		
	1	SC Counter	Displays how many times SC codes have been output. [0 ~ 9999 / **0** / 0 time/step]
403	Latest 10 SC Log		
	1	Latest	Displays the latest ten SC codes.
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
502*	Paper Jam Counter		
	1	Paper Jam Counter	Displays the total number of jams detected. [0 ~ 9999 / **0** / 0 /step]
503	Original Jam Counter		
	1	Original Jam Counter	Displays the total original jam count. [0 ~ 9999 / **0** / 0 /step]
504*	Jam by Location		
	1	At Power On	
	3	Tray 1: ON	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / **0** / 0 /step]
	4	Tray 2: Non Feed	
	5	Tray 3: Non Feed	
	6	Tray 4: Non Feed	
	7	Bypass: Non Feed	
	8	1st Relay ON	
	9	2nd Relay: ON	
	10	3rd Relay: ON	
	12	Registration (From Tray)	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
504*	13	Registration (From Duplex)	
	14	Duplex Exit	
	15	Interchange Exit:: ON	
	16	Paper Exit: On	
	17	Bridge Exit: On	
	18	Bridge Relay: On	
	19	Duplex Entrance 1: On	
	20	Duplex Entrance 2: On	
	23	Duplex Exit: On	
	40	Finisher Entrance: On	
	41	Finisher Exit: On	
	58	1st Relay: Off	
	59	2nd Relay: Off	
	60	3rd Relay: Off	
	61	4th Relay: Off	
	63	Registration: Off	
	64	Fusing Exit	
	65	Interchange Exit: Off	
	66	Paper Exit: Off	
	67	Bridge Exit: Off	
	68	Bridge Relay: Off	
	69	Duplex Entrance 1: Off	
	70	Duplex Entrance 2: Off	
	73	Duplex Exit: Off	
	100	Finisher Entrance: Off	
	101	Finisher Exit: Off	
	103	Finisher Staple	
	104	Finisher Stack Feed-out	
	105	Finisher Paper Taking out	
	107	Finisher Drive Error	
	108	Finisher Tray Lift Error	
	109	Finisher Jogger Error	
	110	Finisher Tray Shift Error	
	111	Finisher Stapler Error	
	112	Finisher Stack Feed-out	
	114	Finisher Feed out Error	
	115	Finisher No Response	
505	Original Tray by Location		
	5	Registration Sensor (On Check)	
	6	Relay Sensor (On Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	7	Inverter Sensor (On Check)	Inverter Sensor = Original Reverse Sensor (S10)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
505	55	Registration Sensor (Off Check)	
	56	Relay Sensor (Off Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	57	Inverter Sensor (Off Check)	Inverter Sensor = Original Reverse Sensor (S10)
506*	Jam by Paper Size		
	4	A3	Displays the number of jams according to paper size. [0 ~ 9999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	47	12" x 18"	
	128	Other	
507*	Copy Jam History		
	1	Latest	Displays the latest 10 paper jams. *The information contains the following four lines:* • *Location code (☛ SP7-504)* • *Paper size (in the ASAP code)* • *Total counter (as of the jam)* • *Date*
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
508	Original Jam History		
	1	Latest	Displays the logs of the latest 10 original jams. *The logs are composed of the following four lines:* • *Location code (☛ SP7-505)* • *Paper size (in the ASAP code)* • *Total counter (as of the jam)* • *Date*
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
801	Firmware Version		
			Displays the firmware versions and part numbers if available.
803*	PM Counter		
	1	Number of Development	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] • *For clearing the counters, see SP7-804.*
	2	PCU	
	3	Development: M	
	4	Development: C	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
803*	5	Development: Y.	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] *For clearing the counters, see SP7-804.*
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Bank 1 Feed	
	15	Bank 2 Feed	
	16	Bank 3 Feed	
	17	Bank 4 Feed	
	18	Manual Feed	
	19	Paper transfer unit	
	20	ADF	
804	PM Counter Reset		
	1	Number of Development	Clears the PM counters. [0 ~ 1 / **0** / 1 /step] • *For displaying the counter, see SP7-803.*
	2	PCU	
	3	Development: M	
	4	Development: C	
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Tray 1 Roller	
	15	Tray 2 Roller	
	16	Tray 3 Roller	
	17	Tray 4 Roller	
	18	By-pass Feed	
	19	Paper Transfer Unit	
	20	ADF	
	100	All	
807	SC JAM Counter Clear		
	1	SC Jam Counter Clear	Clears the counters related to SC codes and paper jams. [0 ~ 1 / **0** / 0 /step]
808	Counter All Clear (except total)		
	1	Counter All Clear (except total)	Clears all counters except for SP7-003 and –007. [0 ~ 1 / **0** / 0 /step]

810	Access code clear		
	1	Access code clear	Clears the key operator password. *SP7-810 clears the key operator password. After clearing this code, stored data can be accessed without using it.* *To register a new key operator password, use SP5-409-1.*
811	Original Counter Clear		
	1	Original Counter Clear	Clears the original counter.
816	Tray Counter Clear		
	1	Tray 1	Clears the tray counters (SP7-204). [0 ~ 1 / **0** / 0 /step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Tray Duplex	
822	Memory Clear		
	1	Copy Cunter: Magnification Clear	Clears the copy counter (classified by magnification)
825	Electrical Counter Reset		
	1	Electrical Counter Reset	Sets the total counter to “0”. [0 ~ 0 / **0** / 0 /step]
826	MF Error Counter		
	1	Error Total	Displays the MF error counters.
	2	Error Staple	
827	MF Error Counter Clear		
	1	MF Error Counter Clear	Clears the MF error counter.
832*	Diagnostic result		
	1	Diagnostic Result	Displays the result of the diagnostics. Refer to section 4.2 for the error codes. [0 ~ 0 / **0** / 0 /step]
833	Coverage		
	1	Last: M	Displays coverage ratios. [0.00 ~ 100.0 / **0.00** / 0.01 %step] *This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper.* *Do not use this counter for billing purposes. This is because this value is not directly* proportional to the amount of toner consumed, although of course *it is one factor that affects this amount. The other major facors involved include: the type, total image area and image density of the original, toner concentration and developer potential.* *Last: This is the coverage for the previous sheet.* *Average: This is the average coverage for each sheet.*
	2	Last: C	
	3	Last: Y	
	4	Last: Bk	
	5	Average: M	
	6	Average: C	
	7	Average: Y	
	8	Average: Bk	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
834	Toner Consumed		
	5	M	Displays the coverage ratios, including toner revitalization mode. [0 ~ 9999999 / **0** / 1 /step] *This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).* *Do not use this counter for billing purposes.*
	6	C	
	7	Y	
	8	Bk	
835	ACC Counter		
	1	M	Displays the number of times ACC has been done. [0 ~ 9999999 / **0** / 1 /step]
	2	Y	
	3	C	
	4	Bk	
836	Total Memory Size		
	1	Total Memory Size	Displays the memory capacity.
837	Memory Clear		
	1	Memory Clear	Clears the SP7-304 counter (copy count classified by mode).
838	Memory Clear		
	1	Memory Clear	Clears the SP7-305 counter (job count classified by output count).
839	Memory Clear		
	1	Memory Clear	Clears the SP7-306 counter (job count classified by job count).
840	Memory Clear		
	1	Memory Clear	Clears the SP7-320 counter (document box count).
841	Memory Clear		
	1	Memory Clear	Clears the SP7-321 counter (original count classified by paper size).
842	Memory Clear		
	1	Memory Clear	Clears the SP7-323 counter (print count classified by paper size).
843	Memory Clear		
	1	Memory Clear	Clears the SP7-324 counter.
844	Memory Clear		
	1	Memory Clear	Clears the SP7-325 counter.
845	Memory Clear		
	1	Memory Clear	Clears the SP7-326 counter.
846	Memory Clear		
	1	Memory Clear	Clears the SP7-327 counter.
847	Memory Clear		
	1	Memory Clear	Clears the SP7-328 counter.1
848	Memory Clear		
	1	Memory Clear	Clears all the document server counters, which include: • *SP7-301_SP7-304_SP7-305* • *SP7-306_SP7-320_SP7-321* • *SP7-323_SP7-324_SP7-325* • *SP7-326_SP7-327_SP7-328*

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
850	High Duty Counter		
	1	M	Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours.
	2	C	
	3	Y	
	4	Bk	
901	Assert Information (Assert Information)		
	1	File Name	Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / **0** / 0 /step]
	2	# of Lines	
	3	Location	
904	Waste Toner Full Clear		
	1	OPC	Clears the waste toner bottle full counters. [0 ~ 1 / **0** / 0 /step] • *0: Not clears* • *1: Clears*
	2	Belt	
	100	All	
906*	PM Counter-Previous		
	1	PCU	Displays the previous PM counters. [0 ~ 9999999 / **0** / 0 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	ADF	
907	Replace counter		
	1	PCU	[0 ~ 255 / **0** / 1 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
907	12	Filter 2	[0 ~ 255 / **0** / 1 /step]
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	Toner: M	
	20	Toner: C	
	21	Toner: Y	
	22	Toner: Bk	
	23	ADF	
908	Process Control Counter		
	1	Process Control Counter	Displays the process control counter. [0 ~ 9999999 / **0** / 1 sheet/step]
909	Process Control Reset		
	1	Process Control Reset	Resets the process control counter.
913	Oil Counter		
	1	Oil Counter	Displays the oil supply unit counter. [0 ~ 65535 / **0** / 1 sheet/step]
914	Oil Clean Counter Reset		
	1	Oil Clean Counter Reset	Resets the oil cleaner counter.
915	Process Error Log		
	1	Log 1	Displays the latest three process control error logs. *The following are the error codes:* Development unit initial settings errors: • 110: Incorrect image detected by cyan ID sensor • 116: Incorrect image detected by magenta ID sensor • 118: No black image Development bias settings errors: • 113: Incorrect image detected by cyan ID sensor • 114: Incorrect image detected by magenta ID sensor • 115: Incorrect image detected by yellow ID sensor • 123: Incorrect image detected by black ID sensor ID sensor errors: • 103: ID sensor error • 104: ID sensor unable to detect image • 105: OPC belt not detected
	2	Log 2	
	3	Log 3	
920	Machine Counter		
	1	Machine Counter	[0 ~ 0xFFFFFFF / **0** / 1 /step]
921	Machine Counter Clear		
	1	Machine Counter Clear	Clears the machine counter.
922	Toner End Counter		
	1	K Toner	Displays the toner end counter, which indicates the possible print count after a toner near end.
	2	C Toner	
	3	M Toner	
	4	Y Toner	

7	Mode No. (Class 1. 2 and3)		Function / [Setting]
923	Toner End Counter Clear		
	1	K Toner	Clears the toner end counter (SP7-922). *The machine goes back to the normal operation mode if the toner end counter is cleared.*
	2	C Toner	
	3	M Toner	
	4	Y Toner	
	100	All	
924	Charger Clean Counter		
	1	Charger Clean Counter	Displays how many times the charge corona wire has been cleaned. [0 ~ 9999999 / **0** / 1 sheet/step] *SP7-926 resets the counter.*
925	Time Counter Display		
	1	Time Counter Display	Displays the current counter of the charge corona unit cleaning interval. *SP2-801 specifies the charge corona unit cleaning interval.*
926	Charger Cleaner Counter Reset		
	1	Charger Cleaner Counter Reset	Resets the charge wire cleaner counter (SP7-924).
927	Timer Counter Clear		
	1		Clears the counter of the charge corona unit cleaning interval. *SP7-927 clears the counter displayed by SP7-925, but does not clear the value specified with SP2-801.*
928	Previous PM Counter Clear		
	1	Previous PM Counter Clear	Clears the previous PM counter (SP7-906).
929	Replace Counter Clear		
	1	Replace Counter Clear	Clears the replace counter.
930	Counter For Designer		
	1	Counter 1 For Designer	**DFU**
	2	Counter 2 For Designer	

SP9-XXX: (Etc.)

9	**Mode No. (Class 1, 2, and 3)**		**Function / [Setting]**
904	Discharge Threshold		
	1	Discharge Threshold	[90 ~ 220 / **150** / 0.1 g/m^3/step]

5.1.3 TEST PATTERN PRINTING (SP5-955-1)

1. Enter the SP mode and select SP5-955-1.
2. Enter the number for the test pattern that you want to print and press #. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern	No.	Test Pattern
0	None	23	1 dot Grid Pattern (Reverse order of LD1/2 on)
1	Vertical Line (1-dot)	24	3 lines Grayscale
2	Horizontal Line (1-dot)	25	Horizontal Grayscale – 1
3	Vertical Line (2-dot)	26	Vertical Grayscale – 1
4	Horizontal Line (2 dot)	29	Horizontal Grayscale – 2
5	1 dot Grid Pattern0 – 1	30	Vertical Grayscale – 2
6	1 dot pair Grid Pattern – 1	31	Horizontal Grayscale (600 dpi)
7	Alternating Dot Pattern (1 dot)	32	Vertical Grayscale (600 dpi)
8	Alternating Dot Pattern (2 dot)	35	Horizontal Grayscale with White Line – 1
9	Full Dot Pattern	36	Vertical Grayscale with White Line – 1
10	Black band	38	Horizontal Grayscale with White Line – 2
11	Trimming Area (1 dot)	39	Vertical Grayscale with White Line – 2
12	Trimming Area (2 dot)	40	Horizontal Grayscale with White Line (600 dpi)
13	Argyle Pattern (1 dot)	41	Vertical Grayscale with White Line (600 dpi)
14	Argyle Pattern (2 dot)	43	Blank image
15	Horizontal Cross Stitch	50	Vertical Cross Stitch
16	Checker Flag	51	2 beam
19	Alternating Dot Pattern (4 dot)	52	Trimming Area with Crossed Lines
20	1 dot Horizontal Line (Reverse order of LD1/2 on)	53	1 dot Grid Pattern – 2
21	1 dot Grid Pattern (Reverse order of LD1/2 on)	54	1 dot pair Grid Pattern – 2
22	1 dot pair Grid Pattern (Reverse order of LD1/2 on)		

5.1.4 INPUT CHECK

Main Machine Input Check (SP5-803)

1. Enter the SP mode and select SP5-803.
2. Select an item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

   0 0 0 0 0 0 0 0

   Bit 7 6 5 4 3 2 1 0
3. Check the status of each item against the corresponding bit numbers listed in the table below.

SP5-803 -XXX		Description	Reading	
			0	1
1	Tray 1 Set	Tray 1 set (standard tray)	Set	Not set
2	Tray 1 Paper End	Tray 1 paper end sensor (standard tray)	Paper End	Paper is present
3	Tray 1 Paper Height	Tray 1 paper near-end sensor (standard tray)	Not near end	Near end
4	Tray 1 Paper Size	Tray 1 paper size sensor (standard tray)	(See table 1.)	
5	Tray 2 Set	Tray 2 set (standard tray)	Set	Not set
6	Tray 2 Paper End	Tray 2 paper end sensor (standard tray)	Paper End	Paper is present
7	Tray 2 Paper Height	Tray 2 paper near-end sensor (standard tray)	Not near end	Near end
8	Tray 2 Paper Size	Tray 2 paper size sensor (standard tray)		
9	Registration Sensor		Detected	Not detected
10	Upper Relay	Paper feed sensor	Detected	Not detected
11	Lower Relay	Paper feed sensor	Detected	Not detected
12	Right Cover SW		Closed	Open
13	Exit Sensor		Detected	Not detected
14	Paper Overflow		Full	Not full
15	Exit Cover Switch		Closed	Open
16	Interchange Unit Set		Set	Not set
17	Interchange Exit		Detected	Not detected
18	By-pass Tray Set		Not set	Set
19	By-pass Paper End		Paper End	Paper is present
20	By-pass Paper Size			
21	Fusing Unit Set		Set	Not set
22	Fusing Exit		Paper End	Paper is present
23	Fusing Oil End			
24	Fusing High Temperature			

SP5-803 -XXX		Description	Reading	
			0	1
25	Discharge Bias Leak			
30	Toner End: M	Toner end sensor: M	Not end	End
31	Toner End: C	Toner end sensor: C	Not end	End
32	Toner End: Y	Toner end sensor: Y	Not end	End
33	Toner End: K	Toner end sensor: K	Not end	End
34	Toner Unit: M	Toner cartridge memory chip: M	Not set	Set
35	Toner Unit: C	Toner cartridge memory chip: C	Not set	Set
36	Toner Unit: Y	Toner cartridge memory chip: Y	Not set	Set
37	Toner Unit: K	Toner cartridge memory chip: K	Not set	Set
38	O/B Waste Toner Sensor	OPC belt waste toner sensor	Full	Not full
39	O/B Waste Toner Switch	OPC belt waste toner bottle switch	Set	Not set
40	Belt Mark	Belt mark sensor	Not detected	Detected
41	New PCU Sensor	Not used	-	-
42	T/B Waste Toner Sensor	Transfer belt waste toner sensor	Full	Not full
43	T/B Waste Toner Switch	Transfer belt waste toner bottle switch	Set	Not set
44	LD 5V Cover	Interlock switch	Closed	Open
45	Left Cover		Closed	Open
46	Right Upper Cover		Closed	Open
47	Front Cover		Closed	Open
48	Development Motor Lock	Development motor lock	Locked	Not locked
49	Main Motor Lock	Main motor lock	Locked	Not locked
50	Paper Feed Motor Lock	Paper feed motor lock	Locked	Not locked
51	Polygon Motor Lock	Polygon motor lock	Locked	Not locked
52	1 Bin Set		Set	Not set
53	1 Bin Paper Sensor		Detected	Not detected
60	Duplex Connection	Duplex unit	Not connected	Connected
61	Bank 1 Connection	1st optional paper tray	Not connected	Connected
62	Bank 2 Connection	2nd optional paper tray	Not connected	Connected
63	Finisher Connection	Finisher Connection	Not connected	Connected
64	Bridge Exit		Detected	Not detected
65	Bridge Relay		Detected	Not detected
66	Bridge Set		Set	Not set
67	Bridge Right Cover		Closed	Open
68	Bridge Left Cover		Closed	Open
69	Bank Upper Relay	Relay Sensor 3 (optional paper tray unit)	No paper	Paper present
70	Bank Lower Relay	Relay Sensor 4 (optional paper tray unit)	No paper	Paper present

SP5-803 -XXX		Description	Reading	
			0	1
71	Bank Cover 1	Right cover (vertical guide switch)	Closed	Open
72	Bank Cover 2	2nd optional tray: Right cover (vertical guide switch)	Closed	Open
73	Bank Tray 1 Set	1st optional tray: Set	Not set	Set
74	Bank Tray 2 Set	2nd optional tray: Set	Not set	Set
75	Bank Tray 1 Paper End	1st optional tray: Paper end	Not end	End
76	Bank Tray 2 Paper End	2nd optional tray: Paper end	Not end	End
77	Bank Tray 1 Paper Size	1st optional tray: Paper size	(See table 2.)	
78	Bank Tray 2 Paper Size	2nd optional tray: Paper size		
79	Bank Tray 1 Paper Height	1st optional tray: Paper height	(See table 3.)	
80	Bank Tray 2 Paper Height	2nd optional tray: Paper height		
81	Duplex Entrance	Duplex: Entrance sensor	Not detected	Detected
82	Duplex Exit	Duplex: Exit sensor	Detected	Not detected
83	Duplex Open	Duplex unit open switch	Closed	Open
84	Duplex Cover	Duplex cover sensor	Open	Closed
86	Scanner Home Position	Scanner HP sensor	Detected	Not detected
87	Recycle Counter	Mechanical Counter Set	Set	Not set
88	Counter Set		Set	Not set
89	Key Counter Set		Set	Not set
90	Shift Tray Home Position Sensor		Detected	Not detected
91	Platen Cover Sensor		Detected	Not detected

Table 1: Tray 1 and 2 Paper Size

Switch	North America	Europe/Asia	Value
1000	8 1/2" x 11" SEF	8 1/2" x 11" SEF	00001110
1001	B5 SEF	B5 SEF	00000110
1010	5 1/2" x 8 1/2" LEF	A5 LEF	00001010
1011	11" x 17" SEF	A3 SEF	00000010
1100	A4 SEF	A4 SEF	00001100
1101	B5 LEF	B5 LEF	00000100
1110	8 1/2" x 11" LEF	A4 LEF	00001000
1111	8 1/2" x 14" SEF	B4 SEF	00000000

0: pushed
1: not pushed

Table 2: By-pass Tray Paper Size

Paper Width	Value	Paper Width	Value
A3/11"/12"	01110000	B5/8"	10010000
B4	00110000	A5/5.5"	11010000
A4/8.5"	10110000	B6	11000000

Table 3: Optional Paper Tray Unit Paper Size

Size	North America	Europe/Asia	Code
A3 SEF	Detected	Detected	10000100
B4 SEF	None	Detected	10001101
A4 SEF	None	Detected	10000101
A4 LEF	Detected	Detected	00000101
B5 LEF	Detected	Detected	00001110
A5 LEF	None	Detected	00000110
DLT SEF	Detected	Detected	10100000
LG SEF	Detected	None	10001101
LT SEF	Detected	None	10000101
LT LEF	Detected	Detected	00100110
HLT LEF	Detected	None	00000110

Table 4: Optional Paper Tray Unit Paper Near End

Remaining paper	Paper height sensor 2	Paper height sensor 1	Code
Full	ON	ON	11111111
Nearly full	OFF	ON	11111110
	On	OFF	11111101
Near end	OFF	OFF	11111100

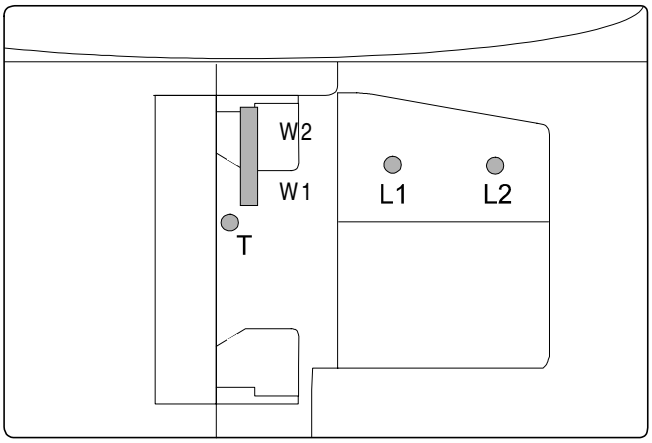
ARDF Input Check (SP6-007)

1. Enter the SP mode and select SP6-007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



No.	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6-117)

1. Enter the SP mode and select SP6-117.
2. Enter the number (1 – 113) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit) at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

No.	Description	Reading	
		0	1
1	Entrance Sensor	Activated	Deactivated
2	Tray Exit Sensor	Activated	Deactivated
4	Staple Entrance Sensor	Activated	Deactivated
5	Stapler Home Position Sensor	Activated	Deactivated
6	Jogger Fence Home Position Sensor	Activated	Deactivated
8	Feed-out Belt Home Position Sensor	Activated	Deactivated
9	Stapler Tray Paper	Activated	Deactivated
10	Stapler Rotation Home Position	Activated	Deactivated
11	Staple Sensor	Activated	Deactivated
14	Staple Sheet Sensor	Activated	Deactivated
17	Exit Plate Home Position Sensor	Activated	Deactivated
18	Tray Shift Home Position Sensor	Activated	Deactivated
21	Stack Height Sensor	Activated	Deactivated
23	Tray Lower Limit Sensor	Activated	Deactivated
101	500 Fin Entrance Sensor	Activated	Deactivated
102	500 Fin Exit Sensor	Activated	Deactivated
103	500 Fin Jogger Home Position Sensor	Activated	Deactivated
104	500 Fin Top Cover Sensor	Closed	Opened
105	500 Fin Height Sensor	Activated	Deactivated
106	500 Fin Lever Sensor	Activated	Deactivated
107	500 Fin Upper Limit Sensor	Activated	Deactivated
108	500 Fin Near Limit Sensor	Activated	Deactivated
109	500 Fin Staple Cover Sensor	Closed	Opened
110	500 Fin Stapler Home Position Sensor	Activated	Deactivated
111	500 Fin Staple End Sensor	Activated	Deactivated
112	500 Fin Staple Sensor	Activated	Deactivated
113	500 Fin Stapler Lock Sensor	Locked	Not Locked

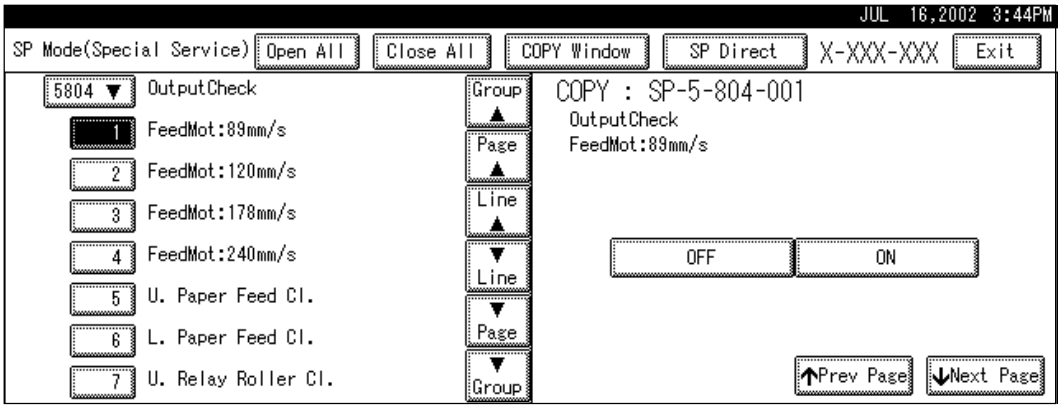
5.1.5 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5-804)

1. Open SP5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. Press *OFF* to end the test.

   NOTE: You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing. Do not keep an electrical component switched *ON* for a long time.



Output Check Table

SP5-804 -XXX		Description
1	Feed Mot: 89 mm/s	Paper feed motor: 89 mm/s
2	Feed Mot: 120 mm/s	Paper feed motor: 120 mm/s
3	Feed Mot: 178 mm/s	Paper feed motor: 178 mm/s
4	Feed Mot: 240 mm/s	Paper feed motor: 240 mm/s
5	Upper Paper Feed Clutch	Tray 1 paper feed clutch
6	Lower Paper Feed Clutch	Tray 2 paper feed clutch
7	Upper Relay Roller Clutch	Tray 1 vertical transport clutch
8	Lower Relay Roller Clutch	Tray 2 vertical transport clutch
9	Transfer Motor: Half Speed	Main motor: 178 mm/s

SP5-804 -XXX		Description
10	Transfer Motor: Low Speed	Main motor: 89 mm/s
11	Regist Clutch	Registration clutch
12	Interchange Upper Gate	Interchange Junction Gate Solenoid 1
13	Interchange Lower Gate	Interchange Junction Gate Solenoid 2
14	By-pass Feed Clutch	By-pass paper feed clutch
15	By-pass Pick-Up Solenoid	By-pass pick-up solenoid
16	Development Clutch: M	Development clutch: M
17	Development Clutch: C	Development clutch: C
18	Development Clutch: Y	Development clutch: Y
19	Development Clutch: K	Development clutch: K
20	Development Motor (Forward)	Development motor
21	Development Motor Half Speed (Forward)	Development motor: Half Speed
22	Development Motor (Reverse)	Development motor: Reverse
23	Development Motor Half Speed (Reverse)	Development motor: Reverse Half Speed
24	Lubricant Clutch	OPC belt cleaning clutch
25	Main Motor (Forward)	Main motor: Regular Speed
26	Main Motor Half Speed (Forward)	Main motor: Half Speed
27	Main Motor (Reverse)	Main motor: Reverse
28	Main Motor Half Speed (Reverse)	Main motor: Reverse Half Speed
29	Polygon Motor	Polygon motor
30	LD On	LD
31	Polygon Motor + LD	Polygon Motor + LD
32	Transfer 2nd Solenoid	Paper Transfer Solenoid
33	T/B Cleaning Clutch	Image transfer belt cleaning clutch
34	T/B Cleaning Solenoid	Image transfer belt cleaning contact solenoid
40	Engine Ready Signal	Engine Ready Signal
41	ID sensor LED	
42	QL	
43	Toner End Led	Toner End LED
44	Charger Bias	Charge corona unit output
45	Development Bias 1	Development Bias: 1
46	Development Bias 2	Development Bias: 2
47	Belt Transfer	Image transfer power supply
48	Paper Transfer: +	Paper transfer bias: +
49	Paper Transfer: –	Paper transfer bias: –
50	T/B Cleaning: +	Image transfer belt cleaning bias: +
51	Discharge: H	Discharge plate power supply: H
52	Discharge: L	Discharge plate power supply: L

SP5-804 -XXX		Description
53	Fuser Main Relay	Fusing Main Relay
54	Fusing Bias	Fusing Bias
55	Scanner Lamp	
100	Bank Upper Feed	1st paper feed clutch (optional paper tray unit)
101	Bank Lower Feed	2nd paper feed clutch (optional paper tray unit)
102	Bank Feed Motor: L	1st paper feed motor (optional paper tray unit)
103	Bank Feed Motor: H	1st Paper feed motor – half speed (optional paper tray unit)
110	Shift Tray Motor: CW	Shift Tray Motor – continuous clockwise
111	Shift Tray Motor: CCW	Shift Tray Motor – continuous counter-clockwise
112	Shift Tray Motor: Run	Shift Tray Motor – shifts once
120	Duplex Reverse Motor (Forward)	Duplex: Inverter motor
121	Duplex Reverse Motor (Reverse)	Duplex: Inverter motor – reverse
122	Duplex Feed Motor (Forward)	Duplex: Transport motor
123	Duplex Feed Motor (Reverse)	Duplex: Transport motor – reverse
124	Duplex Solenoid	Duplex: Inverter gate solenoid
125	Duplex Free Run	Duplex: Free run
130	Bridge Motor: H	
131	Bridge Motor: L	
132	Bridge Gate Sol	
140	Fusing Fan: H	
141	Fusing Fan: L	
142	Dev Fan: H	Development Fan Motor: H
143	Dev. Fan: L	Development Fan Motor: L
144	Cooling Fan: H	Controller Fan Motor: H
145	Cooling Fan: L	Controller Fan Motor: L
146	Ozone Fan: Hi	
147	Ozone Fan: Low	
160	Bridge Cooling Fan: H	
161	Bridge Cooling Fan: L	
162	PSU Fan	
170	Forced Lubricant	The following parts are switched on. O/B cleaning contact clutch T/B cleaning solenoid T/B cleaning contact clutch

ARDF Output Check (SP6-008)

1. Open SP6-008.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description
1	Feed Motor (Forward)
2	Feed Motor (Reverse)
3	Transport Motor (Forward)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6-118)

1. Open SP6-118.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description	No.	Description
	1000-sheet finisher		**500-sheet finisher**
1	Fin All Off	101	500 Fin All Off
2	Upper Transfer Motor	102	500 Fin Main Motor
3	Lower Transfer Motor	103	500 Fin Jogger Motor
4	Exit Motor	104	500 Fin Paddle Sol
5	Tray Gate Sol	105	500 Fin Gear Sol
6	Tray Lift Motor	106	500 Fin Lever Sol
7	Jogger Motor	107	500 Fin Tray Motor
12	Stapler Motor	108	500 Fin Stapler Motor
13	Staple Hummer	109	500 Fin Free Run 1
15	Stapler Gate Sol	110	500 Fin Free Run 2
16	Pos. Roller Sol		
18	Feed-out Motor		
19	Shift Motor		
22	Guide Plate Motor		
23	Fin Free Run 1		
24	Fin Free Run 2		

5.1.6 SMC DATA LISTS (SP5-990)

1. Open SP mode 5-990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All data list
2	SP mode data list
3	UP mode data list
4	Logged data list
5	Self-diagnostics results list
6	Non-Default Data list
7	NIB summary
8	Net file log list (Jobs to be printed from the document server using a PC and the Desk Top Binder software)
21	Copy UP mode list
22	Scanner SP mode list
23	Scanner UP mode list

2. Touch *EXECUTE* on the touch panel
3. Operate according to the instructions on the display.
4. Check that the completion message appears, and touch *Exit.*

5.1.7 ORIGINAL JAM HISTORY DISPLAY

Total Count

SP7-503 displays the number of original jams having occurred in the optional ARDF.

Details on the Most Recent Jams

SP7-508 displays the detailed information on the latest 10 original jams having occurred in the optional ARDF.

SP7-508-		
1	Latest	Information on the latest original jam
2	Latest 1	Information on the 2nd latest original jam
3	Latest 2	Information on the 3rd latest original jam
: :	: :	: :
8	Latest 7	Information on the 8th latest original jam
9	Latest 8	Information on the 9th latest original jam
10	Latest 9	Information on the 10th latest original jam

5.1.8 COPY JAM HISTORY DISPLAY

Total Count

SP7-502 displays the number of copy paper jams having occurred in all paper paths.

Details on the Most Recent Jams

SP7-507 displays the detailed information on the latest 10 copy paper jams having occurred in all paper paths.

SP7-507-		
1	Latest	Information on the latest paper jam
2	Latest 1	Information on the 2nd latest paper jam
3	Latest 2	Information on the 3rd latest paper jam
: :	: :	: :
8	Latest 7	Information on the 8th latest paper jam
9	Latest 8	Information on the 9th latest paper jam
10	Latest 9	Information on the 10th latest paper jam

5.1.9 MEMORY ALL CLEAR (SP5-801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP7-003-1	Print total counter value
SP5-811	Machine serial number
SP5-907	Plug & play brand name and production name setting

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

Using a Flash Memory Card

1. Upload the NVRAM data to a flash memory card (☛ NVRAM Data Upload).
2. Print out all SMC data lists (SP5-990).
   NOTE: Be sure to print out all the lists. If the NVRAM data upload is not completed, it is necessary to manually change the SP mode settings.
3. Open SP5-801.
4. Press the number for the item that you want to initialize. The number you select determines which application software is initialized. Touch 1, for example, if you want to initialize all modules; or select the appropriate number from the table below.

No.	What It Initializes	Comments
1	All modules	Initializes items 2 ~ 15 below.
2	Engine	Initializes all registration settings for the engine and process settings.
3	SCS (System Control Service)/SRAM	Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH (Image Memory handler)	Initializes the registration setting for the image memory handler. (Deletes all image files in the HDD).
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.

No.	What It Initializes	Comments
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	DCS	Initializes the DCS (Delivery & Receive Control Server) settings
15	UCS	Initializes the UCS (User Directory Control Server) settings.

5. Touch *EXECUTE*, and turn the main switch off and on.
6. Download the NVRAM data from a flash memory card (☛ 5.2.2).

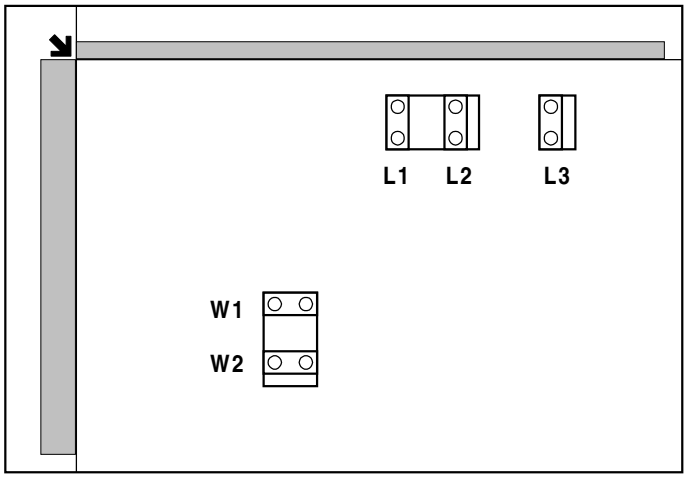
Without Using a Flash Memory Card

If there is no flash memory card, follow the steps below.

1. Execute SP5-990 to print out all SMC data lists.
2. Open SP5-801.
3. Select the number for the item that you want to initialize.
4. Press *EXECUTE* and turn the main switch off and on.
5. Make sure that you do the following:
   - Do the printer and scanner registration and magnification adjustments (☛ "Copy Adjustments" in chapter 3, "Replacement and Adjustment").
   - Do the touch screen calibration (☛ "Touch Screen Calibration" in chapter 3, "Replacement and Adjustment").
   - Referring to the SMC data lists, re-enter all values that have been changed from their factory settings.
   - Do the white level adjustment (☛ Section 3.14 Standard White Density Adjustment)
6. Check the copy quality and the paper paths, and do any necessary adjustments.

5.1.10 APS OUTPUT DISPLAY (SP4-301)

SP4-301 displays a code that indicates the current status of the APS sensors. The table lists the codes and the activated sensors.



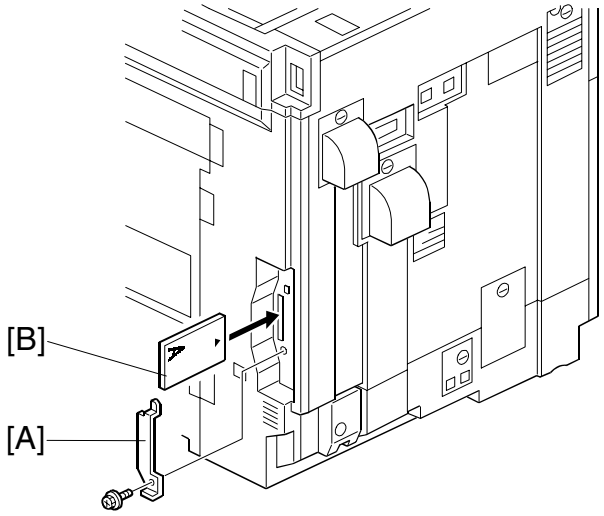
Code	Sensors				
	W1	W2	L1	L2	L3
38	❍	❍	—	—	—
160	❍	❍	❍	❍	❍
164	—	—	❍	❍	❍
166	—	—	❍	❍	—
128	Other combinations				

❍: Activated
—: Deactivated

5.2 PROGRAM DOWNLOAD

5.2.1 FIRMWARE

The procedure is the same for all firmware modules.



1. Turn off the main power switch.
2. Remove the cover [A].
3. Insert the IC card [B] containing the software you wish to download into the card slot of the controller.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions displayed on the operation panel
7. Monitor the downloading status on the operation panel.
   - While downloading is in progress, the panel displays “Writing”. When downloading has been completed, the panel displays “Completed”.
   - The Start key lights red while downloading is in progress, and then lights green again after downloading is completed.

⚠CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the IC card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, perform copier SP5-801-9 (Memory All Clear – Scanner Application).

NOTE: If the download failed, an error message appears on the panel. In this case, download the firmware again using the IC card.
In this condition, if the firmware cannot be downloaded again, do the following:
Controller firmware: Turn on dip switch 1 on the controller board, and switch on. The machine boots from the IC card. Download the new firmware.
Others: Replace the appropriate PCB.

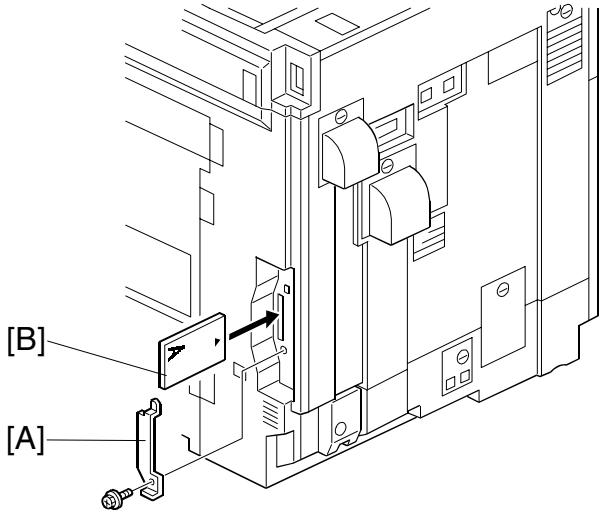
5.2.2 NVRAM DATA UPLOAD/DOWNLOAD

The content of the NVRAM can be uploaded to and downloaded from a flash memory card.

Uploading NVRAM Data (SP5-824)

The data in the NVRAM in the machine can be uploaded to a flash memory card.

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
5. Open SP5-824.
6. Touch *EXECUTE* to start uploading the NVRAM data.
7. Turn off the main switch, and then remove the IC card.



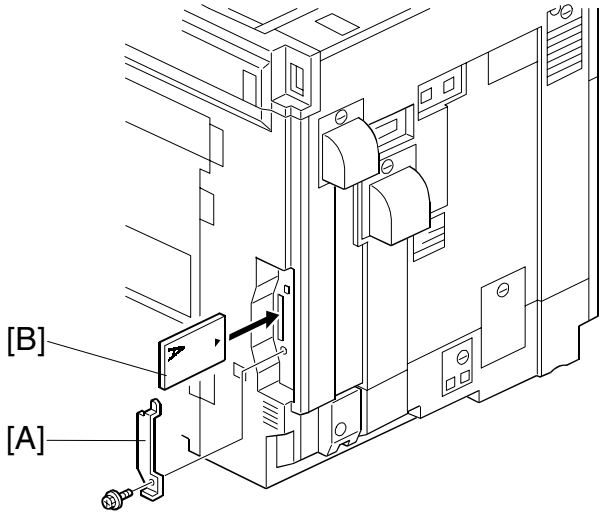
Downloading NVRAM Data (SP5-825)

SP5-825 downloads data from a flash card to the NVRAM inside the machine.

The following data are not downloaded from the flash card:

- Meter charge total counter (SP7-003-1)
- Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (SP7-007).

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
8. Open SP5-825.
5. Touch *EXECUTE* to start download the NVRAM data.
6. Turn off the main switch, and then remove the IC card.



Note that the following errors may occur during downloading:

- If a card is not installed in the card slot and a message tells you that downloading cannot proceed, you cannot execute downloading, even by pressing *EXECUTE.*
- If the correct card for the NVRAM data is not inserted in the card slot, after you press *EXECUTE* a message will tell you that downloading cannot proceed because the card is abnormal and the execution halts.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use either of the following procedures.

Procedure 1

1. Turn the main power switch off and on.
2. Check that “Now loading. Please wait” is displayed and that the copy window opens.

Procedure 2

1. Press and hold down the ⓒ and ⓗ keys together until the machine beeps (for about 10 seconds).
2. Release both buttons.
3. Check that “Now loading. Please wait” is displayed and that the copy window opens.

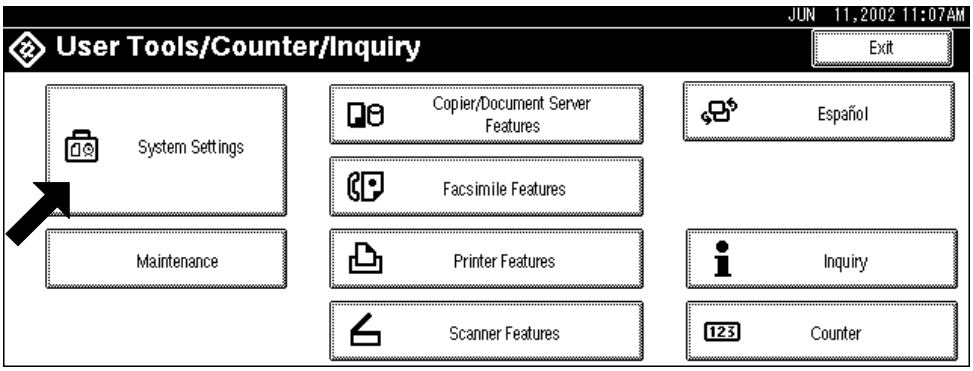
5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

To reset the system settings in the UP mode to their defaults. Use the following procedure.

⟹ 1. Press the User Tools/Counter key (⏎).

2. Hold down the ⓗ key and touch *System Settings*.
   NOTE: Hold down the ⓗ key before touching *System Settings*.



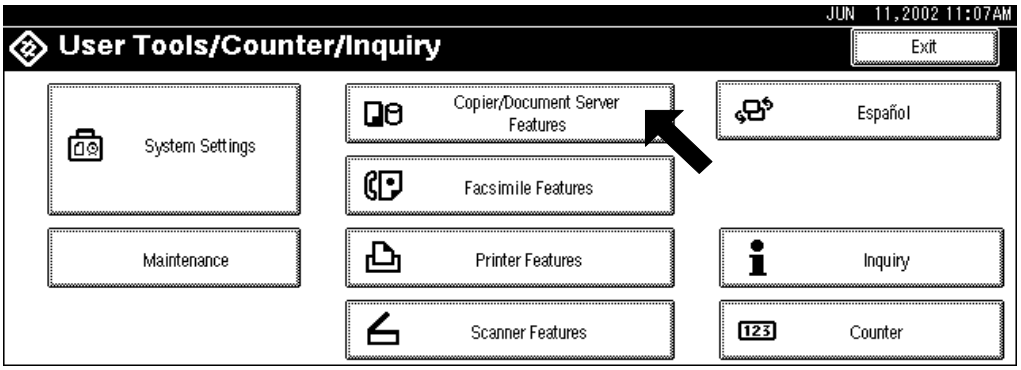
3. When the display asks if you want to reset the system settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.4.2 COPIER SETTING RESET

To reset the copy settings in the UP mode to their defaults, use the following procedure.

⟹ 1. Press the User Tools/Counter key (⏎).

2. Hold down the # key and then touch *Copier/Document Server Features*.
   NOTE: Hold down the # key before touching *Copier/Document Server Features*.



3. When the display asks if you want to reset the Copier Document Server settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time.

5.5.1 HOW TO ENTER USER TOOLS

UP Mode Initial Screen: User Tools/Counter Display

⟹ To enter the UP mode, press the User Tools/Counter key (⇦).

System Settings

In the User Tools/Counter display, touch *System Settings*.

Touch a tab to display the settings. If the Next button is lit in the lower right corner, touch it to display more options. Specify the settings, touch *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

Copier/Document Server Features

In the User/Tools Counter display, touch Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, touch Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then touch the tab to display more settings. The screen below shows the Printer Features screen.

Inquiry

In the User/Tools Counter display, touch *Inquiry*.

The following SP mode settings will be displayed.

- Service Telephone Number (SP5-812-1)
- Service Facsimile Number (SP5-812-2)
- Telephone Number for ordering consumables (SP5-812-3)
- Sales Telephone Number (SP5-812-4)
- Toner Type (SP5-841-1~4)

Counter

In the User/Tools Counter display, touch *Counter*.

The following SP mode counters will be displayed.

- Copy Counter (SP5-914)

View the settings, touch Print Counter *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

5.6 DIP SWITCHES

Controller Board: SW2

DIP SW No.	OFF	ON
1	Boot-up from machine	Boot-up from IC card
2	Not used (keep at OFF)	
3		
4		

If the controller firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

BICU Board: SW2

⇒

DIP SW No.	Function	OFF			ON		
1	Machine Type	B052 (32 minute B/W)			B051 (24 minute B/W)		
2	Destination	Off:	Off:	Off:	On:	On:	Off:
3		Off: JAN	On: NA	Off: EU	On: AA	Off: TWN	On: CHN
4		Off:	Off:	On:	Off:	Off:	On:
5	Not used	Keep at OFF					
6	Not used						

JAN: Japan, NA: North America, EU: Europe, AA: Asia, TWN: Taiwan, CHN: China

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 018 **06/10/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: FIRMWARE UPDATE FOR MLB & SMTP

GENERAL:

The B051/B052 firmware has been modified to support the MLB (file format converter) and SMTP authentication protocol from February, 2003 production. To do this, a large-scale modification of the core program areas was necessary, eliminating the compatibility of software types from before and after the modification. Additional SP modes have been added for use of SMTP authentication. For details on using the MLB, please refer to the **Technical Service Bulletin B529 (B519) MLB FILE FORMAT CONVERTER 002** for additional information on the MLB manual.

To eliminate any compatibility problems with firmware please upgrade the following files as a set.

NOTE: *This is also a good procedure to follow even if the MLB board is not installed.*

Firmware Upgrade Table:

No.	Software Type:	*Required Software versions:*	Software Location:	Service Card Version: (TSC Website
1	Controller	2.01.2	Mainframe	b051_52_controller.exe
2	Fax	2.00	Mainframe	b051_52_BICU_Service Pack.exe
3	Printer	2.01	Printer/Scanner Kit	B051_MFPSP_V201F.exe
4	NIB	3.07	Printer/Scanner Kit	B051_MFPSP_V201F.exe
5	NFA	1.66	Printer/Scanner Kit	B051_MFPSP_V201F.exe
6	Scanner	2.00	Printer/Scanner Kit	b051_52_Scanner_PS3_Service_Pack.exe
7	Delivery	2.00	Printer/Scanner Kit	B051_MFPSP_V201F.exe
8	BICU	1.242	Mainframe	b051_52_BICU_Service Pack.exe

NOTE: *Please refer to Technical Service Bulletin B051/B052 - 005 "INCOMPATIBLE MAINFRAME & PRINTER/SCANNER KIT FIRMWARE" for additional information.*

NEW SP MODES:

The following SP modes have been added (5852-3 to 5853-13) to enable SMTP authentication. Please also see the procedure below on enabling SMTP authentication on machines produced up until January 2003.

SP	Number/Name		Function/[Setting]
5852	**SMTP/POP**		
	001	**SMTP Server Name**	**Input the IP address or host name of the SMTP server. Use up to 127 alphanumeric characters.**
	002	**SMTP Port Number**	**Input the port number used when sending e-mail to the SMTP server.** **[1~65535 /** 25 **/ 1]**
	003	Authorization	Validates the SMTP function. SMTP (Simple Mail Transfer Protocol) is the protocol for communication between Internet main MTAs (Message Transfer Agents). [0~1 / **0** / 1] 0: OFF: Disables SMTP 1: ON: Enables SMTP
5852	004	User Name	Sets the SMTP user name.
	005	Password	Sets the SMTP password.
	006	SMTP Auth. Encryption	Sets encryption method for the transfer password in SMTP validation. [0~2 / **0** / 1] 0: Auto: Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. 1: OFF: Allows two methods for SMTP validation: LOGIN, PLAIN. 2: ON: Allows only one method for SMTP validation: CRAM-MD5.
	007	POP before SMTP	A flag that determines whether the POP server is connected before connecting to the SMTP server. [0~1 / **0** / 1] POP 0: OFF 1: ON Post Office Protocol (POP) servers are computers that receive mail using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
	008	POP Server Name	Sets the POP server name. Enter up to 127 alphanumeric characters.
	009	POP Port Number	Sets the POP port number. [1□65535 / **110** / 1]
	010	POP User Name	Sets the POP user name. Enter up to 63 alphanumeric characters.
	011	POP Password	Sets the POP password. Enter up to 63 alphanumeric characters.
	012	POP Auth. Encryption	Sets the encryption method for the password when SP5852-007 (POP Before SMTP) is in use. [0~2 / **0** / 1] 0: Auto: Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. 1: OFF: Allows only normal encryption. 2: ON: Allows only APOP encryption.
	013	Time out Setting for POP	Sets the wait time after POP validation until the SMTP mail is sent. [0~10000/ **300** /1 ms]

ENABLING SMTP AUTHENTICATION ON PRE CUT-IN MACHINES

Machines from February '03 production contain firmware with the following defaults already set. However, for cases where customers require SMTP authentication on machines produced up until January 2003, please enable the function with the following procedure.

1. Print out the NIB summary report (SP5-990-007).
2. Update the firmware to the versions specified in this Technical Service Bulletin.

NOTE: *Remember to update the firmware together as a set to avoid interchangeability-related problems.*

3. Check to see that the SMTP server name displayed in the following screen is the same as the name on the NIB summary report.
   User Tools ➞ System Settings ➞ File transfer Tab.
   If they are different, change the server name in this screen to the server name on the NIB summary report.
4. Check or change the SP value in accordance with the following table.

SP Number	Check / Change
5852-001	Check: The server name should be the same as the name on the NIB summary report. If they are different, change the server name in this SP to the name on the NIB summary report.
5852-002	Check: The port number should be the same as the number on the NIB summary report. If they are different, change the port number in this SP to the number on the NIB summary report.
5852-003	Change: to **0**
5852-004	Check: Should be blank.
5852-005	Check: Should be blank.
5852-006	Check: Should be **0**.
5852-007	Check: Should be **0**.
5852-008	Check: Should be blank.
5852-009	Change: to 110
5852-010	Check: Should be blank.
5852-011	Check: Should be blank.
5852-012	Check: Should be **0**.
5852-013	Change: to 300

5. Print out the NIB summary report again and confirm the above SP settings.

NOTE: *For security purposes, the user name and password do not appear on the list.*

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 019 **06/10/2003**

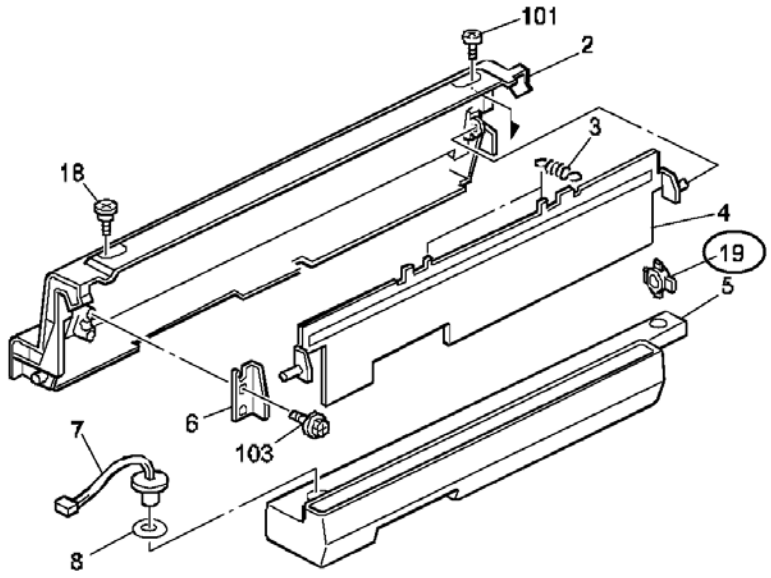
APPLICABLE MODEL:

GESTETNER – DSc224/DSc232
LANIER – LD024c/LD032c
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: OIL TANK GUIDE

GENERAL:

To ensure good oil transportability, the inner diameter of the oil tank guide has been changed from 10 mm to 14 mm. The following part update is being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0514313	B0514319	Oil Tank Guide	1	0	41	19

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Oil Tank Guide installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2536200661
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2636201222

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: B051/B052 - 020 **06/13/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

SERVICE MANUAL

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

• Legend Page	Updated Information (Wrong Model Number for Gestetner)
• v & vi	TOC Pages Updated Information
• 5-41 to 5-46	Updated Information (Table Corrections)
• 5-47 to 5-48	Additional Service Codes for SMTP/POP
• 5-49 to 5-89	No Change to Information (Only Page Number Has Change)

LEGEND

PRODUCT CODE	COMPANY			
	GESTETNER	LANIER	RICOH	SAVIN
B051	DSc224	LD024c	Aficio 1224C	C2408
B052	DSc232	LD032c	Aficio 1232C	C3210

DOCUMENTATION HISTORY

REV. NO.	DATE	COMMENTS
*	02/2003	Original Printing

SERVICE TABLES

DETAILED SECTION DESCRIPTIONS

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
835	File Transfer		
	1	Capture server IP address	Displays/specifies the capture server IP address. [00000000000h ~ FFFFFFFFFFF1 / **0** / 1 /step]
	10	Archive: Copier	Validates/invalidates auto-store functions. [0 ~ 1 / **0** / 1 /step] • *0: Invalidates* • *1: Validates*
	11	Archive: Fax Send	
	12	Archive: Fax: Receive	
	13	Archive: Printer	
	14	Archive: Scanner	
	20	Server: Copier	Transfers or does not transfer data to servers. [0 ~ 1 / **0** / 1 /step] • *0: Not transferred* • *1: Transferred*
	21	Server: Fax Send	
	22	Server Transfer: Fax: Receive	
	23	Server: Printer	
	24	Server: Scanner	
	30	List File: Copier	Selects lists or files. [0 ~ 1 / **0** / 1 /step] • *0: Lists* • *1: Files*
	31	List File: Fax: Send	
	32	List File: Fax: Receive	
	33	List File: Printer	
	34	List File: Scanner	
⇒ 836	Capture Setting		
	001	Capture Function	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/0/1] 0: Disable 1: Enable
	002	Panel Setting	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] 0: Disable 1: Enable The setting for SP5-836- 001 has priority.
	051	Capture Setting: Cancel Document	Deletes the file(s) that could not send to a PC or waiting for sending.

5	Number/Name		Function/[Setting]
836	071	Capture Setting: Resolution Conversion for Color	Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	072	Capture Setting: Resolution Conversion for Copy Text	Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	073	Capture Setting: Resolution Conversion for Copy (Others)	Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	074	Capture Setting: Resolution Conversion for Color Print	Determines the resolution conversion ratio when a color print image document is sent to the Document Server via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	075	Capture Setting: Resolution Conversion for Binary Print	Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	076	Capture Setting: Resolution Conversion for Dither Print (Grayscale processing mode)	Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the File Format Converter. [1~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
836	081	Capture Setting: Format for Color Copy	Determines the image format for Color Copy images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	082	Capture Setting: Format for Copy Text	Determines the image format for Copy Text images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	083	Capture Setting: Format for Copy (Others)	Determines the image format for Copy (other than text) images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	084	Capture Setting: Format for Color Print	Determines the image format for Color Print images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	085	Capture Setting: Format for Binary Print	Determines the image format for Binary Print images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	086	Capture Setting: Format for Dither Print (1200dpi)	Determines the image format for Dither Print images sent to the Document Server via the File Format Converter. [0~3/2/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	091	Capture Setting: Page Quality for JPEG	Determines the quality level of JPEG images sent to the Document Server via the File Format Converter. [5~95/50/1]
839	IEEE1394		
	4	Device Name	Displays the 1394 device name. [Text up to 13 bytes / **NULL** / – /step]
	7	Cycle Master	• Validates/invalidates the cycle master function. [0 ~ 1 / **1** / 1 /step] *0: Invalidates* *1: Validates*

5	Number/Name		Function/[Setting
839	8	BCR mode	Select either 'Standard', 'IRM color copy', or 'Always effective'.
	9	IRM 1394a Check	[bit 0 ~ bit 1 / **0** / 1 /step] *bit 0: off* *bit 1: on*
	10	Unique ID	[bit 0 ~ bit 1 / **0** / 1 /step] • *bit 0: off* • *bit 1: on*
	11	Logout	Prevents initiators from logging on or makes initiators log off. [0 ~ 1 / **0** / 1 /step] *0: Prevents the initiators (having already logged on) to log on if they try to log on* *1: Makes initiators (having already logged on) to log off if they try to log on*
	12	Login	Allows/disallows an initiator to exclusively log on. [0 ~ 1 / **0** / 1 /step] • *0: Disallows* • *1: Allows*
	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / **8** / 1 /step]
840	IEEE 802.11b		
	6	Channel MAX	Specifies the maximum number of IEEE 802.11b channels. North America: [1 ~ 14 / **11** / 1 /step] Europe: [1 ~ 14 / **13** / 1 /step]
	7	Channel MIN	Specifies the minimum number of IEEE 802.11b channels. [1 ~ 14 / **1** / 1 /step]
	11	WEP Key Select	Selects the WEP key. [00, 01, 10, 11 / **00** / – /step] • *00: 1st key* • *01: 2nd key* • *10: 3rd key* • *11: 4th key*
841	Toner Name Setting		
	1	Black	Specifies supply names. These appear on the screen when the user presses the Inquiry button in the user tools screen.
	2	Cyan	
	3	Yellow	
	4	Magenta	
842	Net File Analysis Mode Setting		
	1	Net File Analysis Mode Setting	**DFU** Default: 00111111 – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
843	Input Check (Controller)		
	1	Input Check (Controller)	[0x00 ~ 0x07 / **–** / 1 /step] **DFU** Default: 00000001 – do not change

5	Number/Name		Function/[Setting
845	Delivery Server		
	1	FTP Port No.	Specifies the FTP port number. [0 ~ 65535 / **3670** / 1 /step]
	2	IP address	Specifies the distribution server IP address. [0 ~ 0xffffffff / **0x00** / – /step]
	3	Retry Timer	Specifies the distribution retry time. [60 ~ 900 / **300** / 1 /step]
	4	Retry Times	Specifies the distribution retry count. [0 ~ 99 / **3** / 1 /step]
	5	IP (Capture Server)	Specifies the distribution server address. [0 ~ 0xffffffff / **0x00** / 1 /step]
	6	Error Display Time	Specifies the display time of the distribution error. [0 ~ 999 / **300** / 1 /step]
	7	Delivery Option	Selects the distribution option. [0 ~ 1 / **0** / 1 /step] • *0: Data goes directly to the connected PC* • *1: Data goes to the Scan Router server*
846	UCS		
	1	Machine ID (Delivery Server)	Specifies the machine ID of the distribution server.
	2	Machine ID Clear (Delivery Server)	Clears the machine ID of the distribution server.
	3	Max Entry	Specifies the maximum entry count. [2000 ~ 5000 / **2000** / 1 /step]
	4	Delivery Server Model	Selects the distribution server model. [0 ~ 4 / **0** / 1 /step] • *0: Unknown* • *1: SG1 (distributed with the copier)* • *2: SG1 (distributed as a package)* • *3: SG2 (distributed with the copier)* • *4: SG2 (distributed as a package)*
	5	Delivery Server Capability	Specifies the distribution capability. [0 ~ 255 / **0** / 2 /step]
	6	Delivery Server Retry Timer	[0 ~ 255 / **0** / 1 /step]
	50	All Directory Clear	Initializes all directories.

5	Number/Name		Function/[Setting
847	Net File Mag. Rate		
	001	Copy: Color	Changes the default settings of color copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [1~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	002	Copy: Text	Changes the default settings of copy text image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	003	Copy: Others	Changes the default settings of a copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	004	Print Color	Changes the default settings of color print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	005	Print: Binary	Changes the default settings of binary print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	006	Print: Dither (Grayscale processing mode)	Changes the default settings of dither print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting
847	021	Netfile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by DeskTopBinder V2 sent via the File Format Converter. [5~95 / 50 / 1]
848	Web Service		Sets the 4-bit switch assignment for the access control setting. 0000: No access control 0001: Denies access to Desk Top Binder V2. Has no effect on access and delivery from Scan Router. The lower 4 bits are used.
	001	Access Control: Net file	Net File: Job printed from the document server from a PC using DeskTopBinder V2. DocBox: Document Server Repository: Document Management area on the machine's hard disks
	002	Access Control: Repository	
	003	DocBox Print	
	004	User Directory	
	005	Delivery Input (Lower 4 Bits)	
	006	Fax Control (Lower 4 Bits)	
849	Counter Clear Day		
	1	Indication	Displays the date when the electrical counter was reset to zero.
	2	Display of Counter Clear Day	Allows or does not allow printing the counter clear day on the user counter list. [0 ~ 1 / **1** / 1 /step] • *0: Printed* • *1: Not printed*
850	Address Book Function		
	1	Switch Module	Selects which module is responsible for user information management. [0 ~ 1 / **1** / 1 /step] **DFU** • *0: SCS* • *1: UCS* *Having changed the setting, turn the main switch off and on to validate it.*
	2	Select Title	Selects the address book index style. [2 ~ 4 / **2** / 1 /step] • *2: Style 1* • *3: Style 2* • *4: Style 3*
⇒ 852	SMTP/POP		
	001	SMTP Server Name	Input the IP address or host name of the SMTP server. Use up to 127 alphanumeric characters.
	002	SMTP Port Number	Input the port number used when sending e-mail to the SMTP server. [1~65535 / **25** / 1]

Service Tables

5	Number/Name		Function/[Setting
⇒ 852	003	Authorization	Validates the SMTP function. SMTP (Simple Mail Transfer Protocol) is the protocol for communication between Internet main MTAs (Message Transfer Agents). [0~1 / **0** / 1] 0: OFF: Disables SMTP1 1: ON: Enables SMTP
	004	User Name	Sets the SMTP user name.
	005	Password	Sets the SMTP password.
	006	SMTP Auth. Encryption	Sets encryption method for the transfer password in SMTP validation. [0~2 / **0** / 1] 0: Auto: Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. 1: OFF: Allows two methods for SMTP validation: LOGIN, PLAIN. 2: ON: Allows only one method for SMTP validation: CRAM-MD5.
	007	POP before SMTP	A flag that determines whether the POP server is connected before connecting to the SMTP server. [0~1 / **0** / 1] POP 0: OFF 1: ON Post Office Protocol (POP) servers are computers that receive mail-using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
	008	POP Server Name	Sets the POP server name. Enter up to 127 alphanumeric characters.
	009	POP Port Number	Sets the POP port number. [1 ~ 65535 / 110 / 1]
	010	POP User Name	Sets the POP user name. Enter up to 63 alphanumeric characters.
	011	POP Password	Sets the POP password. Enter up to 63 alphanumeric characters.
	012	POP Auth. Encryption	Sets the encryption method for the password when SP5852-007 (POP Before SMTP) is in use. [0~2 / **0** / 1] 0: Auto: Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. 1: OFF: Allows only normal encryption. 2: ON: Allows only APOP encryption.
	013	Time out Setting for POP	Sets the wait time after POP validation until the SMTP mail is sent. [0~10000/ **300** /1 ms]

5	Number/Name		Function/[Setting
907	Plug and Play		
	1	Plug and Play	Specifies the Plug and Play setting. [0~15 / **0** / 1 /step] Select the required setting from the menu.
913	Switchover Permission Time		
	1	Indication Application	Specifies the switching time from the default application to another application. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the default application.*
	2	Print Application	Specifies the switching time from one application to another. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the running application.*
914	Counter Display		
			Allows/does not allow applications to display their counters. [0 ~ 1 / **0** / 1 /step] • *0: Allows* • *1: Does not allow*
919	ACS Mode		
	1	ACS Mode	Selects the ACS mode. **DFU** [0 ~ 1 / **0** / 1 /step] • *0: Standard mode* 1: High performance mode
954	CSV Password Check		
	1	CSV Password Check	CSV: Copy server (document server) When a document is stored with a password on the copy server, and this document is selected later at the operation panel, this SP determines whether the password is displayed or greyed out. 0: Not displayed 1: Displayed [0 ~ 1 / **0** / 1 /step]
955	Test Pattern		
	1	Pattern	[0 ~ 255 / **0** / 1 /step] See section 5.1.3. for how to use.
	2	Density	[0 ~ 255 / **255** / 1 /step]
966	Document Clear Time		
	1	Document Clear Time	Specifies how many days the document server stores files. [0 ~ 180 / **3** / 1 /step]
970	Debug Serial		
	1	Debug Serial	**DFU**
971	Touch Panel Correction		
	1	Touch Panel Correction	Displays if the operation panel has been calibrated after an SP5-801 execution. [0 ~ 1 / **0** / 1 /step] • *0: Not calibrated* • *1: Calibrated*

5	Number/Name		Function/[Setting
974	Cherry Server Setting		
	1	Cherry Server Setting	Selects the Scan Router server light or full version. [0 ~ 1 / **0** / 1 /step] • *0: Light version* • *1: Professional version*
989	Loop Back Test		
	1	Duplex	Executes a loop back test. [0 ~ 1 / **0** / 1 /step] • *0: Does not execute* • *1: Executes*
	2	Bank	
	3	Exit Option	
	4	ARDF	
	5	Interchange Unit	
	6	By-pass Tray	
	7	1 Bin Tray	
990*	SMC Print		
	1	All (Data List)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] • SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. • All: All SP mode settings • Non-Default: SP settings that have been changed from the defaults
	2	SP (Mode Data List)	
	3	User Program	
	4	Logging Data	
	5	Diagnosis Report	
	6	Non-Default	
	7	NIB Summary (Configuration page, system log page NVRAM log page)	
	8	Net File Log	
990*	21	Copier UP Data (Copy Management Report)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] • SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. • All: All SP mode settings • Non-Default: SP settings that have been changed from the defaults
	22	Scanner SP	
	23	Scanner UP (Scanner Management Report)	
996	Density Adjustment		
	1	Bk	Adjusts the density. [–3 ~ 3 / **0** / 1 /step] –3: Image becomes lighter 3: Image becomes darker This setting changes the development bias and charge corona voltage to adjust the image density.
	2	Y	
	3	M	
	4	C	

SP6-XXX: (Peripherals)

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
006*	ADF Adjustment		
	1	S-to-S Registration	Adjusts the side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	2	Leading Edge Registration	Adjusts the sub-scan registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	3	Trailing Edge Erase	Adjusts the trail edge erase of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	4	S-to-S Registration (Rear)	Adjusts the rear-side side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	5	Sub-san Magnification	Adjusts the sub-scan magnification of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 %/step]
	6	Orig. Buckling	Enables/disables original buckling during rear side scanning. Disable if the customer is scanning fragile originals. [0 ~ 1 / **1** / 1 /step] • *0: Disabled* • *1: Enabled*
	7	Buckle Adjustment	Adjusts original buckling for rear side scanning. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
007	DF Input Check		
	1	Original Set	Displays the signals received from sensors and switches of the ARDF. See section 5.1.4 *Do not check another item before the result is returned.*
	2	Original Width 1	
	3	Original Width 2	
	4	Original Length 1	
	5	Original Length 2	
	6	Orig. Trailing Edge	
	7	Cover Open	
	8	DF Position	
	9	Registration	
	10	Original Exit	
	11	Original Reverse	
008	DF Output Check		
	1	Feed Motor (Forward)	Switches on each electrical component of the ARDF for testing. See section 5.1.5 *Do not start to check another item before ending the test that is in progress.*
	2	Feed Motor (Reverse)	
	3	Trans. Motor (Forward)	
	4	Feed Clutch	
	5	Pick-up Solenoid	
	6	Junction Gate Solenoid	
	7	Stamp Solenoid	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
009	ADF Free Run		
	1	ADF Free Run	Executes an ADF free run. [0 ~ 1 / **0** / 1 /step] • *0: End* *1: Start*
010	ADF Stamp Position		
	1	ADF Stamp Position	Adjusts the stamp position of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
016	ADF Size Change		
	1	ADF Size Change	Selects the paper size detected by the optional ADF original sensors. North America: [0 ~ 1 / **0** / 1 /step] Others: [0 ~ 2 / **0** / 1 /step] • *0: Regular* • *1: A4/LT* • *2: 8K/16K* *Number 2, "8K/16K", is valid for the models of the following regions: Europe, Asia. When number 2 is selected, the following paper sizes are not detected: A3, B4, A4, B5.*
050	Staple Position		
	1	Staple Position	Adjusts the staple position of the optional finisher. [–3.5 ~ 3.5 / **0.0** / 0.5 mm/step]
117	Finisher Input Check		
	1	Entrance	Displays the signals received from sensors and switches in the finisher. See section 5.1.4
	2	Tray Exit	
	4	Staple Entrance	
	5	Stapler Home Position	
	6	Jogger Fence Home Position	
	8	Feed-out Belt Home Position	
	9	Stapler Tray Paper	
	10	Stapler Rotation Home Position	
	11	Staple	
	14	Staple Sheet	
	17	Exit Plate Home Position	
	18	Tray Shift Home Position	
	21	Stack Height	
	23	Tray Lower Limit	
	35	Paper Limit	
	101	500 Fin Entrance	
	102	500 Fin Exit	
	103	500 Fin Jogger Home Position	
	104	500 Fin Top Cover	
	105	500 Fin Height	
	106	500 Fin Lever	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
117	107	500 Fin Upper Limit	
	108	500 Fin Near Limit	
	109	500 Fin Staple Cover	
	110	500 Fin Stapler Home Position	
	111	500 Fin Staple End	
	112	500 Fin Staple	
	113	500 Fin Stapler Lock	
118	Output Check		
	1	Fin All Off	Switches on each electrical component of the finisher. See section 5.1.5
	2	Upper Transfer Motor	
	3	Lower Transfer Motor	
	4	Exit Motor	
	5	Tray Gate Sol	
	6	Tray Lift Motor	
	7	Jogger Motor	
	12	Stapler Motor	
	13	Staple Hummer	
	15	Stapler Gate Sol	
	16	Pos. Roller Sol	
	18	Feed-out Motor	
	19	Shift Motor	
	22	Guide Plate Motor	
	23	Fin Free Run 1	
	24	Fin Free Run 2	
	101	500 Fin All Off	
	102	500 Fin Main Motor	
	103	500 Fin Jogger Motor	
	104	500 Fin Paddle Sol	
	105	500 Fin Gear Sol	
	106	500 Fin Lever Sol	
	107	500 Fin Tray Motor	
	108	500 Fin Stapler Motor	
	109	500 Fin Free Run 1	
	110	500 Fin Free Run 2	
990	ADF Read Position Adjustment		
	1	ADF Read Position Adjustment	Adjusts the reading position of the ADF. Moves the scanner under the glass to a different position. Use this if there is a scratch on the glass. [–10 ~ 10 / 0 / 0.1 mm/step]

SP7-XXX: (Data Log)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001*	Operation Time		
	1	Operation Time	Displays the main motor operation time. [0000000 ~ 9999999 / **0** / 1 minute/step] *Logging this operation time helps identify the cause of a difficulty by analyzing the correlation between the printing count and the OPC-belt operation time.*
002	Original Counter		
	1	Total Counter	Displays the original counters. [0000000 ~ 9999999 / **0** / 1 /step]
	2	Copier	
	3	Fax	
	4	Document Box	
	5	Scanner	
	6	Others	
003*	Print Counter		
	1	Total	Displays the color counters. [–9999 to 9999999 / **0** / 1/step]
	2	Copy: Black	
	4	Copy: Full Color	
	5	FAX: Black	
	6	FAX: Single Color	
	7	Print: Black	
	8	Print: Full Color	
	10	Development: CMY	• *10, 11: These SP modes are development counters.*
	11	Development: K	
	12	CPY: Single Color	
	13	CPY: Twin Color	
	20	Total Full color	• *These SP modes are used for the Japanese market only.*
	21	Total B/W Single Color	
	22	Total Single Color	
	23	Total B/W	
	24	Copy: Full Color	
	25	Print: Full Color	
	26	Copy: Color	
	27	Copy: B/W	
	28	Print: Color (except for B/W)	• *These SP modes are print counters.* • *These SP modes are used in all markets.*
	29	Print: B/W	
	30	Total: Color	
007*	Other Counter		
	1	Duplex	Displays other counter values. [–9999 ~ 9999999 / **0** / 0 sheet/step]
	2	A3/DLT	
	3	Staple	
101*	Paper Size Counter		
	4	A3	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT (11" x 17")	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
101*	36	LG (8 1/2" x 14")	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	38	LT (8 1/2" x 11")	
	44	HLT (5 1/2" x 8 1/2")	
	47	12 x 18	
	128	Other	
105	Paper type Counter		
	1	Normal	Displays the output counter for each paper type. [0 ~ 999999999 / **0** / 1 /step]
	2	Recycled	
	3	Special	
	4	Color	
	5	Letter head	
	6	Label	
	7	Thick	
	8	OHP	
	9	Others	
106*	Waste Toner Full		
	1	OPC	Displays the waste toner bottle counters. [0 ~ 65535 / **0** / 1 /step]
	2	Belt	[0 ~ 65535 / **0** / 1 /step]
201	Total Scan Counter		
	1	Total Scan Counter	
204*	Paper Tray Counter		
	1	Tray 1	Displays the number of sheets fed from each paper feed station. [0 ~ 9999999 / **0** / 0 sheet/step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Duplex	
205	ADF Total Counter		
	1	ADF Total Counter	Displays the ARDF original count. [0000000 ~ 9999999 / **0** / 1 /step]
206	Staple Counter		
	1	Staple Counter	Displays the stapling count. [0000000 ~ 9999999 / **0** / 1 /step]
209	Punch Counter		
	1	Punch Counter	Displays the punching count. [0 ~ 9999999 / **0** / 1 /step]
301	Copy Counter: Magnification		
	1	Reduce 25% <-->49 %	Displays the copy count for each magnification ratio. [0 ~ 9999999 / **0** / 1 /step]
	2	Reduce 50% <-->99 %	
	3	Full Size	
	4	Enlarge 101% <--> 200%	
	5	Enlarge 201% <--> 400%	
	6	Direct Magnification	
	7	Direct Size Magnification mm (inch)	
	8	Auto Reduce/Enlarge	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
304	Copy Counter: Copy Mode		
	1	Text	Displays the copy count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	T/P (Glossy Photo)	
	3	T/P (Printed Photo)	
	4	T/P (Copied Photo)	
	5	Photo (Glossy Photo)	
	6	Photo (Printed Photo)	
	7	Photo (Copied Photo)	
	8	Generation Copy	
	9	Pale	
	10	Map	
	12	Repeat	
	13	Sort	
	14	Staple	
	15	Series	
	16	Erase	
	17	Duplex	
	18	ADF	
	19	Double Copy	
	20	Duplex Original	
	21	Interrupt Copy	
	22	Combine 1 Side	
	23	Combine 2 Side	
	26	Batch	
	27	SADF	
	28	Mixed Sizes	
	29	Stamp	
	30	Cover Page	
	31	Chapter Page	
	32	Color Balance Adjustment	
	33	Adjust Color	
	34	Copy Quality	
	35	Erase Color	
	36	Convert Color	
	37	Color Background	
305	Copy Counter–Set number		
	1	1 to 1	Displays the multi-page job copy counters. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
306	Job Counter–Copy Mode		
	1	Sort	Displays the job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Staple	
	4	Reserve Copy	
	5	Check Copy	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
320	Document Server–Scan Counter		
	1	Document Server–Scan Counter	Displays the number of pages scanned into the document server. [0 ~ 9999999 / **0** / 1 /step]
321	Document Server–Original Size		
	4	A3	Displays the original count for each paper size when using the document server. [0 ~ 9999999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	128	Others	
323	Document Server–Print Size		
	5	A4 (sideways)	Displays the document server printing count for each paper size. [0 ~ 9999999 / **0** / 1 /step]
	6	A5 (sideways)	
	14	B5 (sideways)	
	38	LT (sideways)	
	44	HLT (sideways)	
	128	Other	
	132	A3 (lengthwise)	
	133	A4 (lengthwise)	
	134	A5 (lengthwise)	
	141	B4 (lengthwise)	
	142	B5 (lengthwise)	
	160	DLT (lengthwise)	
	164	LG (lengthwise)	
	166	HT (lengthwise)	
	172	HLT (lengthwise)	
324	Document Server–Print Job Counter		
	1	Duplex	Displays the document server printing job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Sort	
	3	Staple	
	5	Check Copy	
	6	Print 1st Page	
325	Document Server–Job Count (Page No)		
	1	1-page	Displays document server printing job counts for multi-page jobs.
	2	2-page	
	3	3<-->5 page	
	4	6<-->10 page	
	5	over 11 pages	
326	Document Server–Job Count (File No)		
	1	1 file	Displays document server printing job counts classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	2	2<-->5 files	
	3	6<-->10 files	
	4	Over 11 files	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
327	Document Server–Job Count (Set No)		
	1	1 to 1	Displays document server printing job counts classified by number of outputs. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
328	Document Server–Job Count (Print Mode)		
	8	Sort	Displays document server printing count classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	9	Staple	
	12	Duplex	
	24	Stamp	
	25	Cover Page	
	26	Slip Sheet	
401*	Total SC Counter		
	1	SC Counter	Displays how many times SC codes have been output. [0 ~ 9999 / **0** / 0 time/step]
403	Latest 10 SC Log		
	1	Latest	Displays the latest ten SC codes.
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
502*	Paper Jam Counter		
	1	Paper Jam Counter	Displays the total number of jams detected. [0 ~ 9999 / **0** / 0 /step]
503	Original Jam Counter		
	1	Original Jam Counter	Displays the total original jam count. [0 ~ 9999 / **0** / 0 /step]
504*	Jam by Location		
	1	At Power On	
	3	Tray 1: ON	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / **0** / 0 /step]
	4	Tray 2: Non Feed	
	5	Tray 3: Non Feed	
	6	Tray 4: Non Feed	
	7	Bypass: Non Feed	
	8	1st Relay ON	
	9	2nd Relay: ON	
	10	3rd Relay: ON	
	12	Registration (From Tray)	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
504*	13	Registration (From Duplex)	
	14	Duplex Exit	
	15	Interchange Exit:: ON	
	16	Paper Exit: On	
	17	Bridge Exit: On	
	18	Bridge Relay: On	
	19	Duplex Entrance 1: On	
	20	Duplex Entrance 2: On	
	23	Duplex Exit: On	
	40	Finisher Entrance: On	
	41	Finisher Exit: On	
	58	1st Relay: Off	
	59	2nd Relay: Off	
	60	3rd Relay: Off	
	61	4th Relay: Off	
	63	Registration: Off	
	64	Fusing Exit	
	65	Interchange Exit: Off	
	66	Paper Exit: Off	
	67	Bridge Exit: Off	
	68	Bridge Relay: Off	
	69	Duplex Entrance 1: Off	
	70	Duplex Entrance 2: Off	
	73	Duplex Exit: Off	
	100	Finisher Entrance: Off	
	101	Finisher Exit: Off	
	103	Finisher Staple	
	104	Finisher Stack Feed-out	
	105	Finisher Paper Taking out	
	107	Finisher Drive Error	
	108	Finisher Tray Lift Error	
	109	Finisher Jogger Error	
	110	Finisher Tray Shift Error	
	111	Finisher Stapler Error	
	112	Finisher Stack Feed-out	
	114	Finisher Feed out Error	
	115	Finisher No Response	
505	Original Tray by Location		
	5	Registration Sensor (On Check)	
	6	Relay Sensor (On Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	7	Inverter Sensor (On Check)	Inverter Sensor = Original Reverse Sensor (S10)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
505	55	Registration Sensor (Off Check)	
	56	Relay Sensor (Off Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	57	Inverter Sensor (Off Check)	Inverter Sensor = Original Reverse Sensor (S10)
506*	Jam by Paper Size		
	4	A3	Displays the number of jams according to paper size. [0 ~ 9999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	47	12" x 18"	
	128	Other	
507*	Copy Jam History		
	1	Latest	Displays the latest 10 paper jams. *The information contains the following four lines:* • *Location code (☛ SP7-504)* • *Paper size (in the ASAP code)* • *Total counter (as of the jam)* • *Date*
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
508	Original Jam History		
	1	Latest	Displays the logs of the latest 10 original jams. *The logs are composed of the following four lines:* • *Location code (☛ SP7-505)* • *Paper size (in the ASAP code)* • *Total counter (as of the jam)* • *Date*
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
801	Firmware Version		
			Displays the firmware versions and part numbers if available.
803*	PM Counter		
	1	Number of Development	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] • *For clearing the counters, see SP7-804.*
	2	PCU	
	3	Development: M	
	4	Development: C	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
803*	5	Development: Y.	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] *For clearing the counters, see SP7-804.*
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Bank 1 Feed	
	15	Bank 2 Feed	
	16	Bank 3 Feed	
	17	Bank 4 Feed	
	18	Manual Feed	
	19	Paper transfer unit	
	20	ADF	
804	PM Counter Reset		
	1	Number of Development	Clears the PM counters. [0 ~ 1 / **0** / 1 /step] • *For displaying the counter, see SP7-803.*
	2	PCU	
	3	Development: M	
	4	Development: C	
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Tray 1 Roller	
	15	Tray 2 Roller	
	16	Tray 3 Roller	
	17	Tray 4 Roller	
	18	By-pass Feed	
	19	Paper Transfer Unit	
	20	ADF	
	100	All	
807	SC JAM Counter Clear		
	1	SC Jam Counter Clear	Clears the counters related to SC codes and paper jams. [0 ~ 1 / **0** / 0 /step]
808	Counter All Clear (except total)		
	1	Counter All Clear (except total)	Clears all counters except for SP7-003 and –007. [0 ~ 1 / **0** / 0 /step]

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
810	Access code clear		
	1	Access code clear	Clears the key operator password. *SP7-810 clears the key operator password. After clearing this code, stored data can be accessed without using it.* *To register a new key operator password, use SP5-409-1.*
811	Original Counter Clear		
	1	Original Counter Clear	Clears the original counter.
816	Tray Counter Clear		
	1	Tray 1	Clears the tray counters (SP7-204). [0 ~ 1 / **0** / 0 /step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Tray Duplex	
822	Memory Clear		
	1	Copy Cunter: Magnification Clear	Clears the copy counter (classified by magnification)
825	Electrical Counter Reset		
	1	Electrical Counter Reset	Sets the total counter to “0”. [0 ~ 0 / **0** / 0 /step]
826	MF Error Counter		
	1	Error Total	Displays the MF error counters.
	2	Error Staple	
827	MF Error Counter Clear		
	1	MF Error Counter Clear	Clears the MF error counter.
832*	Diagnostic result		
	1	Diagnostic Result	Displays the result of the diagnostics. Refer to section 4.2 for the error codes. [0 ~ 0 / **0** / 0 /step]
833	Coverage		
	1	Last: M	Displays coverage ratios. [0.00 ~ 100.0 / **0.00** / 0.01 %step] *This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper.* *Do not use this counter for billing purposes. This is because this value is not directly* proportional to the amount of toner consumed, although of course *it is one factor that affects this amount. The other major facors involved include: the type, total image area and image density of the original, toner concentration and developer potential.* *Last: This is the coverage for the previous sheet.* *Average: This is the average coverage for each sheet.*
	2	Last: C	
	3	Last: Y	
	4	Last: Bk	
	5	Average: M	
	6	Average: C	
	7	Average: Y	
	8	Average: Bk	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
834	Toner Consumed		
	5	M	Displays the coverage ratios, including toner revitalization mode. [0 ~ 9999999 / **0** / 1 /step] *This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).* *Do not use this counter for billing purposes.*
	6	C	
	7	Y	
	8	Bk	
835	ACC Counter		
	1	M	Displays the number of times ACC has been done. [0 ~ 9999999 / **0** / 1 /step]
	2	Y	
	3	C	
	4	Bk	
836	Total Memory Size		
	1	Total Memory Size	Displays the memory capacity.
837	Memory Clear		
	1	Memory Clear	Clears the SP7-304 counter (copy count classified by mode).
838	Memory Clear		
	1	Memory Clear	Clears the SP7-305 counter (job count classified by output count).
839	Memory Clear		
	1	Memory Clear	Clears the SP7-306 counter (job count classified by job count).
840	Memory Clear		
	1	Memory Clear	Clears the SP7-320 counter (document box count).
841	Memory Clear		
	1	Memory Clear	Clears the SP7-321 counter (original count classified by paper size).
842	Memory Clear		
	1	Memory Clear	Clears the SP7-323 counter (print count classified by paper size).
843	Memory Clear		
	1	Memory Clear	Clears the SP7-324 counter.
844	Memory Clear		
	1	Memory Clear	Clears the SP7-325 counter.
845	Memory Clear		
	1	Memory Clear	Clears the SP7-326 counter.
846	Memory Clear		
	1	Memory Clear	Clears the SP7-327 counter.
847	Memory Clear		
	1	Memory Clear	Clears the SP7-328 counter.1
848	Memory Clear		
	1	Memory Clear	Clears all the document server counters, which include: • *SP7-301_SP7-304_SP7-305* • *SP7-306_SP7-320_SP7-321* • *SP7-323_SP7-324_SP7-325* • *SP7-326_SP7-327_SP7-328*

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
850	High Duty Counter		
	1	M	Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours.
	2	C	
	3	Y	
	4	Bk	
901	Assert Information (Assert Information)		
	1	File Name	Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / **0** / 0 /step]
	2	# of Lines	
	3	Location	
904	Waste Toner Full Clear		
	1	OPC	Clears the waste toner bottle full counters. [0 ~ 1 / **0** / 0 /step] • *0: Not clears* • *1: Clears*
	2	Belt	
	100	All	
906*	PM Counter-Previous		
	1	PCU	Displays the previous PM counters. [0 ~ 9999999 / **0** / 0 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	ADF	
907	Replace counter		
	1	PCU	[0 ~ 255 / **0** / 1 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
907	12	Filter 2	[0 ~ 255 / **0** / 1 /step]
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	Toner: M	
	20	Toner: C	
	21	Toner: Y	
	22	Toner: Bk	
	23	ADF	
908	Process Control Counter		
	1	Process Control Counter	Displays the process control counter. [0 ~ 9999999 / **0** / 1 sheet/step]
909	Process Control Reset		
	1	Process Control Reset	Resets the process control counter.
913	Oil Counter		
	1	Oil Counter	Displays the oil supply unit counter. [0 ~ 65535 / **0** / 1 sheet/step]
914	Oil Clean Counter Reset		
	1	Oil Clean Counter Reset	Resets the oil cleaner counter.
915	Process Error Log		
	1	Log 1	Displays the latest three process control error logs. *The following are the error codes:* Development unit initial settings errors: • 110: Incorrect image detected by cyan ID sensor • 116: Incorrect image detected by magenta ID sensor • 118: No black image Development bias settings errors: • 113: Incorrect image detected by cyan ID sensor • 114: Incorrect image detected by magenta ID sensor • 115: Incorrect image detected by yellow ID sensor • 123: Incorrect image detected by black ID sensor ID sensor errors: • 103: ID sensor error • 104: ID sensor unable to detect image • 105: OPC belt not detected
	2	Log 2	
	3	Log 3	
920	Machine Counter		
	1	Machine Counter	[0 ~ 0xFFFFFFF / **0** / 1 /step]
921	Machine Counter Clear		
	1	Machine Counter Clear	Clears the machine counter.
922	Toner End Counter		
	1	K Toner	Displays the toner end counter, which indicates the possible print count after a toner near end.
	2	C Toner	
	3	M Toner	
	4	Y Toner	

7	Mode No. (Class 1. 2 and3)		Function / [Setting]
923	Toner End Counter Clear		
	1	K Toner	Clears the toner end counter (SP7-922). *The machine goes back to the normal operation mode if the toner end counter is cleared.*
	2	C Toner	
	3	M Toner	
	4	Y Toner	
	100	All	
924	Charger Clean Counter		
	1	Charger Clean Counter	Displays how many times the charge corona wire has been cleaned. [0 ~ 9999999 / **0** / 1 sheet/step] *SP7-926 resets the counter.*
925	Time Counter Display		
	1	Time Counter Display	Displays the current counter of the charge corona unit cleaning interval. *SP2-801 specifies the charge corona unit cleaning interval.*
926	Charger Cleaner Counter Reset		
	1	Charger Cleaner Counter Reset	Resets the charge wire cleaner counter (SP7-924).
927	Timer Counter Clear		
	1		Clears the counter of the charge corona unit cleaning interval. *SP7-927 clears the counter displayed by SP7-925, but does not clear the value specified with SP2-801.*
928	Previous PM Counter Clear		
	1	Previous PM Counter Clear	Clears the previous PM counter (SP7-906).
929	Replace Counter Clear		
	1	Replace Counter Clear	Clears the replace counter.
930	Counter For Designer		
	1	Counter 1 For Designer	**DFU**
	2	Counter 2 For Designer	

SP9-XXX: (Etc.)

9	Mode No. (Class 1, 2, and 3)		Function / [Setting]
904	Discharge Threshold		
	1	Discharge Threshold	[90 ~ 220 / **150** / 0.1 g/m^3/step]

5.1.3 TEST PATTERN PRINTING (SP5-955-1)

1. Enter the SP mode and select SP5-955-1.
2. Enter the number for the test pattern that you want to print and press #. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern	No.	Test Pattern
0	None	23	1 dot Grid Pattern (Reverse order of LD1/2 on)
1	Vertical Line (1-dot)	24	3 lines Grayscale
2	Horizontal Line (1-dot)	25	Horizontal Grayscale – 1
3	Vertical Line (2-dot)	26	Vertical Grayscale – 1
4	Horizontal Line (2 dot)	29	Horizontal Grayscale – 2
5	1 dot Grid Pattern0 – 1	30	Vertical Grayscale – 2
6	1 dot pair Grid Pattern – 1	31	Horizontal Grayscale (600 dpi)
7	Alternating Dot Pattern (1 dot)	32	Vertical Grayscale (600 dpi)
8	Alternating Dot Pattern (2 dot)	35	Horizontal Grayscale with White Line – 1
9	Full Dot Pattern	36	Vertical Grayscale with White Line – 1
10	Black band	38	Horizontal Grayscale with White Line – 2
11	Trimming Area (1 dot)	39	Vertical Grayscale with White Line – 2
12	Trimming Area (2 dot)	40	Horizontal Grayscale with White Line (600 dpi)
13	Argyle Pattern (1 dot)	41	Vertical Grayscale with White Line (600 dpi)
14	Argyle Pattern (2 dot)	43	Blank image
15	Horizontal Cross Stitch	50	Vertical Cross Stitch
16	Checker Flag	51	2 beam
19	Alternating Dot Pattern (4 dot)	52	Trimming Area with Crossed Lines
20	1 dot Horizontal Line (Reverse order of LD1/2 on)	53	1 dot Grid Pattern – 2
21	1 dot Grid Pattern (Reverse order of LD1/2 on)	54	1 dot pair Grid Pattern – 2
22	1 dot pair Grid Pattern (Reverse order of LD1/2 on)		

5.1.4 INPUT CHECK

Main Machine Input Check (SP5-803)

1. Enter the SP mode and select SP5-803.
2. Select an item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

SP5-803 -XXX		Description	Reading	
			0	1
1	Tray 1 Set	Tray 1 set (standard tray)	Set	Not set
2	Tray 1 Paper End	Tray 1 paper end sensor (standard tray)	Paper End	Paper is present
3	Tray 1 Paper Height	Tray 1 paper near-end sensor (standard tray)	Not near end	Near end
4	Tray 1 Paper Size	Tray 1 paper size sensor (standard tray)	(See table 1.)	
5	Tray 2 Set	Tray 2 set (standard tray)	Set	Not set
6	Tray 2 Paper End	Tray 2 paper end sensor (standard tray)	Paper End	Paper is present
7	Tray 2 Paper Height	Tray 2 paper near-end sensor (standard tray)	Not near end	Near end
8	Tray 2 Paper Size	Tray 2 paper size sensor (standard tray)		
9	Registration Sensor		Detected	Not detected
10	Upper Relay	Paper feed sensor	Detected	Not detected
11	Lower Relay	Paper feed sensor	Detected	Not detected
12	Right Cover SW		Closed	Open
13	Exit Sensor		Detected	Not detected
14	Paper Overflow		Full	Not full
15	Exit Cover Switch		Closed	Open
16	Interchange Unit Set		Set	Not set
17	Interchange Exit		Detected	Not detected
18	By-pass Tray Set		Not set	Set
19	By-pass Paper End		Paper End	Paper is present
20	By-pass Paper Size			
21	Fusing Unit Set		Set	Not set
22	Fusing Exit		Paper End	Paper is present
23	Fusing Oil End			
24	Fusing High Temperature			

SP5-803 -XXX		Description	Reading	
			0	1
25	Discharge Bias Leak			
30	Toner End: M	Toner end sensor: M	Not end	End
31	Toner End: C	Toner end sensor: C	Not end	End
32	Toner End: Y	Toner end sensor: Y	Not end	End
33	Toner End: K	Toner end sensor: K	Not end	End
34	Toner Unit: M	Toner cartridge memory chip: M	Not set	Set
35	Toner Unit: C	Toner cartridge memory chip: C	Not set	Set
36	Toner Unit: Y	Toner cartridge memory chip: Y	Not set	Set
37	Toner Unit: K	Toner cartridge memory chip: K	Not set	Set
38	O/B Waste Toner Sensor	OPC belt waste toner sensor	Full	Not full
39	O/B Waste Toner Switch	OPC belt waste toner bottle switch	Set	Not set
40	Belt Mark	Belt mark sensor	Not detected	Detected
41	New PCU Sensor	Not used	-	-
42	T/B Waste Toner Sensor	Transfer belt waste toner sensor	Full	Not full
43	T/B Waste Toner Switch	Transfer belt waste toner bottle switch	Set	Not set
44	LD 5V Cover	Interlock switch	Closed	Open
45	Left Cover		Closed	Open
46	Right Upper Cover		Closed	Open
47	Front Cover		Closed	Open
48	Development Motor Lock	Development motor lock	Locked	Not locked
49	Main Motor Lock	Main motor lock	Locked	Not locked
50	Paper Feed Motor Lock	Paper feed motor lock	Locked	Not locked
51	Polygon Motor Lock	Polygon motor lock	Locked	Not locked
52	1 Bin Set		Set	Not set
53	1 Bin Paper Sensor		Detected	Not detected
60	Duplex Connection	Duplex unit	Not connected	Connected
61	Bank 1 Connection	1st optional paper tray	Not connected	Connected
62	Bank 2 Connection	2nd optional paper tray	Not connected	Connected
63	Finisher Connection	Finisher Connection	Not connected	Connected
64	Bridge Exit		Detected	Not detected
65	Bridge Relay		Detected	Not detected
66	Bridge Set		Set	Not set
67	Bridge Right Cover		Closed	Open
68	Bridge Left Cover		Closed	Open
69	Bank Upper Relay	Relay Sensor 3 (optional paper tray unit)	No paper	Paper present
70	Bank Lower Relay	Relay Sensor 4 (optional paper tray unit)	No paper	Paper present

SP5-803 -XXX		Description	Reading	
			0	1
71	Bank Cover 1	Right cover (vertical guide switch)	Closed	Open
72	Bank Cover 2	2nd optional tray: Right cover (vertical guide switch)	Closed	Open
73	Bank Tray 1 Set	1st optional tray: Set	Not set	Set
74	Bank Tray 2 Set	2nd optional tray: Set	Not set	Set
75	Bank Tray 1 Paper End	1st optional tray: Paper end	Not end	End
76	Bank Tray 2 Paper End	2nd optional tray: Paper end	Not end	End
77	Bank Tray 1 Paper Size	1st optional tray: Paper size	(See table 2.)	
78	Bank Tray 2 Paper Size	2nd optional tray: Paper size		
79	Bank Tray 1 Paper Height	1st optional tray: Paper height	(See table 3.)	
80	Bank Tray 2 Paper Height	2nd optional tray: Paper height		
81	Duplex Entrance	Duplex: Entrance sensor	Not detected	Detected
82	Duplex Exit	Duplex: Exit sensor	Detected	Not detected
83	Duplex Open	Duplex unit open switch	Closed	Open
84	Duplex Cover	Duplex cover sensor	Open	Closed
86	Scanner Home Position	Scanner HP sensor	Detected	Not detected
87	Recycle Counter	Mechanical Counter Set	Set	Not set
88	Counter Set		Set	Not set
89	Key Counter Set		Set	Not set
90	Shift Tray Home Position Sensor		Detected	Not detected
91	Platen Cover Sensor		Detected	Not detected

Table 1: Tray 1 and 2 Paper Size

Switch	North America	Europe/Asia	Value
1000	8 1/2" x 11" SEF	8 1/2" x 11" SEF	00001110
1001	B5 SEF	B5 SEF	00000110
1010	5 1/2" x 8 1/2" LEF	A5 LEF	00001010
1011	11" x 17" SEF	A3 SEF	00000010
1100	A4 SEF	A4 SEF	00001100
1101	B5 LEF	B5 LEF	00000100
1110	8 1/2" x 11" LEF	A4 LEF	00001000
1111	8 1/2" x 14" SEF	B4 SEF	00000000

0: pushed
1: not pushed

Table 2: By-pass Tray Paper Size

Paper Width	Value	Paper Width	Value
A3/11"/12"	01110000	B5/8"	10010000
B4	00110000	A5/5.5"	11010000
A4/8.5"	10110000	B6	11000000

Table 3: Optional Paper Tray Unit Paper Size

Size	North America	Europe/Asia	Code
A3 SEF	Detected	Detected	10000100
B4 SEF	None	Detected	10001101
A4 SEF	None	Detected	10000101
A4 LEF	Detected	Detected	00000101
B5 LEF	Detected	Detected	00001110
A5 LEF	None	Detected	00000110
DLT SEF	Detected	Detected	10100000
LG SEF	Detected	None	10001101
LT SEF	Detected	None	10000101
LT LEF	Detected	Detected	00100110
HLT LEF	Detected	None	00000110

Table 4: Optional Paper Tray Unit Paper Near End

Remaining paper	Paper height sensor 2	Paper height sensor 1	Code
Full	ON	ON	11111111
Nearly full	OFF	ON	11111110
	On	OFF	11111101
Near end	OFF	OFF	11111100

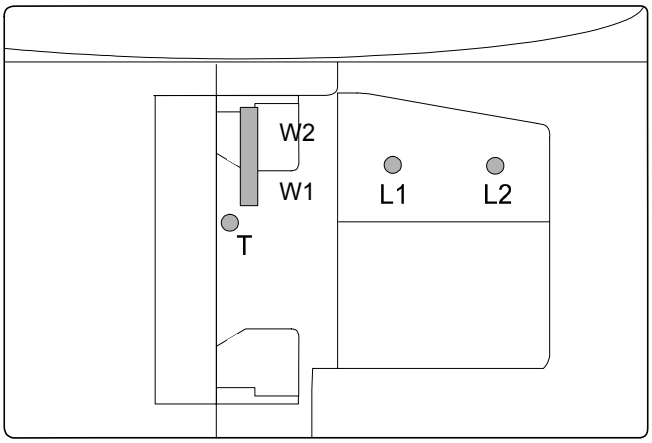
ARDF Input Check (SP6-007)

1. Enter the SP mode and select SP6-007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



No.	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6-117)

1. Enter the SP mode and select SP6-117.
2. Enter the number (1 – 113) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit) at the right side of the screen is valid.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

No.	Description	Reading	
		0	1
1	Entrance Sensor	Activated	Deactivated
2	Tray Exit Sensor	Activated	Deactivated
4	Staple Entrance Sensor	Activated	Deactivated
5	Stapler Home Position Sensor	Activated	Deactivated
6	Jogger Fence Home Position Sensor	Activated	Deactivated
8	Feed-out Belt Home Position Sensor	Activated	Deactivated
9	Stapler Tray Paper	Activated	Deactivated
10	Stapler Rotation Home Position	Activated	Deactivated
11	Staple Sensor	Activated	Deactivated
14	Staple Sheet Sensor	Activated	Deactivated
17	Exit Plate Home Position Sensor	Activated	Deactivated
18	Tray Shift Home Position Sensor	Activated	Deactivated
21	Stack Height Sensor	Activated	Deactivated
23	Tray Lower Limit Sensor	Activated	Deactivated
101	500 Fin Entrance Sensor	Activated	Deactivated
102	500 Fin Exit Sensor	Activated	Deactivated
103	500 Fin Jogger Home Position Sensor	Activated	Deactivated
104	500 Fin Top Cover Sensor	Closed	Opened
105	500 Fin Height Sensor	Activated	Deactivated
106	500 Fin Lever Sensor	Activated	Deactivated
107	500 Fin Upper Limit Sensor	Activated	Deactivated
108	500 Fin Near Limit Sensor	Activated	Deactivated
109	500 Fin Staple Cover Sensor	Closed	Opened
110	500 Fin Stapler Home Position Sensor	Activated	Deactivated
111	500 Fin Staple End Sensor	Activated	Deactivated
112	500 Fin Staple Sensor	Activated	Deactivated
113	500 Fin Stapler Lock Sensor	Locked	Not Locked

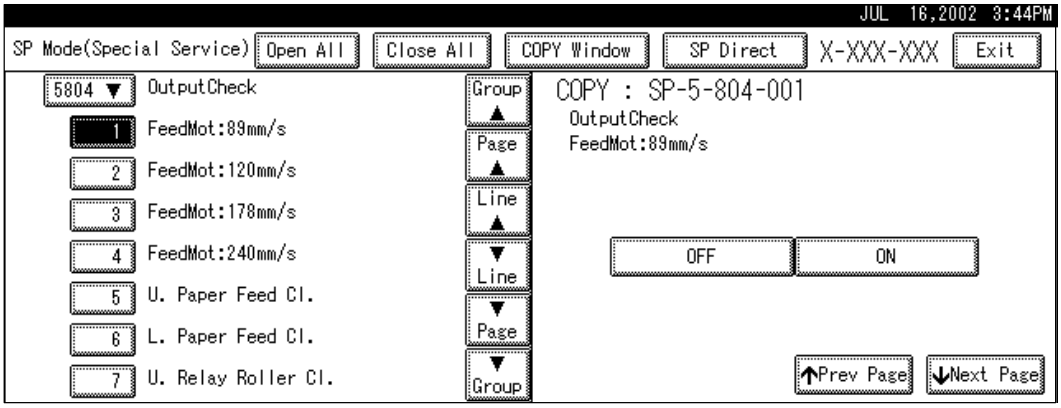
5.1.5 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5-804)

1. Open SP5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. Press *OFF* to end the test.

   NOTE: You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing. Do not keep an electrical component switched *ON* for a long time.



Output Check Table

SP5-804 -XXX		Description
1	Feed Mot: 89 mm/s	Paper feed motor: 89 mm/s
2	Feed Mot: 120 mm/s	Paper feed motor: 120 mm/s
3	Feed Mot: 178 mm/s	Paper feed motor: 178 mm/s
4	Feed Mot: 240 mm/s	Paper feed motor: 240 mm/s
5	Upper Paper Feed Clutch	Tray 1 paper feed clutch
6	Lower Paper Feed Clutch	Tray 2 paper feed clutch
7	Upper Relay Roller Clutch	Tray 1 vertical transport clutch
8	Lower Relay Roller Clutch	Tray 2 vertical transport clutch
9	Transfer Motor: Half Speed	Main motor: 178 mm/s

SP5-804 -XXX		Description
10	Transfer Motor: Low Speed	Main motor: 89 mm/s
11	Regist Clutch	Registration clutch
12	Interchange Upper Gate	Interchange Junction Gate Solenoid 1
13	Interchange Lower Gate	Interchange Junction Gate Solenoid 2
14	By-pass Feed Clutch	By-pass paper feed clutch
15	By-pass Pick-Up Solenoid	By-pass pick-up solenoid
16	Development Clutch: M	Development clutch: M
17	Development Clutch: C	Development clutch: C
18	Development Clutch: Y	Development clutch: Y
19	Development Clutch: K	Development clutch: K
20	Development Motor (Forward)	Development motor
21	Development Motor Half Speed (Forward)	Development motor: Half Speed
22	Development Motor (Reverse)	Development motor: Reverse
23	Development Motor Half Speed (Reverse)	Development motor: Reverse Half Speed
24	Lubricant Clutch	OPC belt cleaning clutch
25	Main Motor (Forward)	Main motor: Regular Speed
26	Main Motor Half Speed (Forward)	Main motor: Half Speed
27	Main Motor (Reverse)	Main motor: Reverse
28	Main Motor Half Speed (Reverse)	Main motor: Reverse Half Speed
29	Polygon Motor	Polygon motor
30	LD On	LD
31	Polygon Motor + LD	Polygon Motor + LD
32	Transfer 2nd Solenoid	Paper Transfer Solenoid
33	T/B Cleaning Clutch	Image transfer belt cleaning clutch
34	T/B Cleaning Solenoid	Image transfer belt cleaning contact solenoid
40	Engine Ready Signal	Engine Ready Signal
41	ID sensor LED	
42	QL	
43	Toner End Led	Toner End LED
44	Charger Bias	Charge corona unit output
45	Development Bias 1	Development Bias: 1
46	Development Bias 2	Development Bias: 2
47	Belt Transfer	Image transfer power supply
48	Paper Transfer: +	Paper transfer bias: +
49	Paper Transfer: –	Paper transfer bias: –
50	T/B Cleaning: +	Image transfer belt cleaning bias: +
51	Discharge: H	Discharge plate power supply: H
52	Discharge: L	Discharge plate power supply: L

SP5-804 -XXX		Description
53	Fuser Main Relay	Fusing Main Relay
54	Fusing Bias	Fusing Bias
55	Scanner Lamp	
100	Bank Upper Feed	1st paper feed clutch (optional paper tray unit)
101	Bank Lower Feed	2nd paper feed clutch (optional paper tray unit)
102	Bank Feed Motor: L	1st paper feed motor (optional paper tray unit)
103	Bank Feed Motor: H	1st Paper feed motor – half speed (optional paper tray unit)
110	Shift Tray Motor: CW	Shift Tray Motor – continuous clockwise
111	Shift Tray Motor: CCW	Shift Tray Motor – continuous counter-clockwise
112	Shift Tray Motor: Run	Shift Tray Motor – shifts once
120	Duplex Reverse Motor (Forward)	Duplex: Inverter motor
121	Duplex Reverse Motor (Reverse)	Duplex: Inverter motor – reverse
122	Duplex Feed Motor (Forward)	Duplex: Transport motor
123	Duplex Feed Motor (Reverse)	Duplex: Transport motor – reverse
124	Duplex Solenoid	Duplex: Inverter gate solenoid
125	Duplex Free Run	Duplex: Free run
130	Bridge Motor: H	
131	Bridge Motor: L	
132	Bridge Gate Sol	
140	Fusing Fan: H	
141	Fusing Fan: L	
142	Dev Fan: H	Development Fan Motor: H
143	Dev. Fan: L	Development Fan Motor: L
144	Cooling Fan: H	Controller Fan Motor: H
145	Cooling Fan: L	Controller Fan Motor: L
146	Ozone Fan: Hi	
147	Ozone Fan: Low	
160	Bridge Cooling Fan: H	
161	Bridge Cooling Fan: L	
162	PSU Fan	
170	Forced Lubricant	The following parts are switched on. O/B cleaning contact clutch T/B cleaning solenoid T/B cleaning contact clutch

ARDF Output Check (SP6-008)

1. Open SP6-008.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description
1	Feed Motor (Forward)
2	Feed Motor (Reverse)
3	Transport Motor (Forward)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6-118)

1. Open SP6-118.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description	No.	Description
	1000-sheet finisher		**500-sheet finisher**
1	Fin All Off	101	500 Fin All Off
2	Upper Transfer Motor	102	500 Fin Main Motor
3	Lower Transfer Motor	103	500 Fin Jogger Motor
4	Exit Motor	104	500 Fin Paddle Sol
5	Tray Gate Sol	105	500 Fin Gear Sol
6	Tray Lift Motor	106	500 Fin Lever Sol
7	Jogger Motor	107	500 Fin Tray Motor
12	Stapler Motor	108	500 Fin Stapler Motor
13	Staple Hummer	109	500 Fin Free Run 1
15	Stapler Gate Sol	110	500 Fin Free Run 2
16	Pos. Roller Sol		
18	Feed-out Motor		
19	Shift Motor		
22	Guide Plate Motor		
23	Fin Free Run 1		
24	Fin Free Run 2		

5.1.6 SMC DATA LISTS (SP5-990)

1. Open SP mode 5-990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All data list
2	SP mode data list
3	UP mode data list
4	Logged data list
5	Self-diagnostics results list
6	Non-Default Data list
7	NIB summary
8	Net file log list (Jobs to be printed from the document server using a PC and the Desk Top Binder software)
21	Copy UP mode list
22	Scanner SP mode list
23	Scanner UP mode list

2. Touch *EXECUTE* on the touch panel
3. Operate according to the instructions on the display.
4. Check that the completion message appears, and touch *Exit.*

5.1.7 ORIGINAL JAM HISTORY DISPLAY

Total Count

SP7-503 displays the number of original jams having occurred in the optional ARDF.

Details on the Most Recent Jams

SP7-508 displays the detailed information on the latest 10 original jams having occurred in the optional ARDF.

SP7-508-		
1	Latest	Information on the latest original jam
2	Latest 1	Information on the 2nd latest original jam
3	Latest 2	Information on the 3rd latest original jam
:	:	:
8	Latest 7	Information on the 8th latest original jam
9	Latest 8	Information on the 9th latest original jam
10	Latest 9	Information on the 10th latest original jam

5.1.8 COPY JAM HISTORY DISPLAY

Total Count

SP7-502 displays the number of copy paper jams having occurred in all paper paths.

Details on the Most Recent Jams

SP7-507 displays the detailed information on the latest 10 copy paper jams having occurred in all paper paths.

SP7-507-		
1	Latest	Information on the latest paper jam
2	Latest 1	Information on the 2nd latest paper jam
3	Latest 2	Information on the 3rd latest paper jam
: :	: :	: :
8	Latest 7	Information on the 8th latest paper jam
9	Latest 8	Information on the 9th latest paper jam
10	Latest 9	Information on the 10th latest paper jam

5.1.9 MEMORY ALL CLEAR (SP5-801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP7-003-1	Print total counter value
SP5-811	Machine serial number
SP5-907	Plug & play brand name and production name setting

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

Using a Flash Memory Card

1. Upload the NVRAM data to a flash memory card (☛ NVRAM Data Upload).
2. Print out all SMC data lists (SP5-990).
   NOTE: Be sure to print out all the lists. If the NVRAM data upload is not completed, it is necessary to manually change the SP mode settings.
3. Open SP5-801.
4. Press the number for the item that you want to initialize. The number you select determines which application software is initialized. Touch 1, for example, if you want to initialize all modules; or select the appropriate number from the table below.

No.	What It Initializes	Comments
1	All modules	Initializes items 2 ~ 15 below.
2	Engine	Initializes all registration settings for the engine and process settings.
3	SCS (System Control Service)/SRAM	Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH (Image Memory handler)	Initializes the registration setting for the image memory handler. (Deletes all image files in the HDD).
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.

No.	What It Initializes	Comments
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	DCS	Initializes the DCS (Delivery & Receive Control Server) settings
15	UCS	Initializes the UCS (User Directory Control Server) settings.

5. Touch *EXECUTE*, and turn the main switch off and on.
6. Download the NVRAM data from a flash memory card (☛ 5.2.2).

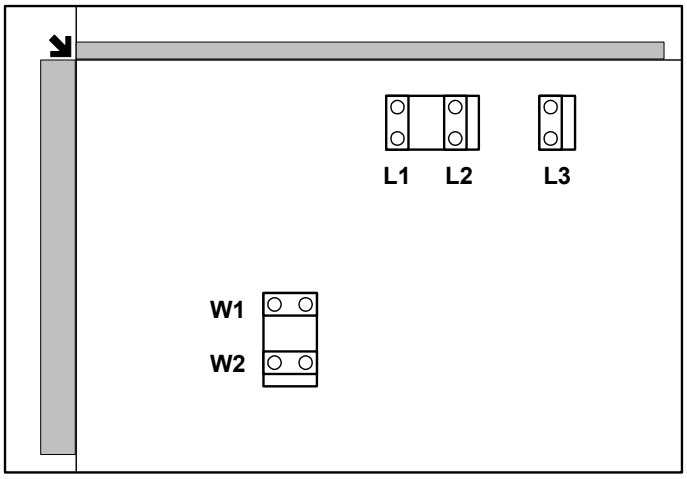
Without Using a Flash Memory Card

If there is no flash memory card, follow the steps below.

1. Execute SP5-990 to print out all SMC data lists.
2. Open SP5-801.
3. Select the number for the item that you want to initialize.
4. Press *EXECUTE* and turn the main switch off and on.
5. Make sure that you do the following:
   - Do the printer and scanner registration and magnification adjustments (☛ "Copy Adjustments" in chapter 3, "Replacement and Adjustment").
   - Do the touch screen calibration (☛ "Touch Screen Calibration" in chapter 3, "Replacement and Adjustment").
   - Referring to the SMC data lists, re-enter all values that have been changed from their factory settings.
   - Do the white level adjustment (☛ Section 3.14 Standard White Density Adjustment)
6. Check the copy quality and the paper paths, and do any necessary adjustments.

5.1.10 APS OUTPUT DISPLAY (SP4-301)

SP4-301 displays a code that indicates the current status of the APS sensors. The table lists the codes and the activated sensors.



Code	Sensors				
	W1	W2	L1	L2	L3
38	❍	❍	—	—	—
160	❍	❍	❍	❍	❍
164	—	—	❍	❍	❍
166	—	—	❍	❍	—
128	Other combinations				

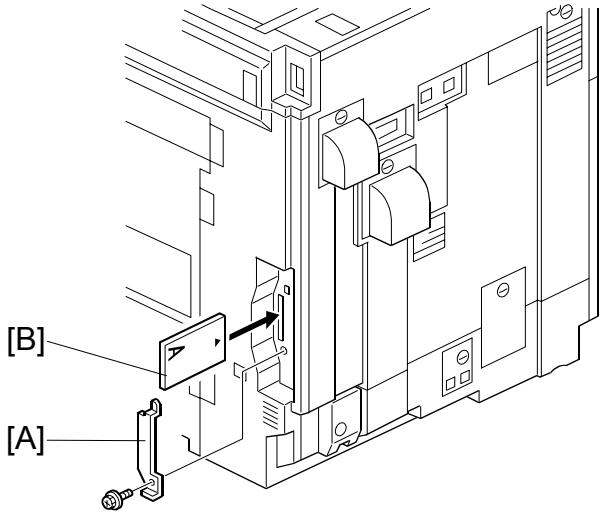
❍: Activated
—: Deactivated

5.2 PROGRAM DOWNLOAD

5.2.1 FIRMWARE

The procedure is the same for all firmware modules.

1. Turn off the main power switch.
2. Remove the cover [A].
3. Insert the IC card [B] containing the software you wish to download into the card slot of the controller.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions displayed on the operation panel
7. Monitor the downloading status on the operation panel.
   - While downloading is in progress, the panel displays “Writing”. When downloading has been completed, the panel displays “Completed”.
   - The Start key lights red while downloading is in progress, and then lights green again after downloading is completed.



⚠CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the IC card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, perform copier SP5-801-9 (Memory All Clear – Scanner Application).

NOTE: If the download failed, an error message appears on the panel. In this case, download the firmware again using the IC card.
In this condition, if the firmware cannot be downloaded again, do the following:
Controller firmware: Turn on dip switch 1 on the controller board, and switch on. The machine boots from the IC card. Download the new firmware.
Others: Replace the appropriate PCB.

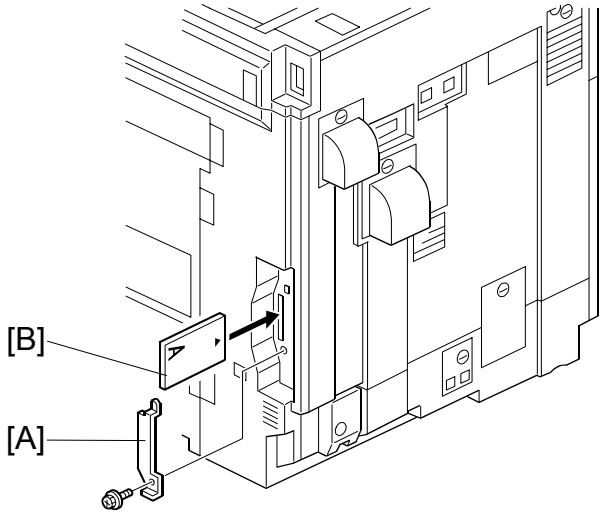
5.2.2 NVRAM DATA UPLOAD/DOWNLOAD

The content of the NVRAM can be uploaded to and downloaded from a flash memory card.

Uploading NVRAM Data (SP5-824)

The data in the NVRAM in the machine can be uploaded to a flash memory card.

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
5. Open SP5-824.
6. Touch *EXECUTE* to start uploading the NVRAM data.
7. Turn off the main switch, and then remove the IC card.



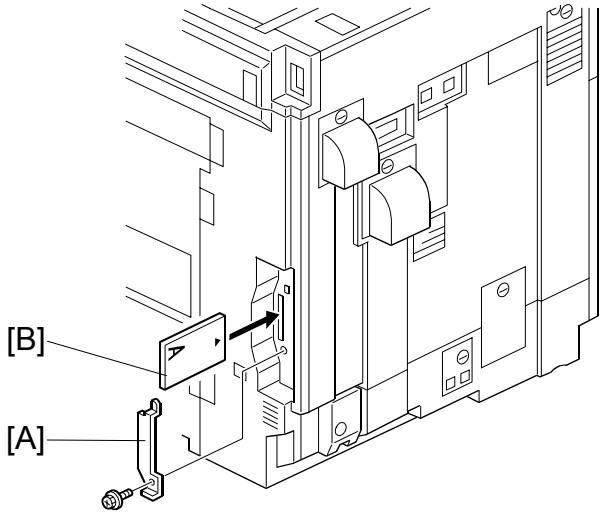
Downloading NVRAM Data (SP5-825)

SP5-825 downloads data from a flash card to the NVRAM inside the machine.

The following data are not downloaded from the flash card:

- Meter charge total counter (SP7-003-1)
- Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (SP7-007).

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
8. Open SP5-825.
5. Touch *EXECUTE* to start download the NVRAM data.
6. Turn off the main switch, and then remove the IC card.



Note that the following errors may occur during downloading:

- If a card is not installed in the card slot and a message tells you that downloading cannot proceed, you cannot execute downloading, even by pressing *EXECUTE.*
- If the correct card for the NVRAM data is not inserted in the card slot, after you press *EXECUTE* a message will tell you that downloading cannot proceed because the card is abnormal and the execution halts.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use either of the following procedures.

Procedure 1

1. Turn the main power switch off and on.
2. Check that "Now loading. Please wait" is displayed and that the copy window opens.

Procedure 2

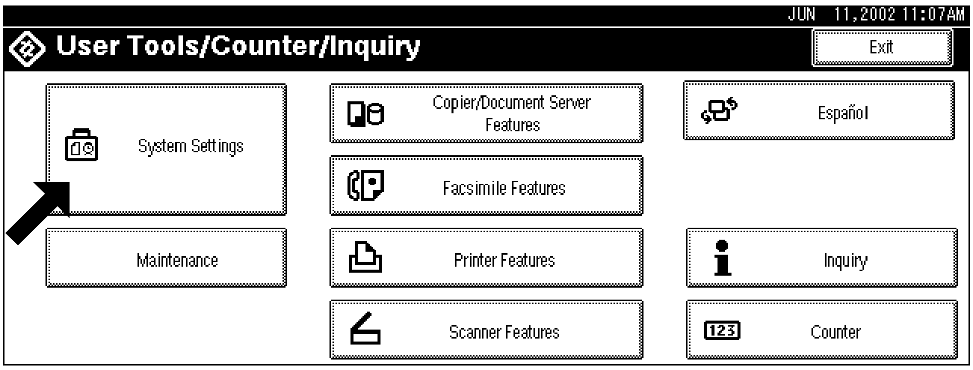
1. Press and hold down the (•/*) and (#) keys together until the machine beeps (for about 10 seconds).
2. Release both buttons.
3. Check that "Now loading. Please wait" is displayed and that the copy window opens.

5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

To reset the system settings in the UP mode to their defaults. Use the following procedure.

⇒ 1. Press the User Tools/Counter key.
2. Hold down the (#) key and touch *System Settings*.
NOTE: Hold down the (#) key before touching *System Settings*.



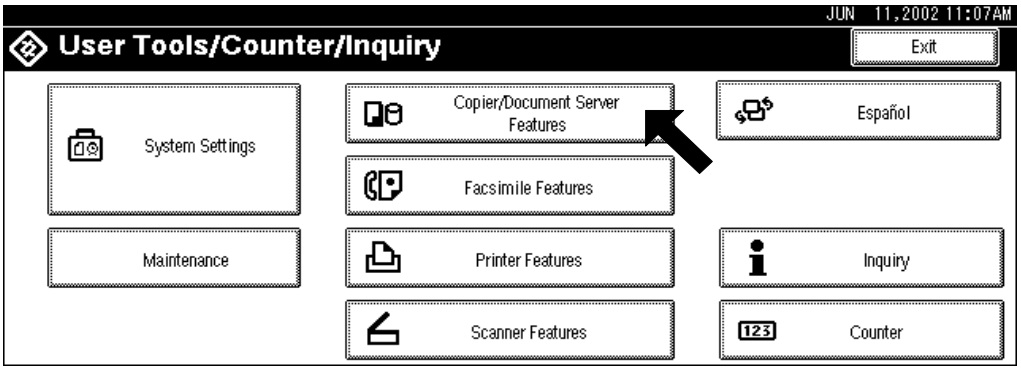
3. When the display asks if you want to reset the system settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.4.2 COPIER SETTING RESET

To reset the copy settings in the UP mode to their defaults, use the following procedure.

⇒ 1. Press the User Tools/Counter key (⌂).

2. Hold down the # key and then touch *Copier/Document Server Features*.
   NOTE: Hold down the # key before touching *Copier/Document Server Features*.



3. When the display asks if you want to reset the Copier Document Server settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

Service Tables

5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time.

5.5.1 HOW TO ENTER USER TOOLS

UP Mode Initial Screen: User Tools/Counter Display

⇒ To enter the UP mode, press the User Tools/Counter key (⇦).

System Settings

In the User Tools/Counter display, touch *System Settings*.

Touch a tab to display the settings. If the Next button is lit in the lower right corner, touch it to display more options. Specify the settings, touch *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

Copier/Document Server Features

In the User/Tools Counter display, touch Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, touch Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then touch the tab to display more settings. The screen below shows the Printer Features screen.

Inquiry

In the User/Tools Counter display, touch *Inquiry*.

The following SP mode settings will be displayed.

- Service Telephone Number (SP5-812-1)
- Service Facsimile Number (SP5-812-2)
- Telephone Number for ordering consumables (SP5-812-3)
- Sales Telephone Number (SP5-812-4)
- Toner Type (SP5-841-1~4)

Counter

In the User/Tools Counter display, touch *Counter*.

The following SP mode counters will be displayed.

- Copy Counter (SP5-914)

View the settings, touch Print Counter *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

5.6 DIP SWITCHES

Controller Board: SW2

DIP SW No.	OFF	ON
1	Boot-up from machine	Boot-up from IC card
2	Not used (keep at OFF)	
3		
4		

If the controller firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

BICU Board: SW2

DIP SW No.	Function	OFF			ON		
1	Machine Type	B052 (32 minute B/W)			B051 (24 minute B/W)		
2	Destination	Off:	Off:	Off:	On:	On:	Off:
3		Off: JAN	On: NA	Off: EU	On: AA	Off: TWN	On: CHN
4		Off:	Off:	On:	Off:	Off:	On:
5	Not used	Keep at OFF					
6	Not used						

JAN: Japan, NA: North America, EU: Europe, AA: Asia, TWN: Taiwan, CHN: China

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 021 **07/10/2003**

APPLICABLE MODEL:

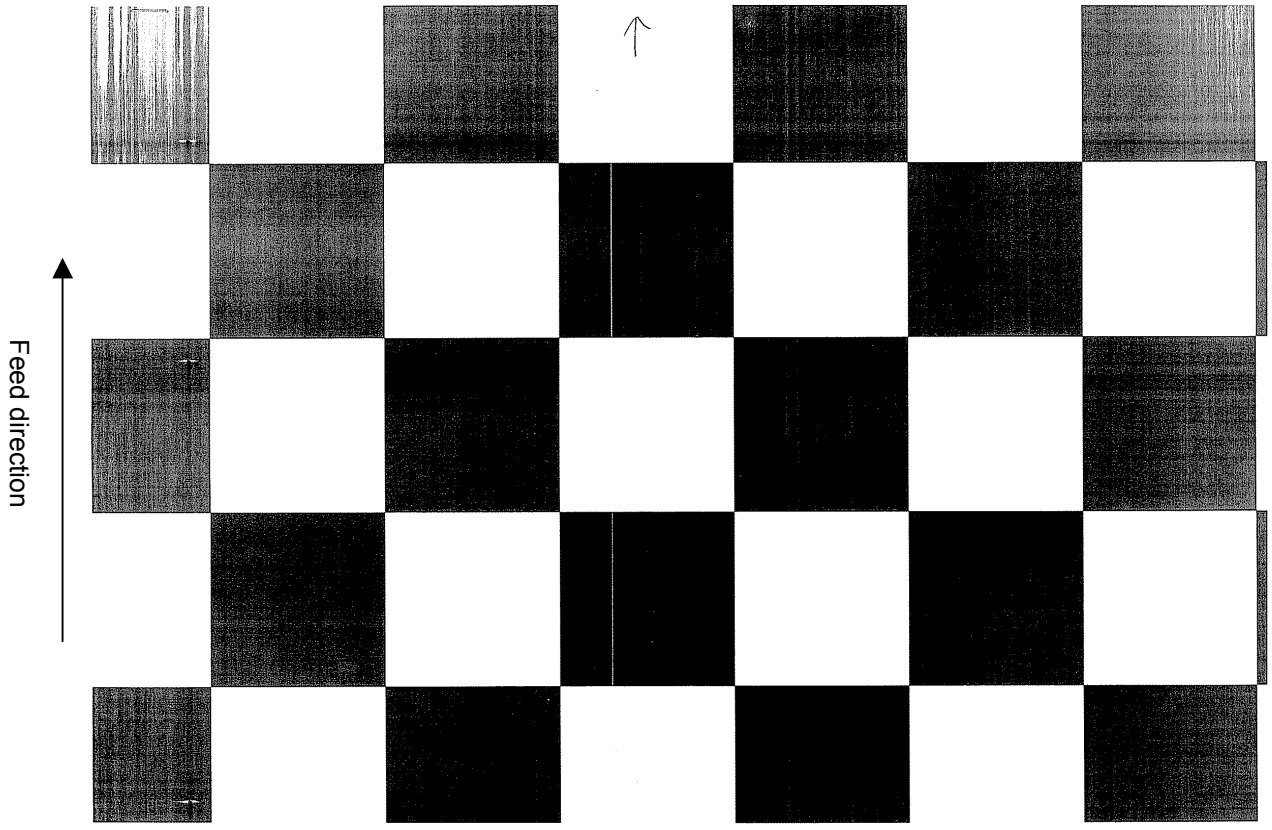
GESTETNER - DSC224/DSC324
LANIER - LD024C/LD032C
RICOH - AFICIO 1224C/1232C
SAVIN - C2408/C3210

SUBJECT: FAINT BLACK IMAGE

SYMPTOM:

Image density becomes lighter across the image; both sides may appear lighter then the center on the copy. (Refer to sample) This is visible in solid image and halftone areas, and occurs more easily with:
1) B/W image areas
2) Originals with low image coverage ratios
3) Jobs with a low quantity of sets (e.g. 1 or 2 page(s) per job.)

Sample:



CAUSE:

The lubricant applied to the OPC belt migrates into the black development unit, causing the friction level on the developer roller surface to decrease. This makes it difficult for the toner to be transferred onto the roller surface, causing the image to gradually get lighter. The symptom primarily occurs with black developer, but could potentially occur with a color developer if a single color is the primary output.

NOTE: *The symptom temporarily subsides when the toner cartridge is replaced and new toner is supplied to the hopper (concentration of lubricant in the unit is minimized).*

SOLUTION:

During the next service visit for the B051/B052, the firmware should be upgraded and the SP values as identified in table 1 should be changed. The modified firmware changes the rotation time of the PCU assembly to reduce the lubrication used on the OPC.

NOTE: *This symptom can possibly occur on the G071, however, the procedure is different. Refer to the G071 bulletin for the correct procedure.*

- Controller ver **2.01.5** or later.
- BICU ver **1.253:01** or later.

IMPORTANT NOTE: BE SURE TO UPGRADE AS A SET. PRINT SP 5-990-005 TO CONFIRM THE FOLLOWING FIRMWARES ARE AT THE APPROPRIATE LEVELS TO ENSURE FIRMWARE COMPATIBILITY:

FIRMWARE TYPE	*FIRMWARE VERSION*	*TSC Website File Name*
CONTROLLER/SYSTEM/COPIER	2.01.5	B051_CTL_V2015S.exe
BICU/ENGINE	1.253.01	B051_BICU_FAX_V109T.exe
LCDC/CONTROL PANEL	1.19	B051_BICU_FAX_V109T.exe
NIB	3.70	B051_MFPSP_V201F.exe
NET FILE	1.66	B051_MFPSP_V201F.exe
POST SCRIPT		b051_52_Scanner_PS3_Service_Pack.exe
FAX	2.00	B051_BICU_FAX_V109T.exe
PRINTER	2.01	B051_MFPSP_V201F.exe
SCANNER	2.00	b051_52_Scanner_PS3_Service_Pack.exe

After updating the firmware, input the following new values **manually**.

SP No.	Description	Old Value	New Value
2-938-001 (New SP)	**OPC Reverse Interval**	**0**	**10**
2-941-001	**OPC Lubricant Time – Interrupt**	**20**	**14**
3-920-001	**Lubrication Cleaning Time**	**100**	**50**
3-922-001 (New SP)	**Lubricant Clutch OFF: 1C**	**0**	**6**
3-922-002 (New SP)	**Lubricant Clutch OFF: 2C/3C/4C**	**0**	**6**

Table 1

1. Print 2 test patterns SP 5-955-001 #16 in ACS mode and denote the lead edge and paper feed direction using arrows. Inspect the prints and if the symptom is evident continue this procedure. Be sure to turn SP 5-955-001 to 0 (default).
2. Replace the black development unit.
3. Replace the black toner cartridge.

NOTE: *It is necessary to replace the toner cartridge since the lubricant also gets into the cartridge.*

4. Print a complete SMC Report (SP 5-990-001) and Copy Counter List (Press User Tools, Counter Key/Counter List/Print Counter List/Start).
5. Complete the form attached and submit to the address indicated. Be sure to attach the service history, SMC report, internal test patterns and copy count report to the B051/B052 Development Unit Form.

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2534601441~1474, 1476~1543, 1545~1563
Gestetner DSC324 Lanier LD032C Ricoh Aficio 1232C Savin 3210	J2636400923

B051/B052 Development Unit Form

TSC is providing a replacement Black Development Unit for B051/B052 copiers that exhibit the defined symptom. The replacement Development Unit shipments are contingent upon proper submittal of the items listed below.

1. Replacement Development Unit will ship from TSC by UPS Ground only.
2. Development Unit is replacement inventory after proof of failure.

NOTE: *Fax copy samples are not appropriate for evaluation, only HARD COPIES WILL BE ACCEPTED.*

Check List (please be sure that all items are included with this Form):

- ❑ **SMC Report (SP5-990-001)**
- ❑ **2 printed Test Pattern SP 5-955-001 # 16 (sample indicating the symptom denoting paper direction and lead edge.)**
- ❑ **Counter Printout (User Tools, Counter/Counter /Print Counter List/Start)**

Mail to:
Ricoh Corporation
19C Chapin Road
P.O. Box 2008
Pine Brook, NJ 07058-2008
Attn: OPSD Box 32/ TSB B051/B052-xxx

DEALER NAME:		
ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
ATTN:		**TECH ID #**
PHONE #:	**FAX #:**	
DEALER ACCOUNT NUMBER:		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 021 REISSUE ★ **07/10/2003**

APPLICABLE MODEL:

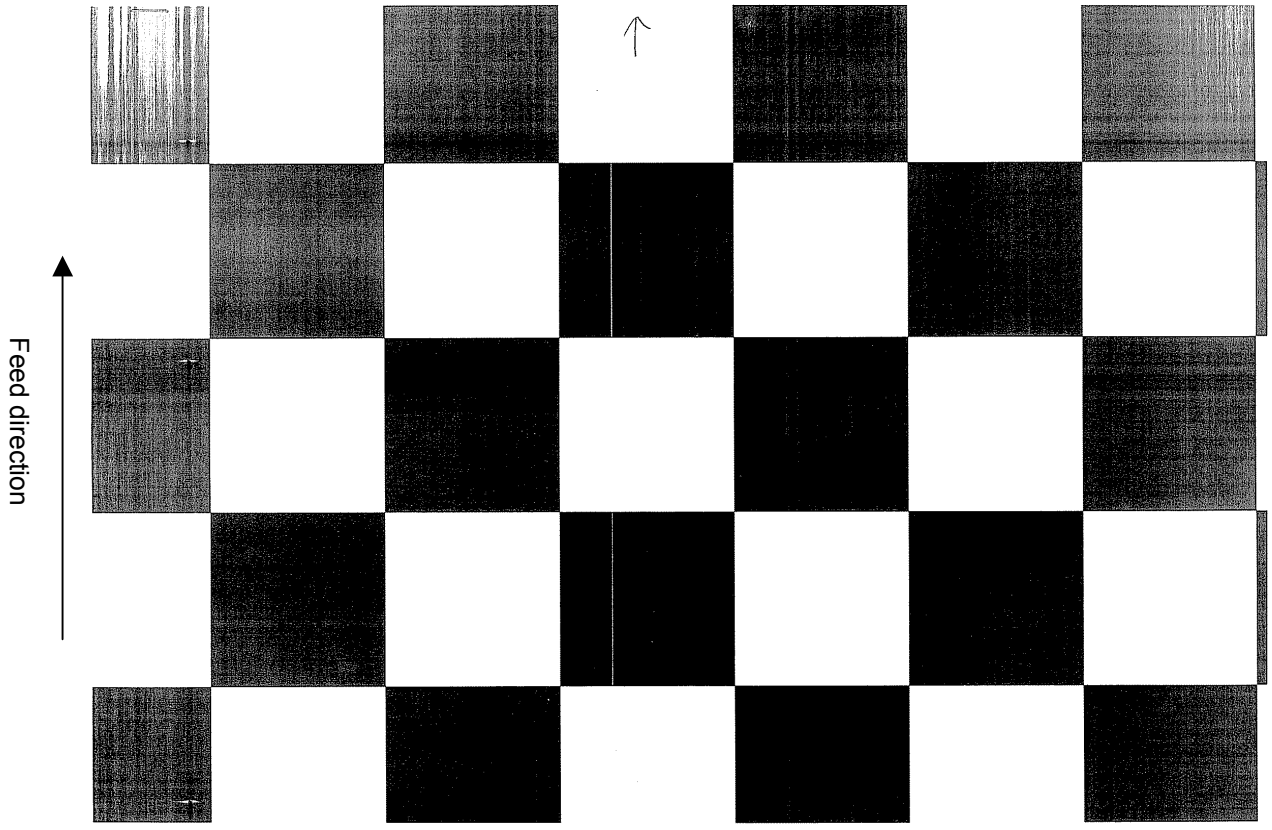
★ **GESTETNER - DSC224/DSC232**
LANIER - LD024C/LD032C
RICOH - AFICIO 1224C/1232C
SAVIN - C2408/C3210

SUBJECT: FAINT BLACK IMAGE

SYMPTOM:

Image density becomes lighter across the image; both sides may appear lighter then the center on the copy. (Refer to sample) This is visible in solid image and halftone areas, and occurs more easily with:
1) B/W image areas
2) Originals with low image coverage ratios
3) Jobs with a low quantity of sets (e.g. 1 or 2 page(s) per job.)

Sample:



CAUSE:

The lubricant applied to the OPC belt migrates into the black development unit, causing the friction level on the developer roller surface to decrease. This makes it difficult for the toner to be transferred onto the roller surface, causing the image to gradually get lighter. The symptom primarily occurs with black developer, but could potentially occur with a color developer if a single color is the primary output.

NOTE: *The symptom temporarily subsides when the toner cartridge is replaced and new toner is supplied to the hopper (concentration of lubricant in the unit is minimized).*

SOLUTION:

During the next service visit for the B051/B052, the firmware should be upgraded and the SP values as identified in Table 1 should be changed. The modified firmware changes the rotation time of the PCU assembly to reduce the lubrication used on the OPC.

NOTE: *This symptom can possibly occur on the G071, however, the procedure is different. Refer to the G071 bulletin for the correct procedure.*

- Controller ver **2.01.5** or later.
- BICU ver **1.253:01** or later.

IMPORTANT NOTE: BE SURE TO UPGRADE AS A SET. PRINT SP 5-990-005 TO CONFIRM THE FOLLOWING FIRMWARES ARE AT THE APPROPRIATE LEVELS TO ENSURE FIRMWARE COMPATIBILITY:

FIRMWARE TYPE	*FIRMWARE VERSION*	*TSC Website File Name*
CONTROLLER/SYSTEM/COPIER	2.01.5	B051_CTL_V2015S.exe
BICU/ENGINE	1.253.01	B051_BICU_FAX_V109T.exe
LCDC/CONTROL PANEL	1.19	B051_BICU_FAX_V109T.exe
NIB	3.70	B051_MFPSP_V201F.exe
NET FILE	1.66	B051_MFPSP_V201F.exe
POST SCRIPT		b051_52_Scanner_PS3_Service_Pack.exe
FAX	2.00	B051_BICU_FAX_V109T.exe
PRINTER	2.01	B051_MFPSP_V201F.exe
SCANNER	2.00	b051_52_Scanner_PS3_Service_Pack.exe

After updating the firmware, input the following new values **manually**.

SP No.	Description	Old Value	New Value
2-938-001 (New SP)	**OPC Reverse Interval**	**0**	**10**
2-941-001	**OPC Lubricant Time – Interrupt**	**20**	**14**
3-920-001	**Lubrication Cleaning Time**	**100**	**50**
3-922-001 (New SP)	**Lubricant Clutch OFF: 1C**	**0**	**6**
3-922-002 (New SP)	**Lubricant Clutch OFF: 2C/3C/4C**	**0**	**6**

Table 1

1. Print 2 test patterns SP 5-955-001 #16 in ACS mode and denote the lead edge and paper feed direction using arrows. Inspect the prints and if the symptom is evident continue this procedure. Be sure to turn SP 5-955-001 to 0 (default).
2. Replace the black development unit.
3. Replace the black toner cartridge.

NOTE: *It is necessary to replace the toner cartridge since the lubricant also gets into the cartridge.*

4. Print a complete SMC Report (SP 5-990-001) and Copy Counter List (Press User Tools, Counter Key/Counter List/Print Counter List/Start).
5. Complete the form attached and submit to the address indicated. Be sure to attach the service history, SMC report, internal test patterns and copy count report to the B051/B052 Development Unit Form.

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2534601441~1474, 1476~1543, 1545~1563
Gestetner DSC324 Lanier LD032C Ricoh Aficio 1232C Savin 3210	J2636400923

B051/B052 Development Unit Form

TSC is providing a replacement Black Development Unit for B051/B052 copiers that exhibit the defined symptom. The replacement Development Unit shipments are contingent upon proper submittal of the items listed below.

1. Replacement Development Unit will ship from TSC by UPS Ground only.
2. Development Unit is replacement inventory after proof of failure.

NOTE: *Fax copy samples are not appropriate for evaluation, only HARD COPIES WILL BE ACCEPTED.*

Check List (please be sure that all items are included with this Form):

- ❑ **SMC Report (SP5-990-001)**
- ❑ **2 printed Test Pattern SP 5-955-001 # 16 (sample indicating the symptom denoting paper direction and lead edge.)**
- ❑ **Counter Printout (User Tools, Counter/Counter /Print Counter List/Start)**

Mail to:
Ricoh Corporation
19C Chapin Road
P.O. Box 2008
Pine Brook, NJ 07058-2008
★ **Attn: OPSD Box 32/ TSB B051/B052 – 021**

DEALER NAME:		
ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
ATTN:		**TECH ID #**
PHONE #:	**FAX #:**	
DEALER ACCOUNT NUMBER:		

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 021 REISSUE ★ **02/13/2004**

APPLICABLE MODEL:

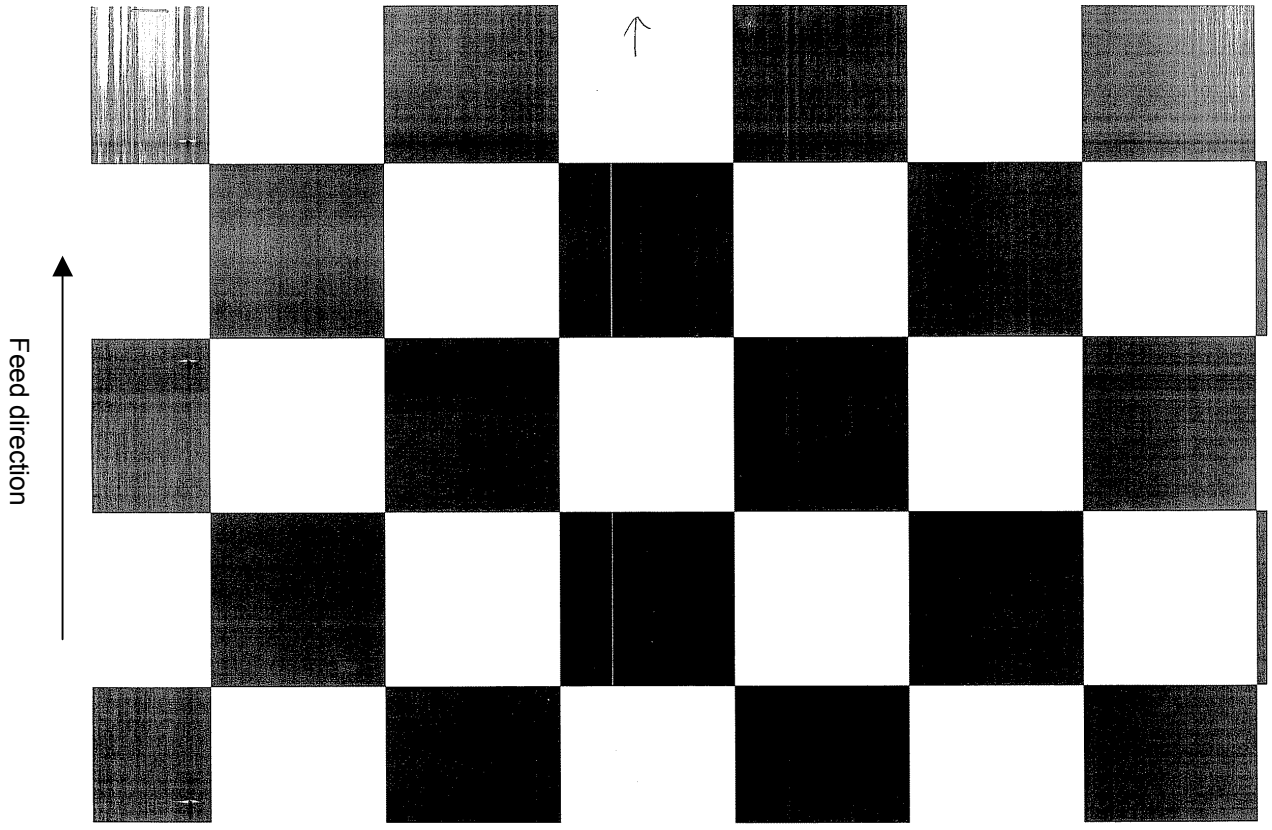
GESTETNER - DSC224/DSC232
LANIER - LD024C/LD032C
RICOH - AFICIO 1224C/1232C
SAVIN - C2408/C3210

SUBJECT: FAINT BLACK IMAGE

SYMPTOM:

Image density becomes lighter across the image; both sides may appear lighter then the center on the copy. (Refer to sample) This is visible in solid image and halftone areas, and occurs more easily with:
1) B/W image areas
2) Originals with low image coverage ratios
3) Jobs with a low quantity of sets (e.g. 1 or 2 page(s) per job.)

Sample:



CAUSE:

The lubricant applied to the OPC belt migrates into the black development unit, causing the friction level on the developer roller surface to decrease. This makes it difficult for the toner to be transferred onto the roller surface, causing the image to gradually get lighter. The symptom primarily occurs with black developer, but could potentially occur with a color developer if a single color is the primary output.

NOTE: *The symptom temporarily subsides when the toner cartridge is replaced and new toner is supplied to the hopper (concentration of lubricant in the unit is minimized).*

SOLUTION:

During the next service visit for the B051/B052, the firmware should be upgraded and the SP values as identified in Table 1 should be changed. The modified firmware changes the rotation time of the PCU assembly to reduce the lubrication used on the OPC.

NOTE: *This symptom can possibly occur on the G071, however, the procedure is different. Refer to the G071 bulletin for the correct procedure.*

- Controller ver **2.01.5** or later.
- BICU ver **1.253:01** or later.

IMPORTANT NOTE: BE SURE TO UPGRADE AS A SET. PRINT SP 5-990-005 TO CONFIRM THE FOLLOWING FIRMWARES ARE AT THE APPROPRIATE LEVELS TO ENSURE FIRMWARE COMPATIBILITY:

FIRMWARE TYPE	*FIRMWARE VERSION*	*TSC Website File Name*
CONTROLLER/SYSTEM/COPIER	2.01.5	B051_CTL_V2015S.exe
BICU/ENGINE	1.253.01	B051_BICU_FAX_V109T.exe
LCDC/CONTROL PANEL	1.19	B051_BICU_FAX_V109T.exe
NIB	3.70	B051_MFPSP_V201F.exe
NET FILE	1.66	B051_MFPSP_V201F.exe
POST SCRIPT		b051_52_Scanner_PS3_Service_Pack.exe
FAX	2.00	B051_BICU_FAX_V109T.exe
PRINTER	2.01	B051_MFPSP_V201F.exe
SCANNER	2.00	b051_52_Scanner_PS3_Service_Pack.exe

After updating the firmware, input the following new values **manually**.

SP No.	Description	Old Value	New Value
2-938-001 (New SP)	**OPC Reverse Interval**	**0**	**10**
2-941-001	**OPC Lubricant Time – Interrupt**	**20**	**14**
3-920-001	**Lubrication Cleaning Time**	**100**	**50**
3-922-001 (New SP)	**Lubricant Clutch OFF: 1C**	**0**	**6**
3-922-002 (New SP)	**Lubricant Clutch OFF: 2C/3C/4C**	**0**	**6**

Table 1

1. Print 2 test patterns SP 5-955-001 #16 in ACS mode and denote the lead edge and paper feed direction using arrows. Inspect the prints and if the symptom is evident continue this procedure. Be sure to turn SP 5-955-001 to 0 (default).
2. Replace the black development unit.
3. Replace the black toner cartridge.

NOTE: *It is necessary to replace the toner cartridge since the lubricant also gets into the cartridge.*

4. Print a complete SMC Report (SP 5-990-001) and Copy Counter List (Press User Tools, Counter Key/Counter List/Print Counter List/Start).
5. Complete the form attached and submit to the address indicated. Be sure to attach the service history, SMC report, internal test patterns and copy count report to the B051/B052 Development Unit Form.

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2534601441~1474, 1476~1543, 1545~1563
★ Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin 3210	J2636400923

B051/B052 Development Unit Form

TSC is providing a replacement Black Development Unit for B051/B052 copiers that exhibit the defined symptom. The replacement Development Unit shipments are contingent upon proper submittal of the items listed below.

1. Replacement Development Unit will ship from TSC by UPS Ground only.
2. Development Unit is replacement inventory after proof of failure.

NOTE: *Fax copy samples are not appropriate for evaluation, only HARD COPIES WILL BE ACCEPTED.*

NOTE: DO NOT RETURN THE DEVELOPMENT UNITS WITH THE PAPER WORK. THIS WILL COST YOU MORE IN SHIPPING, DELAY CREDITS AND POSSIBLE YOU CAN BE DENIED A REPLACEMENT UNIT BECAUSE THE PAPERWORK WAS DAMAGED.

Check List (please be sure that all items are included with this Form):

- ❑ **SMC Report (SP5-990-001)**
- ❑ **2 printed Test Pattern SP 5-955-001 # 16 (sample indicating the symptom denoting paper direction and lead edge.)**
- ❑ **Counter Printout (User Tools, Counter/Counter /Print Counter List/Start)**

Mail to:
Ricoh Corporation
19C Chapin Road
P.O. Box 2008
Pine Brook, NJ 07058-2008
Attn: OPSD Box 32/ TSB B051/B052 – 021

DEALER NAME:		
ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
ATTN:		**TECH ID #**
PHONE #:	**FAX #:**	
DEALER ACCOUNT NUMBER:		

DO NOT RETURN DEVELOPMENT UNIT

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 022 **07/11/2003**

APPLICABLE MODEL:

GESTETNER - DSC224/DSC232
LANIER - LD024C/LD032C
RICOH - AFICIO 1224C/1232C
SAVIN - C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

■ SERVICE MANUAL

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

- 5-18 through 5-20 Updated Information (Service Program Mode)
- 5-23 and 5-24 Updated Information (Service Program Mode)

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
912*	Temperature Humidity Display		
	1	Temperature	Displays the temperature measured by the temperature sensor inside the machine. [–127 ~ 127 / **0** / 1°C/step]
	2	Humidity 1	Displays the humidity measured by the humidity sensor inside the machine. [0 ~ 255 / **0** / 1%/step]
	3	Humidity 2	Displays the absolute humidity calculated from the temperature/humidity sensor readings. [0 ~ 65535 / **0** / 0.1 g/m^3/step]
	4	Environment Level ** AH = absolute humidity*	Displays the current humidity level calculated from the absolute humidity. [0 ~ 1 / **0** / 1/step] • *LL1: 0 < AH ≤ 3.5* • *LL2: 3.5 < AH ≤ 8.0* • *NN1: 8.0 < AH ≤ 14* • *NN2: 14 < AH ≤ 19* • *HH: 19 < AH*
⇒ 938	OPC Reverse Interval		
	1	[0 ~ 100 / **10** / 10 counts /step] The Main motor rotates the OPC belt backwards for 500 ms at the end of every job, in order to remove foreign particles between the OPC belt and cleaning blade. This does not need to be performed as often. Also, reducing the frequency of OPC belt reverse rotation improves the cleaning blade performance. This SP adjusts the counter for the OPC belt reverse rotation, and is incremented as follows: LT/A4 LEF or smaller: 1, larger than LT/A4 LEF: 2. When this SP reaches its set maximum, reverse rotation is performed for 500 ms at job end. **NOTE**: Requires BICU Firmware v 1.253:01 and controller v 2.01.5.	
939	OPC lubricant interruption (Forced OPC lubrication)		
	1		Enables/disables forced OPC lubrication at a certain interval. **DFU** [0 ~ 1 / **0** / 1 /step] • *0: Disabled* • *1: Enabled* *The OPC lubrication interval is specified with SP2-942-1.*
940	OPC Lubricant Mode		
	1	OPC Lubricant Mode	Executes a forced OPC lubrication to reduce the friction on the OPC belt. **DFU** *The OPC belt and the lubricant brush operate for 2 mins.*
941	OPC Lubricant Time		
⇒	1	Interrupt **NOTE**: Requires BICU Firmware v 1.253:01 & controller v 2.01.5.	Determines how long the OPC belt is lubricated for after the end of every job (☛ SP3–940). [0 ~ 30 / **14** / 1 s/step]
	2	No Interrupt	Determines how long the OPC belt is lubricated at the forced lubrication. [0 ~ 60 / **10** / 1 s/step]
942	OPC Lubricant Interval		
	1	OPC Lubricant Interval	The machine lubricates the OPC belt and image transfer belt at the interval (number of prints) set with this SP. Incoming print jobs do not interrupt the lubrication. [10 ~ 65535 / **50** / 10/step] **DFU** *Set SP2-939-1 to 1 to execute the forced OPC lubrication.*

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
944	OPC Lubrication: High Coverage		
	1	Setting	Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5. [0 ~ 1 / **1** / 1 /step] • *0: Disables 1: Enables* *When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing (lubrication time: around 34 seconds).*
	2	Image Coverage–1	Specifies standard average coverage condition 1. [50 ~ 800 / **300** / 10 units/step] *OPC lubrication is executed under the following conditions.* • *After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-4.* • *The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 1.*
	3	Image Coverage–2	Specifies standard average coverage condition 2. [50 ~ 800 / **200** / 10 units/step] *OPC lubrication is executed under the following conditions.* • *After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-5.* • *The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 2.*
	4	Sheets–1	[10 ~ 80 / **20** / 1 sheet/step]
	5	Sheets–2	[10 ~ 80 / **40** / 1 sheet/step]
950	Start Registration Adjustment		
	1	Start Registration Adjustment 1–K	Color registration adjustment: Adjusts the start timing of imaging for each color. [–3 ~ 3 / **0** / 1 line/step] **DFU** 2 lines = 0.047566 ms (about 85 μm) • *+: Delays the start timing.* • *–: Advances the start timing.* • *The start timing is adjusted only in plain paper mode, and when one of the following conditions is satisfied:* *1) Between the two images on the transfer belt (when two images are developed on the OPC at the same time (☛ 6.2))* *2) B4 SEF or larger (multi-print job)*
	2	Start Registration Adjustment 1–M	[–3 ~ 3 / **–1** / 1 line/step]
	3	Start Registration Adjustment 1–C	[–3 ~ 3 / **0** / 1 line/step]
	4	Start Registration Adjustment 1–Y	[–3 ~ 3 / **0** / 1 line/step]
	5	Start Registration Adjustment 2–K	[–3 ~ 3 / **0** / 1 line/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 950	6	Start Registration Adjustment 2–M	[–3 ~ 3 / **–1** / 1 line/step]
	7	Start Registration Adjustment 2–C	[–3 ~ 3 / **0** / 1 line/step]
	8	Start Registration Adjustment 2–Y	[–3 ~ 3 / **0** / 1 line/step]
951	Clock Phase Control		
	1	LD 1	Adjusts the clock phase of the LD to reduce the density difference between the left and right sides of the printout when the color misalignment correction (SP2–952–1) is enabled. [0 ~ 8 / **0** / 1 /step] *Do this after installing a new laser unit; see Replacement and Adjustment for details.*
	2	LD 2	
952	Color Misalignment Correction		
	1	Color Misalignment Correction	Selects either color misalignment correction or reduction in density difference between the left and right sides of pages. [0 ~ 1 / **1** / 1 /step] • *1: on* *The data for LD1 and LD2 are switched between the left and right sides of each page. This is done because of the difference in the output of each LD. However, in some cases this correction may cause density differences between sides.* • *0: off* *Use this setting if there are density differences between sides.*
970	Oil Removal Mode		
	1	Oil Removal	Enables/disables the settings of SP2–970–2 through 4. [0 ~ 1 / **1** / 1 /step] • *0: Disables* • *1: Enables* Oil on duplex copies gets on the transfer belt, and this can cause uneven image density. To remove this oil, printing stops, the PCU turns, and the cleaning unit removes the oil.
	2	Print Interruption	Enables/disables interruption of the oil removal process. [0 ~ 1 / **0** / 1 /step] • *0: Disables* • *1: Enables* *If interruption is enabled, the user does not need to wait until the oil removal process ends, but the output image may be poor.*
	3	Number of Continuation	Specifies how many times the oil removal process is repeated. [1 ~ 20 / **5** / 1 /step] *The more times the oil removal is repeated, the better the output images are; but the longer it takes.*
	4	Number of Duplex	Specifies how often the oil removal process is done. The unit is the number of duplex prints. The counter counts down once every narrow (A4 SEF or less) duplex sheet, and counts back up 1 for every other type of sheet. [1 ~ 50 / **10** / 1 /step]

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
006*	Density Adjustment		
	1	M/A Correction	Select the toner density compensation level for process control. If prints are not dark enough when making multi-print jobs, increasing this value ensures that prints will be darker after the next process control. The default (0) is for no correction. SP3-006-1: Use this one if the density of solid areas is not satisfactory. SP3-006-2: Use this one if the density of highlight areas is not satisfactory. [0 ~ 3 / **0** / 1/step] • *0: None* • *1: Weak* • *2: Medium* • *3: Strong* The higher the value, the darker the prints will be.
	2	Highlight Correction	
125	Process control/LD: Pre-ACC self-check setting		
	1	ACC self-check setting	Enables/disables process control execution before ACC. [0 ~ 1 / **1** / 1/step] • *0: Disabled* • *1: Enabled*
901	LD-POWER		
	1	LD 1	Specifies the LD power. **DFU** [0 ~ 65535 / **716** / 1 /step]
	2	LD 2	
910*	Doctor Interval		
	1	Color	If the number of pages in a job exceeds this number, the doctor roller rotates in reverse at the end of the job. [0 ~ 50 / **50** / 1 sheet/step] • *The value indicates how many sheets are output before the doctor roller is reversed. (Sheet counts are converted into equivalent A4-LEF sheet counts.)* • *The roller is reversed for 16 seconds* • *Reversing the roller removes toner blockages.* • *The sheet count is reset after reverse rotation.* • *The machine waits until the end of the job before reversing the doctor roller.* • *Decrease the value when vertical white lines appear on prints.*
	2	Black	[0 ~ 65535 / **50** / 1 sheet/step]
	3	Job end	If at the end of a job, the roller has not been reversed since more than this number of pages, the roller is reversed at the end of the job. [0 ~ 65535 / **20** / 1 sheet/step]
⇒ 920*	Lubrication Cleaning Time		
	1	Lubrication Cleaning Time	Sets the OPC belt lubrication period. **DFU** [0 ~ 100 / **50** / 1%/step] • *When 100 is specified, the OPC belt cleaning clutch is always on whenever the OPC is turning, so the OPC gets lubricated. When 50 is specified, the clutch is only on half the time that the motor is on.* **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.

Service Tables

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
921*	Lubricant time		
	1	Job end	Specifies the duration of lubrication at the end of jobs. [0 ~ 30 / **20** / 1 /step] **DFU**
	2	Doctor roller reverse operation	Specifies the duration of lubrication during reverse doctor roller rotation. [0 ~ 30 / **20** / 1 /step] **DFU**
⇒ 922	Lubricant Brush Off		
	1	1 Color	Allows the image transfer belt cleaning clutch off timing to be adjusted. The setting determines the number of seconds after image transfer belt cleaning roller charging that the clutch is turned off. With previous versions, the clutch is always running while the development roller motor rotates. [0 ~ 11 / **6** / 1s /step]
	2	2 Color/3 Color/4 Color **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.	
940	Job End Interruption		
	1	Job End Interruption	The OPC belt is lubricated after the end of every job (SP2–941–1). This SP determines whether the lubrication is interrupted when a job arrives at the printer. [0 ~ 1 / **0** / 1 /step] • *0: Interrupted* • *1: Not interrupted*
970	Image Area Rate		
	1	M	Specifies the minimum image area (expressed as a percentage of an A4 page) required to maintain optimum development unit condition (☛ Toner Revitalization: SP3–971). [0 ~ 10.0 / **2.0** / 0.1 %/step] *After 20 sheets over a number of small jobs (or after 50 sheets in one job), if the developed area is less than the value of this SP mode, toner is transferred to the image transfer belt and cleaned off. This is performed during the doctor roller reverse rotation.*
	2	C	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	3	Y	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	4	Bk	[0 ~ 10.0 / **3.0** / 0.1 %/step]
971	Toner Revitalization		
	1	Toner Revitalization	Enables/disables the toner revitalization. [0 ~ 1 / **0**/ 1 /step] • *0: Disables* • *1: Enables* *Continuous printing with a relatively low coverage ratio (CMYK less than 5% each) tends to reduce the charge potential of the toner, because the toner remains in the hopper for a long time. This can lead to spots on the copy. Toner revitalization removes this defective toner periodically.*
980	1C Idling		
	1	1C Idling	Enables/disables 1-color idling after paper transfer. [0 ~ 1 / **0** / 1 /step] • *0: Disables* • *1: Enables* *Set this to 1 if the user complains about diagonal lines in solid areas of prints that only use one toner color (M, C, or Y).*

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 023 **09/12/2003**

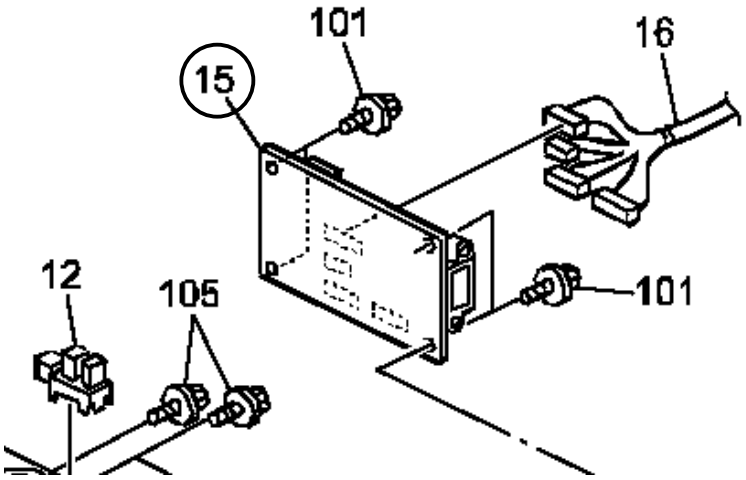
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: I/O CONTROL BOARD - SCANNER

GENERAL:

The following part update is being issued for all B051 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0515232	B0515247	I/O Control Board - Scanner	1-1	1	15	15

UNITS AFFECTED:

All B051 copiers manufactured after the serial numbers listed below will have the new style I/O Control Board - Scanner installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc232 Savin C3210	J2636500899
Gestetner DSc224 Savin C2408	J2536401441
Lanier LD032c	J2636500899
Lanier LD024	J2536401441
Ricoh Aficio 1224C	J2536401441
Ricoh Aficio 1232C	J2636500899

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: B051/B052 – 024 **10/03/2003**

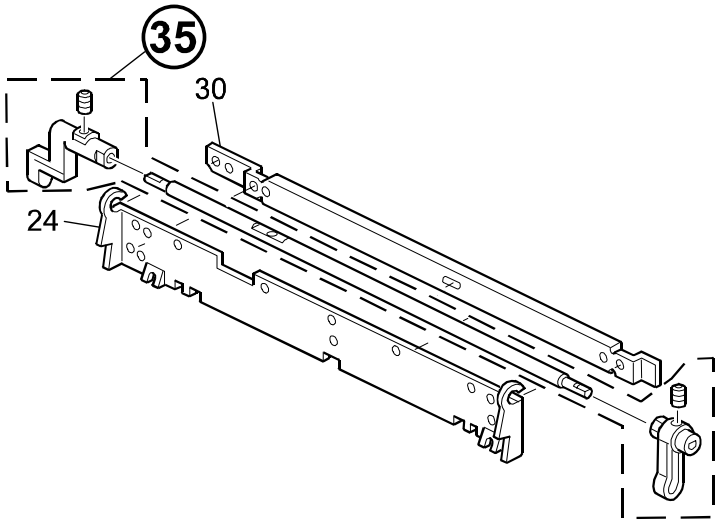
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: ARM SHAFT ASSEMBLY

GENERAL:

The Front Arm, Rear Arm and Arm Shaft have been combined into one assembly to ensure that the shaft is level when attached. This task is difficult to achieve when installing the individual components without a factory tool.



The following parts updates are being issued for all B051/B052 Parts Catalogs.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
G0706238		Front Arm	1-0		29	31
G0706239		Rear Arm	1-0		29	23
G0706240		Arm Shaft	1-0		29	25
05730040E		Hexagon Headless Set Screw – M3x4	2-0		29	105
	G0706237	Arm Shaft Assembly	0-1		29	35*

*** DENOTES NEW ITEM NUMBER**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 025 **10/17/2003**

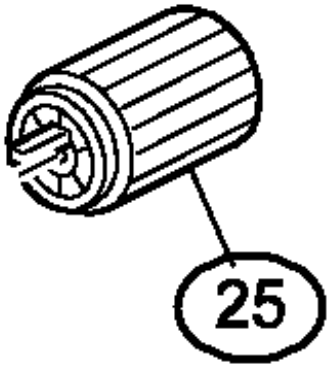
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: PAPER FEED ROLLER

GENERAL:

The shape of the Paper Feed Roller has been changed to ensure that the roller is not damaged when the tray is pulled out following a paper jam. The following part update is being issued for all B051/B052 Parts Catalogs. Please update your parts catalog with the following information.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AF031059	AF031084	Paper Feed Roller – 36mm	1	0	21	25
AF031059	AF031084	Paper Feed Roller – 36mm	1	0	23	25

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Paper Feed Roller installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224	J2536805469
Lanier LD024c	J2536805469
Ricoh Aficio 1224C	J2536805469
Savin C2408	J2536805469
Gestetner DSc232	J26369xxxxx
Lanier LD032c	J26369xxxxx
Ricoh Aficio 1232C	J26369xxxxx
Savin C3210	J26369xxxxx

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 026 **10/31/2003**

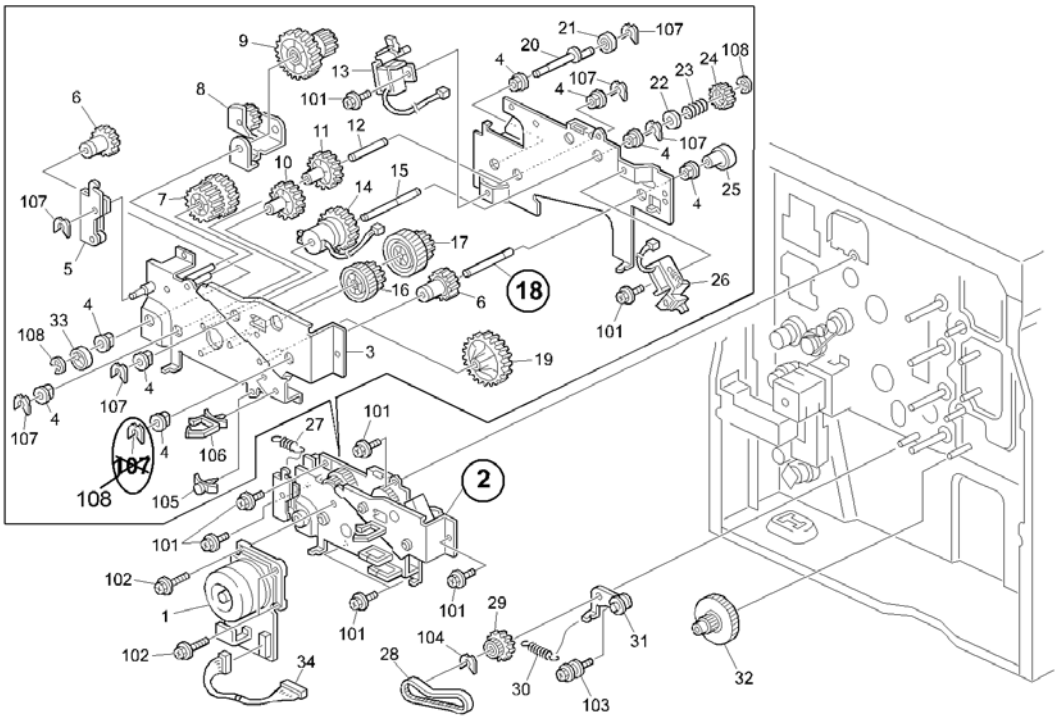
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: TRANSPORT ASSEMBLY BRACKET

GENERAL:

The following parts have been changed to further ensure proper function of the Cam (P/N G0704829) by minimizing the possibility of an excessive load placed on the cam. The following parts updates are being issued for all B051/B052 Parts Catalogs. Please update your parts catalog with the following information.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0514800	B0514803	Bracket – Transport Assembly	1	3/S	57	2
AA145546	AA145563	Cleaning On/Off Shaft	1	3/S	57	18
08050089		Retaining Ring – M4	-	3/S	57	107
	07200040E	Retaining Ring – M4			57	108

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Transport Assembly Bracket installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2536700105
Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J2636700313

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: B051/B052 – 027 **11/19/2003**

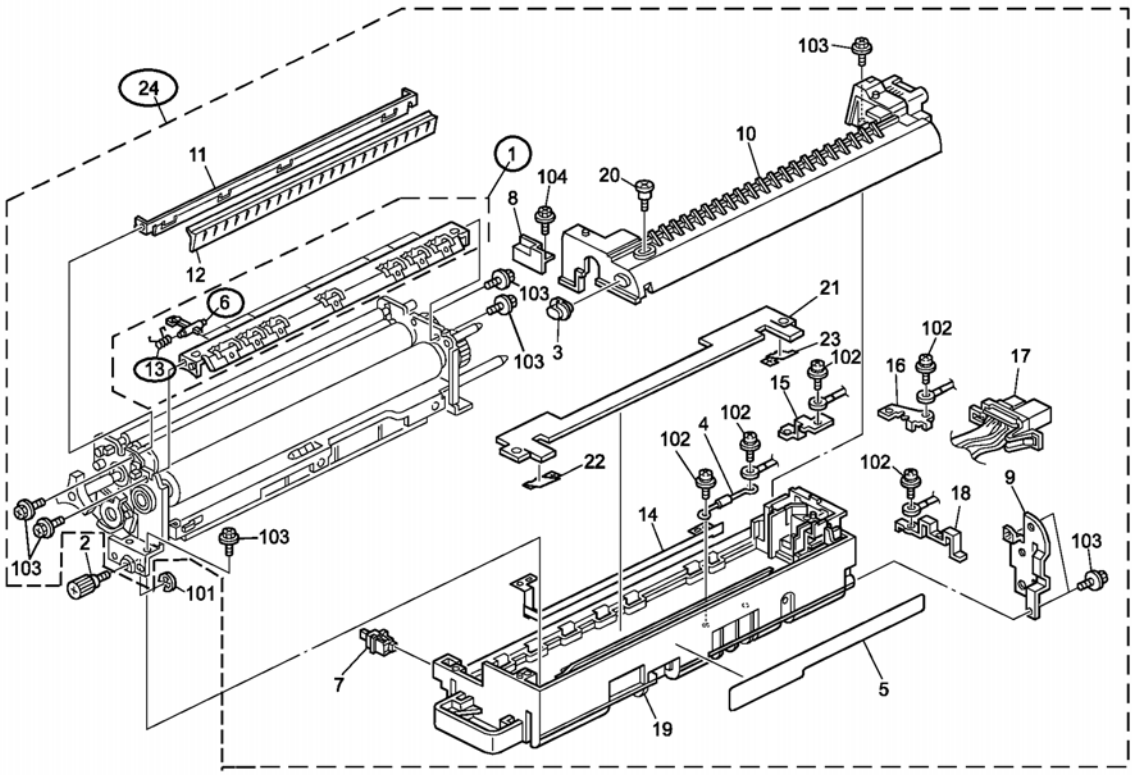
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: PICK-OFF PAWL – PRESSURE ROLLER

GENERAL:

The width of the leading edge of the stripper pawls has been changed from 2 mm to 6 mm. The angle for the pawls has also been changed. Due to this modification, the stripper pawl springs also have been changed. The following parts updates are being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
G0704004	G0704010	Pick-off Pawl Assembly	1	1	37	1
AE044041	AE044050	Stripper Pawl	7	3/S	37	6
AA069261	AA069263	Stripper Pawl Spring	7	3/S	37	13
B0514027	B0514028	Fusing Sub Unit (120V)	1	1	37	24
B0514033	B0514034	Fusing Sub Unit (230V)	1	1	37	24

NOTE: *The Stripper Pawl (Item 6) and Stripper Pawl Spring (Item 13) should be replaced as a set.*

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Pick-Off Pawl Assembly installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2536805469
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2530800001
Gestetner DSC524 Lanier NA Ricoh Aficio 1224CG Savin C2524	J2530800835 (Government Models only)
Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J26370xxxxx
Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J2630800001
Gestetner DSC532 Lanier NA Ricoh Aficio 1232CG Savin C2534	J2630800919 (Government Models only)

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: B051/B052 – 028 **11/25/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SPACERS

GENERAL:

The following spacers have been added to minimize trapezoid, skewed or trapezoid/skewed images. Please see TSB B051/B052 – 029 for additional information on Image Skew Adjustment Procedure and skewed or trapezoid/skewed images. The following parts updates are being issued for all B051/B052 Parts Catalogs.

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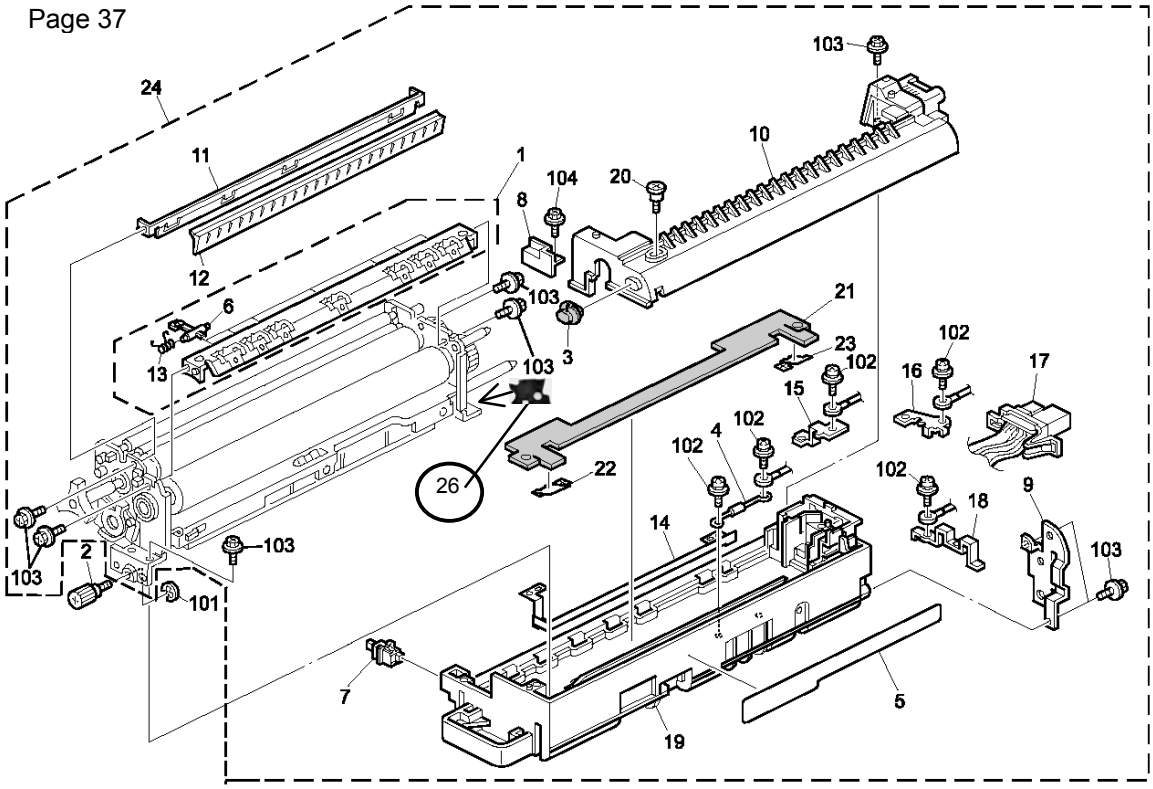

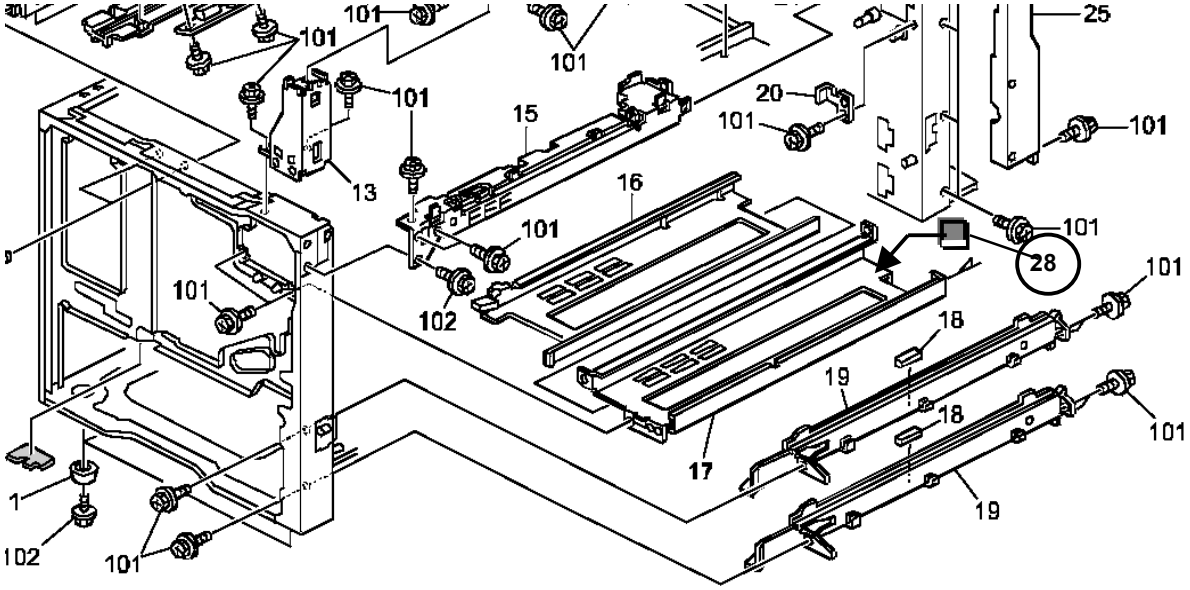

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			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
B0514370	Rail Spacer – 18.5X19.5X3.3	1	61	28*
B0514371	Lower Pressure Spacer	1	37	26*

*** DENOTES NEW ITEM NUMBER**

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Rail Spacer and Lower Pressure Spacer installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Savin C2408	J2536500368
Gestetner DSc232 Savin C3210	J2636500899
Lanier LD024c	J2536500368
Lanier LD032c	J2636500899
Ricoh Aficio 1224C	J2536500368
Ricoh Aficio 1232C	J2636500899

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: B051/B052 – 028 REISSUE★ **04/02/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SPACERS

GENERAL:

The following spacers have been added to minimize trapezoid, skewed or trapezoid/skewed images. Please see TSB B051/B052 - 029 for the specific troubleshooting flow and attachment procedure.

In accordance with this change, the part numbers for the following units have been changed to distinguish between the units with and without the spacer.

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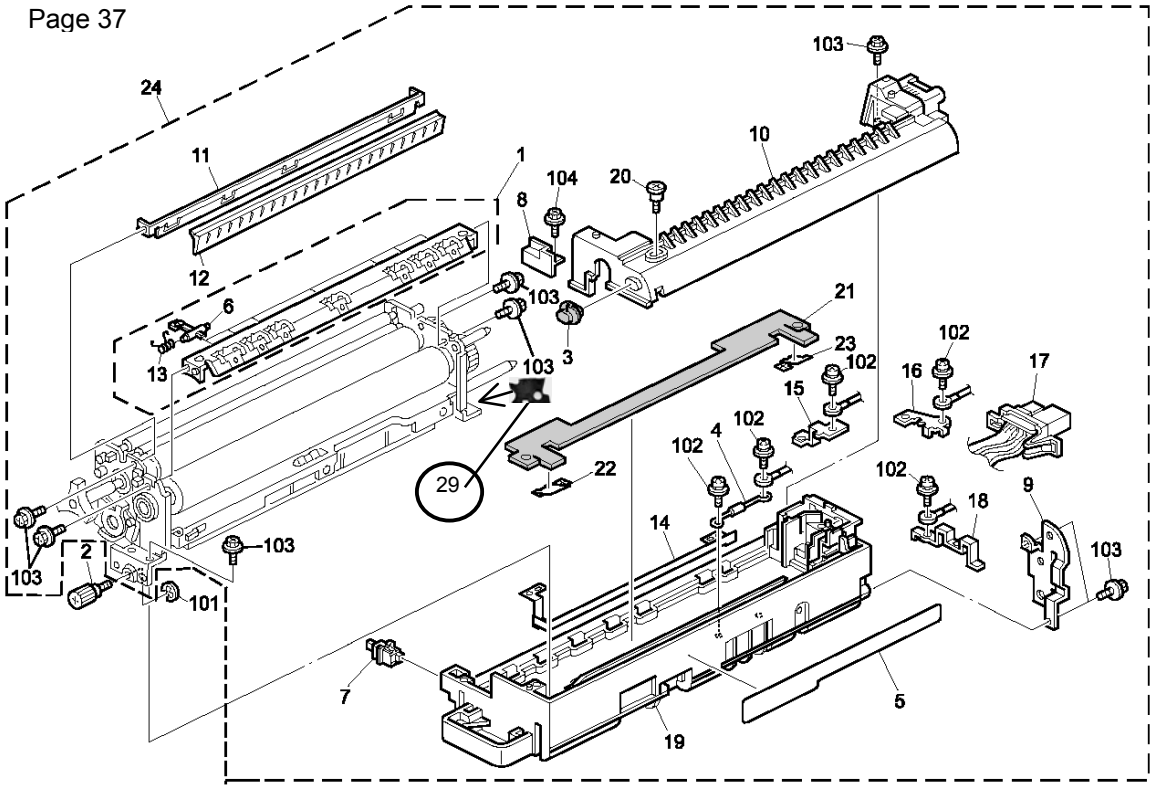
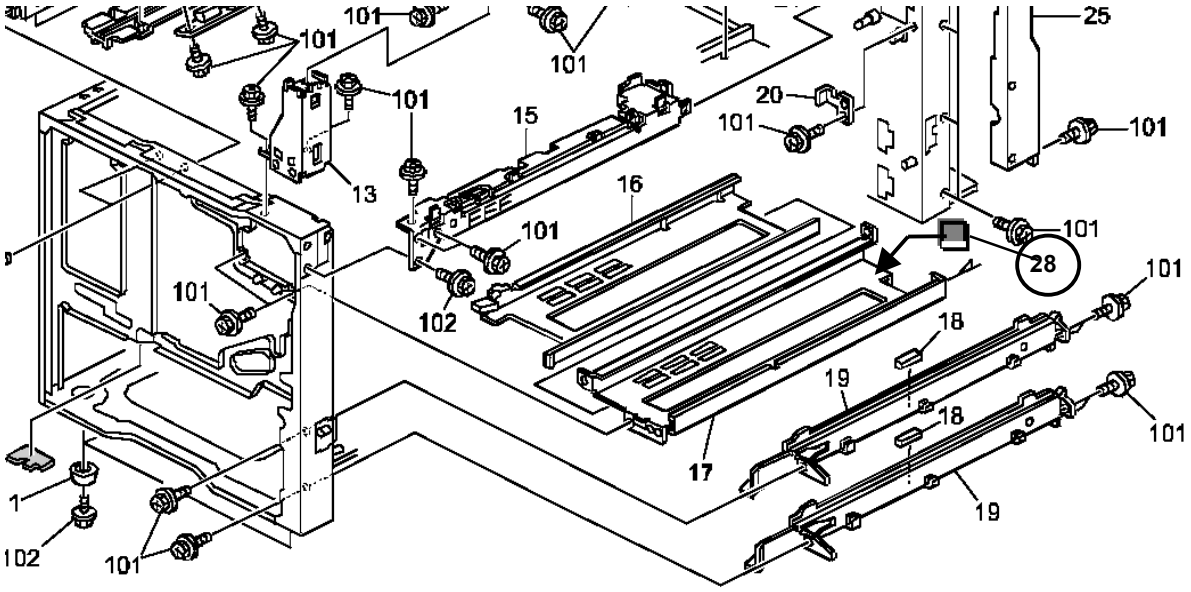


★



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OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE PAGE	REFERENCE ITEM
	B0514370	Rail spacer – 18.5X19.5X3.3	0-1		61	*28
★	B0514371	Lower pressure spacer	0-1		37	*29
B0514040	B0514041	Fusing Unit Assembly - 230V	1-1	0	37	*
					39	
B0514035	B0514036	Fusing Unit Assembly - 120V	1-1	0	37	*
					39	
B0514031	B0514033	Fusing Sub Unit (230V)	1-1	0	37	24
B0514026	B0514027	Fusing Sub Unit (120V)	1-1	0	37	24

*** DENOTES NEW ITEM NUMBER**

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Rail Spacer and Lower Pressure Spacer installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Savin C2408	J2536500668
Gestetner DSc232 Savin C3210	J2636500899
Lanier LD024c	J2536500668
Lanier LD032c	J2636500899
Ricoh Aficio 1224C	J2536500668
Ricoh Aficio 1232C	J2636500899

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: B051/B052 – 029 **11/25/2003**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SKEW IMAGE ADJUSTMENT PROCEDURE

SYMPTOM:

Skewed, Parallelogram, and Trapezoid Images.

CAUSE:

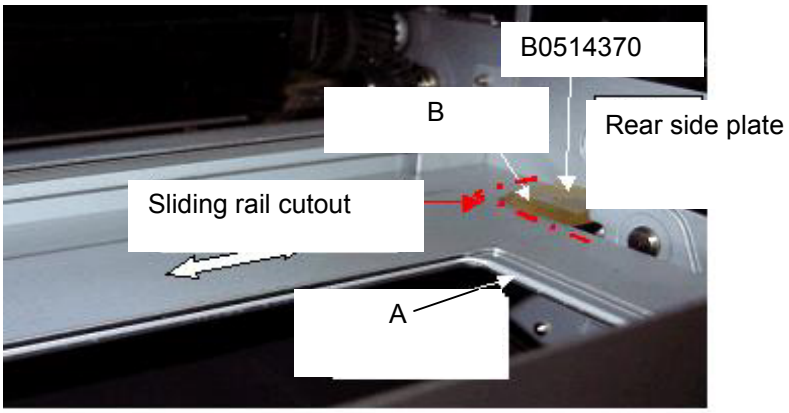
Spacers (2) required for the fusing rail and fusing unit.

SOLUTION:

Attach Spacers as shown on the following pages.

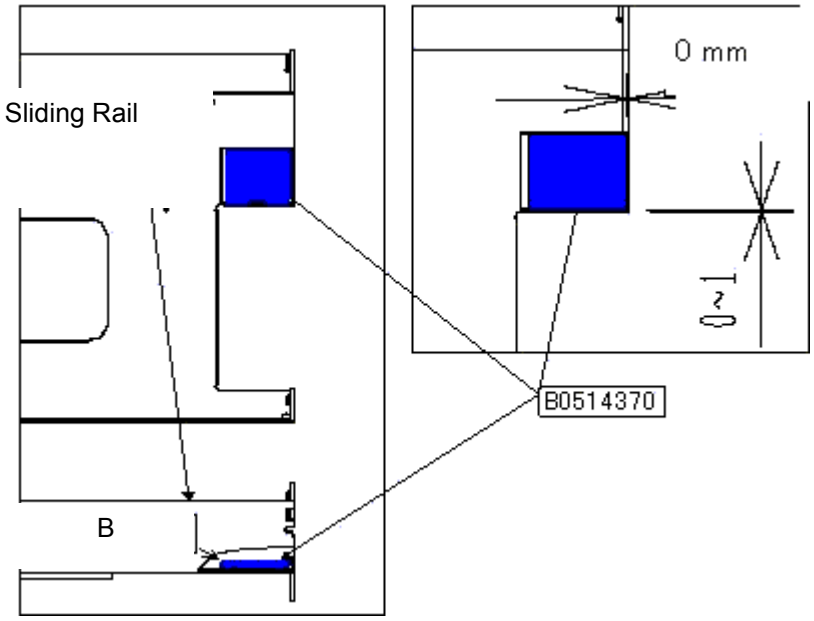
Action 1 - Attaching the Spacer to the Fusing Rail

1. Remove the fusing unit.
2. Clean the attachment area for the rail spacer with alcohol.
3. Attach the rail spacer (B0514370) to the rear of the non-sliding fusing rail [A] so that the tapered side [B] is facing the front.



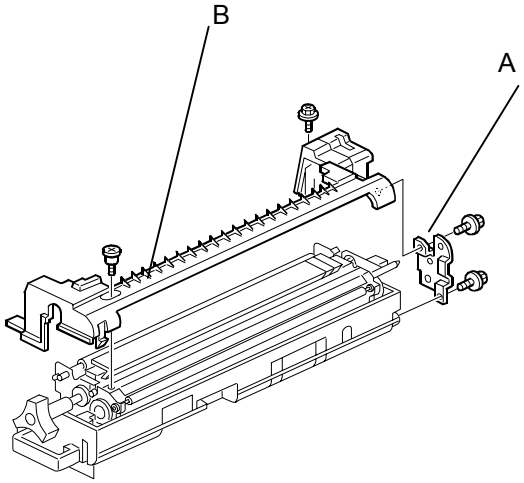
NOTE: *The actual color of the B0514370 service part rail spacer is black.*

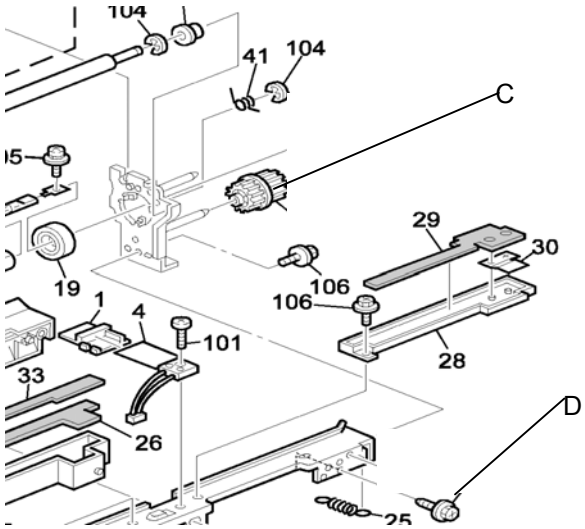
4. After attaching the spacer, move the fusing unit along the rail to make sure the spacer does not interfere with the rail.



Action 2 - Attaching the Spacer to the Fusing Unit

1. Remove the fusing unit. Then, remove the oil supply unit.
2. Remove the gear bracket [A] (2 screws).
3. Remove the upper cover [B] (2 screws, 1 shoulder screw).
4. Remove the drive gear [C].
5. Remove the pressure side plate securing screw (rear side only) [D].



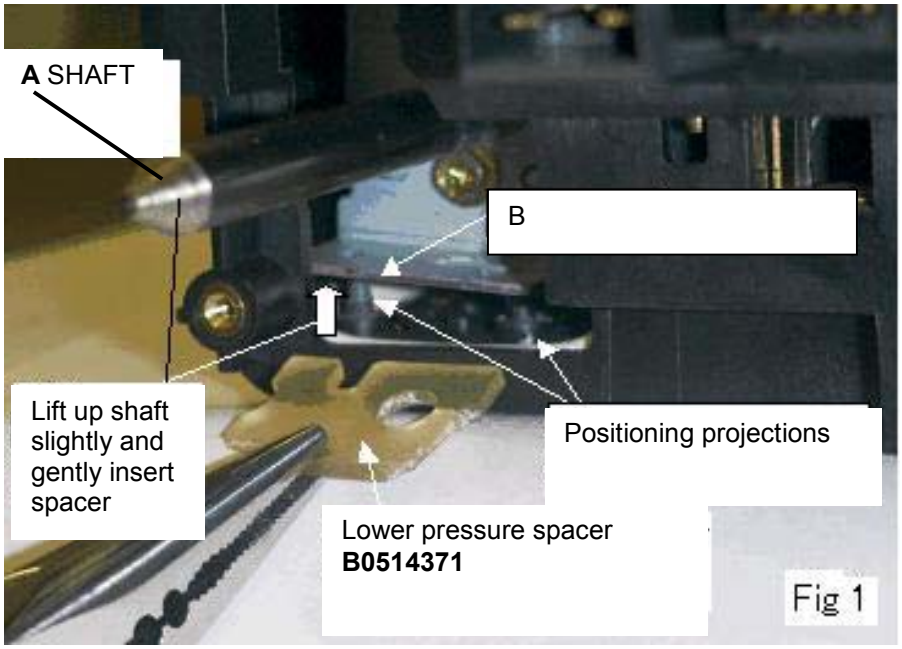


Important: In the next step, be sure to lift up the shaft slowly and gently. If it is lifted up too quickly or with too much force, the fusing lamp will be damaged.

6. Lift up the shaft [A] very gently, just enough so that the lower pressure spacer can be inserted. While holding the shaft up, insert the lower pressure spacer (B0514371) between the pressure side plate [B] and lower cover.

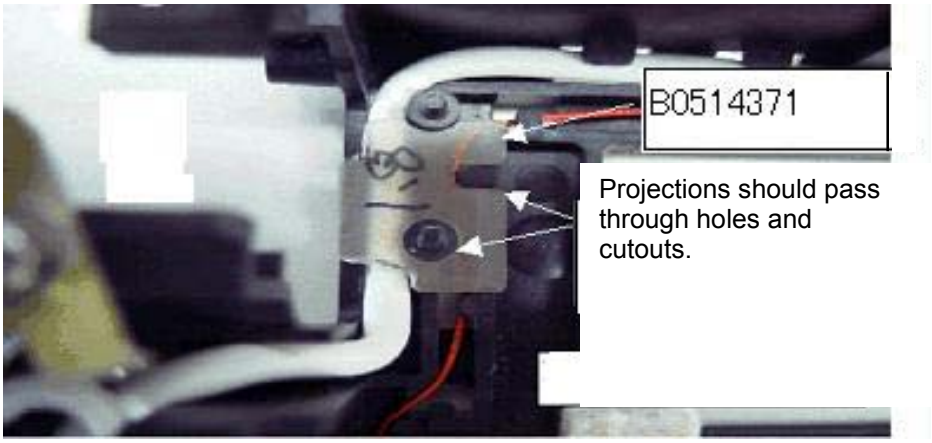
NOTE: *Insert the spacer so that the positioning projections can pass through the hole and cutouts in the spacer (see illustrations below).*

7. Reassemble the Fusing Unit.

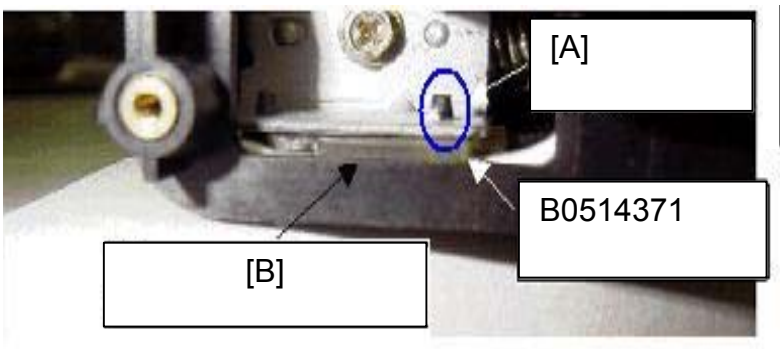


NOTE: Avoid damage to the Fusing Lamp! Lift Shaft [A] just enough to insert the spacer.

Bird's eye view of Fig.1 above:



Important: Confirm the following after attachment
Make sure that:
1. Positioning projection [A] is visible.
2. The edge of the lower pressure spacer (B0514371) is aligned with the lower cover edge [B], i.e. not positioned inside or projecting out from the cover edge.



Action 3 (parallelogram image of trimming pattern)

Adjust the position of the laser optics-housing unit as described in the Service Manual, pg. 3-12 to 3-15.

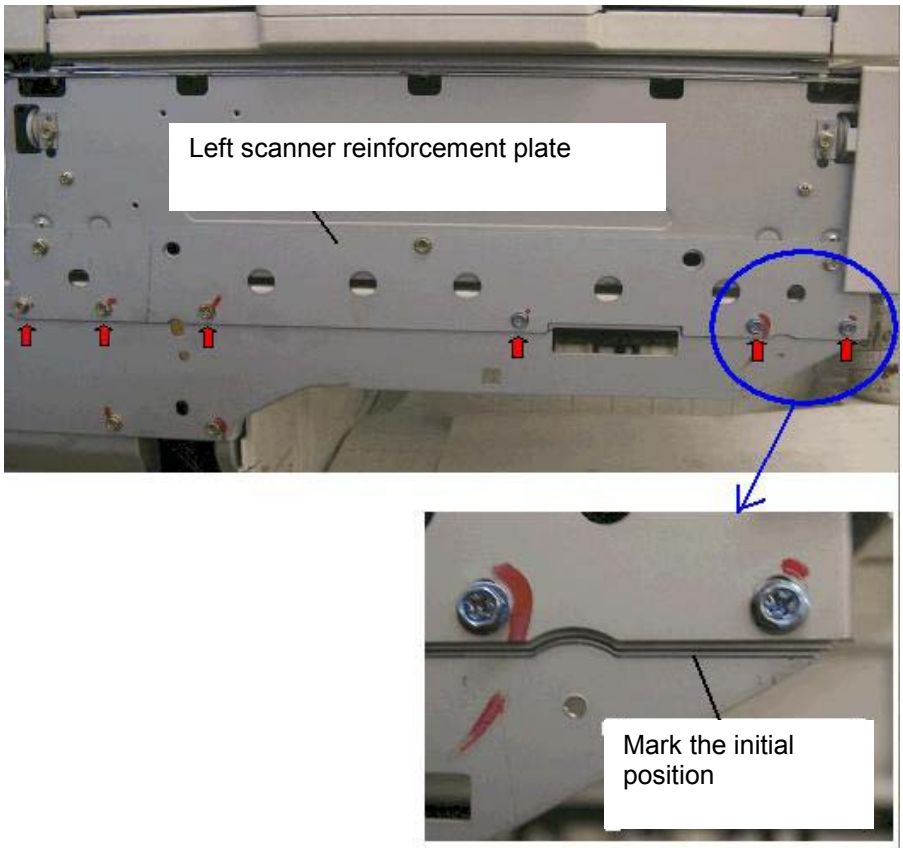
Action 4 (Parallelogram image in platen mode)

Parallelogram slants to the right → Raise the left side of the scanner unit.
Parallelogram slants to the left → Lower the left side of the scanner unit.

1. Remove the rear cover, scanner left cover, and upper left cover.
2. Mark the position of the left scanner reinforcement plate by drawing a line along the lower edge (see photograph below).
3. While holding the scanner unit in place, loosen the 6 screws of the left scanner reinforcement plate.

NOTE: *The scanner must be held in place, as it will tend to sink due to its own weight.*

4. Raise or lower the scanner with respect to the reference line, then tighten the screws.



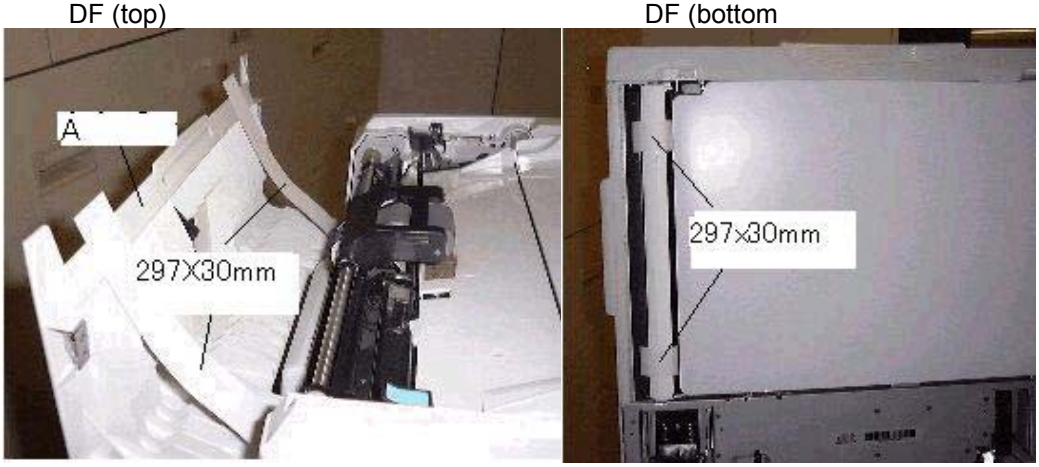
Action 5 (original skew)

Perform the following checks:

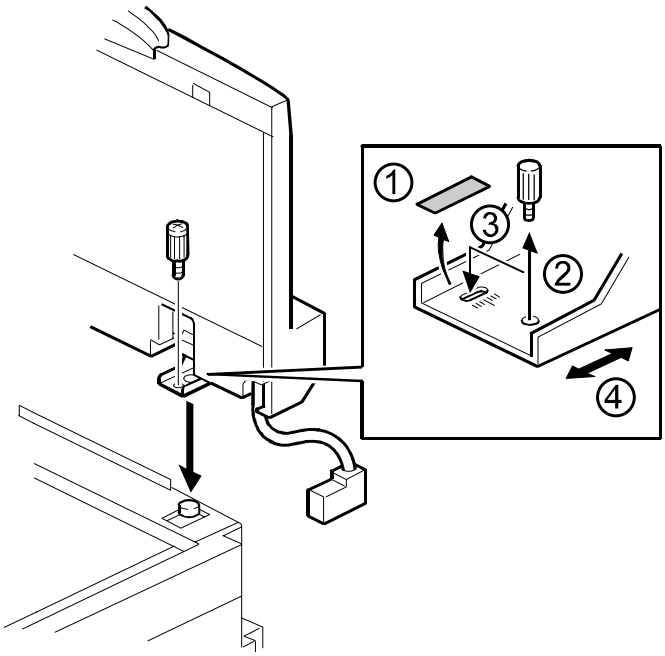
1. Make sure the ADF side fences are in the proper position for the size of the original.
2. Check to see if the surfaces of the pick-up roller, separation roller, feed belt, transport rollers and exit rollers are dirty, and clean if necessary.
3. Check to see if the skewing still occurs, and if it does, continue onto the next step.
4. Cut two sheets of paper to a size of 11X1.25 inches. Open the ADF left cover [A] and insert the two sheets into the paper path as shown (left and right sides).
5. Close the ADF unit (keeping the ADF left cover open).
6. Pull on both strips of paper at the same time (from the left side of the DF) and check for a difference in resistance.

- If there is no difference in resistance between the front and rear, adjust the ADF skew as shown below in Action 6-1(see ARDF Skew Adjustment in the Service Manual, pg. 3-58).
- If the resistance with the rear sheet is larger than the front, adjust the skew as shown below in 6-2.

DF (top) DF (bottom



Action 6-1 (Adjusting the original skew with equal front/rear pulling loads)



1. Peel off the black tape on the right hinge of the ADF.
2. Loosen the screw that secures the left hinge.
3. Change the position of the screw that secures the right hinge to the long hole.

NOTE: *Do not tighten the screw at this moment.*

4. Adjust the right hinge position to correct the skewed image:

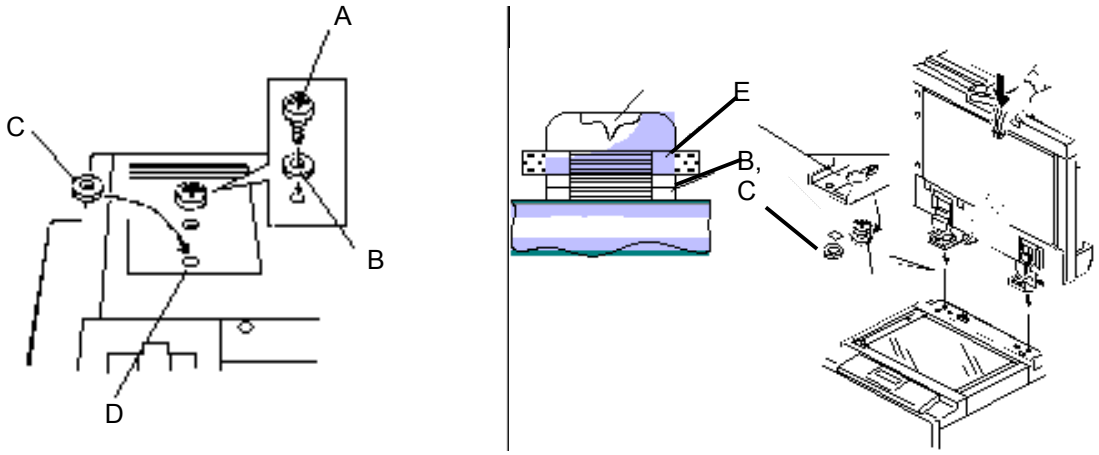
NOTE: *Shifting the hinge to the **rear** will slant the image to the **right** (and vice-versa).*

5. Tighten both screws and check the copy image.

NOTE: *If it is not fixed, repeat steps 2 to 5.*

Action 6-2 Adjusting the original skew when the rear-pulling load is larger

1. Raise the left side of the ADF by adding washers as shown below.



2. Remove the ADF unit from the copier.
3. Remove the shoulder screw. [A].
4. Add one or two washers (P/N 07010050Z [B], t=0.7mm) between the hinge bracket (mainframe) and ADF left hinge [E] to raise the height of the left side of the ADF.
5. Add the same quantity of the washers [C] to the neighboring screw hole [D] on the hinge bracket.
2. Reattach the ADF so that the ADF hinge [E] is positioned horizontal on top of the washers added to the left hinge bracket.

GENERAL:

Please see TSB B051/B052 – 028 for additional information on parts and the serial number cut in chart.

			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
B0514370	Rail spacer – 18.5X19.5X3.3	1	61	28*
B0514371	Lower pressure spacer	1	37	26*

*** DENOTES NEW ITEM NUMBER**

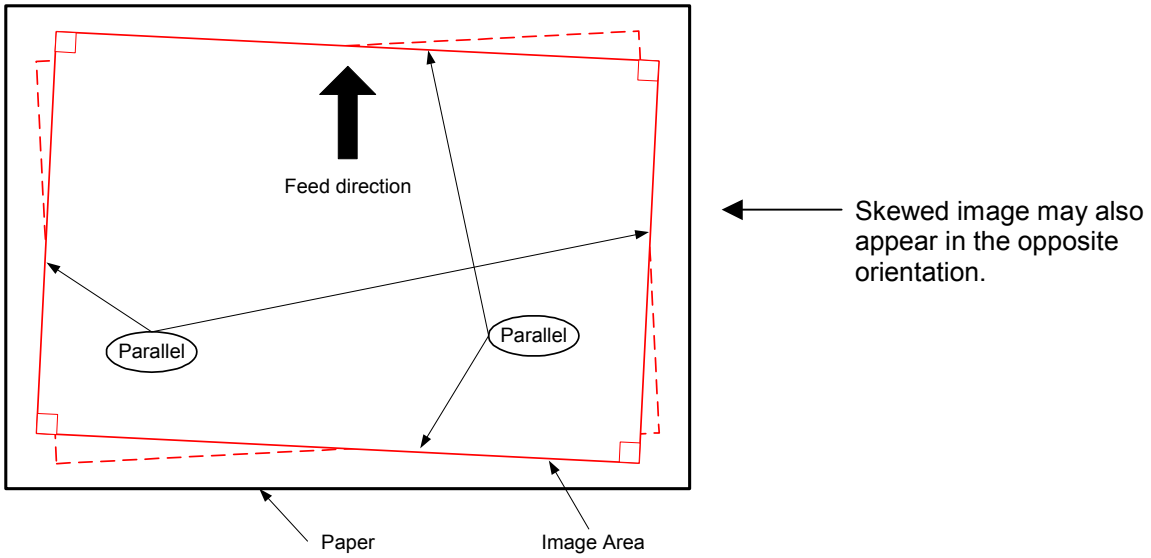
UNITS AFFECTED:

All B051/B052 copiers manufactured after May 2003 will have the new style spacers installed during production.

VISUAL DIFFERENCES BETWEEN SKEWED, TRAPEZOID AND PARALLELOGRAM IMAGES

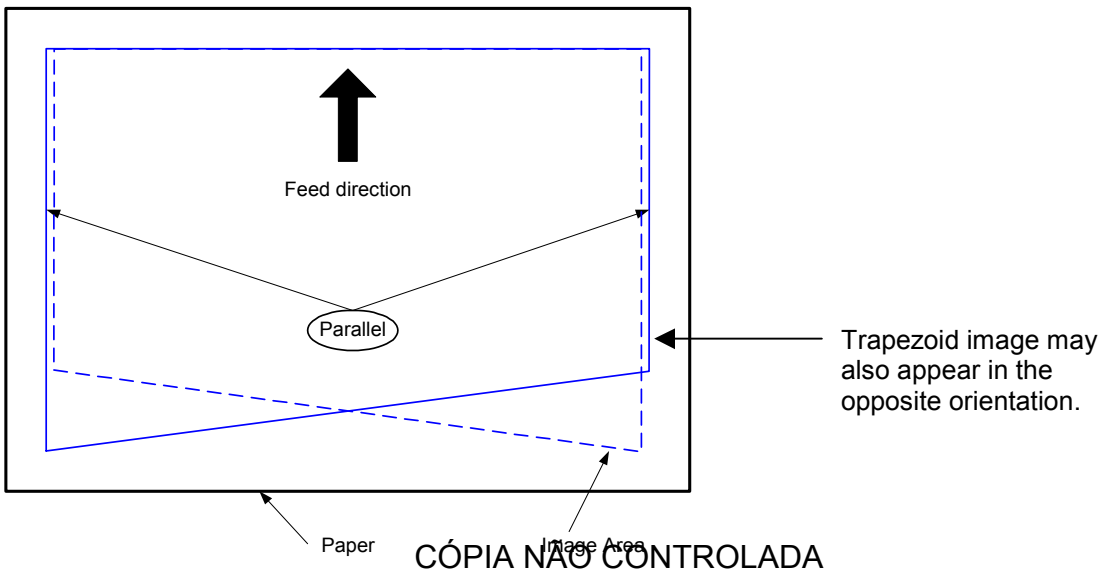
SKEWED IMAGES

- The image's leading and trailing edges are parallel to one another.
- The image's left and right edges are also parallel.
- However, **all four sides** are slanted with respect to the paper's edge.



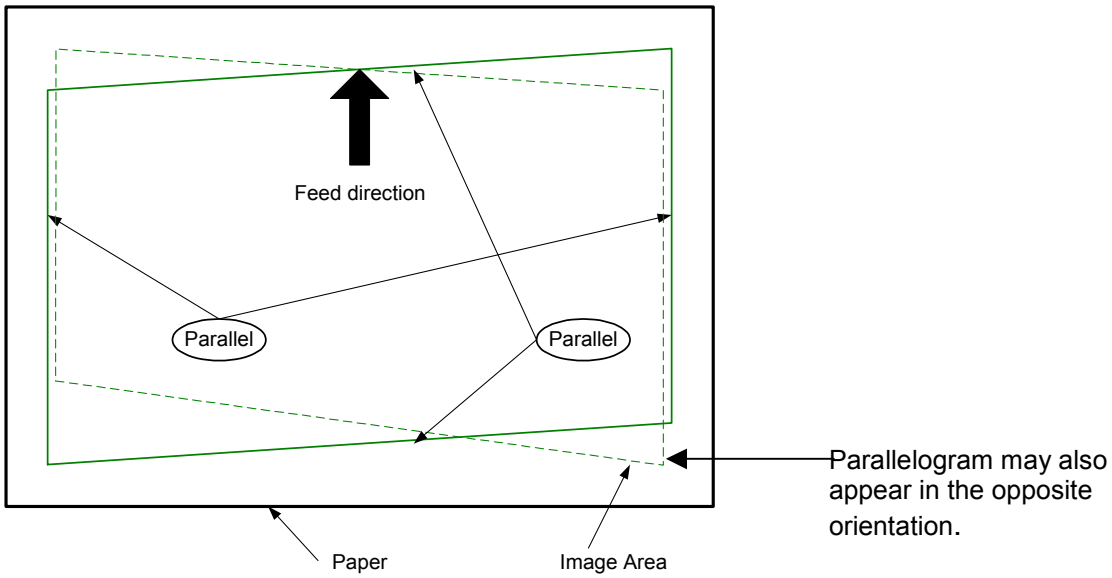
TRAPEZOID IMAGES

- Only the image's **trailing edge** is slanted with respect to the paper. The remaining 3 sides are parallel to the paper's edges.



PARALLELOGRAM IMAGES

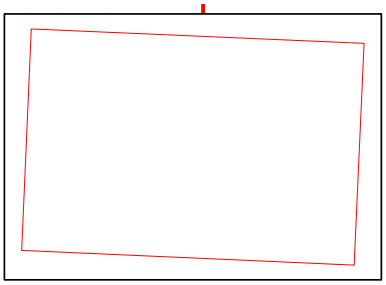
- Like skewed images, the leading/trailing edges and left/right edges are parallel to each other, however here, the **leading and trailing edges** are both slanted with respect to the paper's edge.



CHECKING THE IMAGE WITH THE TRIMMING PATTERN

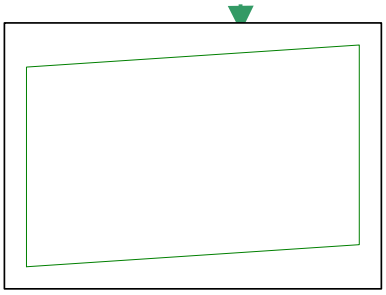
Print out 5-letter size Trimming Patterns from SP5-955-001 (value: 11)

Skewed



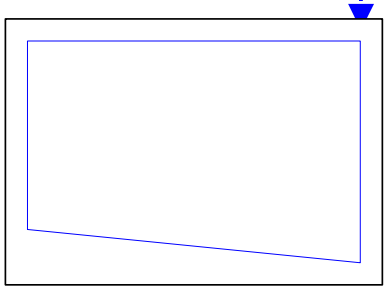
See *Adjusting Skewed Images*,

Parallelogram



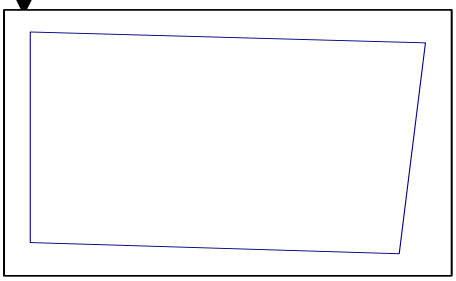
See adjusting *Parallelogram Image Adjustment,*

Trapezoid



See Adjusting Trapezoid Images,.

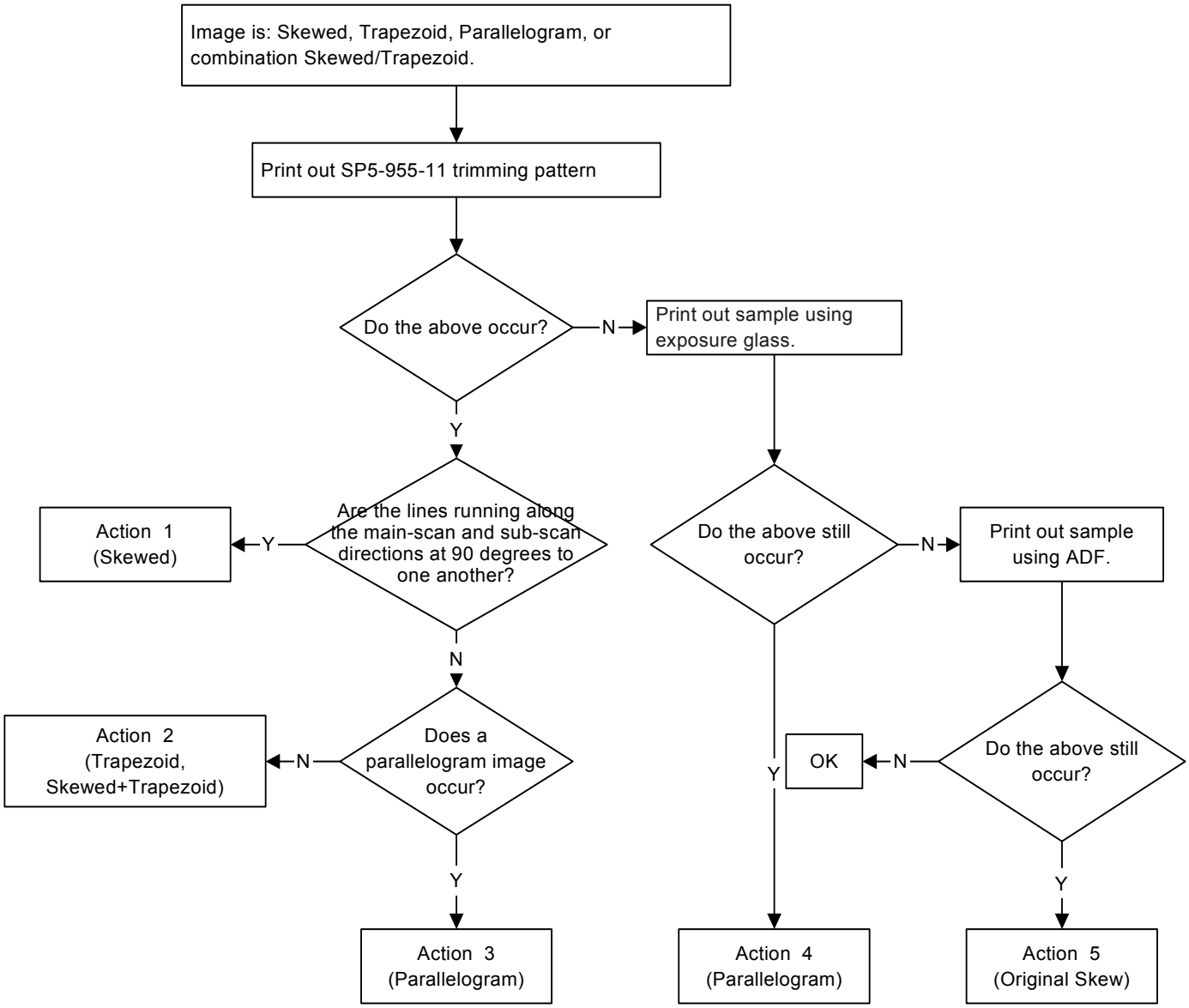
Combination skewed and trapezoid image



Perform *Adjusting Trapezoid Images* first, then *Adjusting Skewed Images.*

CORRECTING THE IMAGES
FLOWCHART

Please use the following flowchart to correct skewed, parallelogram, and trapezoid images.



TECHNICAL SERVICE BULLETIN

This bulletin supercedes TSB B051/B052 – 021 Reissue ★
SUBJECT - FAINT BLACK IMAGE

BULLETIN NUMBER: B051/B052 – 030 **12/23/2003**

APPLICABLE MODEL:
GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: DEVELOPMENT UNITS & PCU UPDATES

SYMPTOMS:

Image density becomes lighter across the image, beginning from the leading edge and both sides. This phenomenon is visible in solid image and halftone areas, and occurs more easily with:

1. B/W image areas
2. Originals with low image coverage ratios
3. Jobs with a low quantity of sets (e.g. 1 or 2 pages per job)

CAUSE:

The lubricant applied to the OPC belt gets inside the black development unit via the development roller, causing the friction level on the roller surface to decrease. This makes it more difficult for the toner to be transferred onto the roller surface, causing the image to gradually get lighter.

NOTE: *The symptom temporarily subsides when the toner cartridge is replaced and a new toner is supplied to the hopper (concentration of lubricant in the unit is minimized). However, it will recur when the above process repeats.*

SOLUTIONS:

- Firmware update: The firmware has been applied to November 2003 production. Update the firmware to controller version 2.02.9 or later and BiCU version 1.275:01 or later (Service Card version 1.11 or later). The latest controller firmware is version 2.05.1 and BiCU firmware version 1.291: 01 as of October 2003.
- Development Unit modified in August 2003. New style development units can be identified by a blue seal on the left hand side of the development unit. Replace the Development Unit and toner.
- Along with the firmware update and black development unit replacement below (See **UNITS AFFECTED** below), it is necessary to input new SP values.

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC324 Lanier LD032C Ricoh Aficio 1224C Savin C2408	J2537100001
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1232C Savin C3210	J2637100001

Improvements to the PCU are being introduced with this Technical Service Bulletin due to compatibility with the firmware and development units. **The PCU does not influence the symptoms listed above**. All B051/B052 copiers manufactured after the serial numbers listed below will have the new style development units and PCU installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC324 Lanier LD032C Ricoh Aficio 1224C Savin C2408	J2536805469
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1232C Savin C3210	J2636900001
Gestetner DSC324 Lanier LD032C Ricoh Aficio 1224C Savin C2408	J2530800001
Gestetner DSC224 Lanier LD024C Ricoh Aficio 1232C Savin C3210	J2630800001

Development Unit Modifications

The following modifications were applied to the Development Unit:

- The doctor roller plate spring has been removed to optimize the pressure distribution of the roller.
- The same bias applied to the doctor roller and toner supply roller is now applied to the entrance seal bracket as well, in order to ensure a uniform charge across all three components.

The diameter of the Cyan doctor roller has been increased from 10 mm to 12 mm.

NOTE: *The diameter of the doctor roller for the other colors has been 12 mm from the beginning of mass production.*

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0523204	B0523214	Development Unit - BK	1	1	35	27
B0523205	B0523215	Development Unit – M	1	1	35	28
B0523206	B0523216	Development Unit – Y	1	1	35	29
B0523207	B0523217	Development Unit – C	1	1	35	30

Changing SP Mode Settings After Installing New PCU, Development Unit or Both

The following information is required to change SP Mode settings after updating to the November 2003 production machine firmware.

Important Points:

The SP Modes must be set to match the level of subassemblies in the B051/B052 main frame. It is necessary to change these SP mode settings when replacing the Magenta or Black development units, OPC, and updating the Controller/BICU firmware. It is not necessary to change the SP settings when replacing the Yellow or Cyan development units.

PCU / K Development unit	New PCU	Old PCU
New Development unit	Setting C	Setting B
Old Development unit	Setting A	Setting D

SP Mode table for specific combinations for Black (K) or Magenta (M) Development Unit/PCU replacement:

SP No.	Title	Setting A	Setting B	Setting C	Setting D
		New PCU (B0529100) + New Firmware (Old Dev. Unit)	**New Dev. unit (B0523214) + New firmware (Old PCU)**	**New PCU + New dev. unit (B0523214) + New Firmware**	**New firmware only (Old PCU & Old Dev. Unit)**
2-920-001	ITB Cleaning CL OFF Time	0	0	0	0
2-921-001	ITB Cleaning CL OFF Mode	0	1	0	1
2-922-001	Dev CL ON after Job End	0: OFF	1: ON	0: OFF	1: ON
2-923-001	Lubricant after Toner End	1: ON	1: ON	1: ON	1: ON
2-924-001	ITB Cleaning Clutch Off/On - Time	300	300	300	300
2-924-002	ITB Cleaning Clutch Off/On - Number	2	0	2	0
2-953-001	Image Position Adjustment	0	1	0	1
3-911-001	Doc. Roller Rotation Interval:M Dev.	1 (See Note1 below)	1 (See Note1 below)	1 (See Note1 below)	1 (See Note1 below)
3-911-002	Doc. Roller Rotation Interval:K Dev.	1	20	20	1
3-920-002	Lubrication Cleaning Time – 2C/3C/4C	100	100	100	100
2-400-008	Cleaning Bias LL1: OPC lubrication time	1400	1400	1400	1400
2-401-008	Cleaning Bias LL2: OPC lubrication time	1400	1400	1400	1400
2-402-008	Cleaning Bias NN1: OPC lubrication time	1400	1400	1400	1400
2-403-008	Cleaning Bias NN2: OPC lubrication time	1400	1400	1400	1400
2-404-008	Cleaning Bias HH: OPC lubrication time	1400	1400	1400	1400

NOTE 1: *Change this setting from 1 to 20 when also installing the new Magenta development unit (B0523215) at the same time.*

When the Controller and BICU firmware have been updated to controller version 2.05.1 and BICU version 1.291:01 or later, the following SP settings must be input.

SP No.	Title	Setting A	Setting B	Setting C	Setting D
2-927-001	Disable Time (ITB Cleaning)	3	3	3	3
2-925-001	ITB Cleaning Execution Variable	20	20	20	20
2-926-001	Cover Ratio Reference (MC)	1.7	1.7	1.7	1.7
2-926-002	Cover Ratio Reference (FC)	1.7	1.7	1.7	1.7
2-970-005	ITB Cleaning Clutch Off/On Number in Oil removal mode	2	0	2	0

Also the following SP Modes must be set:

SP No.	Description	Value
2-938-001 (New SP)	OPC Reverse Interval	10
2-941-001	OPC Lubricant Time – Interrupt	14
3-920-001	Lubrication Cleaning Time	50
3-922-001 (New SP)	Lubricant Clutch OFF: 1C	6
3-922-002 (New SP)	Lubricant Clutch OFF: 2C/3C/4C	6
3-970-004	Image Area Rate: Bk	4.7

Perform the following:

Item	Description
SP3-001-001	Forced process control
ACC	
If the PCU was replaced, reset the PCU PM counter	
SP7-804-02	PM counter reset PCU

PCU Modifications

The PCU has been modified to ensure high cleaning performance from the ITB Cleaning Unit and to increase the durability of the OPC Belt Cleaning Unit.

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0519100	B0529100	Photoconductor Unit	1	1	33	*
G0706300	G1006300	Belt cleaning Assembly	1	3	33	40
G0706394	G1006394	Rear Bracket – ITB Cleaning Unit	1	3	33	21
G0702050	G1002051	Charge Section Assembly	1	1	33	39
04513006B	-	Tapping Screw – M3X6	-	1	33	101
-	08025279	Tapping Screw With Washer - M3X8				
-	B0514828	PCU Cam Stopper	1	-	33	45 *

* Denotes new item.

NOTE: ***A:*** *A cleaning blade was added to the ITB cleaning section. To facilitate this, the Belt Cleaning Assembly, ITB Cleaning Unit Rear Bracket and side plate of the PCU have been modified. The Belt Cleaning Assembly and Rear Bracket are both components of the PCU, however the new assembly and rear bracket cannot be installed on previous PCU's.*

NOTE: ***B:*** *The modified PCU's are now secured with a tapping screw with washer, instead of a tapping screw alone. This is to facilitate assembly on the production line as well as to further ensure that the unit is not deformed when the fixing screws are tightened in place.*

INSTALLATION PROCEDURE:

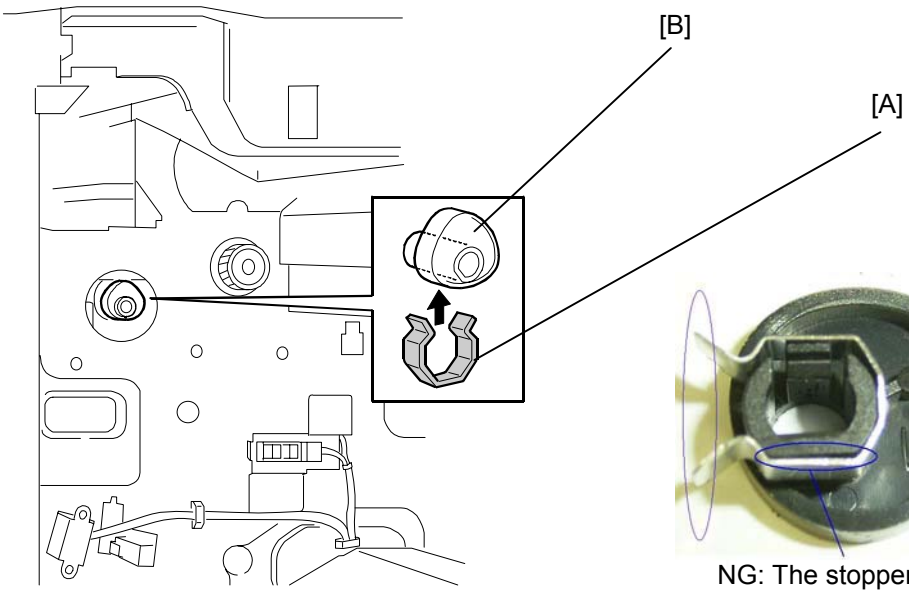
NOTE: *If you install the modified PCU in a mass-production unit from August 2003 production, you do not have to install this cam stopper.*

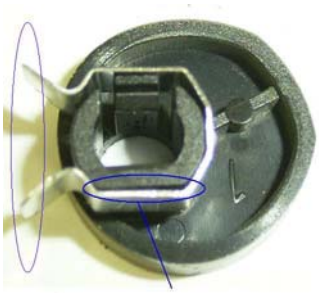
1. Turn off the Main Switch.
2. Open the Front Cover.
3. Remove the old PCU.

4. Install the Cam Stopper [A] on the Cam [B] so that the Stopper does not stick out from the Cam. See illustration below.

NOTE: *The straight-lines of the Cam Stopper and Cam are aligned with each other. The Cam Stopper will snap into position.*

5. Install the modified PCU.





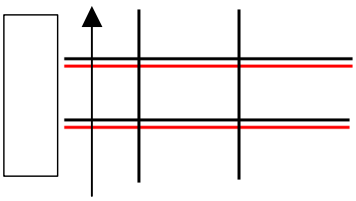
NG: The stopper is sticking out from the cam.

Sub-scan Color Registration Adjustment (SP2-950)

Perform the following only when installing the modified PCU in machines produced up to and including July 2003. The adjustment is performed at the factory as of August 2003.

1. Enter SP5-955-1 select test pattern 5 (1 dot Grid Pattern 0-1). Print two pages of DLT (11x17) or four pages of LT (8.5x11) in full color mode.
2. Increase the setting of the following SP by 1: SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm).
3. Print out the same test pattern as in step 1.
4. Subtract 1 from the *initial* setting of SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm).
5. Print out the same test pattern as in step 1.
6. **DLT printing**:
   Compare the grid pattern in the center of the first and second sheets of each setting (initial, +1, -1). Then select the printout with the most closely aligned grid pattern. Then set SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm) to the value that produced that print.
   LT printing:
   Compare the grid pattern near the trailing edge of the first and third sheets of each setting (initial, +1, -1). Then select the printout with the most closely aligned grid pattern. Then set SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm) to the value that produced that print.

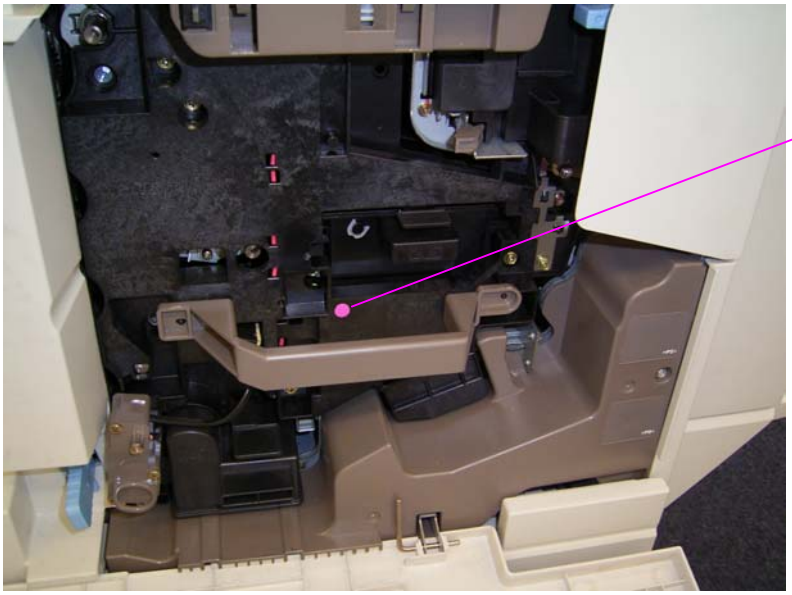
1 Dot Grid Pattern



How To Identify Modified Units From The Old Style:

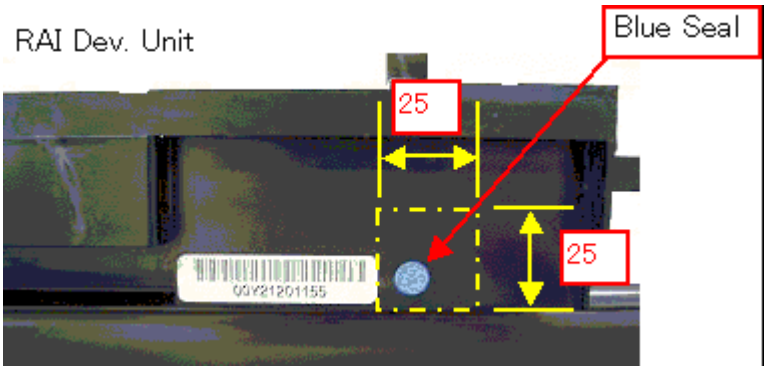
To distinguish modified units from the old style ones, seals have been placed on the modified PCU's and development units.

Modified PCU
The modified PCU unit has a circular seal on the front side of the PCU.



New style Development units:

- The new style development units either have a "★" (star mark) after the bar code or
- The new development unit has a blue seal on the left side of the development unit as shown below.



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

This bulletin supercedes TSB B051/B052 – 021 Reissue ★
SUBJECT - FAINT BLACK IMAGE

BULLETIN NUMBER: B051/B052 – 030 REISSUE ★ **02/13/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: DEVELOPMENT UNITS & PCU UPDATES

SYMPTOMS:

Image density becomes lighter across the image, beginning from the leading edge and both sides. This phenomenon is visible in solid image and halftone areas, and occurs more easily with:

1. B/W image areas
2. Originals with low image coverage ratios
3. Jobs with a low quantity of sets (e.g. 1 or 2 pages per job)

CAUSE:

The lubricant applied to the OPC belt gets inside the black development unit via the development roller, causing the friction level on the roller surface to decrease. This makes it more difficult for the toner to be transferred onto the roller surface, causing the image to gradually get lighter.

NOTE: *The symptom temporarily subsides when the toner cartridge is replaced and a new toner is supplied to the hopper (concentration of lubricant in the unit is minimized). However, it will recur when the above process repeats.*

SOLUTIONS:

- Firmware update: The firmware has been applied to November 2003 production. Update the firmware to controller version 2.02.9 or later and BiCU version 1.275:01 or later (Service Card version 1.11 or later). The latest controller firmware is version 2.05.1 and BiCU firmware version 1.291: 01 as of October 2003.
- Development Unit modified in August 2003. New style development units can be identified by a blue seal on the left hand side of the development unit. Replace the Development Unit and toner.
- Along with the firmware update and black development unit replacement below (See **UNITS AFFECTED** below), it is necessary to input new SP values.

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style firmware installed during production.

MODEL NAME	SERIAL NUMBER
★ Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J2637100001
★ Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2537100001

Improvements to the PCU are being introduced with this Technical Service Bulletin due to compatibility with the firmware and development units. **The PCU does not influence the symptoms listed above**. All B051/B052 copiers manufactured after the serial numbers listed below will have the new style development units and PCU installed during production.

MODEL NAME	SERIAL NUMBER
★ Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2536805469
★ Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J2636900001
★ Gestetner DSC224 Lanier LD024C Ricoh Aficio 1224C Savin C2408	J2530800001
★ Gestetner DSC232 Lanier LD032C Ricoh Aficio 1232C Savin C3210	J2630800001

Development Unit Modifications

The following modifications were applied to the Development Unit:

- The doctor roller plate spring has been removed to optimize the pressure distribution of the roller.
- The same bias applied to the doctor roller and toner supply roller is now applied to the entrance seal bracket as well, in order to ensure a uniform charge across all three components.

The diameter of the Cyan doctor roller has been increased from 10 mm to 12 mm.

NOTE: *The diameter of the doctor roller for the other colors has been 12 mm from the beginning of mass production.*

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0523204	B0523214	Development Unit - BK	1	1	35	27
B0523205	B0523215	Development Unit – M	1	1	35	28
B0523206	B0523216	Development Unit – Y	1	1	35	29
B0523207	B0523217	Development Unit – C	1	1	35	30

Changing SP Mode Settings After Installing New PCU, Development Unit or Both

The following information is required to change SP Mode settings after updating to the November 2003 production machine firmware.

Important Points:

The SP Modes must be set to match the level of subassemblies in the B051/B052 main frame. It is necessary to change these SP mode settings when replacing the Magenta or Black development units, OPC, and updating the Controller/BICU firmware. It is not necessary to change the SP settings when replacing the Yellow or Cyan development units.

PCU / K Development unit	New PCU	Old PCU
New Development unit	Setting C	Setting B
Old Development unit	Setting A	Setting D

SP Mode table for specific combinations for Black (K) or Magenta (M) Development Unit/PCU replacement:

SP No.	Title	Setting A	Setting B	Setting C	Setting D
		New PCU (B0529100) + New Firmware (Old Dev. Unit)	**New Dev. unit (B0523214) + New firmware (Old PCU)**	**New PCU + New dev. unit (B0523214) + New Firmware**	**New firmware only (Old PCU & Old Dev. Unit)**
2-920-001	ITB Cleaning CL OFF Time	0	0	0	0
2-921-001	ITB Cleaning CL OFF Mode	0	1	0	1
2-922-001	Dev CL ON after Job End	0: OFF	1: ON	0: OFF	1: ON
2-923-001	Lubricant after Toner End	1: ON	1: ON	1: ON	1: ON
2-924-001	ITB Cleaning Clutch Off/On - Time	300	300	300	300
2-924-002	ITB Cleaning Clutch Off/On - Number	2	0	2	0
2-953-001	Image Position Adjustment	0	1	0	1
3-911-001	Doc. Roller Rotation Interval:M Dev.	1 (See Note1 below)	1 (See Note1 below)	1 (See Note1 below)	1 (See Note1 below)
3-911-002	Doc. Roller Rotation Interval:K Dev.	1	20	20	1
3-920-002	Lubrication Cleaning Time – 2C/3C/4C	100	100	100	100
2-400-008	Cleaning Bias LL1: OPC lubrication time	1400	1400	1400	1400
2-401-008	Cleaning Bias LL2: OPC lubrication time	1400	1400	1400	1400
2-402-008	Cleaning Bias NN1: OPC lubrication time	1400	1400	1400	1400
2-403-008	Cleaning Bias NN2: OPC lubrication time	1400	1400	1400	1400
2-404-008	Cleaning Bias HH: OPC lubrication time	1400	1400	1400	1400

NOTE 1: *Change this setting from 1 to 20 when also installing the new Magenta development unit (B0523215) at the same time.*

When the Controller and BICU firmware have been updated to controller version 2.05.1 and BICU version 1.291:01 or later, the following SP settings must be input.

SP No.	Title	Setting A	Setting B	Setting C	Setting D
2-927-001	Disable Time (ITB Cleaning)	3	3	3	3
2-925-001	ITB Cleaning Execution Variable	20	20	20	20
2-926-001	Cover Ratio Reference (MC)	1.7	1.7	1.7	1.7
2-926-002	Cover Ratio Reference (FC)	1.7	1.7	1.7	1.7
2-970-005	ITB Cleaning Clutch Off/On Number in Oil removal mode	2	0	2	0

Also the following SP Modes must be set:

SP No.	Description	Value
2-938-001 (New SP)	OPC Reverse Interval	10
2-941-001	OPC Lubricant Time – Interrupt	14
3-920-001	Lubrication Cleaning Time	50
3-922-001 (New SP)	Lubricant Clutch OFF: 1C	6
3-922-002 (New SP)	Lubricant Clutch OFF: 2C/3C/4C	6
3-970-004	Image Area Rate: Bk	4.7

Perform the following:

Item	Description
SP3-001-001	Forced process control
ACC	
If the PCU was replaced, reset the PCU PM counter	
SP7-804-02	PM counter reset PCU

PCU Modifications

The PCU has been modified to ensure high cleaning performance from the ITB Cleaning Unit and to increase the durability of the OPC Belt Cleaning Unit.

					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0519100	B0529100	Photoconductor Unit	1	1	33	*
G0706300	G1006300	Belt cleaning Assembly	1	3	33	40
G0706394	G1006394	Rear Bracket – ITB Cleaning Unit	1	3	33	21
G0702050	G1002051	Charge Section Assembly	1	1	33	39
04513006B	-	Tapping Screw – M3X6	-	1	33	101
-	08025279	Tapping Screw With Washer - M3X8				
-	B0514828	PCU Cam Stopper	1	-	33	45 *

* Denotes new item.

NOTE: ***A:*** *A cleaning blade was added to the ITB cleaning section. To facilitate this, the Belt Cleaning Assembly, ITB Cleaning Unit Rear Bracket and side plate of the PCU have been modified. The Belt Cleaning Assembly and Rear Bracket are both components of the PCU, however the new assembly and rear bracket cannot be installed on previous PCU's.*

NOTE: ***B:*** *The modified PCU's are now secured with a tapping screw with washer, instead of a tapping screw alone. This is to facilitate assembly on the production line as well as to further ensure that the unit is not deformed when the fixing screws are tightened in place.*

INSTALLATION PROCEDURE:

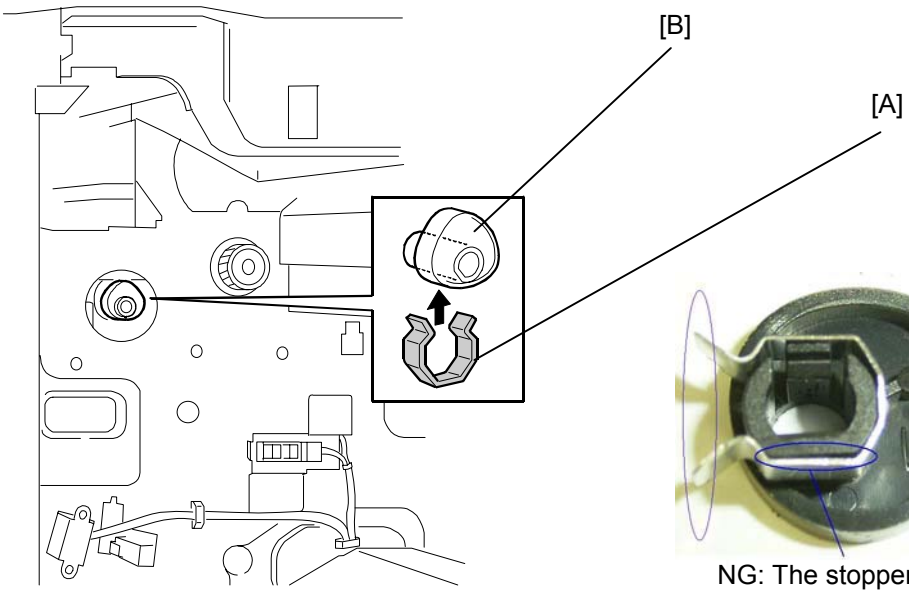
NOTE: *If you install the modified PCU in a mass-production unit from August 2003 production, you do not have to install this cam stopper.*

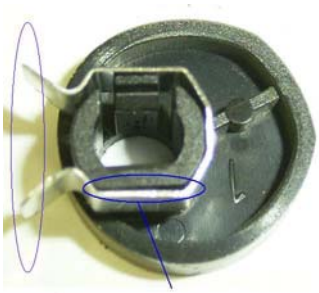
1. Turn off the Main Switch.
2. Open the Front Cover.
3. Remove the old PCU.

4. Install the Cam Stopper [A] on the Cam [B] so that the Stopper does not stick out from the Cam. See illustration below.

NOTE: *The straight-lines of the Cam Stopper and Cam are aligned with each other. The Cam Stopper will snap into position.*

5. Install the modified PCU.





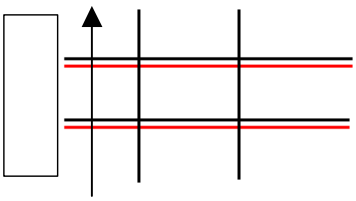
NG: The stopper is sticking out from the cam.

Sub-scan Color Registration Adjustment (SP2-950)

Perform the following only when installing the modified PCU in machines produced up to and including July 2003. The adjustment is performed at the factory as of August 2003.

1. Enter SP5-955-1 select test pattern 5 (1 dot Grid Pattern 0-1). Print two pages of DLT (11x17) or four pages of LT (8.5x11) in full color mode.
2. Increase the setting of the following SP by 1: SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm).
3. Print out the same test pattern as in step 1.
4. Subtract 1 from the *initial* setting of SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm).
5. Print out the same test pattern as in step 1.
6. **DLT printing**:
   Compare the grid pattern in the center of the first and second sheets of each setting (initial, +1, -1). Then select the printout with the most closely aligned grid pattern. Then set SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm) to the value that produced that print.
   LT printing:
   Compare the grid pattern near the trailing edge of the first and third sheets of each setting (initial, +1, -1). Then select the printout with the most closely aligned grid pattern. Then set SP2-950-5 (B052: 32 cpm) or SP2-950-13 (B051: 24 cpm) to the value that produced that print.

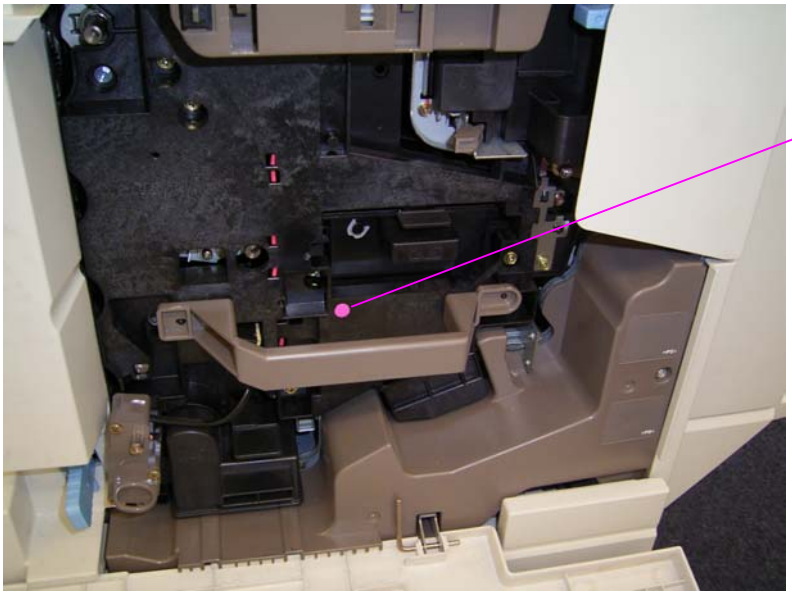
1 Dot Grid Pattern



How To Identify Modified Units From The Old Style:

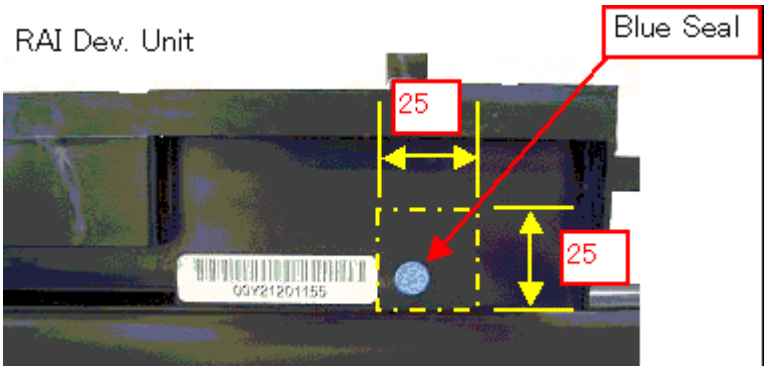
To distinguish modified units from the old style ones, seals have been placed on the modified PCU's and development units.

Modified PCU
The modified PCU unit has a circular seal on the front side of the PCU.



New style Development units:

- The new style development units either have a "★" (star mark) after the bar code or
- The new development unit has a blue seal on the left side of the development unit as shown below.



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: B051/B052 – 031 **01/07/2004**

APPLICABLE MODEL:

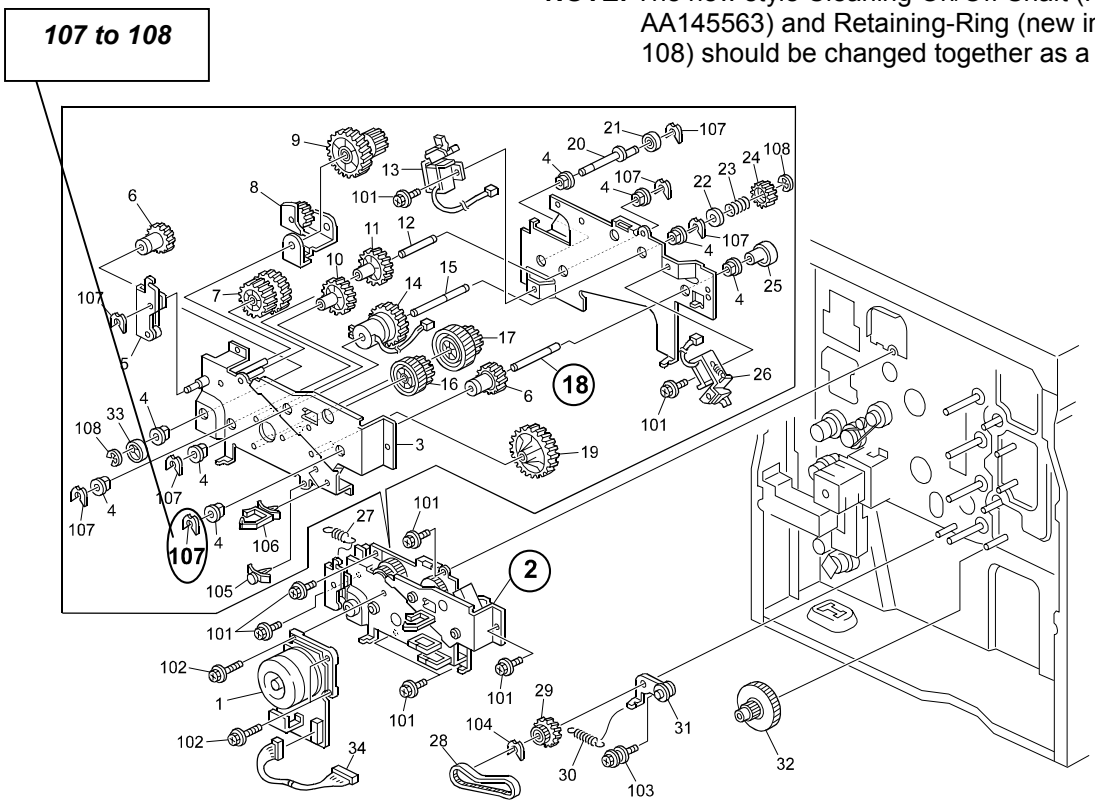
GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: TRANSPORT ASSEMBLY BRACKET & CLEANING ON/OFF SHAFT

GENERAL:

The following parts have been changed to further ensure proper function of the Cam (P/N G0704829) by minimizing the possibility of an excessive load placed on the cam. The following parts updates are being issued for all B051/B052 Parts Catalogs.

NOTE: The new style Cleaning On/Off Shaft (P/N AA145563) and Retaining-Ring (new index 108) should be changed together as a set.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0514800	B0514803	Bracket – Transport Assembly	1	1	57	2
AA145546	AA145563	Cleaning On/Off Shaft	1	3/S	57	18
08050089		Retaining Ring – M4	-		57	107
	07200040E	Retaining Ring – M4	-	3/S	57	108

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Transport Assembly Bracket and Cleaning On/Off Shaft installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSC224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2536700105
Gestetner DSC232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2636700313

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: B051/B052 – 032 **01/08/2004**

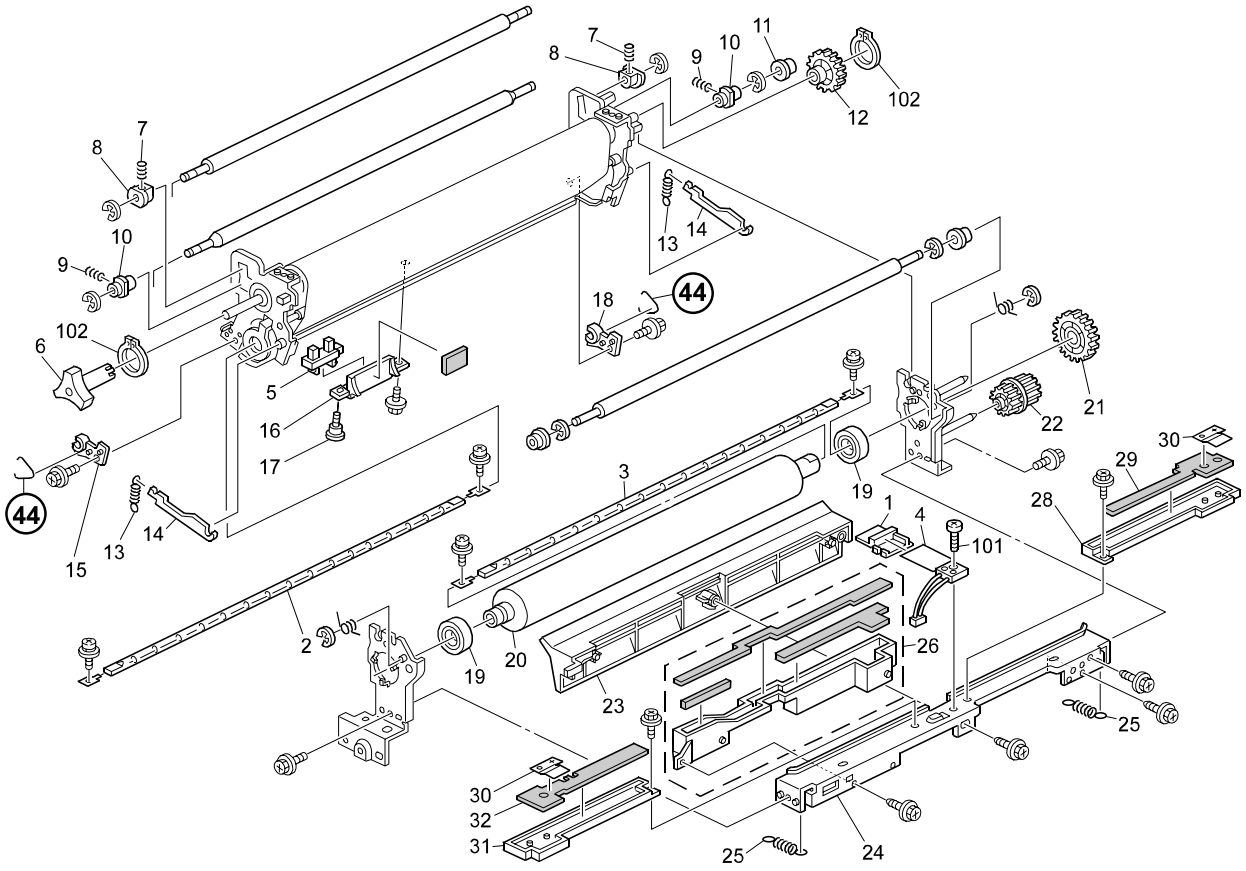
APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: STOPPER SPRING

GENERAL:

The Stopper Spring was omitted from the parts catalog. Please correct your B051/B052 Parts Catalog with the following information. The following part correction is being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
-	G0704153	Stopper Spring	2	-	38	44 *

*** DENOTES NEW ITEM NUMBER**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 033 **01/15/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

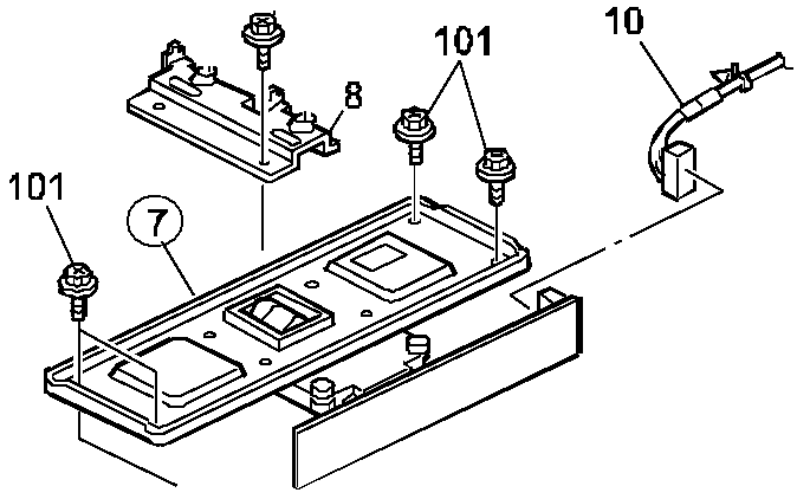
SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all B051/B052 Parts Catalogs.

- **UPDATE 1:**

Lens Holder Assembly– The adhesive and adhesive method for the lens holder assembly components (CCD control board) has been improved to provide greater adhesive integrity against heat and operational stress, which can sometimes cause an SC142. Please update your B051/B052 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0511689	B0511697	Lens Holder Assembly	1	1	15	7

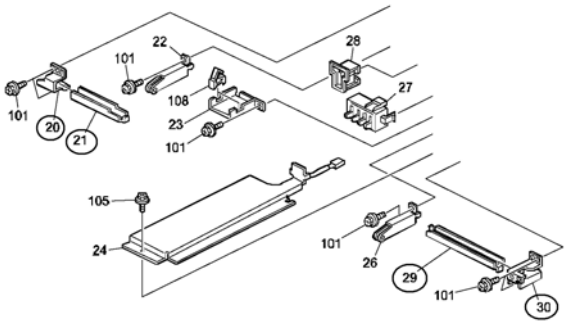
UNITS AFFECTED:

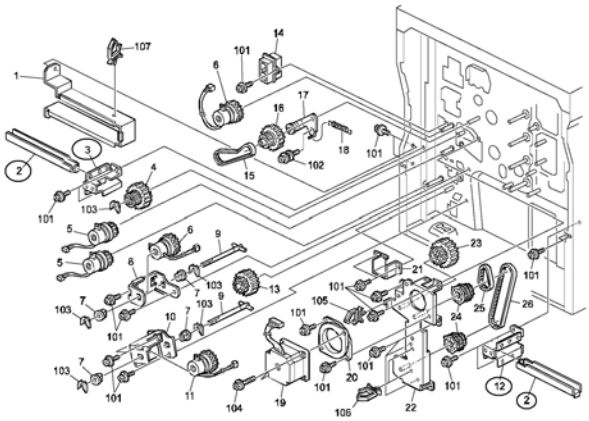
All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Lens Holder Assembly installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2537101216
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2637001372
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J25311xxxxx
Gestetner DSc524 Ricoh Aficio 1224CG Savin C2524	J2531000089
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J26311xxxxx
Gestetner DSc532 Ricoh Aficio 1232CG Savin C2534	J2631000101

- **UPDATE 2:**

Grips – The following parts related to the Grips have been changed to increase the durability of the Grips. Please update your B051/B052 Parts Catalog with the following information.





					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0511078	B0511079	Left Front Bracket	1	3/S	51	20
G0701051	G0701107	Grip	1	3/S	51	21
G0701051	G0701107	Grip	2	3/S	59	2
G0701053	B0511132	Grip Bracket – Front Light	1	3/S	51	30
G0701067	G0701108	Right Grip	1	3/S	51	29
B0511124	B0511134	Rear Right Bracket - Grip	1	3/S	59	3
B0511122	B0511133	Rear Left Bracket - Grip	1	3/S	59	12

NOTE: *When installing for the first time, these parts should be changed together as a set.*

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Lens Holder Assembly installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2527200079
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2627100183

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: B051/B052 – 034 **01/16/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

■ MECHANICAL

SUBJECT: CAP FOR O/B WASTE TONER

SYMPTOM:

Waste toner may sometimes leak from the service part PCU due to vibration during parts transport.

CAUSE:

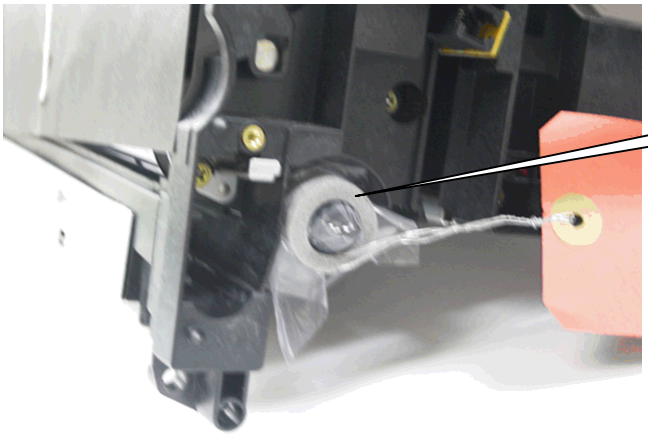
Cleaning was not performed on the service part PCU following final tests on the production line (only PCU's fitted in the mainframe were cleaned at this stage).

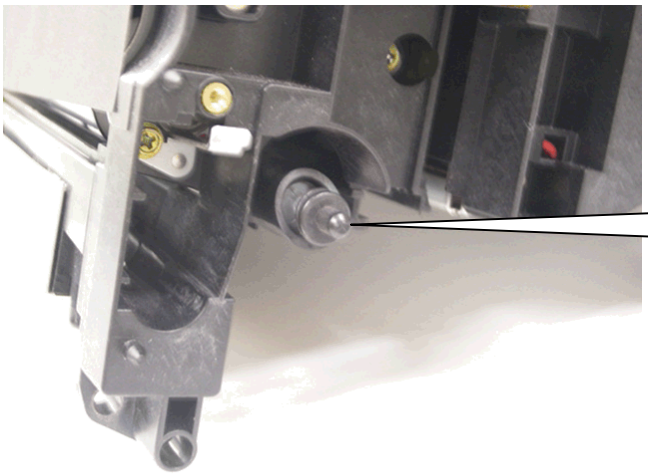
SOLUTIONS:

- A PCU cleaning procedure was added to the production process for the service part PCU.
  The procedure has been applied from: May 2003 production.
- A cap has been added to the service part PCU to seal the opening between the PCU and the waste toner bottle during shipping from August 2003 production.

NOTE 1: *This cap is not necessary on mainframe PCU's since the waste toner bottle already covers this opening . See Caution on page 2.*

CAUTION: Important note when installing the PCU:
Please be sure to remove the Cap [A] before installing the unit.





TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 035 **02/06/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

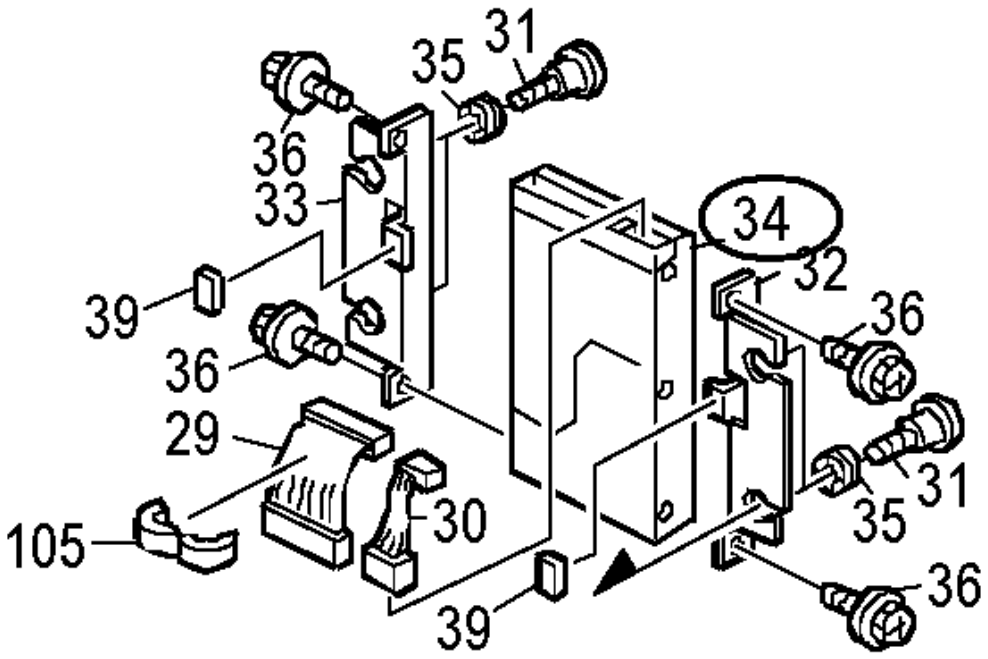
SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all B051/B052 Parts Catalogs.

- **UPDATE 1:**

HDD 40 GB– The 40 GB Hard Disk Drive has been changed due to a vendor change. Please update your B051/B052 Parts Catalog with the following information.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B5145960	B5145970	HDD 40 GB	1	0	45	34

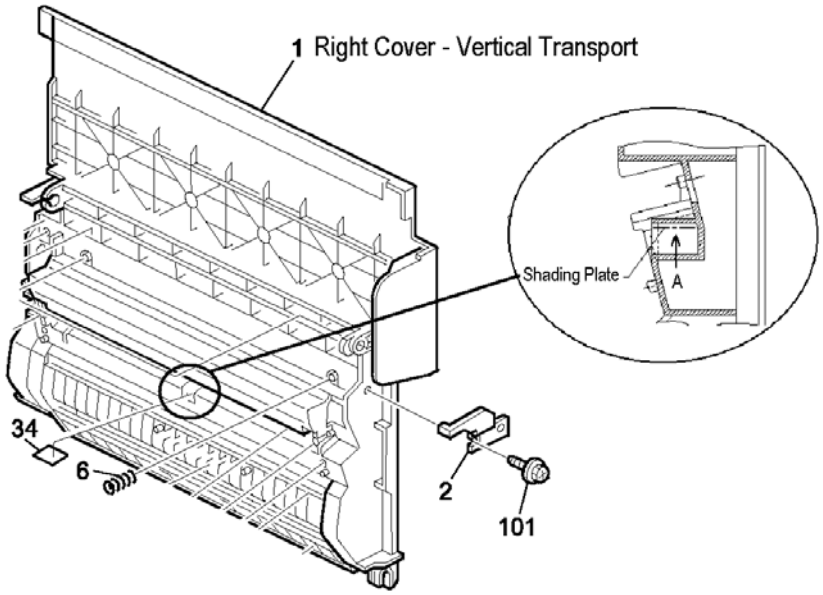
UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style 40 GB Hard Disk Drive installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2527101411
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2637101006
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J25312xxxxx
Gestetner DSc524 Ricoh Aficio 1224CG Savin C2524	J2531100001
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J26312xxxxx
Gestetner DSc532 Ricoh Aficio 1232CG Savin C2534	J2631100001

- **UPDATE 2:**

Grid Shading Plate – A black Shading Plate has been added to the Vertical Transport Right Cover. The Shading Plate ensures proper paper feed by preventing registration sensor misdetections caused by light diffused by paper dust. Please update your B051/B052 Parts Catalog with the following information.



			REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G0702136	Grid Shading Plate	1	29	34

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Grid Shading Plate installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2527001216
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2627000371

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: B051/B052 – 036 **02/13/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: GEARS ON THE DEVELOPMENT SHAFT

SYMPTOM:

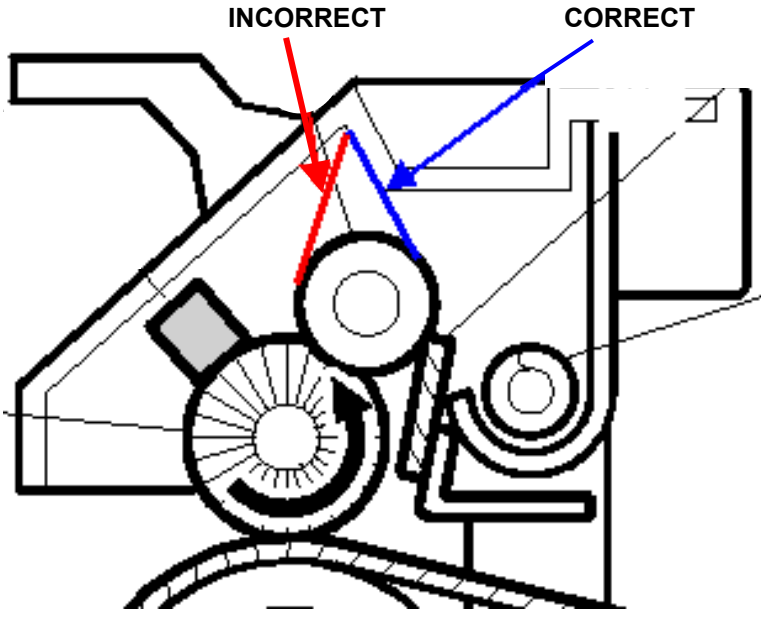
Printed pages are almost blank and printed images have one or more colors printing light.

CAUSE:

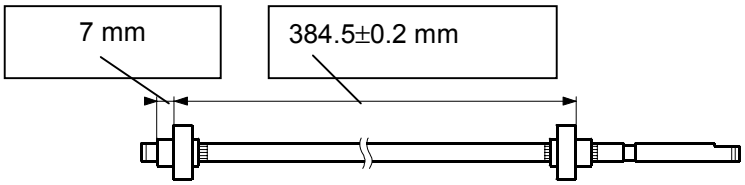
The gear on the development drive shaft may shift due to production line errors. Specifically:
- Diameter of the gear shafts is 0.04mm smaller than specification minimum.
- Gear rotational torque (0.5kgf) is much lower than specification minimum (10kgf).

The gear on the development shaft shifts when the development drive is applied.

The Mylar next to the cleaning roller in the image transfer belt-cleaning unit was placed in the opposite position from where it should have been. Refer to the following illustration. (Incorrect position: red, correct position: blue).



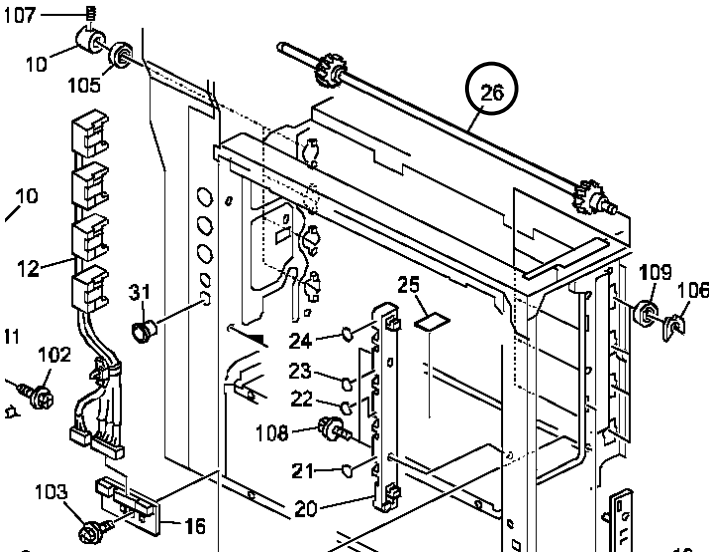
These machines were picked for a QA sample check on the production line. After the QA check, the cleaning unit was cleaned on the line. It is likely that the Mylar moved to the opposite position during cleaning of the ITB cleaning unit. If the cleaning roller gear is rotated incorrectly during the cleaning stage, the Mylar moves to the incorrect position.



Specification: Development Drive Shaft
G0704607

SOLUTION:

In the field:
Replace the development shaft (G0704607: Development Shaft – FC Index 26 p34).



On the production line:
Temporary solution: From July 17 production.
1. Shaft diameters checked to make sure only those within specification are used.
2. Gear rotational torque measured to make sure only those within specification are used.
Permanent:
1) When materials or scratches are detected on the surface, the shaft is not used (no grinding/polishing).
2) The factory continues to check the parts produced with the temporary countermeasure above.

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 037 **03/16/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: JAMS AT REGISTRATION SENSOR SECTION

SYMPTOM:

Continuous paper jams in the registration section (counted in SP7504-63). The paper that has jammed in the registration section is not folded or damaged in any way.

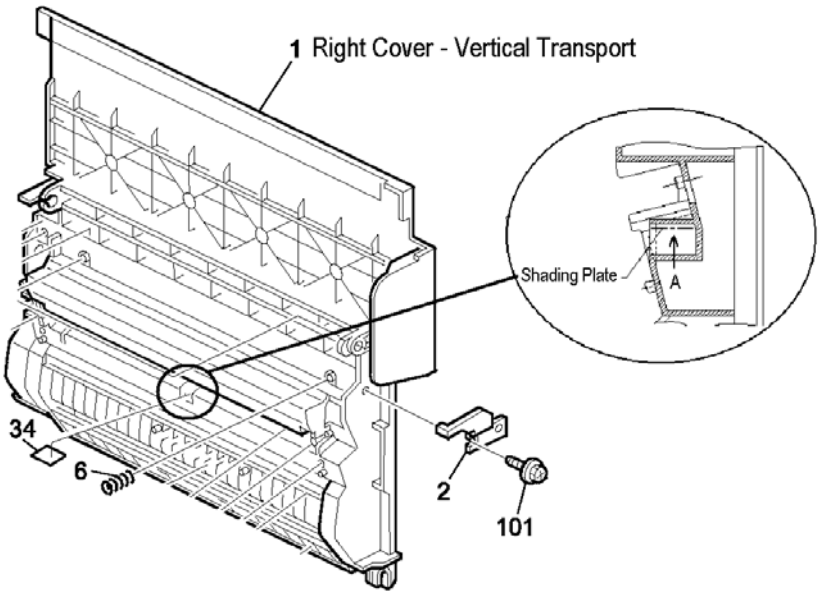
CAUSE:

Paper dust in the machine reflects and diffuses light, which causes a registration sensor misdetection and the jam condition.

SOLUTIONS:

Production Countermeasure:

A black seal (P/N G0702136: Grid Shading Plate) has been added to the right cover (as shown in the illustration below) from October 2002 production. See Units Affected for the serial number cut-in information.



Field Countermeasure:

Clean the area shown in the illustration on page 1, and remove any sheets of paper still left in the registration area.

GENERAL:

			REFERENCE	
PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G0702136	Grid Shading Plate	1	29	34

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Grid Shading Plate installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2527001216
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2627000371

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 038 **03/18/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: TORN IMAGE TRANSFER BELT & SC481

SYMPTOM:

Service Code 481 (Transfer belt mark detection error) is indicated.

CAUSE:

The image transfer belt in the photoconductor unit tears due to the surface of transfer roller loosening. Additionally, the edges of the roller's may not be smooth, causing the image transfer belt position to shift causing the belt timing marks not being detected correctly.

SOLUTION:

Production Countermeasure:

The surface coating for the image transfer roller has been changed to stainless steel. This ensures the image transfer belt will not become scratched. The surface treatment of the roller edges have been made more smoother.

NOTE: *The part number for the new photoconductor unit is B0529100.*

Field Countermeasure:

Refer to "Technical Service Bulletin B051/B052 – 030 Reissue" for the necessary procedure when installing the new and old photoconductor unit in the field.

UNITS AFFECTED:

All copiers listed below and manufactured after the serial numbers provided will have the new parts installed during production.

MODEL NAME	SERIAL NUMBER
B051	J25368XXXXX or J2530800001
B052	J26368XXXXX or J2630800001

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 038 REISSUE ★ **09/30/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: TORN IMAGE TRANSFER BELT & SC481

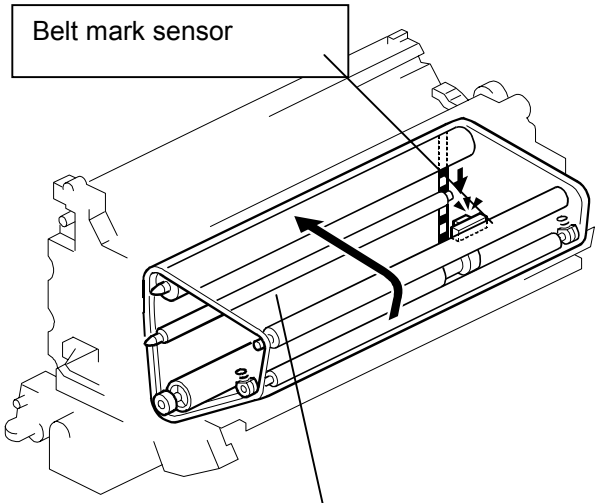
SYMPTOM:

Service Code 481 (Transfer belt mark detection error) is indicated.

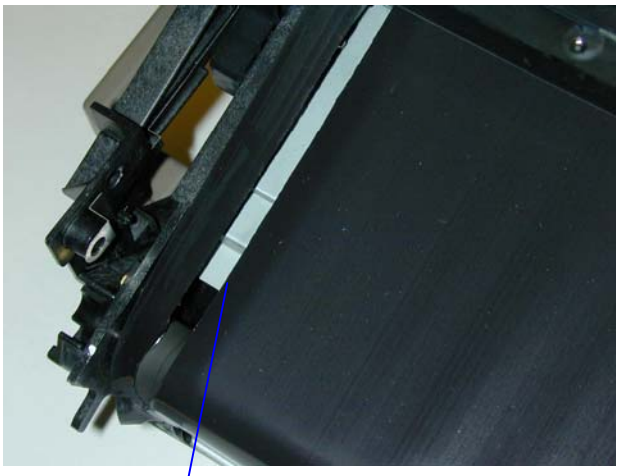
CAUSE:

The image transfer belt in the photoconductor unit tears due to the surface of transfer roller loosening. Additionally, the edges of the roller's may not be smooth, causing the image transfer belt position to shift causing the belt timing marks to not be detected correctly.

★ Belt mark sensor



Transfer roller



Torn transfer belt

SOLUTION:

★ **Production Countermeasures:**

1. The surface coating for the image transfer roller has been changed to stainless steel. This ensures the image transfer belt will not become scratched. The surface treatment of the roller edges have been made smoother.

NOTE: *The part number for the new photoconductor unit is B0529100.*

2. A buff finishing treatment has been applied to the roller edge to ensure better edge condition from May 2004 production.

Field Countermeasure:

Refer to "Technical Service Bulletin B051/B052 – 030 Reissue" for the necessary procedure when installing the new and old photoconductor units in the field.

★UNITS AFFECTED:

All B05/B052 copiers listed below and manufactured after the serial numbers provided will have the new photoconductor unit installed during production.

MODEL NAME	SERIAL NUMBER
DSC224 LD024C Aficio 1224C C2408	J25368XXXXX or J2530800001
DSC232 LD032C Aficio 1232C C3210	J26368XXXXX or J2630800001

All B05/B052 copiers listed below and manufactured after the serial numbers provided will have the buff finishing treatment applied to the roller edge during production.

MODEL NAME	SERIAL NUMBER
DSC224 LD024C Aficio 1224C C2408	J2546500966
DSC232 LD032C Aficio 1232C C3210	J2646700008

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 039 **04/14/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

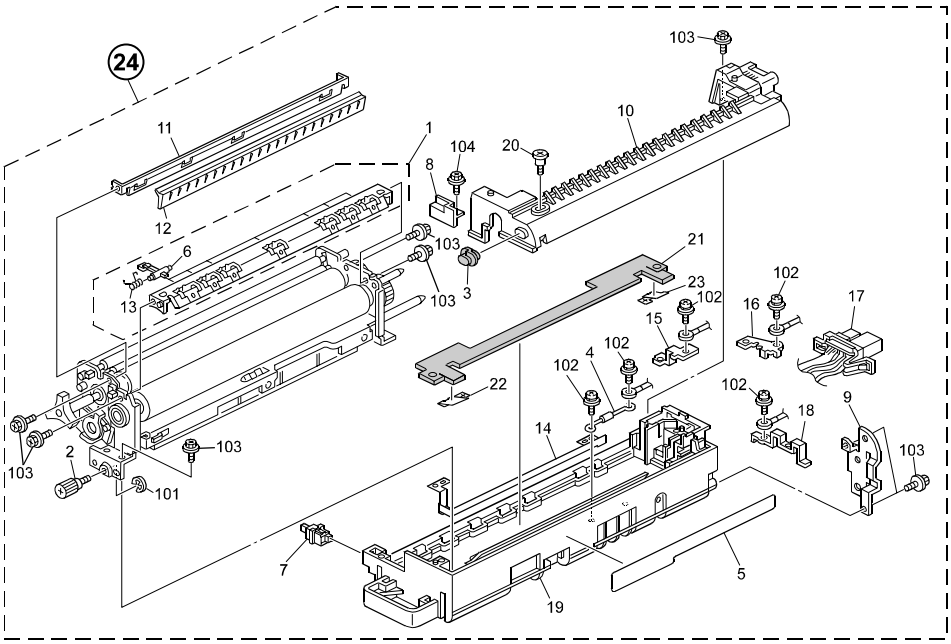
SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following parts updates are being issued for all B051/B052 Parts Catalogs.

- **UPDATE 1:**

Fusing Sub Unit – The Fusing Sub Unit has been changed to maximize the accuracy of parallel edges and 90 degree corners of the image. Please update your parts catalog with the following updates.



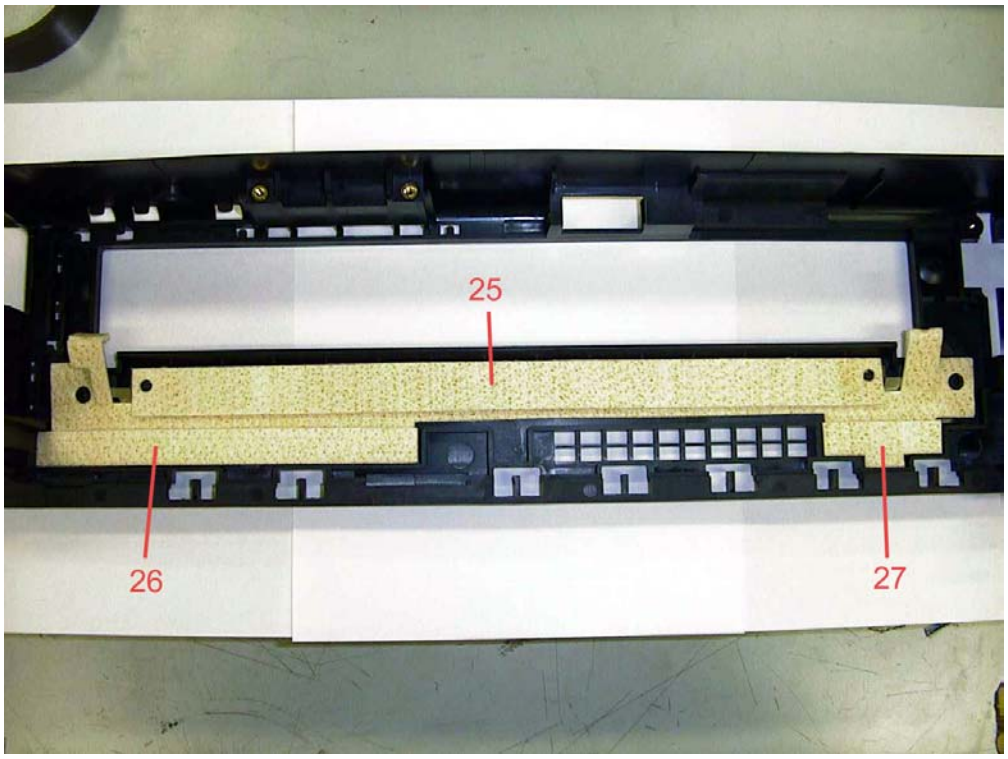
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
B0514026	B0514028	Fusing Sub Unit (120V)	1	0	37	24
B0514031	B0514034	Fusing Sub Unit (230V)	1	0	37	24

UNITS AFFECTED:

The serial number cut-in information was not available at time of this publication.

- **UPDATE 2:**

Felt –Lower – The Front, Rear and Center Lower Felts have been added to ensure that oil does not leak from the Fusing Unit. See photograph below for the installation locations of the felts. Please update your parts catalog with the following information.



			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G0704157	Felt – Lower Center	1	37	25 *
G0704158	Felt – Lower Rear	1	37	26 *
G0704159	Felt – Lower Front	1	37	27 *

*** DENOTES NEW ITEM NUMBER**

UNITS AFFECTED:

All B051/B052 copiers manufactured after the serial numbers listed below will have the new style Front, Rear and Center Lower Felts installed during production.

MODEL NAME	SERIAL NUMBER
Gestetner DSc224 Lanier LD024c Ricoh Aficio 1224C Savin C2408	J2536700205
Gestetner DSc232 Lanier LD032c Ricoh Aficio 1232C Savin C3210	J2636700409

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 040 **04/29/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: SERVICE MANUAL - INSERT

SERVICE MANUAL

The Service Manual pages listed below must be replaced with the pages supplied.

The revised areas have been highlighted by an arrow ⇒.

PAGES:

- 5-5 to 5-93

Updated Information:

Due to the recent firmware updates for this model, additional service program modes have been added to the service program table. New pages have been added to Section 5 of the service manual.

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
003*	4	Tray: Small Size	[–4 ~ 6 / **0** / 1 mm/step] *Small Size includes LT long edge feed and smaller.*
	5	By-pass: Plain	[–4 ~ 6 / **0** / 1 mm/step]
	6	By-pass: Thick	[–4 ~ 6 / **–2** / 1 mm/step]
	7	By-pass: OHP	[–4 ~ 6 / **–2** / 1 mm/step]
	8	Duplex	[–4 ~ 6 / **0** / 1 mm/step]
105*	Fusing Temperature		
	1	Heating: Idling	Sets the temperature at which the heating roller starts idling. [100 ~ 180 / **145** / 1°C/step]
	2	Heating: Ready	Sets the temperature at which the heating roller enters the print ready condition. [100 ~ 180 / **155** / 1°C/step]
	3	Heating: Standby	Sets the heating roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Pressure roller: SP1-105-16 [100 ~ 180 / **160** / 1°C/step]
	4	Heating: Plain/1 Color	Sets the heating roller temperature for thin paper in single-color mode. [120 ~ 190 / **155** / 1°C/step]
	5	Heating: Plain/Full Color	Sets the heating roller temperature for thin paper in full-color mode. [120 ~ 190 / **160** / 1°C/step]
	6	Heating: Middle Thick/1 Color	Sets the heating roller temperature for normal plain paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	7	Heating: Middle Thick/Full Color	Sets the heating roller temperature for normal plain paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	8	Heating: Thick/1 Color	Sets the heating roller temperature for thick paper in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	9	Heating: Thick/Full Color	Sets the heating roller temperature for thick paper in full-color mode. [120 ~ 190 / **170** / 1°C/step]
	10	Heating: OHP/1 Color	Sets the heating roller temperature for OHP sheets in single-color mode. [120 ~ 190 / **165** / 1°C/step]
	11	Heating: OHP/Full Color	Sets the heating roller temperature for the OHP sheets in full-color mode. [120 ~ 190 / **175** / 1°C/step]
	12	Heating: Duplex/1 Color	Sets the heating roller temperature for duplex printing (both sides) in single-color mode. [120 ~ 190 / **150** / 1°C/step]

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
105*	13	Heating: Duplex/Full Color	Sets the heating roller temperature for duplex printing (both sides) in full-color mode. [120 ~ 190 / **155** / 1°C/step]
	14	Pressure: Idling	Sets the temperature at which the pressure roller starts idling. [30 ~ 100 / **10** / 1°C/step]
	15	Pressure: Ready	Sets the temperature at which the pressure roller becomes ready for printing. [60 ~ 150 / **65** / 1°C/step]
	16	Pressure: Standby	Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3 [60 ~ 150 / **115** / 1°C/step]
	27	Heating: OFFSET +	Sets the heating roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **5** / 1°C/step]
	28	Pressure: OFFSET +	Sets the pressure roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **0** / 1°C/step]
	29	Heat: OFFSET –	Sets the heating roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **5** / 1°C/step]
	30	Pressure: OFFSET –	Sets the pressure roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **0** / 1°C/step]
106	Temperature Display		
	1	Heating Roller	Displays the current temperature of the heating and pressure rollers.
	2	Pressure Roller	
109	Fusing Nip		
	1	Execute Mode	Checks the fusing nip width using an OHP sheet. The OHP sheet stops in the fusing unit for the specified time (☛ SP1-109-2). The nip width should be 9 ± 0.5 mm at front and rear. If this requirement is not met, change the fusing unit.
	2	Stop Duration	Adjusts the stoppage time for the OHP sheet in the fusing unit (☛ SP1-109-1). [0 ~ 100 / **10** / 1 s/step]
905	Pressure Roller Type		
	1	Pressure Roller Type	0: 2.1 mm Type (New)
			1: 1.5 mm Type (Old)

1	Mode No. (Class 1, 2, and 3)		Function / [Setting]
920	Exit Full Timer		
	1	Exit Full Timer	[10 ~ 60 / **10** / 1 s/step] **DFU**
930	Fusing Oil Add		
	1	Fusing oil add	Forces the oil pump to supply silicone oil up from the oil tank to the tank in the oil supply unit. If the oil end sensor detects oil in the oil supply unit, this SP will not start the pump.
940	LEF Priority–Bypass		
	1	LEF Priority–Bypass	Selects the default paper feed direction of the by-pass tray. [0 ~ 1 / **0** / 1 /step] 0: SEF 1: LEF The machine detects only the width, but detects the size based on this information. If the setting is 0 (SEF): When A4 LEF is placed in the bypass tray, the machine detects this as A3. A4 SEF will be detected as A4. If the setting is 1 (LEF): The machine will detect A4LEF as A4. However, if A4 SEF is placed in the bypass tray, it will be detected as A5.

⇒ *SP2-XXX: (Drum)*

2	**Mode No. (Class 1, 2, and 3)**		**Function / [Setting]**
001*	Charge Bias		
	1	[M]	Adjusts the charge corona unit grid voltage. [300 ~ 800 / **500** / 1 Volt/step] Only effective is SP3-003 is set to 0.
	2	[C]	
	3	[Y]	
	4	[K]	
	5	No Image Area	
	6	Charger Current	Adjusts the charge corona unit current. [400 ~ 800 / **500** / 1 μA/step]
100*	Magnification Adjustment		
	1	Main Scan	Adjusts the magnification in each scan direction. [–12.8 ~ 12.7 / **0** / 0.01%/step]
	2	Sub Scan	
101*	Trim Adjustment		
	1	front	Adjusts the width of the white margin. [0.0 ~ 9.0 / **4.0** / 0.1 mm/step]
	2	back	[0.0 ~ 9.0 / **2.0** / 0.1 mm/step]
	3	lead	
	4	trail	
201*	Develop Bias Adjustment		
	1	[M]	Adjusts the development bias. [0 ~ 500 / **250** / 1 Volt/step] Only effective is SP3-003 is set to 0.
	2	[C]	
	3	[Y]	
	4	[K]	
208	Forced Toner		
	1	[K]	Forcefully supplies toner to the development unit.
	2	[C]	
	3	[M]	
	4	[Y]	
	5	All Color	
213	Toner End Set		
	1	Toner End Set	Specifies how many sheets can be printed after the toner near end message. [0 ~ 255 / **50** / 1 /step] **DFU**
301	Trans Belt Bias		
	1	1 Color: Front	Adjusts the transfer belt current. [30 ~ 140 / **80** / 10 μA/step] *The front side image for 1-color printing*
	2	1 Color: Rear	[30 ~ 140 / **80** / 10 μA/step] *The rear side image for 1-color duplex printing*
	3	2 Colors: First color	[30 ~ 140 / **130** / 10 μA/step] *The first color toner image of 2-color printing*
	4	3 Colors: First color	[30 ~ 140 / **130** / 10 μA/step] *The first color toner image of 3-color printing*
	5	4 Colors: First color	[30 ~ 140 / **75** / 10 μA/step] *The first color toner image of 4-color printing*
	6	2 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner mage of 2-color printing*
	7	3 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner image of 3-color printing*

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
301	8	4 Colors: 2nd color	[30 ~ 140 / **130** / 10 μA/step] *The second color toner image of 4-color printing*
	9	3 Colors: 3rd color	[30 ~ 140 / **130** / 10 μA/step] *The third color toner image of 3-color printing*
	10	4 Colors: 3rd color	[30 ~ 140 / **130** / 10 μA/step] *The third color toner image of 4-color printing*
	11	4 Colors: 4th color	[30 ~ 140 / **130** / 10 μA/step] *The fourth color toner image of 4-color printing*
	12	Print start	[30 ~ 140 / **70** / 10 μA/step] *After the first color toner image*
	13	Print end	[30 ~ 140 / **70** / 10 μA/step] *After the second color toner image*
	14	After 1st Color	[30 ~ 140 / **70** / 10 μA/step] *After the third color toner image*
	15	After 2nd Color	[30 ~ 140 / **70** / 10 μA/step] *After the final color toner image*
	16	After 3rd Color	[30 ~ 140 / **70** / 10 μA/step] *Development start*
	17	After 4th Color	[30 ~ 140 / **70** / 10 μA/step] *Development end*
	18	1 Color: Front: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating the front side image for 1-color printing*
	19	1 Color: Rear: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating the rear side image for 1-color duplex printing*
	20	2 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating an image for 2-color printing*
	21	3 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for thick paper or OHP before creating an image for 3-color printing*
	22	4 Colors: Idling	[30 ~ 140 / **70** / 10 μA/step] *Waiting for the thick paper or OHP before creating an image for 4-color printing*
	23	Power On Recovery	[30 ~ 140 / **70** / 10 μA/step] *Machine start and jam recovery*
303*	Transfer Belt Environment		
	1	Threshold 1	Adjusts the environmental threshold for the transfer belt. [0 ~ 100.0 / **3.5** / 0.1 g/m^3/step] **DFU**
	2	Threshold 2	[0 ~ 100.0 / **19.0** / 0.1 g/m^3/step] **DFU**
304	Transfer Belt Environment		
	1	LL/Image/1 Color/1st	[50 ~ 200 / **85** / 1 %/step] **DFU**
	2	LL/Image/1 Color/1st	[50 ~ 200 / **85** / 1 %/step] **DFU**
	3	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	4	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	5	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	6	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	7	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**
	8	LL/Image/1 Color/1st	[50 ~ 200 / **100** / 1 %/step] **DFU**

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
305*	Transfer Belt Start		
	1	Bias On Off	Sets the bias for the image transfer start to on or off. [0 ~ 1 / 1 / 1/step] **DFU** 0: Bias off 1: Bias on
306	Trans Belt First		
	1	1 Color	Adds the transfer current to the first page to improve insufficient transfer of the whole solid image. [3.0 ~ 14.0 / **9.0** / 1/step]
	2	2/3/4 Colors	[3.0 ~ 14.0 / **13.0** / 1/step]
⇒ 310*	1Paper Trans_LL1 (Paper Transfer LL1) LL1: Absolute humidity AH (g/m^3) is $0 < AH \leq 3.5$ The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL1' humidity range (Note: The current for the LL1 range is also affected by SP2-903.) Adjust only if there are problems with insufficient transfer in the image area of the copy for a particular paper type or mode, or in response to field problems as directed by technical support staff. [0 ~ 70.0 / **25.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **25.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
	16	Normla/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **12.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
310*	28	Thick/2nd/210-256	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **24.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **20.0** / 0.1 μA/step]
⇒ 311*	Paper Trans_LL2 (Paper Transfer LL2) LL2: Absolute humidity AH (g/m^3) is $3.5 < AH \leq 8.0$ The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'LL2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **27.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **13.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **19.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 312*	Paper Trans_NN1 (Paper Transfer NN1) NN1: Absolute humidity AH (g/m^3) is 8.0 < AH ≤ 14 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN1' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **28.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **21.0** / 0.1 μA/step]
⇒ 313*	Paper Trans_NN2 (Paper Transfer NN2) NN2: Absolute humidity AH (g/m^3) is 14 < AH ≤ 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'NN2' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **29.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **30.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
313*	5	Normal/1st/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **17.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **23.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
⇒ 314*	Paper Trans_HH (Paper Transfer HH). HH: Absolute humidity AH (g/m^3) is > 19 The display indicates: Paper Weight/Side 1 or 2/Paper Width (mm) Nrml: Thin paper, Mid: Normal plain paper, Thk: Thick paper		
	1	Normal/1st/-297	Sets the paper transfer current for the 'HH' humidity range. See SP2-310 for comments. [0 ~ 70.0 / **30.0** / 0.1 μA/step]
	2	Normal/1st/257-296	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	3	Normal/1st/210-256	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	4	Normal/1st/129-209	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	5	Normal/1st/-128	[0 ~ 70.0 / **26.0** / 0.1 μA/step]
	6	Middle/1st/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	7	Middle/1st/257-296	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	8	Middle/1st/210-256	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	9	Middle/1st/129-209	[0 ~ 70.0 / **29.0** / 0.1 μA/step]
	10	Middle/1st/-128	[0 ~ 70.0 / **27.0** / 0.1 μA/step]
	11	Thick/1st/-297	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	12	Thick/1st/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	13	Thick/1st/210-256	[0 ~ 70.0 / **15.0** / 0.1 μA/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
314*	14	Thick/1st/129-209	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	15	Thick/1st/-128	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	16	Normal/2nd/-297	[0 ~ 70.0 / **30.0** / 0.1 μA/step]
	17	Normal/2nd/257-296	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	18	Normal/2nd/210-256	[0 ~ 70.0 / **36.0** / 0.1 μA/step]
	19	Normal/2nd/129-209	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	20	Normal/2nd/-128	[0 ~ 70.0 / **32.0** / 0.1 μA/step]
	21	Middle/2nd/-297	[0 ~ 70.0 / **31.0** / 0.1 μA/step]
	22	Middle/2nd/257-296	[0 ~ 70.0 / **34.0** / 0.1 μA/step]
	23	Middle/2nd/210-256	[0 ~ 70.0 / **37.0** / 0.1 μA/step]
	24	Middle/2nd/129-209	[0 ~ 70.0 / **35.0** / 0.1 μA/step]
	25	Middle/2nd/-128	[0 ~ 70.0 / **33.0** / 0.1 μA/step]
	26	Thick/2nd/-297	[0 ~ 70.0 / **14.0** / 0.1 μA/step]
	27	Thick/2nd/257-296	[0 ~ 70.0 / **15.0** / 0.1 μA/step]
	28	Thick/2nd/210-256	[0 ~ 70.0 / **16.0** / 0.1 μA/step]
	29	Thick/2nd/129-209	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
	30	Thick/2nd/-128	[0 ~ 70.0 / **28.0** / 0.1 μA/step]
	31	OHP/297	[0 ~ 70.0 / **18.0** / 0.1 μA/step]
	32	OHP/210	[0 ~ 70.0 / **22.0** / 0.1 μA/step]
320*	Paper Trans_Col (Paper Transfer Correction) The display indicates: Paper Type/Side 1 or 2/Printing mode		
	1	Normal/1st/1 Color	Corrects the electric current for paper transfer. **DFU** [0 ~ 100 / **45** / 1%/step]
	2	Normal/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	3	Normal/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	4	Normal/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	5	Normal/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	6	Normal/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	7	Thick/1st/1 Color	[0 ~ 100 / **45** / 1%/step]
	8	Thick/1st/2 Colors	[0 ~ 100 / **90** / 1%/step]
	9	Thick/1st/3 Colors	[0 ~ 100 / **100** / 1%/step]
	10	Thick/2nd/1 Color	[0 ~ 100 / **45** / 1%/step]
	11	Thick/2nd/2 Colors	[0 ~ 100 / **90** / 1%/step]
	12	Thick/2nd/3 Colors	[0 ~ 100 / **100** / 1%/step]
	13	OHP/1 Color	[0 ~ 100 / **60** / 1%/step]
	14	OHP/2 Colors	[0 ~ 100 / **90** / 1%/step]
	15	OHP/3 Colors	[0 ~ 100 / **100** / 1%/step]
⇒ 321	Paper Transfer Bias of Edge		
	1	Normal/1st/Leading edge	Adjusts the paper transfer current at the paper edges. [10.0 ~ 20.0 / **10.0** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	2	Normal/2nd/Leading edge	
	3	Thick/1st/Leading edge	
	4	Thick/2nd/Leading edge	
	5	OHP/Leading edge	
	6	Normal/1st/Trailing edge	

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
321	7	Normal/2nd/Trailing edge	Adjusts the paper transfer current at the paper edges. [0.0 ~ 1.0 / **0.8** / 0.1 times/step] **DFU** *The specified values indicate how many times larger the current at the edge is.*
	8	Thick/1st/Trailing edge	
	9	Thick/2nd/Trailing edge	
	10	OHP/Trailing edge	
322	Paper Transfer Charge		
	1	Leading edge	Adjusts the width at the paper edges where the current specified with SP2–321 is applied. [0 ~ 30 / **30** / 1 mm/step] **DFU** *The values indicate the distance from the paper edges.*
	2	Trailing Edge	
323	Paper Transfer Cleaning		
	1	Cleaning Negative	Adjusts the transfer belt cleaning current. The current is applied before and after printing jobs and during jam recovery. [0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	2	Cleaning Positive	[0 ~ 255 / **150** / 0.1 μA/step] **DFU**
	3	Cleaning Negative Lubrication	[0 ~ 255 / **50** / 0.1 μA/step] **DFU**
331	Print Start Cleaning		
	1	Print Start Cleaning	Enables/disables cleaning before printing jobs. [0 ~ 1 / **0** / 1 /step] **DFU** 0: Disables 1: Enables
400*	Cleaning Bias LL1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $0 < AH \leq 3.5$ (this is the 'LL1' humidity range) **DFU** [0 ~ 2000 / **1200** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1200** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1200** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
401*	Cleaning Bias LL2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: $3.5 < AH \leq 8.0$ (this is the 'LL2' humidity range) **DFU** [0 ~ 2000 / **1600** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1600** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1600** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
402*	Cleaning Bias NN1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 8.0 < AH ≤ 14 (this is the 'NN1' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
403*	Cleaning Bias NN2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 14 < AH ≤ 19 (this is the 'NN2' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
404*	Cleaning Bias HH		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m^3) is in the following range: 19 < AH (this is the 'HH' humidity range) **DFU** [0 ~ 2000 / **1700** / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / **1700** / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / **1700** / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / **1600** / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / **1400** / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / **1600** / 10 Volt/step]
500*	Fusing Bias		
	1	Normal/1 Color/1st	Adjusts the fusing bias voltage. **DFU** [1000 ~ 4000 / **3000** / 100 Volt/step]
	2	Normal/1 Color/2nd	[1000 ~ 4000 / **3000** / 100 Volt/step]
	3	Normal/Full Color/1st	[1000 ~ 4000 / **2500** / 100 Volt/step]
	4	Normal/Full Color/2nd	[1000 ~ 4000 / **2500** / 100 Volt/step]
	5	Thick/1 Color/1st	[1000 ~ 4000 / **3000** / 100 Volt/step]
	6	Thick/1 Color/2nd	[1000 ~ 4000 / **3000** / 100 Volt/step]
	7	Thick/Full Color/1st	[1000 ~ 4000 / **2500** / 100 Volt/step]
	8	Thick/Full Color/2nd	[1000 ~ 4000 / **2500** / 100 Volt/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
501*	Fusing Bias Switch		
	1	Fusing Bias Switch	Switches the fusing and discharge pin bias control on or off. [0 ~ 1 / **1** / 1/step] **DFU** 0: Control off 1: Control on
502	Discharge Bias		
	1	H	Adjusts the discharge plate voltage (paper separation from transfer belt). [–4000 ~ –1000 / –**2500** / 100 Volt/step]
	2	L	
801*	Charge Cleaning Interval		
	1	Charge Cleaning Interval	Sets the charge corona unit cleaning interval. [0 ~ 5000 / **600** / 100 counts/step] *See section 6 for details. SP7-925 displays the number of counts since the last cleaning.*
	3	Additional Charge Corona Cleaning Interval	Sets the additional charge corona unit cleaning interval. [0 ~ 5000 / **100** / 100 counts/step] The cleaning is carried out after 600, at job end or after 700 (-3 setting).
802	Charger Cleaning		
	1	Charger Cleaning	Executes a forced charge corona unit cleaning. Set to 1 to start cleaning.
901*	Environment Control		
	1	Environment Control	Switches environment control on or off. [0 ~ 1 / **1** / 1/step] **DFU** 0: Control off (The paper transfer and cleaning bias environments are set to NN1. The image transfer bias environment is set to MM.) 1: Control on
902	Charge Cleaning Status		
	1	Charge Cleaning Status	[0 ~ 9 / **0** / 1/step] 0: Cleaner has stopped 1: Cleaner moving from front to rear 3: Cleaner moving from rear to front (back to the home position)
903	Paper Transfer Adjustment		
	1	LL1: Plain	Specifies the difference from the LL1 paper transfer current (SP2-310). [0 ~ 7.0 / **1.0** / 1 μA/step] *The specified value is subtracted from the value specified by SP2-310 under the following conditions:* The machine is in the LL1 environment. 400 images or less are created after the machine starts.
904	1C Bias Adjustment		
	1	M	Default 50V **DFU**
	2	C	Default 0V **DFU**
	3	Y	Default 0V **DFU**
	4	K	Default 0V **DFU**
905	Paper Transfer Roller Type		
	1	Paper Transfer Roller Type	0: Drum Type (New) 1: Straight Type (Old)

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
912*	Temperature Humidity Display		
	1	Temperature	Displays the temperature measured by the temperature sensor inside the machine. [–127 ~ 127 / **0** / 1°C/step]
	2	Humidity 1	Displays the humidity measured by the humidity sensor inside the machine. [0 ~ 255 / **0** / 1%/step]
	3	Humidity 2	Displays the absolute humidity calculated from the temperature/humidity sensor readings. [0 ~ 65535 / **0** / 0.1 g/m^3/step]
	4	Environment Level ** AH = absolute humidity*	Displays the current humidity level calculated from the absolute humidity. [0 ~ 1 / **0** / 1/step] LL1: 0 < AH ≤ 3.5 LL2: 3.5 < AH ≤ 8.0 NN1: 8.0 < AH ≤ 14 NN2: 14 < AH ≤ 19 HH: 19 < AH
938	OPC Reverse Interval		
	1	[0 ~ 100 / **10** / 10 counts /step] The Main motor rotates the OPC belt backwards for 500 ms at the end of every job, in order to remove foreign particles between the OPC belt and cleaning blade. This does not need to be performed as often. Also, reducing the frequency of OPC belt reverse rotation improves the cleaning blade performance. This SP adjusts the counter for the OPC belt reverse rotation, and is incremented as follows: LT/A4 LEF or smaller: 1, larger than LT/A4 LEF: 2. When this SP reaches its set maximum, reverse rotation is performed for 500 ms at job end. **NOTE**: Requires BICU Firmware v 1.253:01 and controller v 2.01.5.	
939	OPC lubricant interruption (Forced OPC lubrication)		
	1		Enables/disables forced OPC lubrication at a certain interval. **DFU** [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled *The OPC lubrication interval is specified with SP2-942-1*.
940	OPC Lubricant Mode		
	1	OPC Lubricant Mode	Executes a forced OPC lubrication to reduce the friction on the OPC belt. **DFU** The OPC belt and the lubricant brush operate for 2 mins.
941	OPC Lubricant Time		
	1	Interrupt **NOTE**: Requires BICU Firmware v 1.253:01 & controller v 2.01.5.	Determines how long the OPC belt is lubricated for after the end of every job (☛ SP3–940). [0 ~ 30 / **14** / 1 s/step]
	2	No Interrupt	Determines how long the OPC belt is lubricated at the forced lubrication. [0 ~ 60 / **10** / 1 s/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
942	OPC Lubricant Interval		
	1	OPC Lubricant Interval	The machine lubricates the OPC belt and image transfer belt at the interval (number of prints) set with this SP. Incoming print jobs do not interrupt the lubrication. [10 ~ 65535 / **50** / 10/step] **DFU** *Set SP2-939-1 to 1 to execute the forced OPC lubrication.*
944	OPC Lubrication: High Coverage		
	1	Setting	Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5. [0 ~ 1 / **1** / 1 /step] 0: Disables 1: Enables When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing (lubrication time: around 34 seconds).
	2	Image Coverage–1	Specifies standard average coverage condition 1. [50 ~ 800 / **300** / 10 units/step] *OPC lubrication is executed under the following conditions.* After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-4. The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 1.
	3	Image Coverage–2	Specifies standard average coverage condition 2. [50 ~ 800 / **200** / 10 units/step] *OPC lubrication is executed under the following conditions.* After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-5. The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 2.
	4	Sheets–1	[10 ~ 80 / **20** / 1 sheet/step]
	5	Sheets–2	[10 ~ 80 / **40** / 1 sheet/step]

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
950	Start Registration Adjustment		
	1	Start Registration Adjustment 1–K	Color registration adjustment: Adjusts the start timing of imaging for each color. [–3 ~ 3 / **0** / 1 line/step] **DFU** 2 lines = 0.047566 ms (about 85 μm) +: Delays the start timing. –: Advances the start timing. The start timing is adjusted only in plain paper mode, and when one of the following conditions is satisfied: *1) Between the two images on the transfer belt (when two images are developed on the OPC at the same time (☛6.2))* *2) B4 SEF or larger (multi-print job)*
	2	Start Registration Adjustment 1–M	[–3 ~ 3 / **–1** / 1 line/step]
	3	Start Registration Adjustment 1–C	[–3 ~ 3 / **0** / 1 line/step]
	4	Start Registration Adjustment 1–Y	[–3 ~ 3 / **0** / 1 line/step]
	5	Start Registration Adjustment 2–K	[–3 ~ 3 / **0** / 1 line/step]
	6	Start Registration Adjustment 2–M	[–3 ~ 3 / **–1** / 1 line/step]
	7	Start Registration Adjustment 2–C	[–3 ~ 3 / **0** / 1 line/step]
	8	Start Registration Adjustment 2–Y	[–3 ~ 3 / **0** / 1 line/step]
951	Clock Phase Control		
	1	LD 1	Adjusts the clock phase of the LD to reduce the density difference between the left and right sides of the printout when the color misalignment correction (SP2–952–1) is enabled. [0 ~ 8 / **0** / 1 /step] *Do this after installing a new laser unit; see Replacement and Adjustment for details.*
	2	LD 2	
952	Color Misalignment Correction		
	1	Color Misalignment Correction	Selects either color misalignment correction or reduction in density difference between the left and right sides of pages. [0 ~ 1 / **1** / 1 /step] 1: on The data for LD1 and LD2 are switched between the left and right sides of each page. This is done because of the difference in the output of each LD. However, in some cases this correction may cause density differences between sides. 0: off Use this setting if there are density differences between sides.

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
⇒ 954	New PCU Settings		
	1	PCU Settings	This mode facilitates servicing in the field with individual settings for new and old PCUs. Enabling/Disabling this SP mode will change the settings of all of the SP modes listed in the table below: 0: New *1: Old* **NOTE:** This SP mode is present with Copier Firmware version 1.31:01 or later.

Affected Service Programs When SP 2-954-001 is Set:

SP No.	Description	SP2-954-01	
		0:New	1:Old
		Setting for New	Setting for Old
2-400-008	Cleaning Bias LL1: OPC lubrication time	**1400**	1400
2-401-008	Cleaning Bias LL2: OPC lubrication time	**1400**	1400
2-402-008	Cleaning Bias NN1: OPC lubrication time	**1400**	1400
2-403-008	Cleaning Bias NN2: OPC lubrication time	**1400**	1400
2-404-008	Cleaning Bias HH: OPC lubrication time	**1400**	1400
2-920-01	ITB Cleaning CL OFF Time	**0**	0
2-921-01	ITB Cleaning CL OFF Mode	**0: New PCU**	1: Old PCU
2-922-01	Dev CL ON after Job End	**0: OFF**	1: ON
2-923-01	Lubricant after Toner End	**1: ON**	1: ON
2-924-01	ITB Cleaning Clutch Off/On - Time	**300**	300
2-924-02	ITB Cleaning Clutch Off/On - Number	**2**	0
2-925-01	ITB Cleaning Execution Variable	**20**	20
2-926-01	Cover Ratio Reference (MC)	**1.7**	1.7
2-926-02	Cover Ratio Reference (FC)	**1.7**	1.7
2-927-01	Disable Time (ITB Cleaning)	**3**	3
2-970-05	ITB Cleaning Clutch Off/On Number in Oil removal mode	**2**	0
3-920-02	Lubrication Cleaning Time – 2C/3C/4C	**100**	100

2	Mode No. (Class 1, 2, and 3)		Function / [Setting]
970	Oil Removal Mode		
	1	Oil Removal	Enables/disables the settings of SP2–970–2 through 4. [0 ~ 1 / **1** / 1 /step] 0: Disables 1: Enables Oil on duplex copies gets on the transfer belt, and this can cause uneven image density. To remove this oil, printing stops, the PCU turns, and the cleaning unit removes the oil.
	2	Print Interruption	Enables/disables interruption of the oil removal process. [0 ~ 1 / **0** / 1 /step] 0: Disables 1: Enables *If interruption is enabled, the user does not need to wait until the oil removal process ends, but the output image may be poor.*
	3	Number of Continuation	Specifies how many times the oil removal process is repeated. [1 ~ 20 / **5** / 1 /step] *The more times the oil removal is repeated, the better the output images are; but the longer it takes.*
	4	Number of Duplex	Specifies how often the oil removal process is done. The unit is the number of duplex prints. The counter counts down once every narrow (A4 SEF or less) duplex sheet, and counts back up 1 for every other type of sheet. [1 ~ 50 / **10** / 1 /step]

SP3-XXX: (Process)

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001	Process Control		
	1	Execute	Does a forced process control, and displays the result as one of the following codes.
	2	Display	Displays the completion code. 0: Normal termination 103: Error (ID sensor inactive → Defective ID sensor, Defective circuit, Defective BCU board) 104: Error (ID sensor unable to receive light → Defective OPC belt, Dirty OPC belt, Defective ID sensor, Defective circuit, Defective BCU board) 105: Error (ID sensor unable to receive reflection from OPC → Same as "104") 110: Error (Cyan: ID sensor unable to detect correct image) 111: Error (Magenta: ID sensor unable to detect correct image) 112: Error (Yellow: ID sensor unable to detect correct image) 113: Error (Cyan: ID sensor unable to detect correct image) 114: Error (Magenta: ID sensor unable to detect correct image) 115: Error (Yellow: ID sensor unable to detect correct image) 116: Error (Black: ID sensor unable to detect correct image) 118: Error (Black image not detected) 123: Error (Development bias error; Black ID sensor unable to detect correct image) Solutions for codes 110 to 123: Poor connection to the development unit Dirty development bias terminal Abnormal development bias PCU not installed correctly LD unit defective Abnormal charge corona voltage Defective BICU

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
002	Process Control **DFU**		
	1	LED	[0 ~ 255 / **150** / 1 /step]
	2	Bk Out	[0 ~ 0xFFFF / **0** / 1 /step]
	3	Bk Led Off Out	[0 ~ 0xFFFF / **0** / 1 /step]
	4	Color Out	[0 ~ 0xFFFF / **0** / 1 /step]
	5	Color Led Off Out	[0 ~ 0xFFFF / **0** / 1 /step]
	6	ID Sensor Target	[0 ~ 5000 / **1500** / 1 /step]
	7	ID sensor Out Adjustment	[800 ~ 12000 / **1000** / 1 /step]
	10	Bk Vg Control	[0 ~ 1000 / **250** / 1 /step]
	11	Color Vg Control	[0 ~ 1000 / **400** / 1 /step]
	12	Color Vd Control	[0 ~ 1000 / **150** / 1 /step]
	13	gamma M	[–30000 ~ 30000 / **2000** / 1 /step]
	14	gamma C	[–30000 ~ 30000 / **2000** / 1 /step]
002	15	gamma Y	[–30000 ~ 30000 / **2000** / 1 /step]
	16	Gamma K	[–30000 ~ 30000 / **5000** / 1 /step]
	17	Invariable-M	[–3000 ~ 3000 / **150** / 1 /step]
	18	Invariable-C	[–3000 ~ 3000 / **150** / 1 /step]
	19	Invariable-Y	[–3000 ~ 3000 / **150** / 1 /step]
	20	Invariable-K	[–3000 ~ 3000 / **0** / 1 /step]
	21	OPC Target M	[400 ~ 2000 / **600** / 1 /step]
	22	OPC Target C	[400 ~ 2000 / **620** / 1 /step]
	23	OPC Target Y	[400 ~ 2000 / **570** / 1 /step]
	24	OPC Target K	[400 ~ 2000 / **850** / 1 /step]
	25	Charge V Offset M	[100 ~ 600 / **280** / 1 /step]
	26	Charge V Offset C	[100 ~ 600 / **280** / 1 /step]
	27	Charge V Offset Y	[100 ~ 600 / **280** / 1 /step]
	28	Charge V Offset K	[100 ~ 600 / **280** / 1 /step]
	29	ID sensor Target 1M	[0 ~ 5000 / **1400** / 1 /step]
	30	ID sensor Target 1 Color	[0 ~ 5000 / **1400** / 1 /step]
	31	ID sensor Target 1Y	[0 ~ 5000 / **1400** / 1 /step]
	32	ID sensor Target 2M	[0 ~ 1000 / **200** / 1 /step]
	33	ID sensor Target 2 Colors	[0 ~ 1000 / **200** / 1 /step]
	34	ID sensor Target 2Y	[0 ~ 1000 / **200** / 1 /step]
	35	ID sensor Target 2K	[0 ~ 2000 / **1200** / 1 /step]
	36	Color Development Bias	[50 ~ 300 / **100** / 1 /step]
	37	Bk Development Bias	[50 ~ 300 / **50** / 1 /step]
	38	Bias Charge	[0 ~ 1000 / **20** / 1 /step]
	52	Absolute Temperature	[0 ~ 200 / **150** / 1 /step]
	53	Previous Temperature	[0 ~ 100 / **15** / 1 /step]
	54	Timer Counter	[0 ~ 5000 / **1440** / 1 /step]
003*	Lubricant Interval		
	1	Lubricant Interval	Sets the process control interval. [0 ~ 1000 / **200** / 10 sheet/step] 0: Disables automatic process control

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
004*	Environment Change		
	1	Temperature	Sets the temperature/humidity change that triggers process control (process control is done if temperature or humidity has changed by this amount since the previous process control). [0 ~ 100 / **15** / 1°C/step]
	2	Humidity	[0 ~ 100 / **150** / 1 g/m^3/step]
005*	Process control Pre-Rotate		
	1	Process control Pre-Rotate	PCU and development unit idling is done before process control. This value determines the amount of idling rotation. [1 ~ 5 / **1** / 1 turn/step] 1 turn: A3 length
006*	Density Adjustment		
	1	M/A Correction	Select the toner density compensation level for process control. If prints are not dark enough when making multi-print jobs, increasing this value ensures that prints will be darker after the next process control. The default (0) is for no correction. SP3-006-1: Use this one if the density of solid areas is not satisfactory. SP3-006-2: Use this one if the density of highlight areas is not satisfactory. [0 ~ 3 / **0** / 1/step] 0: None 1: Weak 2: Medium 3: Strong The higher the value, the darker the prints will be.
	2	Highlight Correction	
125	Process control/LD: Pre-ACC self-check setting		
	1	ACC self-check setting	Enables/disables process control execution before ACC. [0 ~ 1 / **1** / 1/step] 0: Disabled 1: Enabled
901	LD-POWER		
	1	LD 1	Specifies the LD power. **DFU** [0 ~ 65535 / **716** / 1 /step]
	2	LD 2	

Service Tables

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
910*	Doctor Interval		
	1	Color	If the number of pages in a job exceeds this number, the doctor roller rotates in reverse at the end of the job. [0 ~ 50 / **50** / 1 sheet/step] The value indicates how many sheets are output before the doctor roller is reversed. (Sheet counts are converted into equivalent A4-LEF sheet counts.) The roller is reversed for 16 seconds Reversing the roller removes toner blockages. The sheet count is reset after reverse rotation. The machine waits until the end of the job before reversing the doctor roller. Decrease the value when vertical white lines appear on prints.
	2	Black	[0 ~ 65535 / **50** / 1 sheet/step]
	3	Job end	If at the end of a job, the roller has not been reversed since more than this number of pages, the roller is reversed at the end of the job. [0 ~ 65535 / **20** / 1 sheet/step]
920*	Lubrication Cleaning Time		
	1	Lubrication Cleaning Time	Sets the OPC belt lubrication period. **DFU** [0 ~ 100 / **50** / 1%/step] When 100 is specified, the OPC belt cleaning clutch is always on whenever the OPC is turning, so the OPC gets lubricated. When 50 is specified, the clutch is only on half the time that the motor is on. **Rev. 06/2003** **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.
921*	Lubricant time		
	1	Job end	Specifies the duration of lubrication at the end of jobs. [0 ~ 30 / **20** / 1 /step] **DFU**
	2	Doctor roller reverse operation	Specifies the duration of lubrication during reverse doctor roller rotation. [0 ~ 30 / **20** / 1 /step] **DFU**
922	Lubricant Brush Off		
	1	1 Color	Allows the image transfer belt cleaning clutch off timing to be adjusted. The setting determines the number of seconds after image transfer belt cleaning roller charging that the clutch is turned off. With previous versions, the clutch is always running while the development roller motor rotates. [0 ~ 11 / **6** / 1s /step]
	2	2 Color/3 Color/4 Color **NOTE**: Requires BICU Firmware version 1.253:01 and controller version 2.01.5.	

3	Mode No. (Class 1, 2, and 3)		Function / [Setting]
940	Job End Interruption		
	1	Job End Interruption	The OPC belt is lubricated after the end of every job (SP2–941–1). This SP determines whether the lubrication is interrupted when a job arrives at the printer. [0 ~ 1 / **0** / 1 /step] 0: Interrupted 1: Not interrupted
970	Image Area Rate		
	1	M	Specifies the minimum image area (expressed as a percentage of an A4 page) required to maintain optimum development unit condition (☛ Toner Revitalization: SP3–971). [0 ~ 10.0 / **2.0** / 0.1 %/step] *After 20 sheets over a number of small jobs (or after 50 sheets in one job), if the developed area is less than the value of this SP mode, toner is transferred to the image transfer belt and cleaned off. This is performed during the doctor roller reverse rotation.*
	2	C	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	3	Y	[0 ~ 10.0 / **2.0** / 0.1 %/step]
	4	Bk	[0 ~ 10.0 / **3.0** / 0.1 %/step]
971	Toner Revitalization		
	1	Toner Revitalization	Enables/disables the toner revitalization. [0 ~ 1 / **0**/ 1 /step] 0: Disables 1: Enables *Continuous printing with a relatively low coverage ratio (CMYK less than 5% each) tends to reduce the charge potential of the toner, because the toner remains in the hopper for a long time. This can lead to spots on the copy. Toner revitalization removes this defective toner periodically.*
980	1C Idling		
	1	1C Idling	Enables/disables 1-color idling after paper transfer. [0 ~ 1 / **0** / 1 /step] 0: Disables 1: Enables *Set this to 1 if the user complains about diagonal lines in solid areas of prints that only use one toner color (M, C, or Y).*

SP4-XXX: (Scanner)

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
008*	Scanner Sub Scan Magnification		
	1	Scanner Sub Scan Magnification	Adjusts the magnification in the sub scan direction for scanning. [0.0 ~ 1.0 / **0.0** / 0.1 %/step] *Use the key to toggle between + and – before entering the value. The specification is ± 1%. See "Replacement and Adjustment – Copy Adjustment" for details.*
010	Scanner Leading Edge Registration		
	1	Scanner Leading Edge Registration	Adjusts the leading edge registration for scanning in platen mode. [–3.0 ~ 3.0 / **0.0** / 0.1 mm/step] *(–): The image moves in the direction of the leading edge.* *Use the key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment – Copy Adjustment" for details.*
011*	Scanner Side-to-side Registration		
	1	Scanner Side-to-side Registration	Adjusts the side-to-side registration for scanning in platen mode. [–6.0 ~ +6.0 / **0.0** / 0.1 mm step] *(–): The image disappears at the left side.* *(+): The image appears.* *Use the key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See "Replacement and Adjustment – Copy Adjustment" for details.*
012*	Scanner Blank Margin		
	1	Leading Edge	Adjusts the erase margin at each side for scanning. [0.0 ~ 3.0 / **0.0** / 0.1 mm/step] *Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.*
	2	Trailing Edge	
	3	Left	
	4	Right	
013	Scanner Free Run		
	1	Lamp: OFF	Performs a scanner free run with the exposure lamp on or off. *Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.*
	2	Lamp: ON	
017	Scan		
	1	Shading ON	Performs a scanner free run with shading on or off. Only one scan is made. *Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.*
	2	Shading OFF	
205	Black ADS Level		
	1	Black ADS Level	Adjusts the erased background level for black-&-white ADS. [0 ~ 128 / **64** / 1 /step]
301	APS Data Confirmation		
	1	APS Data Confirmation	Displays the status of the APS sensors and platen/DF cover sensor.

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]	
303	APS Minimum Size Setting			
	1		Selects whether the copier determines that the original is A5 size when the APS sensor cannot detect the size. [0 ~ 1 / **0** / 1 /step] *If "A5 lengthwise" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise. If "Not detected" is selected, "Cannot detect original size" will be displayed.*	
417	IPU Test Pattern			
	1	Prints test patterns from the IPU video data outputs. 0: Scanning Image 1: Checker 2: Oblique Checker 3: Horizontal Gray Scale 4: Vertical Gray Scale 5: RGB YMCK Scale 6: UCR Gray Scale 7: Color Patch 16 Steps 1 8: Color Patch 16 Steps 2	9: Color Patch 64 Steps 10: Checker (YMCK) 11: Patch (YMCK) 12: Banding 1 (Gray) 13: Banding 2 (Gray) 14: Horizontal Gray Scale 2 15: Scanning Image + Checker 16: Scanning Image + Gray Scale *Change to the copy mode display by pressing the Interrupt key, then print the test pattern.*
440	Saturation Adjustment			
	1		Adjusts the colour chroma for the scanner. [0 ~ 5 / **3** / 1 /step] **DFU**	
540	Printer Vector			
	1	R:K	Adjust the vector correction of the filter in the CCD on the SBU unit. [–128 ~ 127 / **0** / 1 /step] *When replacing the SBU, input the data from the data sheet that is included with the spare SBU unit.*	
	2	R:C		
	3	R:M		
	4	R:Y		
	5	Y:K		
	6	Y:C		
	7	Y:M		
	8	Y:Y		
	9	G:K		
	10	G:C		
	11	G:M		
	12	G:Y		
	13	C:K		
	14	C:C		
	15	C:M		
	16	C:Y		
	17	B:K		
	18	B:C		

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
540	19	B:M	Adjust the vector correction of the filter in the CCD on the SBU unit. [–128 ~ 127 / **0** / 1 /step] *When replacing the SBU, input the data from the data sheet that is included with the spare SBU unit.*
	20	B:Y	
	21	M:K	
	22	M:C	
	23	M:M	
	24	M:Y	
628	Gain Adjustment: R		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
629	Gain Adjustment: G		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
630	Gain Adjustment: B		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
685	Reference Adjustment: R		
	1	Reference Adjustment: R	Adjusts the ADC reference voltage. Details are in Replacement and Adjustment. [0 ~ 255 / **136** / 1 /step]
686	Reference Adjustment: G		
	1	Reference Adjustment: G	Adjusts the ADC reference voltage. [0 ~ 255 / **136** / 1 /step]
687	Reference Adjustment: B		
	1	Reference Adjustment: B	Adjusts the ADC reference voltage. [0 ~ 255 / **136** / 1 /step]
688	DF: Density Adjustment		
	1	DF: Density Adjustment	Adjusts the brightness for scanning using the ARDF. [83 ~ 100 / **86** / 1 %/step] *The density when scanning from the DF exposure glass tends to be higher than the density from the main exposure glass. SP4-688 adjusts the density on the DF exposure glass.*
800	DF: Density Correction		
	1	DF: Density Correction: R	Adjusts the red density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
	2	DF: Density Correction: G	Adjusts the green density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
	3	DF: Density Correction: B	Adjusts the blue density when scanning with the ARDF [–20 ~ 20 / **0** / 1 %/step]
902	ACC Data Display		
	1	R DATA 1	Displays ACC data. [0 ~ 255 / **0** / 1 /step]
	2	G DATA 1	
	3	B DATA 1	
	4	R DATA 2	
	5	G DATA 2	
	6	B DATA 2	

4	Mode No. (Class 1, 2, and 3)		Function / [Setting]
903	Vertical Line Correction		
	1	Vertical Line Correction	Adjusts the strength of the vertical line's correction with sheet through DF. [0 ~ 4 / **0** / 1 /step] 0: No adjustment 1: Low level adjustment 2: Middle-low level adjustment 3: Middle-high level adjustment 4: High level adjustment
904	BICU Board Test		
	1	test 1: register access test	Tests the BICU board *The following are completion codes:* *00: Normal end* *11: JTONE (DFID) error* *12: CPR (DFID) error* *13: IDU (DFID) error* *14: Separation ASIC error* *15: MaCKY error*
	2	test 2: image path test	*The following are completion codes:* *00: Normal end* *21: JTONE (DFID) error, Field memory error* *22: CPR (DFID) error, MaCKY, DFID, Field memory error* *23: JTONE (DFID), Separation error* *24: Separation error, CPR error, MaCKY error, DFID error, Field memory error*
905*	Dither selection		
	1	Dither selection	[0 ~ 255 / **1** / 1 /step] **DFU**
906	Binary Threshold		
	1	Binary Threshold	Specifies the black/white threshold for binary image processing. [0 ~ 255 / **128** / 1 /step] *Lower values increase the proportion of black in the image.*
907	VPU Test Pattern Selection		
	1	select any test pattern: R	[0 ~ 4 / **1** / 1 /step] 0: CCD 1: Black 2: White 3: 15-grade gray scale 4: Vertical line
	2	select any test pattern: G	
	3	select any test pattern: B	
918	Manual Gamma Adjustment		
			Please refer to section 3.13.2
932*	Picture Element Correction		
	1	R: Left	Corrects the left or right side alignment of the red or blue filter on the CCD. [0 ~ 9 / **5** / 1 /step]
	2	R: Right	
	3	B: Left	
	4	B: Right	

Service Tables

SP5-XXX: (Mode)

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]	
009	Set Display Language			
	1	Set Display Language	Selects the language on the display. [1 ~ 16 / **1** / 1 /step] 1: Japanese 2: English (British) 3: English (American) 4: French 5: German 6: Italian 7: Spanish 8: Dutch	9: Norwegian 10: Danish 11: Swedish 12: Polish 13: Portuguese 14: Hungarian 15: Czech 16: Finnish *Turn off and on the main power switch to validate SP5-009.*
024	mm/inch Display Selection			
	1	mm/inch Display Selection	Selects a unit system. North America: [0 ~ 1 / **1** / 1 /step] Europe: [0 ~ 1 / **0** / 0 /step] 0: Millimeters 1: Inches	
045*	Charge Counter Display			
	1	Charge Counter Display	Changes the counter method. The setting can only be changed once. [0 ~ 1 / **0** / 1 /step] 0: Developments 1: Prints	
046*	ROM Update Display			
	1	ROM Update	Enables or disables the ROM Update utility. When enabled, this utility will be displayed in the user program mode. **DFU** [0 or 1 / **1** / –] 0: Enabled 1: Disabled	
104*	A3/11x17 count			
	1	A3/11x17 count	The counters count double for A3/11" x 17". [0 ~ 1 / **0** / 1/step] 0: Normal count 1: Double count	
112	Custom size Setting			
	1	Custom size Setting	Allows/does not allow custom paper sizes. [0 ~ 1 / **1** / 1 /step] 0: Not allowed 1: Allowed	

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
113	Optional Counter Type		
	001	Optional Counter Type	Determines the type of accounting device. [0 ~ 9 / **0** / 1 /step] 0: None 1: Key card (RK2, RK3, RK4) 2: Key card (subtracting) 3: Prepaid card 4: Coin lock 5: MF key card 6: (not used) 7: (not used) 8: Key counter (excluding vendors) 9: Barcode printer
118	Disable copying		
			[0 ~ 1 / **1** / 1 /step] 0: Copying enabled *1: Copying disabled*
121	Counter Up Timing		
	001	Counter Up Timing	Selects the accounting timing. [0 ~ 1 / **0** / 1 /step] 0: Paper feed 1: Paper exit SP5-121 affects only the timing for sending signals to the accounting device. The counters for other units or devices are not affected.
126	F Original Size		
	001	F Original Size	Specifies the type of F-size paper. [0 ~ 2 / **0** / 1 /step] • *0: 8 1/2" x 13" SEF* • *1: 8 1/4" x 13" SEF* • *2: 8" x 13" SEF*
127	APS Mode		
	001	APS Mode	Enables or disables the APS (Auto Paper Selection) mode. [0 ~ 1 / **0** / 1 /step] • *0: Enables* • *1: Disables*
128	Combination (Op. Counter)		
	001	Combination (Op. Counter)	[0 ~ 1 / **0** / 1 /step] **DFU** 0: 1:

Service Tables

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
212	Page Numbering		
	003	Duplex Printout Right/Left Position	Adjusts the positions of page numbers. [–99 ~ 99 / **0** / 1 mm/step]
	004	Duplex Printout High/Low Position	
302	Setting Time		
	001	Setting Time	Sets the clock.
	002	Time zone	Sets the time zone. North America: [–1440 ~ 1440 / **–300** / 1 minute/step] Europe: [–1440 ~ 1440 / **60** / 1 minute/step] *Values indicate the time difference from the Greenwich Mean Time (GMT). "–300" indicates the eastern standard time of Canada and the United States of America. "60" indicates the standard time of the French Republic.*
305	Auto Off Set		
	001	ON/OFF	Determines the auto-off timer adjustment range that is available for SP5-305-2. [0 ~ 1 / **0** / 1/step] 0: 10 minutes to 240 minutes 1: 0 minutes to 240 minutes
	002	Set Timer	Specifies the auto-off timer value. [0 ~ 14400 / **3600** / 1 second/step] *When SP5-305-1 is set to 1, SP5-305-2 has a range of 0 minutes to 240 minutes. 0 means AOF is disabled (the machine never switches itself off).*
401*	Access Control		
	001	Copy: User Code (UC)	Activates/inactivates copy mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use copy mode. To select 1, one or more user codes must be registered.
	002	Copy: Key Counter (KC)	Activates/inactivates the key counter for copy mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs copy mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	003	Copy: Coin Lock (CL)	Activates/inactivates the accounting device for copy mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs copy mode operations.
	011	DS: User Code (UC)	Activates/inactivates document server access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use document server mode. To select 1, one or more user codes must be registered.
	012	DS: Key Counter (KC)	Activates/inactivates the key counter for document server mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs document server operations.
	013	DS: Coin Lock (CL)	Activates/inactivates the accounting device for document server mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs document server operations.
	021	Fax: User Code (UC)	Activates/inactivates fax mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use fax mode. To select 1, one or more user codes must be registered..

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	022	Fax: Key Counter (KC)	Activates/inactivates the key counter for fax mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs fax mode operations.
	023	Fax: Coin Lock (CL)	Activates/inactivates the accounting device for fax mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the fax mode operations.
	031	Scanner: User Code (UC)	Activates/inactivates scanner mode access control using user codes [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use scanner mode. To select 1, one or more user codes must be registered.
	032	Scanner: Key Counter (KC)	Activates/inactivates the key counter for scanner mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs scanner mode operations.
	033	Scanner: Coin Lock (CL)	Activates/inactivates the accounting device for scanner mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the scanner mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	041	Printer: User Code (UC)	Activates/inactivates printer mode access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to use printer mode. To select 1, one or more user codes must be registered. If SP5-401-44 is activated, the user codes can be automatically registered.
	042	Printer: Key Counter (KC)	Activates/inactivates the key counter for printer mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs printer mode operations.
	043	Printer: Coin Lock (CL)	Activates/inactivates the accounting device for printer mode. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs the printer mode operations.
	044	Printer: UC Auto	Activates the auto user code registration function (prints are counted and logged for each user code and the counts can be viewed with SmartNetMonitor). [0 ~ 1 / **1** / 1/step]0: Inactivated 1: Activated
	051	Copy: UC Mono color	Activates/inactivates mono color copying access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make mono color copies. To select 1, one or more user codes must be registered.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	052	Copy: KC Mono color	Activates/inactivates the key counter for mono color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs mono color copy operations.
	053	Copy: LC Mono color	Activates/inactivates the accounting device for mono color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs mono color copy mode operations.
	054	Copy: UC Twin color	Activates/inactivates two-color copying access control using user codes [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make two-color copies. To select 1, one or more user codes must be registered.
	055	Copy: KC Twin Color	Activates/inactivates the key counter for two-color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs two-color copy operations..
	056	Copy: CL Twin Color	Activates/inactivates the accounting device for two-color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs two-color copy mode operations.

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
401*	057	Copy: UC Full Color	Activates/inactivates full color copying access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make full color copies. To select 1, one or more user codes must be registered.
	058	Copy: KC Full Color	Activates/inactivates the key counter for full color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs full color copy operations.
	059	Copy: CL Full Color	Activates/inactivates the accounting device for full color copying. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs full color copy mode operations.
	061	Printer: UC Color	Activates/inactivates full color printing access control using user codes. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the users must input their user codes to make full color prints. To select 1, one or more user codes must be registered.
	062	Printer: KC Color	Activates/inactivates the key counter for full color printing. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the key counter logs full color printing operations.
	063	Printer: CL Color	Activates/inactivates the accounting device for full color printing. [0 ~ 1 / **0** / 1 /step] 0: Inactivates 1: Activates When 1 (activates) is selected, the accounting device logs full color print mode operations

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
404	User Code Counter Clear		
	001	User Code Counter Clear	Clears the user code counter.
409	Access code		
	001	Password	Registers/changes the password for the key operator. [0 ~ 99999999 / **0** / 1 /step] *"0" indicates no code has been registered. SP7-810 can be used to clear the key operator password.*
	002	Access Area	Decides which programs require key operator codes. [0 ~ 2 / **0** / 1 /step] 0: None 1: Some key operator user tool settings 2: All user tool programs
501	PM Alarm		
	001	PM Alarm Level	Specifies the PM alarm level. [0 ~ 255 / **0** / 1 /step] 0: Disables the PM alarm 1 ~ 255: Specifies the PM alarm level. *The PM alarm occurs when L x 1000 >= C, where L is the specified level and C is the current PM counter value.*
	002	Original Count Alarm	
504	Jam alarm **Japan Only**		
	1	Jam Alarm	Selects the jam alarm level. [0 ~ 3 / **3** / 1 /step] 0: Z (none) 1: L (6K x 1/4) 2: M (6K x 1/2) 3: H (6K)
	2	Error Alarm	Enables/disables the control call when an unremoved jam occurs. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled An "unremoved jam" is a paper jam that remains unremoved for 15 minutes. If 1 is selected, the machine beeps if an unremoved jam has occurred.
505	Error Alarm **Japan Only**		
	1	Error Alarm	[0 ~ 255 / **40** / 1 /step]

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
507	Supply Alarm **Japan Only**		
	1	Paper Supply Alarm	Turns the supply alarm on or off. [0 ~ 1 / **0** / 1 /step] 0: Off • 1: On
	2	Staple Supply Alarm	
	3	Toner Supply Alarm	
	128	Interval: Others	The machine issues the control call when the number of paper sheets reaches the specified value. [00250 ~ 10000 / **1000** / 1 sheet/step]
	132	Interval: A3	
	133	Interval: A4	
	134	Interval: A5	
	141	Interval: B4	
	142	Interval: B5	
	160	Interval: DLT	
	164	Interval: LG	
	166	Interval: LT	
	172	Interval: HLT	
508	CC call **Japan Only**		
	001	CC201 ON/OFF (Remain of Jam)	Enables/disables alarms for unremoved jams. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled
	002	CC101 ON/OFF (Continuous jam Occurrence)	Enables/disables alarms for consecutive jams. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled
	003	CC202 ON/OFF (Continuous Door Open)	Enables/disables alarms when a cover remains open continuously. [0 ~ 1 / **0** / 1 /step] 0: Disabled 1: Enabled

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
508	004	CC Call Screening ON/OFF (Low Call Mode)	Selects the alarm mode. [0 ~ 1 / **0** / 1 /step] 0: Normal Mode (CC Auto Call) 1: Reduce Mode (CC Manual Call) When selecting 1 (reduce mode), SP5-508-011 through -023 specify parameters (referred to as "P" in the following descriptions). Alarms occur under the following conditions: Continuous jam: When paper jams occur P times consecutively, where P can be between 2 and 10. The default for P is 5 (☛ SP5-508-012). Continuous door open: When a door is left open for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-013). Unremoved jam: When a paper jam is left unremoved for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-011).
	011	CC201 Interval (Jam Detection: Time Length)	Specifies the unremoved jam timer (☛ SP5-508-004). [3 ~ 30 / **10** / 1 minute/step]
	012	CC101 Frequency (Jam Detection: Time Length)	Specifies the number of consecutive jams (☛ SP5-508-004). [2 ~ 10 / **5** / 1 time/step]
	013	CC202 Interval (Door Open: Time Length)	Specifies the continuous door open timer (☛ SP5-508-004). [3 ~ 30 / **10** / 1 minute/step]
	021	CC201 Beeper Ope (Jam Operation: Time Length)	Selects how the machine handles the unremoved jam alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Beeper If an unremoved jam occurs, a phone call is automatically made when 0 (auto call) is selected. To enable SP5-508-21 through -23, SP5-508-4 must be set to 1.
	022	CC101 Manual Call ON/OFF (Jam Operation: Time Length)	Selects how the machine handles the consecutive jam alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Manual Call
	023	CC202 Manual Call ON/OFF (Door Operation: Time Length)	Selects how the machine handles the continuous door open alarm. [0 ~ 1 / **1** / 1 /step] 0: Auto call 1: Manual Call

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
610	ACC Factory Setting		
	004	Recall	Recalls the ACC factory settings.
	005	Overwrite	Overwrites the ACC factory settings with the current settings.
	006	Previous Setting	Recalls the previous ACC settings.
611	2nd. Single Color Adj.		
	001	B–C	[0 ~ 100 / **90** / 1 %/step]
	002	B–M	[0 ~ 100 / **60** / 1 %/step]
	003	G–C	[0 ~ 100 / **85** / 1 %/step]
	004	G–Y	[0 ~ 100 / **80** / 1 %/step]
	005	R–M	[0 ~ 100 / **95** / 1 %/step]
	006	R–Y	[0 ~ 100 / **65** / 1 %/step]
801	Memory Clear – Refer to section 5.1.9 for how to use this SP		
	001	All modules	Clears the settings from the NVRAM and initializes the settings. [0 ~ 0 / **0** / 0/step]
	002	Engine Clear	Clears the engine settings. [0 ~ 1 / **0** / 1/step]
	003	SCS/SRM	Clears the system settings. [0 ~ 0 / **0** / 0/step]
	004	IMH Memory Clear	Clears IMH data. **DFU** [0 ~ 0 / **0** / 0/step]
	005	MCS	Clears MCS data. **DFU** [0 ~ 1 / **0** / 0/step] 0: Does not execute 1: Executes
	006	Copier application	Clears the copy settings. [0 ~ 1 / 0 / 1/step]
	007	Fax application	Clears the fax settings. [0 ~ 1 / 0 / 1/step]
	008	Printer application	Clears the user tool settings. [0 ~ 0 / **0** / 0/step]
	009	Scanner application	Clears the scanner settings. *This SP must be performed after installing the printer/scanner option or updating the scanner software.* [0 ~ 1 / 0 / 1/step]
	010	Network application	Clears the net file settings. [0 ~ 1 / 0 / 1/step]
	011	NCS	Clears the network settings. [0 ~ 0 / **0** / 0/step]

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
801	012	IPU	Clears the IPU settings. [0 ~ 1 / 0 / 1/step]
	014	DCS Memory Clear	Clears the DCS settings. [0 ~ 1 / 0 / 1/step]
	015	UCS Memory Clear	Clears the UCS settings. [0 ~ 1 / 0 / 1/step]
802	Free Run		
	1	A4: BANK 2: Bk	Makes a free run test. All mode: Goes through tests 1 to 4. [0 ~ 1 / 0 / 1/step] • *0: No free run* *1: Start a free run test*
	2	A4: TRAY 1: Bk	
	3	A4: By-pass: Bk	
	4	A4: BANK 2: Full Color	
	5	All Mode	
803	Input Check (See section 5.1.4, “Input Check”)		
804	Output Check (See section 5.1.5, “Output Check”.)		
810	SC Reset		
	001	SC Reset	Resets a fusing-related SC. [0 ~ 1 / **0** / 1/step] *Resets a type A service call condition.* ***NOTE:*** *Turn the main switch off and on after using this SP.*
811	Serial Number Display		
	002	Serial Number Display	Displays the machine serial number. [0 ~ 1 / **0** / 1/step]
812*	Service Telephone No. Setting		
	001	Telephone	5-812-1: Service representative telephone number 5-812-2: Service representative fax number 5-812-3: Number for ordering consumables 5-812-4: Telephone number of the sales representative [0 ~ 0 / **0** / 0/step] Both numbers and alphabetic characters can be input.
	002	Facsimile	
	003	Supply	
	004	Operation	
813*	High Voltage SC Sensor		
	001	High Voltage SC Sensor	Activates/deactivates detection of SC conditions for the high voltage power supplies. [0 ~ 1 / **0** / 1/step] 0: Activated 1: Deactivated *The following SCs are affected:* SC300, 301, 302, 350, 351, 400, 410, 411, 412, 413, 420, 421, 430
816	CSS Function **DFU**		
	1	Function Setting	[0 ~ 1 / **0** / 1 /step] 0: Off 1: On
	2	CE Call	
821	CSS-PI Device Code **DFU**		
	1	CSS-PI device code	Selects the PI device code. [0 ~ 4 / **0** / 1 /step] *To validate the setting, turn off and on the main power switch.*

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
822	Document All Clear		
	1	Document All Clear	Clears the management information on stored fax files.
824	NVRAM Data Upload		
	1	NVRAM Data Upload	Use this to copy NVRAM data from the machine to a flash card.
825	NVRAM Data Download		
	1	NVRAM Data Download	Imports data from a flash card to the NVRAM. *When data has been normally imported into the NVRAM, a message appears on the operation panel. After reading the message, turn the main power switch off and on. The data of SP7-007 are not imported through SP5-825.*
828	Network Setting		
	74	Delete Password	Deletes the password.
	75	DNS Server From DHCP	[0 ~ 1 / **0** / 1 /step]
	76	DNS Server 1	Server address
	77	DNS Server 2	Server address
	78	DNS Server 3	Server address
	79	Domain Name (Ethernet)	Domain name
	80	Host Name (Ethernet)	Host name
832	HDD		
	1	HDD Formatting (ALL)	Initializes the hard disk. [0 ~ 0 / **0** / 0 /step] Use this SP mode only for hard disk error recovery.
	2	HDD Formatting (IMH)	
	3	HDD Formatting (Thumbnail)	
	4	HDD Formatting (Job Log)	
	5	HDD Formatting (Printer Fonts)	
	6	HDD Formatting (User Info 1)	
	7	HDD Formatting (User Info 2)	
	8	HDD Formatting (Scanner Mail)	
	9	HDD Formatting (Data for a Design)	
	11	HDD Formatting (Ridoc interface)	

5	Mode No. (Class 1, 2, and 3)		Function / [Setting]
833*	Job Log Transfer		
	7	Job Log Transfer	Saves the results of jobs in the job log. [0 ~ 1 / **0** / 1 /step] If this mode is enabled, the results of jobs are written on the HDD. 0: Disabled 1: Enabled
835	File Transfer		
	1	Capture server IP address	Displays/specifies the capture server IP address. [00000000000h ~ FFFFFFFFFF1 / **0** / 1 /step]
	10	Archive: Copier	Validates/invalidates auto-store functions. [0 ~ 1 / **0** / 1 /step] 0: Invalidates 1: Validates
	11	Archive: Fax Send	
	12	Archive: Fax: Receive	
	13	Archive: Printer	
	14	Archive: Scanner	
	20	Server: Copier	Transfers or does not transfer data to servers. [0 ~ 1 / **0** / 1 /step] 0: Not transferred 1: Transferred
	21	Server: Fax Send	
	22	Server Transfer: Fax: Receive	
	23	Server: Printer	
	24	Server: Scanner	
	30	List File: Copier	Selects lists or files. [0 ~ 1 / **0** / 1 /step] 0: Lists 1: Files
	31	List File: Fax: Send	
	32	List File: Fax: Receive	
	33	List File: Printer	
	34	List File: Scanner	
836	Capture Setting		
	001	Capture Function	With this function disabled, the settings related to the capture feature cannot be initialized, displayed, or selected. [0~1/0/1] 0: Disable 1: Enable
	002	Panel Setting	Determines whether each capture related setting can be selected or updated from the initial system screen. [0~1/0/1] 0: Disable 1: Enable The setting for SP5-836- 001 has priority.
	051	Capture Setting: Cancel Document	Deletes the file(s) that could not send to a PC or waiting for sending.

5	Number/Name		Function/[Setting]
836	071	Capture Setting: Resolution Conversion for Color	Determines the resolution conversion ratio when a Color image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	072	Capture Setting: Resolution Conversion for Copy Text	Determines the resolution conversion ratio when a Copy Text image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	073	Capture Setting: Resolution Conversion for Copy (Others)	Determines the resolution conversion ratio when a Copy image document other than Text mode is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	074	Capture Setting: Resolution Conversion for Color Print	Determines the resolution conversion ratio when a color print image document is sent to the Document Server via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	075	Capture Setting: Resolution Conversion for Binary Print	Determines the resolution conversion ratio when a binary print image document is sent to the Document Server via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	076	Capture Setting: Resolution Conversion for Dither Print (Grayscale processing mode)	Determines the resolution conversion ratio when the Dither print image document is sent to the Document Server via the File Format Converter. [1~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting]
836	081	Capture Setting: Format for Color Copy	Determines the image format for Color Copy images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	082	Capture Setting: Format for Copy Text	Determines the image format for Copy Text images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	083	Capture Setting: Format for Copy (Others)	Determines the image format for Copy (other than text) images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	084	Capture Setting: Format for Color Print	Determines the image format for Color Print images sent to the Document Server via the File Format Converter. 0: JFIF/JPEG
	085	Capture Setting: Format for Binary Print	Determines the image format for Binary Print images sent to the Document Server via the File Format Converter. [0~3/1/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	086	Capture Setting: Format for Dither Print (1200dpi)	Determines the image format for Dither Print images sent to the Document Server via the File Format Converter. [0~3/2/1] 0: JFIF/JPEG 1: TIFF/MMR 2: TIFF/MH 3: TIFF/MR
	091	Capture Setting: Page Quality for JPEG	Determines the quality level of JPEG images sent to the Document Server via the File Format Converter. [5~95/50/1]
839	IEEE1394		
	4	Device Name	Displays the 1394 device name. [Text up to 13 bytes / **NULL** / – /step]
	7	Cycle Master	Validates/invalidates the cycle master function. [0 ~ 1 / **1** / 1 /step] *0: Invalidates* *1: Validates*

5	Number/Name		Function/[Setting
839	8	BCR mode	Select either 'Standard', 'IRM color copy', or 'Always effective'.
	9	IRM 1394a Check	[bit 0 ~ bit 1 / **0** / 1 /step] *bit 0: off* *bit 1: on*
	10	Unique ID	[bit 0 ~ bit 1 / **0** / 1 /step] bit 0: off bit 1: on
	11	Logout	Prevents initiators from logging on or makes initiators log off. [0 ~ 1 / **0** / 1 /step] *0: Prevents the initiators (having already logged on) to log on if they try to log on* *1: Makes initiators (having already logged on) to log off if they try to log on*
	12	Login	Allows/disallows an initiator to exclusively log on. [0 ~ 1 / **0** / 1 /step] 0: Disallows 1: Allows
	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / **8** / 1 /step]
840	IEEE 802.11b		
	6	Channel MAX	Specifies the maximum number of IEEE 802.11b channels. North America: [1 ~ 14 / **11** / 1 /step] Europe: [1 ~ 14 / **13** / 1 /step]
	7	Channel MIN	Specifies the minimum number of IEEE 802.11b channels. [1 ~ 14 / **1** / 1 /step]
	11	WEP Key Select	Selects the WEP key. [00, 01, 10, 11 / **00** / – /step] 00: 1st key 01: 2nd key 10: 3rd key 11: 4th key
841	Toner Name Setting		
	1	Black	Specifies supply names. These appear on the screen when the user presses the Inquiry button in the user tools screen.
	2	Cyan	
	3	Yellow	
	4	Magenta	
842	Net File Analysis Mode Setting		
	1	Net File Analysis Mode Setting	**DFU** Default: 00111111 – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
843	Input Check (Controller)		
	1	Input Check (Controller)	[0x00 ~ 0x07 / **–** / 1 /step] **DFU** Default: 00000001 – do not change

5	Number/Name		Function/[Setting
845	Delivery Server		
	1	FTP Port No.	Specifies the FTP port number. [0 ~ 65535 / **3670** / 1 /step]
	2	IP address	Specifies the distribution server IP address. [0 ~ 0xffffffff / **0x00** / – /step]
	3	Retry Timer	Specifies the distribution retry time. [60 ~ 900 / **300** / 1 /step]
	4	Retry Times	Specifies the distribution retry count. [0 ~ 99 / **3** / 1 /step]
	5	IP (Capture Server)	Specifies the distribution server address. [0 ~ 0xffffffff / **0x00** / 1 /step]
	6	Error Display Time	Specifies the display time of the distribution error. [0 ~ 999 / **300** / 1 /step]
	7	Delivery Option	Selects the distribution option. [0 ~ 1 / **0** / 1 /step] 0: Data goes directly to the connected PC 1: Data goes to the Scan Router server
846	UCS		
	1	Machine ID (Delivery Server)	Specifies the machine ID of the distribution server.
	2	Machine ID Clear (Delivery Server)	Clears the machine ID of the distribution server.
	3	Max Entry	Specifies the maximum entry count. [2000 ~ 5000 / **2000** / 1 /step]
	4	Delivery Server Model	Selects the distribution server model. [0 ~ 4 / **0** / 1 /step] 0: Unknown 1: SG1 (distributed with the copier) 2: SG1 (distributed as a package) 3: SG2 (distributed with the copier) 4: SG2 (distributed as a package)
	5	Delivery Server Capability	Specifies the distribution capability. [0 ~ 255 / **0** / 2 /step]
	6	Delivery Server Retry Timer	[0 ~ 255 / **0** / 1 /step]
	50	All Directory Clear	Initializes all directories.

5	Number/Name		Function/[Setting
847	Net File Mag. Rate		
	001	Copy: Color	Changes the default settings of color copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [1~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	002	Copy: Text	Changes the default settings of copy text image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	003	Copy: Others	Changes the default settings of a copy image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	004	Print Color	Changes the default settings of color print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/3/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	005	Print: Binary	Changes the default settings of binary print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x
	006	Print: Dither (Grayscale processing mode)	Changes the default settings of dither print image data transferred externally by the DeskTopBinder V2 page reference function via the File Format Converter. [0~3/0/1] 0: 1 x 1: 1/2 x 2: 1/3 x 3: 1/4 x

5	Number/Name		Function/[Setting
847	021	Netfile Page Quality Default for JPEG	Sets the default for JPEG image quality of image files handled by DeskTopBinder V2 sent via the File Format Converter. [5~95 / 50 / 1]
848	Web Service		Sets the 4-bit switch assignment for the access control setting. 0000: No access control 0001: Denies access to Desk Top Binder V2. Has no effect on access and delivery from Scan Router. The lower 4 bits are used.
	001	Access Control: Net file	Net File: Job printed from the document server from a PC using DeskTopBinder V2. DocBox: Document Server Repository: Document Management area on the machine's hard disks
	002	Access Control: Repository	
	003	DocBox Print	
	004	User Directory	
	005	Delivery Input (Lower 4 Bits)	
	006	Fax Control (Lower 4 Bits)	
849	Counter Clear Day		
	1	Indication	Displays the date when the electrical counter was reset to zero.
	2	Display of Counter Clear Day	Allows or does not allow printing the counter clear day on the user counter list. [0 ~ 1 / **1** / 1 /step] 0: Printed 1: Not printed
850	Address Book Function		
	1	Switch Module	Selects which module is responsible for user information management. [0 ~ 1 / **1** / 1 /step] **DFU** 0: SCS 1: UCS *Having changed the setting, turn the main switch off and on to validate it.*
	2	Select Title	Selects the address book index style. [2 ~ 4 / **2** / 1 /step] 2: Style 1 3: Style 2 4: Style 3
852	SMTP/POP		
	001	SMTP Server Name	Input the IP address or host name of the SMTP server. Use up to 127 alphanumeric characters.
	002	SMTP Port Number	Input the port number used when sending e-mail to the SMTP server. [1~65535 / **25** / 1]

5	Number/Name		Function/[Setting
852	003	Authorization	Validates the SMTP function. SMTP (Simple Mail Transfer Protocol) is the protocol for communication between Internet main MTAs (Message Transfer Agents). [0~1 / **0** / 1] 0: OFF: Disables SMTP1 1: ON: Enables SMTP
	004	User Name	Sets the SMTP user name.
	005	Password	Sets the SMTP password.
	006	SMTP Auth. Encryption	Sets encryption method for the transfer password in SMTP validation. [0~2 / **0** / 1] 0: Auto: Allows three methods for encryption in SMTP validation: LOGIN, PLAIN, or CRAM-MD5. 1: OFF: Allows two methods for SMTP validation: LOGIN, PLAIN. 2: ON: Allows only one method for SMTP validation: CRAM-MD5.
	007	POP before SMTP	A flag that determines whether the POP server is connected before connecting to the SMTP server. [0~1 / **0** / 1] POP 0: OFF 1: ON Post Office Protocol (POP) servers are computers that receive mail-using SMTP. The mail includes a setting to ensure that it is directed to the POP server. POP servers are used when the user is not permanently connected to the Internet.
	008	POP Server Name	Sets the POP server name. Enter up to 127 alphanumeric characters.
	009	POP Port Number	Sets the POP port number. [1 ~ 65535 / 110 / 1]
	010	POP User Name	Sets the POP user name. Enter up to 63 alphanumeric characters.
	011	POP Password	Sets the POP password. Enter up to 63 alphanumeric characters.
	012	POP Auth. Encryption	Sets the encryption method for the password when SP5852-007 (POP Before SMTP) is in use. [0~2 / **0** / 1] 0: Auto: Allows two methods for encryption: APOP and normal encryption to match the settings of the POP server. 1: OFF: Allows only normal encryption. 2: ON: Allows only APOP encryption.
	013	Time out Setting for POP	Sets the wait time after POP validation until the SMTP mail is sent. [0~10000/ **300** /1 ms]

5	Number/Name		Function/[Setting
907	Plug and Play		
	1	Plug and Play	Specifies the Plug and Play setting. [0~15 / **0** / 1 /step] Select the required setting from the menu.
913	Switchover Permission Time		
	1	Indication Application	Specifies the switching time from the default application to another application. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the default application.*
	2	Print Application	Specifies the switching time from one application to another. [3 ~ 30 / **3** / 1 /step] *The value indicates how long the next application waits before being given control by the running application.*
914	Counter Display		
			Allows/does not allow applications to display their counters. [0 ~ 1 / **0** / 1 /step] 0: Allows 1: Does not allow
919	ACS Mode		
	1	ACS Mode	Selects the ACS mode. **DFU** [0 ~ 1 / **0** / 1 /step] 0: Standard mode 1: High performance mode
954	CSV Password Check		
	1	CSV Password Check	CSV: Copy server (document server) When a document is stored with a password on the copy server, and this document is selected later at the operation panel, this SP determines whether the password is displayed or greyed out. 0: Not displayed 1: Displayed [0 ~ 1 / **0** / 1 /step]
955	Test Pattern		
	1	Pattern	[0 ~ 255 / **0** / 1 /step] See section 5.1.3. for how to use.
	2	Density	[0 ~ 255 / **255** / 1 /step]
966	Document Clear Time		
	1	Document Clear Time	Specifies how many days the document server stores files. [0 ~ 180 / **3** / 1 /step]
970	Debug Serial		
	1	Debug Serial	DFU
971	Touch Panel Correction		
	1	Touch Panel Correction	Displays if the operation panel has been calibrated after an SP5-801 execution. [0 ~ 1 / **0** / 1 /step] 0: Not calibrated 1: Calibrated

5	Number/Name		Function/[Setting
974	Cherry Server Setting		
	1	Cherry Server Setting	Selects the Scan Router server light or full version. [0 ~ 1 / **0** / 1 /step] 0: Light version 1: Professional version
989	Loop Back Test		
	1	Duplex	Executes a loop back test. [0 ~ 1 / **0** / 1 /step] 0: Does not execute 1: Executes
	2	Bank	
	3	Exit Option	
	4	ARDF	
	5	Interchange Unit	
	6	By-pass Tray	
	7	1 Bin Tray	
990*	SMC Print		
	1	All (Data List)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. All: All SP mode settings Non-Default: SP settings that have been changed from the defaults
	2	SP (Mode Data List)	
	3	User Program	
	4	Logging Data	
	5	Diagnosis Report	
	6	Non-Default	
	7	NIB Summary (Configuration page, system log page NVRAM log page)	
	8	Net File Log	
990*	21	Copier UP Data (Copy Management Report)	[0 ~ 0xff / **0x00** / 0 /step] Prints SP setting data. [0 ~ 255 / **0** / 0 /step] SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7. All: All SP mode settings Non-Default: SP settings that have been changed from the defaults
	22	Scanner SP	
	23	Scanner UP (Scanner Management Report)	
996	Density Adjustment		
	1	Bk	Adjusts the density. [–3 ~ 3 / **0** / 1 /step] –3: Image becomes lighter 3: Image becomes darker This setting changes the development bias and charge corona voltage to adjust the image density.
	2	Y	
	3	M	
	4	C	

SP6-XXX: (Peripherals)

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
006*	ADF Adjustment		
	1	S-to-S Registration	Adjusts the side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	2	Leading Edge Registration	Adjusts the sub-scan registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	3	Trailing Edge Erase	Adjusts the trail edge erase of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
	4	S-to-S Registration (Rear)	Adjusts the rear-side side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step] *The main scan registration of the ADF cannot be adjusted. Adjust the copier registration if necessary.*
	5	Sub-san Magnification	Adjusts the sub-scan magnification of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 %/step]
	6	Orig. Buckling	Enables/disables original buckling during rear side scanning. Disable if the customer is scanning fragile originals. [0 ~ 1 / **1** / 1 /step] 0: Disabled 1: Enabled
	7	Buckle Adjustment	Adjusts original buckling for rear side scanning. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
007	DF Input Check		
	1	Original Set	Displays the signals received from sensors and switches of the ARDF. See section 5.1.4 *Do not check another item before the result is returned.*
	2	Original Width 1	
	3	Original Width 2	
	4	Original Length 1	
	5	Original Length 2	
	6	Orig. Trailing Edge	
	7	Cover Open	
	8	DF Position	
	9	Registration	
	10	Original Exit	
	11	Original Reverse	
008	DF Output Check		
	1	Feed Motor (Forward)	Switches on each electrical component of the ARDF for testing. See section 5.1.5 *Do not start to check another item before ending the test that is in progress.*
	2	Feed Motor (Reverse)	
	3	Trans. Motor (Forward)	
	4	Feed Clutch	
	5	Pick-up Solenoid	
	6	Junction Gate Solenoid	
	7	Stamp Solenoid	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
009	ADF Free Run		
	1	ADF Free Run	Executes an ADF free run. [0 ~ 1 / **0** / 1 /step] 0: End *1: Start*
010	ADF Stamp Position		
	1	ADF Stamp Position	Adjusts the stamp position of the optional ADF. [–5.0 ~ 5.0 / **0** / 0.1 mm/step]
016	ADF Size Change		
	1	ADF Size Change	Selects the paper size detected by the optional ADF original sensors. North America: [0 ~ 1 / **0** / 1 /step] Others: [0 ~ 2 / **0** / 1 /step] 0: Regular 1: A4/LT 2: 8K/16K *Number 2, "8K/16K", is valid for the models of the following regions: Europe, Asia. When number 2 is selected, the following paper sizes are not detected: A3, B4, A4, B5.*
050	Staple Position		
	1	Staple Position	Adjusts the staple position of the optional finisher. [–3.5 ~ 3.5 / **0.0** / 0.5 mm/step]
117	Finisher Input Check		
	1	Entrance	Displays the signals received from sensors and switches in the finisher. See section 5.1.4
	2	Tray Exit	
	4	Staple Entrance	
	5	Stapler Home Position	
	6	Jogger Fence Home Position	
	8	Feed-out Belt Home Position	
	9	Stapler Tray Paper	
	10	Stapler Rotation Home Position	
	11	Staple	
	14	Staple Sheet	
	17	Exit Plate Home Position	
	18	Tray Shift Home Position	
	21	Stack Height	
	23	Tray Lower Limit	
	35	Paper Limit	
	101	500 Fin Entrance	
	102	500 Fin Exit	
	103	500 Fin Jogger Home Position	
	104	500 Fin Top Cover	
	105	500 Fin Height	
	106	500 Fin Lever	

6	Mode No. (Class 1, 2, and 3)		Function / [Setting]
117	107	500 Fin Upper Limit	
	108	500 Fin Near Limit	
	109	500 Fin Staple Cover	
	110	500 Fin Stapler Home Position	
	111	500 Fin Staple End	
	112	500 Fin Staple	
	113	500 Fin Stapler Lock	
118	Output Check		
	1	Fin All Off	Switches on each electrical component of the finisher. See section 5.1.5
	2	Upper Transfer Motor	
	3	Lower Transfer Motor	
	4	Exit Motor	
	5	Tray Gate Sol	
	6	Tray Lift Motor	
	7	Jogger Motor	
	12	Stapler Motor	
	13	Staple Hummer	
	15	Stapler Gate Sol	
	16	Pos. Roller Sol	
	18	Feed-out Motor	
	19	Shift Motor	
	22	Guide Plate Motor	
	23	Fin Free Run 1	
	24	Fin Free Run 2	
	101	500 Fin All Off	
	102	500 Fin Main Motor	
	103	500 Fin Jogger Motor	
	104	500 Fin Paddle Sol	
	105	500 Fin Gear Sol	
	106	500 Fin Lever Sol	
	107	500 Fin Tray Motor	
	108	500 Fin Stapler Motor	
	109	500 Fin Free Run 1	
	110	500 Fin Free Run 2	
990	ADF Read Position Adjustment		
	1	ADF Read Position Adjustment	Adjusts the reading position of the ADF. Moves the scanner under the glass to a different position. Use this if there is a scratch on the glass. [–10 ~ 10 / 0 / 0.1 mm/step]

SP7-XXX: (Data Log)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
001*	Operation Time		
	1	Operation Time	Displays the main motor operation time. [0000000 ~ 9999999 / **0** / 1 minute/step] *Logging this operation time helps identify the cause of a difficulty by analyzing the correlation between the printing count and the OPC-belt operation time.*
002	Original Counter		
	1	Total Counter	Displays the original counters. [0000000 ~ 9999999 / **0** / 1 /step]
	2	Copier	
	3	Fax	
	4	Document Box	
	5	Scanner	
	6	Others	
003*	Print Counter		
	1	Total	Displays the color counters. [–9999 to 9999999 / **0** / 1/step]
	2	Copy: Black	
	4	Copy: Full Color	
	5	FAX: Black	
	6	FAX: Single Color	
	7	Print: Black	
	8	Print: Full Color	
	10	Development: CMY	10, 11: These SP modes are development counters.
	11	Development: K	
	12	CPY: Single Color	
	13	CPY: Twin Color	
	20	Total Full color	These SP modes are used for the Japanese market only.
	21	Total B/W Single Color	
	22	Total Single Color	
	23	Total B/W	
	24	Copy: Full Color	
	25	Print: Full Color	
	26	Copy: Color	
	27	Copy: B/W	
	28	Print: Color (except for B/W)	These SP modes are print counters. These SP modes are used in all markets.
	29	Print: B/W	
	30	Total: Color	
007*	Other Counter		
	1	Duplex	Displays other counter values. [–9999 ~ 9999999 / **0** / 0 sheet/step]
	2	A3/DLT	
	3	Staple	
101*	Paper Size Counter		
	4	A3	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT (11" x 17")	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
101*	36	LG (8 1/2" x 14")	Displays the counter values for each paper size. [0 ~ 9999999 / **0** / 0 sheet/step]
	38	LT (8 1/2" x 11")	
	44	HLT (5 1/2" x 8 1/2")	
	47	12 x 18	
	128	Other	
105	Paper type Counter		
	1	Normal	Displays the output counter for each paper type. [0 ~ 999999999 / **0** / 1 /step]
	2	Recycled	
	3	Special	
	4	Color	
	5	Letter head	
	6	Label	
	7	Thick	
	8	OHP	
	9	Others	
106*	Waste Toner Full		
	1	OPC	Displays the waste toner bottle counters. [0 ~ 65535 / **0** / 1 /step]
	2	Belt	[0 ~ 65535 / **0** / 1 /step]
201	Total Scan Counter		
	1	Total Scan Counter	
204*	Paper Tray Counter		
	1	Tray 1	Displays the number of sheets fed from each paper feed station. [0 ~ 9999999 / **0** / 0 sheet/step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Duplex	
205	ADF Total Counter		
	1	ADF Total Counter	Displays the ARDF original count. [0000000 ~ 9999999 / **0** / 1 /step]
206	Staple Counter		
	1	Staple Counter	Displays the stapling count. [0000000 ~ 9999999 / **0** / 1 /step]
209	Punch Counter		
	1	Punch Counter	Displays the punching count. [0 ~ 9999999 / **0** / 1 /step]
301	Copy Counter: Magnification		
	1	Reduce 25% <-->49 %	Displays the copy count for each magnification ratio. [0 ~ 9999999 / **0** / 1 /step]
	2	Reduce 50% <-->99 %	
	3	Full Size	
	4	Enlarge 101% <--> 200%	
	5	Enlarge 201% <--> 400%	
	6	Direct Magnification	
	7	Direct Size Magnification mm (inch)	
	8	Auto Reduce/Enlarge	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
304	Copy Counter: Copy Mode		
	1	Text	Displays the copy count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	T/P (Glossy Photo)	
	3	T/P (Printed Photo)	
	4	T/P (Copied Photo)	
	5	Photo (Glossy Photo)	
	6	Photo (Printed Photo)	
	7	Photo (Copied Photo)	
	8	Generation Copy	
	9	Pale	
	10	Map	
	12	Repeat	
	13	Sort	
	14	Staple	
	15	Series	
	16	Erase	
	17	Duplex	
	18	ADF	
	19	Double Copy	
	20	Duplex Original	
	21	Interrupt Copy	
	22	Combine 1 Side	
	23	Combine 2 Side	
	26	Batch	
	27	SADF	
	28	Mixed Sizes	
	29	Stamp	
	30	Cover Page	
	31	Chapter Page	
	32	Color Balance Adjustment	
	33	Adjust Color	
	34	Copy Quality	
	35	Erase Color	
	36	Convert Color	
	37	Color Background	
305	Copy Counter–Set number		
	1	1 to 1	Displays the multi-page job copy counters. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
306	Job Counter–Copy Mode		
	1	Sort	Displays the job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Staple	
	4	Reserve Copy	
	5	Check Copy	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
320	Document Server–Scan Counter		
	1	Document Server–Scan Counter	Displays the number of pages scanned into the document server. [0 ~ 9999999 / **0** / 1 /step]
321	Document Server–Original Size		
	4	A3	Displays the original count for each paper size when using the document server. [0 ~ 9999999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	128	Others	
323	Document Server–Print Size		
	5	A4 (sideways)	Displays the document server printing count for each paper size. [0 ~ 9999999 / **0** / 1 /step]
	6	A5 (sideways)	
	14	B5 (sideways)	
	38	LT (sideways)	
	44	HLT (sideways)	
	128	Other	
	132	A3 (lengthwise)	
	133	A4 (lengthwise)	
	134	A5 (lengthwise)	
	141	B4 (lengthwise)	
	142	B5 (lengthwise)	
	160	DLT (lengthwise)	
	164	LG (lengthwise)	
	166	HT (lengthwise)	
	172	HLT (lengthwise)	
324	Document Server–Print Job Counter		
	1	Duplex	Displays the document server printing job count for each mode. [0 ~ 9999999 / **0** / 1 /step]
	2	Sort	
	3	Staple	
	5	Check Copy	
	6	Print 1st Page	
325	Document Server–Job Count (Page No)		
	1	1-page	Displays document server printing job counts for multi-page jobs.
	2	2-page	
	3	3<-->5 page	
	4	6<-->10 page	
	5	over 11 pages	
326	Document Server–Job Count (File No)		
	1	1 file	Displays document server printing job counts classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	2	2<-->5 files	
	3	6<-->10 files	
	4	Over 11 files	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
327	Document Server–Job Count (Set No)		
	1	1 to 1	Displays document server printing job counts classified by number of outputs. [0 ~ 9999999 / **0** / 1 /step]
	2	1 to 2<-->5	
	3	1 to 6<-->10	
	4	1 to 11<-->20	
	5	1 to 21<-->50	
	6	1 to 51<-->100	
	7	1 to 101<-->300	
	8	1 to 301<-->over	
328	Document Server–Job Count (Print Mode)		
	8	Sort	Displays document server printing count classified by mode. [0 ~ 9999999 / **0** / 1 /step]
	9	Staple	
	12	Duplex	
	24	Stamp	
	25	Cover Page	
	26	Slip Sheet	
401*	Total SC Counter		
	1	SC Counter	Displays how many times SC codes have been output. [0 ~ 9999 / **0** / 0 time/step]
403	Latest 10 SC Log		
	1	Latest	Displays the latest ten SC codes.
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
502*	Paper Jam Counter		
	1	Paper Jam Counter	Displays the total number of jams detected. [0 ~ 9999 / **0** / 0 /step]
503	Original Jam Counter		
	1	Original Jam Counter	Displays the total original jam count. [0 ~ 9999 / **0** / 0 /step]
504*	Jam by Location		
	1	At Power On	
	3	Tray 1: ON	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / **0** / 0 /step]
	4	Tray 2: Non Feed	
	5	Tray 3: Non Feed	
	6	Tray 4: Non Feed	
	7	Bypass: Non Feed	
	8	1st Relay ON	
	9	2nd Relay: ON	
	10	3rd Relay: ON	
	12	Registration (From Tray)	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
504*	13	Registration (From Duplex)	
	14	Duplex Exit	
	15	Interchange Exit:: ON	
	16	Paper Exit: On	
	17	Bridge Exit: On	
	18	Bridge Relay: On	
	19	Duplex Entrance 1: On	
	20	Duplex Entrance 2: On	
	23	Duplex Exit: On	
	40	Finisher Entrance: On	
	41	Finisher Exit: On	
	58	1st Relay: Off	
	59	2nd Relay: Off	
	60	3rd Relay: Off	
	61	4th Relay: Off	
	63	Registration: Off	
	64	Fusing Exit	
	65	Interchange Exit: Off	
	66	Paper Exit: Off	
	67	Bridge Exit: Off	
	68	Bridge Relay: Off	
	69	Duplex Entrance 1: Off	
	70	Duplex Entrance 2: Off	
	73	Duplex Exit: Off	
	100	Finisher Entrance: Off	
	101	Finisher Exit: Off	
	103	Finisher Staple	
	104	Finisher Stack Feed-out	
	105	Finisher Paper Taking out	
	107	Finisher Drive Error	
	108	Finisher Tray Lift Error	
	109	Finisher Jogger Error	
	110	Finisher Tray Shift Error	
	111	Finisher Stapler Error	
	112	Finisher Stack Feed-out	
	114	Finisher Feed out Error	
	115	Finisher No Response	
505	Original Tray by Location		
	5	Registration Sensor (On Check)	
	6	Relay Sensor (On Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	7	Inverter Sensor (On Check)	Inverter Sensor = Original Reverse Sensor (S10)

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
505	55	Registration Sensor (Off Check)	
	56	Relay Sensor (Off Check)	Relay Sensor = Original Trailing Edge Sensor (S9)
	57	Inverter Sensor (Off Check)	Inverter Sensor = Original Reverse Sensor (S10)
506*	Jam by Paper Size		
	4	A3	Displays the number of jams according to paper size. [0 ~ 9999 / **0** / 1 /step]
	5	A4	
	6	A5	
	13	B4	
	14	B5	
	32	DLT	
	36	LG	
	38	LT	
	44	HLT	
	47	12" x 18"	
	128	Other	
507*	Copy Jam History		
	1	Latest	Displays the latest 10 paper jams. *The information contains the following four lines:* Location code (☛ SP7-504) Paper size (in the ASAP code) Total counter (as of the jam) Date
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
508	Original Jam History		
	1	Latest	Displays the logs of the latest 10 original jams. *The logs are composed of the following four lines:* Location code (☛ SP7-505) Paper size (in the ASAP code) Total counter (as of the jam) Date
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
801	Firmware Version		
			Displays the firmware versions and part numbers if available.
803*	PM Counter		
	1	Number of Development	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] For clearing the counters, see SP7-804.
	2	PCU	
	3	Development: M	
	4	Development: C	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
803*	5	Development: Y.	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / **0** / 1 sheet/step] *For clearing the counters, see SP7-804.*
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Bank 1 Feed	
	15	Bank 2 Feed	
	16	Bank 3 Feed	
	17	Bank 4 Feed	
	18	Manual Feed	
	19	Paper transfer unit	
	20	ADF	
804	PM Counter Reset		
	1	Number of Development	Clears the PM counters. [0 ~ 1 / **0** / 1 /step] For displaying the counter, see SP7-803.
	2	PCU	
	3	Development: M	
	4	Development: C	
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Toner: OPC	
	10	Waste Toner: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Tray 1 Roller	
	15	Tray 2 Roller	
	16	Tray 3 Roller	
	17	Tray 4 Roller	
	18	By-pass Feed	
	19	Paper Transfer Unit	
	20	ADF	
	100	All	
807	SC JAM Counter Clear		
	1	SC Jam Counter Clear	Clears the counters related to SC codes and paper jams. [0 ~ 1 / **0** / 0 /step]
808	Counter All Clear (except total)		
	1	Counter All Clear (except total)	Clears all counters except for SP7-003 and –007. [0 ~ 1 / **0** / 0 /step]

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
810	Access code clear		
	1	Access code clear	Clears the key operator password. *SP7-810 clears the key operator password. After clearing this code, stored data can be accessed without using it.* *To register a new key operator password, use SP5-409-1.*
811	Original Counter Clear		
	1	Original Counter Clear	Clears the original counter.
816	Tray Counter Clear		
	1	Tray 1	Clears the tray counters (SP7-204). [0 ~ 1 / **0** / 0 /step]
	2	Tray 2	
	3	Tray 3	
	4	Tray 4	
	5	Bypass Tray	
	6	Tray Duplex	
822	Memory Clear		
	1	Copy Cunter: Magnification Clear	Clears the copy counter (classified by magnification)
825	Electrical Counter Reset		
	1	Electrical Counter Reset	Sets the total counter to “0”. [0 ~ 0 / **0** / 0 /step]
826	MF Error Counter		
	1	Error Total	Displays the MF error counters.
	2	Error Staple	
827	MF Error Counter Clear		
	1	MF Error Counter Clear	Clears the MF error counter.
832*	Diagnostic result		
	1	Diagnostic Result	Displays the result of the diagnostics. Refer to section 4.2 for the error codes. [0 ~ 0 / **0** / 0 /step]
833	Coverage		
	1	Last: M	Displays coverage ratios. [0.00 ~ 100.0 / **0.00** / 0.01 %step] This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper. *Do not use this counter for billing purposes. This is because this value is not directly* proportional to the amount of toner consumed, although of course it is one factor that affects this amount. The other major facors involved include: the type, total image area and image density of the original, toner concentration and developer potential. Last: This is the coverage for the previous sheet. Average: This is the average coverage for each sheet.
	2	Last: C	
	3	Last: Y	
	4	Last: Bk	
	5	Average: M	
	6	Average: C	
	7	Average: Y	
	8	Average: Bk	

Service Tables

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
834	Toner Consumed		
	5	M	Displays the coverage ratios, including toner revitalization mode. [0 ~ 9999999 / **0** / 1 /step] *This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).* *Do not use this counter for billing purposes.*
	6	C	
	7	Y	
	8	Bk	
835	ACC Counter		
	1	M	Displays the number of times ACC has been done. [0 ~ 9999999 / **0** / 1 /step]
	2	Y	
	3	C	
	4	Bk	
836	Total Memory Size		
	1	Total Memory Size	Displays the memory capacity.
837	Memory Clear		
	1	Memory Clear	Clears the SP7-304 counter (copy count classified by mode).
838	Memory Clear		
	1	Memory Clear	Clears the SP7-305 counter (job count classified by output count).
839	Memory Clear		
	1	Memory Clear	Clears the SP7-306 counter (job count classified by job count).
840	Memory Clear		
	1	Memory Clear	Clears the SP7-320 counter (document box count).
841	Memory Clear		
	1	Memory Clear	Clears the SP7-321 counter (original count classified by paper size).
842	Memory Clear		
	1	Memory Clear	Clears the SP7-323 counter (print count classified by paper size).
843	Memory Clear		
	1	Memory Clear	Clears the SP7-324 counter.
844	Memory Clear		
	1	Memory Clear	Clears the SP7-325 counter.
845	Memory Clear		
	1	Memory Clear	Clears the SP7-326 counter.
846	Memory Clear		
	1	Memory Clear	Clears the SP7-327 counter.
847	Memory Clear		
	1	Memory Clear	Clears the SP7-328 counter.1
848	Memory Clear		
	1	Memory Clear	Clears all the document server counters, which include: SP7-301_SP7-304_SP7-305 SP7-306_SP7-320_SP7-321 SP7-323_SP7-324_SP7-325 SP7-326_SP7-327_SP7-328

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
850	High Duty Counter		
	1	M	Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours.
	2	C	
	3	Y	
	4	Bk	
901	Assert Information (Assert Information)		
	1	File Name	Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / **0** / 0 /step]
	2	# of Lines	
	3	Location	
904	Waste Toner Full Clear		
	1	OPC	Clears the waste toner bottle full counters. [0 ~ 1 / **0** / 0 /step] 0: Not clears 1: Clears
	2	Belt	
	100	All	
906*	PM Counter-Previous		
	1	PCU	Displays the previous PM counters. [0 ~ 9999999 / **0** / 0 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	ADF	
907	Replace counter		
	1	PCU	[0 ~ 255 / **0** / 1 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Toner: OPC	
	9	Waste Toner: Belt	
	10	Oil	
	11	Filter 1	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
907	12	Filter 2	[0 ~ 255 / **0** / 1 /step]
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	Toner: M	
	20	Toner: C	
	21	Toner: Y	
	22	Toner: Bk	
	23	ADF	
908	Process Control Counter		
	1	Process Control Counter	Displays the process control counter. [0 ~ 9999999 / **0** / 1 sheet/step]
909	Process Control Reset		
	1	Process Control Reset	Resets the process control counter.
913	Oil Counter		
	1	Oil Counter	Displays the oil supply unit counter. [0 ~ 65535 / **0** / 1 sheet/step]
914	Oil Clean Counter Reset		
	1	Oil Clean Counter Reset	Resets the oil cleaner counter.
915	Process Error Log		
	1	Log 1	Displays the latest three process control error logs. *The following are the error codes:* Development unit initial settings errors: • 110: Incorrect image detected by cyan ID sensor • 116: Incorrect image detected by magenta ID sensor • 118: No black image Development bias settings errors: • 113: Incorrect image detected by cyan ID sensor • 114: Incorrect image detected by magenta ID sensor • 115: Incorrect image detected by yellow ID sensor • 123: Incorrect image detected by black ID sensor ID sensor errors: • 103: ID sensor error • 104: ID sensor unable to detect image • 105: OPC belt not detected
	2	Log 2	
	3	Log 3	
920	Machine Counter		
	1	Machine Counter	[0 ~ 0xFFFFFFF / **0** / 1 /step]
921	Machine Counter Clear		
	1	Machine Counter Clear	Clears the machine counter.
922	Toner End Counter		
	1	K Toner	Displays the toner end counter, which indicates the possible print count after a toner near end.
	2	C Toner	
	3	M Toner	
	4	Y Toner	

7	Mode No. (Class 1, 2, and 3)		Function / [Setting]
923	Toner End Counter Clear		
	1	K Toner	Clears the toner end counter (SP7-922). *The machine goes back to the normal operation mode if the toner end counter is cleared.*
	2	C Toner	
	3	M Toner	
	4	Y Toner	
	100	All	
924	Charger Clean Counter		
	1	Charger Clean Counter	Displays how many times the charge corona wire has been cleaned. [0 ~ 9999999 / **0** / 1 sheet/step] *SP7-926 resets the counter.*
925	Time Counter Display		
	1	Time Counter Display	Displays the current counter of the charge corona unit cleaning interval. *SP2-801 specifies the charge corona unit cleaning interval.*
926	Charger Cleaner Counter Reset		
	1	Charger Cleaner Counter Reset	Resets the charge wire cleaner counter (SP7-924).
927	Timer Counter Clear		
	1		Clears the counter of the charge corona unit cleaning interval. *SP7-927 clears the counter displayed by SP7-925, but does not clear the value specified with SP2-801.*
928	Previous PM Counter Clear		
	1	Previous PM Counter Clear	Clears the previous PM counter (SP7-906).
929	Replace Counter Clear		
	1	Replace Counter Clear	Clears the replace counter.
930	Counter For Designer		
	1	Counter 1 For Designer	**DFU**
	2	Counter 2 For Designer	

SP9-XXX: (Etc.)

9	Mode No. (Class 1, 2, and 3)		Function / [Setting]
904	Discharge Threshold		
	1	Discharge Threshold	[90 ~ 220 / **150** / 0.1 g/m^3/step]

5.1.3 TEST PATTERN PRINTING (SP5-955-1)

1. Enter the SP mode and select SP5-955-1.
2. Enter the number for the test pattern that you want to print and press #. (See the tables below.)
3. Press Copy Window to open the copy window and then select the settings for the test print (paper size, etc.)
4. Press Start to start the test print.
5. Press SP Mode (highlighted) to return to the SP mode display.

No.	Test Pattern	No.	Test Pattern
0	None	23	1 dot Grid Pattern (Reverse order of LD1/2 on)
1	Vertical Line (1-dot)	24	3 lines Grayscale
2	Horizontal Line (1-dot)	25	Horizontal Grayscale – 1
3	Vertical Line (2-dot)	26	Vertical Grayscale – 1
4	Horizontal Line (2 dot)	29	Horizontal Grayscale – 2
5	1 dot Grid Pattern0 – 1	30	Vertical Grayscale – 2
6	1 dot pair Grid Pattern – 1	31	Horizontal Grayscale (600 dpi)
7	Alternating Dot Pattern (1 dot)	32	Vertical Grayscale (600 dpi)
8	Alternating Dot Pattern (2 dot)	35	Horizontal Grayscale with White Line – 1
9	Full Dot Pattern	36	Vertical Grayscale with White Line – 1
10	Black band	38	Horizontal Grayscale with White Line – 2
11	Trimming Area (1 dot)	39	Vertical Grayscale with White Line – 2
12	Trimming Area (2 dot)	40	Horizontal Grayscale with White Line (600 dpi)
13	Argyle Pattern (1 dot)	41	Vertical Grayscale with White Line (600 dpi)
14	Argyle Pattern (2 dot)	43	Blank image
15	Horizontal Cross Stitch	50	Vertical Cross Stitch
16	Checker Flag	51	2 beam
19	Alternating Dot Pattern (4 dot)	52	Trimming Area with Crossed Lines
20	1 dot Horizontal Line (Reverse order of LD1/2 on)	53	1 dot Grid Pattern – 2
21	1 dot Grid Pattern (Reverse order of LD1/2 on)	54	1 dot pair Grid Pattern – 2
22	1 dot pair Grid Pattern (Reverse order of LD1/2 on)		

5.1.4 INPUT CHECK

Main Machine Input Check (SP5-803)

1. Enter the SP mode and select SP5-803.
2. Select an item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's.
   The meaning of the display is as follows.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

SP5-803 -XXX		Description	Reading	
			0	1
1	Tray 1 Set	Tray 1 set (standard tray)	Set	Not set
2	Tray 1 Paper End	Tray 1 paper end sensor (standard tray)	Paper End	Paper is present
3	Tray 1 Paper Height	Tray 1 paper near-end sensor (standard tray)	Not near end	Near end
4	Tray 1 Paper Size	Tray 1 paper size sensor (standard tray)	(See table 1.)	
5	Tray 2 Set	Tray 2 set (standard tray)	Set	Not set
6	Tray 2 Paper End	Tray 2 paper end sensor (standard tray)	Paper End	Paper is present
7	Tray 2 Paper Height	Tray 2 paper near-end sensor (standard tray)	Not near end	Near end
8	Tray 2 Paper Size	Tray 2 paper size sensor (standard tray)		
9	Registration Sensor		Detected	Not detected
10	Upper Relay	Paper feed sensor	Detected	Not detected
11	Lower Relay	Paper feed sensor	Detected	Not detected
12	Right Cover SW		Closed	Open
13	Exit Sensor		Detected	Not detected
14	Paper Overflow		Full	Not full
15	Exit Cover Switch		Closed	Open
16	Interchange Unit Set		Set	Not set
17	Interchange Exit		Detected	Not detected
18	By-pass Tray Set		Not set	Set
19	By-pass Paper End		Paper End	Paper is present
20	By-pass Paper Size			
21	Fusing Unit Set		Set	Not set
22	Fusing Exit		Paper End	Paper is present
23	Fusing Oil End			
24	Fusing High Temperature			

SP5-803 -XXX		Description	Reading	
			0	1
25	Discharge Bias Leak			
30	Toner End: M	Toner end sensor: M	Not end	End
31	Toner End: C	Toner end sensor: C	Not end	End
32	Toner End: Y	Toner end sensor: Y	Not end	End
33	Toner End: K	Toner end sensor: K	Not end	End
34	Toner Unit: M	Toner cartridge memory chip: M	Not set	Set
35	Toner Unit: C	Toner cartridge memory chip: C	Not set	Set
36	Toner Unit: Y	Toner cartridge memory chip: Y	Not set	Set
37	Toner Unit: K	Toner cartridge memory chip: K	Not set	Set
38	O/B Waste Toner Sensor	OPC belt waste toner sensor	Full	Not full
39	O/B Waste Toner Switch	OPC belt waste toner bottle switch	Set	Not set
40	Belt Mark	Belt mark sensor	Not detected	Detected
41	New PCU Sensor	Not used	-	-
42	T/B Waste Toner Sensor	Transfer belt waste toner sensor	Full	Not full
43	T/B Waste Toner Switch	Transfer belt waste toner bottle switch	Set	Not set
44	LD 5V Cover	Interlock switch	Closed	Open
45	Left Cover		Closed	Open
46	Right Upper Cover		Closed	Open
47	Front Cover		Closed	Open
48	Development Motor Lock	Development motor lock	Locked	Not locked
49	Main Motor Lock	Main motor lock	Locked	Not locked
50	Paper Feed Motor Lock	Paper feed motor lock	Locked	Not locked
51	Polygon Motor Lock	Polygon motor lock	Locked	Not locked
52	1 Bin Set		Set	Not set
53	1 Bin Paper Sensor		Detected	Not detected
60	Duplex Connection	Duplex unit	Not connected	Connected
61	Bank 1 Connection	1st optional paper tray	Not connected	Connected
62	Bank 2 Connection	2nd optional paper tray	Not connected	Connected
63	Finisher Connection	Finisher Connection	Not connected	Connected
64	Bridge Exit		Detected	Not detected
65	Bridge Relay		Detected	Not detected
66	Bridge Set		Set	Not set
67	Bridge Right Cover		Closed	Open
68	Bridge Left Cover		Closed	Open
69	Bank Upper Relay	Relay Sensor 3 (optional paper tray unit)	No paper	Paper present
70	Bank Lower Relay	Relay Sensor 4 (optional paper tray unit)	No paper	Paper present

SP5-803 -XXX		Description	Reading	
			0	1
71	Bank Cover 1	Right cover (vertical guide switch)	Closed	Open
72	Bank Cover 2	2nd optional tray: Right cover (vertical guide switch)	Closed	Open
73	Bank Tray 1 Set	1st optional tray: Set	Not set	Set
74	Bank Tray 2 Set	2nd optional tray: Set	Not set	Set
75	Bank Tray 1 Paper End	1st optional tray: Paper end	Not end	End
76	Bank Tray 2 Paper End	2nd optional tray: Paper end	Not end	End
77	Bank Tray 1 Paper Size	1st optional tray: Paper size	(See table 2.)	
78	Bank Tray 2 Paper Size	2nd optional tray: Paper size		
79	Bank Tray 1 Paper Height	1st optional tray: Paper height	(See table 3.)	
80	Bank Tray 2 Paper Height	2nd optional tray: Paper height		
81	Duplex Entrance	Duplex: Entrance sensor	Not detected	Detected
82	Duplex Exit	Duplex: Exit sensor	Detected	Not detected
83	Duplex Open	Duplex unit open switch	Closed	Open
84	Duplex Cover	Duplex cover sensor	Open	Closed
86	Scanner Home Position	Scanner HP sensor	Detected	Not detected
87	Recycle Counter	Mechanical Counter Set	Set	Not set
88	Counter Set		Set	Not set
89	Key Counter Set		Set	Not set
90	Shift Tray Home Position Sensor		Detected	Not detected
91	Platen Cover Sensor		Detected	Not detected

Table 1: Tray 1 and 2 Paper Size

Switch	North America	Europe/Asia	Value
1000	8 1/2" x 11" SEF	8 1/2" x 11" SEF	00001110
1001	B5 SEF	B5 SEF	00000110
1010	5 1/2" x 8 1/2" LEF	A5 LEF	00001010
1011	11" x 17" SEF	A3 SEF	00000010
1100	A4 SEF	A4 SEF	00001100
1101	B5 LEF	B5 LEF	00000100
1110	8 1/2" x 11" LEF	A4 LEF	00001000
1111	8 1/2" x 14" SEF	B4 SEF	00000000

0: pushed
1: not pushed

Table 2: By-pass Tray Paper Size

Paper Width	Value	Paper Width	Value
A3/11"/12"	01110000	B5/8"	10010000
B4	00110000	A5/5.5"	11010000
A4/8.5"	10110000	B6	11000000

Table 3: Optional Paper Tray Unit Paper Size

Size	North America	Europe/Asia	Code
A3 SEF	Detected	Detected	10000100
B4 SEF	None	Detected	10001101
A4 SEF	None	Detected	10000101
A4 LEF	Detected	Detected	00000101
B5 LEF	Detected	Detected	00001110
A5 LEF	None	Detected	00000110
DLT SEF	Detected	Detected	10100000
LG SEF	Detected	None	10001101
LT SEF	Detected	None	10000101
LT LEF	Detected	Detected	00100110
HLT LEF	Detected	None	00000110

Table 4: Optional Paper Tray Unit Paper Near End

Remaining paper	Paper height sensor 2	Paper height sensor 1	Code
Full	ON	ON	11111111
Nearly full	OFF	ON	11111110
	On	OFF	11111101
Near end	OFF	OFF	11111100

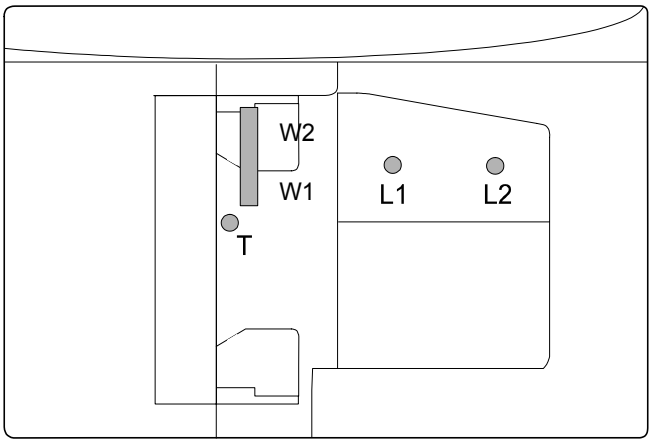
ARDF Input Check (SP6-007)

1. Enter the SP mode and select SP6-007.
2. Enter the number (1 – 11) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit 0 at the right side of the screen is valid.

0 0 0 0 0 0 0 0

Bit 7 6 5 4 3 2 1 0

3. Check the status of bit 0 for the required item listed in the table below.



No.	Description	Reading	
		0	1
1	Original set sensor	Paper not detected	Paper detected
2	Original width sensor 1 (W1)	Paper not detected	Paper detected
3	Original width sensor 2 (W2)	Paper not detected	Paper detected
4	Original length sensor 1 (L1)	Paper not detected	Paper detected
5	Original length sensor 2 (L2)	Paper not detected	Paper detected
6	Original trailing edge sensor	Paper not detected	Paper detected
7	ADF cover sensor	Cover closed	Cover opened
8	DF position sensor	ADF closed	ADF opened
9	Registration sensor	Paper not detected	Paper detected
10	Exit sensor	Paper not detected	Paper detected
11	Inverter sensor	Paper not detected	Paper detected

Finisher Input Check (SP6-117)

1. Enter the SP mode and select SP6-117.
2. Enter the number (1 – 113) for the item that you want to check. A small box will be displayed on the SP mode screen with a series of 0's and 1's, as shown below. However, only bit) at the right side of the screen is valid.

0 0 0 0 0 0 0 0
Bit 7 6 5 4 3 2 1 0

3. Check the status of each item against the corresponding bit numbers listed in the table below.

No.	Description	Reading	
		0	1
1	Entrance Sensor	Activated	Deactivated
2	Tray Exit Sensor	Activated	Deactivated
4	Staple Entrance Sensor	Activated	Deactivated
5	Stapler Home Position Sensor	Activated	Deactivated
6	Jogger Fence Home Position Sensor	Activated	Deactivated
8	Feed-out Belt Home Position Sensor	Activated	Deactivated
9	Stapler Tray Paper	Activated	Deactivated
10	Stapler Rotation Home Position	Activated	Deactivated
11	Staple Sensor	Activated	Deactivated
14	Staple Sheet Sensor	Activated	Deactivated
17	Exit Plate Home Position Sensor	Activated	Deactivated
18	Tray Shift Home Position Sensor	Activated	Deactivated
21	Stack Height Sensor	Activated	Deactivated
23	Tray Lower Limit Sensor	Activated	Deactivated
101	500 Fin Entrance Sensor	Activated	Deactivated
102	500 Fin Exit Sensor	Activated	Deactivated
103	500 Fin Jogger Home Position Sensor	Activated	Deactivated
104	500 Fin Top Cover Sensor	Closed	Opened
105	500 Fin Height Sensor	Activated	Deactivated
106	500 Fin Lever Sensor	Activated	Deactivated
107	500 Fin Upper Limit Sensor	Activated	Deactivated
108	500 Fin Near Limit Sensor	Activated	Deactivated
109	500 Fin Staple Cover Sensor	Closed	Opened
110	500 Fin Stapler Home Position Sensor	Activated	Deactivated
111	500 Fin Staple End Sensor	Activated	Deactivated
112	500 Fin Staple Sensor	Activated	Deactivated
113	500 Fin Stapler Lock Sensor	Locked	Not Locked

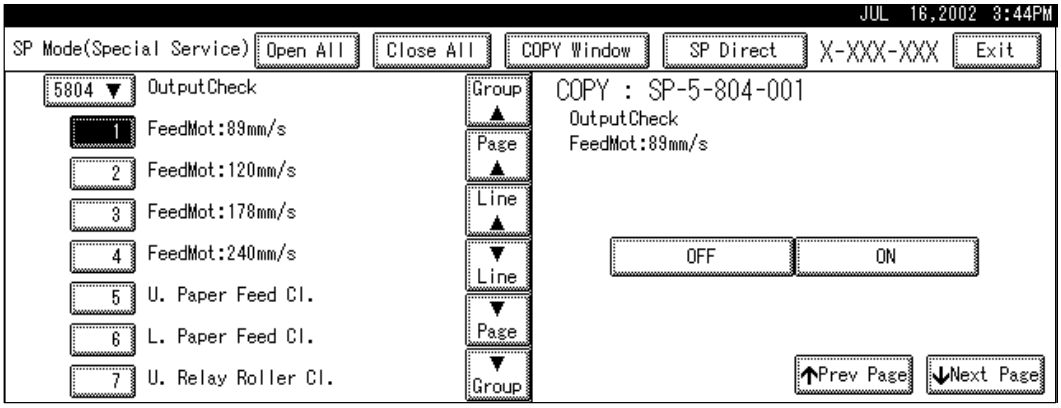
5.1.5 OUTPUT CHECK

NOTE: Motors keep turning in this mode regardless of upper or lower limit sensor signals. To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

Main Machine Output Check (SP5-804)

1. Open SP5-804.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. Press *OFF* to end the test.

   NOTE: You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing. Do not keep an electrical component switched *ON* for a long time.



Output Check Table

SP5-804 -XXX		Description
1	Feed Mot: 89 mm/s	Paper feed motor: 89 mm/s
2	Feed Mot: 120 mm/s	Paper feed motor: 120 mm/s
3	Feed Mot: 178 mm/s	Paper feed motor: 178 mm/s
4	Feed Mot: 240 mm/s	Paper feed motor: 240 mm/s
5	Upper Paper Feed Clutch	Tray 1 paper feed clutch
6	Lower Paper Feed Clutch	Tray 2 paper feed clutch
7	Upper Relay Roller Clutch	Tray 1 vertical transport clutch
8	Lower Relay Roller Clutch	Tray 2 vertical transport clutch
9	Transfer Motor: Half Speed	Main motor: 178 mm/s

SP5-804 -XXX		Description
10	Transfer Motor: Low Speed	Main motor: 89 mm/s
11	Regist Clutch	Registration clutch
12	Interchange Upper Gate	Interchange Junction Gate Solenoid 1
13	Interchange Lower Gate	Interchange Junction Gate Solenoid 2
14	By-pass Feed Clutch	By-pass paper feed clutch
15	By-pass Pick-Up Solenoid	By-pass pick-up solenoid
16	Development Clutch: M	Development clutch: M
17	Development Clutch: C	Development clutch: C
18	Development Clutch: Y	Development clutch: Y
19	Development Clutch: K	Development clutch: K
20	Development Motor (Forward)	Development motor
21	Development Motor Half Speed (Forward)	Development motor: Half Speed
22	Development Motor (Reverse)	Development motor: Reverse
23	Development Motor Half Speed (Reverse)	Development motor: Reverse Half Speed
24	Lubricant Clutch	OPC belt cleaning clutch
25	Main Motor (Forward)	Main motor: Regular Speed
26	Main Motor Half Speed (Forward)	Main motor: Half Speed
27	Main Motor (Reverse)	Main motor: Reverse
28	Main Motor Half Speed (Reverse)	Main motor: Reverse Half Speed
29	Polygon Motor	Polygon motor
30	LD On	LD
31	Polygon Motor + LD	Polygon Motor + LD
32	Transfer 2nd Solenoid	Paper Transfer Solenoid
33	T/B Cleaning Clutch	Image transfer belt cleaning clutch
34	T/B Cleaning Solenoid	Image transfer belt cleaning contact solenoid
40	Engine Ready Signal	Engine Ready Signal
41	ID sensor LED	
42	QL	
43	Toner End Led	Toner End LED
44	Charger Bias	Charge corona unit output
45	Development Bias 1	Development Bias: 1
46	Development Bias 2	Development Bias: 2
47	Belt Transfer	Image transfer power supply
48	Paper Transfer: +	Paper transfer bias: +
49	Paper Transfer: –	Paper transfer bias: –
50	T/B Cleaning: +	Image transfer belt cleaning bias: +
51	Discharge: H	Discharge plate power supply: H
52	Discharge: L	Discharge plate power supply: L

SP5-804 -XXX		Description
53	Fuser Main Relay	Fusing Main Relay
54	Fusing Bias	Fusing Bias
55	Scanner Lamp	
100	Bank Upper Feed	1st paper feed clutch (optional paper tray unit)
101	Bank Lower Feed	2nd paper feed clutch (optional paper tray unit)
102	Bank Feed Motor: L	1st paper feed motor (optional paper tray unit)
103	Bank Feed Motor: H	1st Paper feed motor – half speed (optional paper tray unit)
110	Shift Tray Motor: CW	Shift Tray Motor – continuous clockwise
111	Shift Tray Motor: CCW	Shift Tray Motor – continuous counter-clockwise
112	Shift Tray Motor: Run	Shift Tray Motor – shifts once
120	Duplex Reverse Motor (Forward)	Duplex: Inverter motor
121	Duplex Reverse Motor (Reverse)	Duplex: Inverter motor – reverse
122	Duplex Feed Motor (Forward)	Duplex: Transport motor
123	Duplex Feed Motor (Reverse)	Duplex: Transport motor – reverse
124	Duplex Solenoid	Duplex: Inverter gate solenoid
125	Duplex Free Run	Duplex: Free run
130	Bridge Motor: H	
131	Bridge Motor: L	
132	Bridge Gate Sol	
140	Fusing Fan: H	
141	Fusing Fan: L	
142	Dev Fan: H	Development Fan Motor: H
143	Dev. Fan: L	Development Fan Motor: L
144	Cooling Fan: H	Controller Fan Motor: H
145	Cooling Fan: L	Controller Fan Motor: L
146	Ozone Fan: Hi	
147	Ozone Fan: Low	
160	Bridge Cooling Fan: H	
161	Bridge Cooling Fan: L	
162	PSU Fan	
170	Forced Lubricant	The following parts are switched on. O/B cleaning contact clutch T/B cleaning solenoid T/B cleaning contact clutch

ARDF Output Check (SP6-008)

1. Open SP6-008.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description
1	Feed Motor (Forward)
2	Feed Motor (Reverse)
3	Transport Motor (Forward)
4	Feed Clutch
5	Pick-up Solenoid
6	Junction Gate Solenoid
7	Stamp Solenoid

Finisher Output Check (SP6-118)

1. Open SP6-118.
2. Select the SP number that corresponds to the component you wish to check. (Refer to the table below.)
3. Touch *ON* to test the selected item. To end the test, touch *OFF*. You cannot exit and close this display until you touch *OFF* to switch off the output check currently executing.

No.	Description	No.	Description
	1000-sheet finisher		**500-sheet finisher**
1	Fin All Off	101	500 Fin All Off
2	Upper Transfer Motor	102	500 Fin Main Motor
3	Lower Transfer Motor	103	500 Fin Jogger Motor
4	Exit Motor	104	500 Fin Paddle Sol
5	Tray Gate Sol	105	500 Fin Gear Sol
6	Tray Lift Motor	106	500 Fin Lever Sol
7	Jogger Motor	107	500 Fin Tray Motor
12	Stapler Motor	108	500 Fin Stapler Motor
13	Staple Hummer	109	500 Fin Free Run 1
15	Stapler Gate Sol	110	500 Fin Free Run 2
16	Pos. Roller Sol		
18	Feed-out Motor		
19	Shift Motor		
22	Guide Plate Motor		
23	Fin Free Run 1		
24	Fin Free Run 2		

5.1.6 SMC DATA LISTS (SP5-990)

1. Open SP mode 5-990 and select the number corresponding to the list that you wish to print.

SMC (System Parameter and Data Lists)	
1	All data list
2	SP mode data list
3	UP mode data list
4	Logged data list
5	Self-diagnostics results list
6	Non-Default Data list
7	NIB summary
8	Net file log list (Jobs to be printed from the document server using a PC and the Desk Top Binder software)
21	Copy UP mode list
22	Scanner SP mode list
23	Scanner UP mode list

2. Touch *EXECUTE* on the touch panel
3. Operate according to the instructions on the display.
4. Check that the completion message appears, and touch *Exit.*

5.1.7 ORIGINAL JAM HISTORY DISPLAY

Total Count

SP7-503 displays the number of original jams having occurred in the optional ARDF.

Details on the Most Recent Jams

SP7-508 displays the detailed information on the latest 10 original jams having occurred in the optional ARDF.

SP7-508-		
1	Latest	Information on the latest original jam
2	Latest 1	Information on the 2nd latest original jam
3	Latest 2	Information on the 3rd latest original jam
:	:	:
8	Latest 7	Information on the 8th latest original jam
9	Latest 8	Information on the 9th latest original jam
10	Latest 9	Information on the 10th latest original jam

5.1.8 COPY JAM HISTORY DISPLAY

Total Count

SP7-502 displays the number of copy paper jams having occurred in all paper paths.

Details on the Most Recent Jams

SP7-507 displays the detailed information on the latest 10 copy paper jams having occurred in all paper paths.

SP7-507-		
1	Latest	Information on the latest paper jam
2	Latest 1	Information on the 2nd latest paper jam
3	Latest 2	Information on the 3rd latest paper jam
: :	: :	: :
8	Latest 7	Information on the 8th latest paper jam
9	Latest 8	Information on the 9th latest paper jam
10	Latest 9	Information on the 10th latest paper jam

5.1.9 MEMORY ALL CLEAR (SP5-801)

Executing Memory All Clear resets all the settings stored in the NVRAM to their default settings except the following:

SP7-003-1	Print total counter value
SP5-811	Machine serial number
SP5-907	Plug & play brand name and production name setting

Normally, this SP mode should not be used. This procedure is necessary only after replacing the NVRAM, or when the copier malfunctions because the NVRAM is damaged.

Using a Flash Memory Card

1. Upload the NVRAM data to a flash memory card (☛ NVRAM Data Upload).
2. Print out all SMC data lists (SP5-990).
   NOTE: Be sure to print out all the lists. If the NVRAM data upload is not completed, it is necessary to manually change the SP mode settings.
3. Open SP5-801.
4. Press the number for the item that you want to initialize. The number you select determines which application software is initialized. Touch 1, for example, if you want to initialize all modules; or select the appropriate number from the table below.

No.	What It Initializes	Comments
1	All modules	Initializes items 2 ~ 15 below.
2	Engine	Initializes all registration settings for the engine and process settings.
3	SCS (System Control Service)/SRAM	Initializes default system settings, CSS settings, operation display coordinates, and ROM update information.
4	IMH (Image Memory handler)	Initializes the registration setting for the image memory handler. (Deletes all image files in the HDD).
5	MCS (Memory Control Service)	Initializes the automatic delete time setting for stored documents.
6	Copier application	Initializes all copier application settings.
7	Fax application	Initializes the fax reset time, job login ID, all TX/RX settings, local storage file numbers, and off-hook timer.
8	Printer application	Initializes the printer defaults, programs registered, the printer SP bit switches, and the printer CSS counter.
9	Scanner application	Initializes the scanner defaults for the scanner and all the scanner SP modes.
10	Network application	Deletes the network file application management files and thumbnails, and initializes the job login ID.

No.	What It Initializes	Comments
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	DCS	Initializes the DCS (Delivery & Receive Control Server) settings
15	UCS	Initializes the UCS (User Directory Control Server) settings.

5. Touch *EXECUTE*, and turn the main switch off and on.
6. Download the NVRAM data from a flash memory card (☛ 5.2.2).

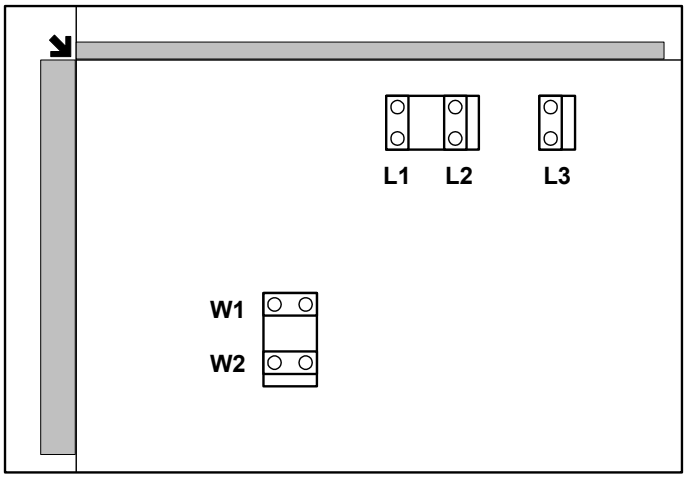
Without Using a Flash Memory Card

If there is no flash memory card, follow the steps below.

1. Execute SP5-990 to print out all SMC data lists.
2. Open SP5-801.
3. Select the number for the item that you want to initialize.
4. Press *EXECUTE* and turn the main switch off and on.
5. Make sure that you do the following:
   - Do the printer and scanner registration and magnification adjustments (☛ "Copy Adjustments" in chapter 3, "Replacement and Adjustment").
   - Do the touch screen calibration (☛ "Touch Screen Calibration" in chapter 3, "Replacement and Adjustment").
   - Referring to the SMC data lists, re-enter all values that have been changed from their factory settings.
   - Do the white level adjustment (☛ Section 3.14 Standard White Density Adjustment)
6. Check the copy quality and the paper paths, and do any necessary adjustments.

5.1.10 APS OUTPUT DISPLAY (SP4-301)

SP4-301 displays a code that indicates the current status of the APS sensors. The table lists the codes and the activated sensors.



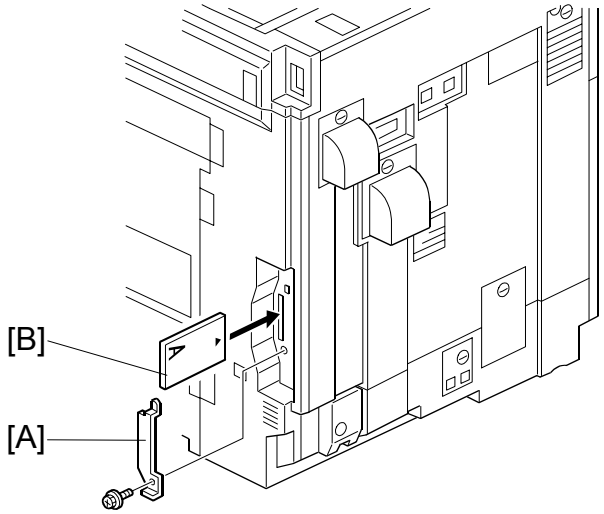
Code	Sensors				
	W1	W2	L1	L2	L3
38	❍	❍	—	—	—
160	❍	❍	❍	❍	❍
164	—	—	❍	❍	❍
166	—	—	❍	❍	—
128	Other combinations				

❍: Activated
—: Deactivated

5.2 PROGRAM DOWNLOAD

5.2.1 FIRMWARE

The procedure is the same for all firmware modules.



1. Turn off the main power switch.
2. Remove the cover [A].
3. Insert the IC card [B] containing the software you wish to download into the card slot of the controller.
4. Open the front cover.
5. Turn on the main power.
6. Follow the instructions displayed on the operation panel
7. Monitor the downloading status on the operation panel.
   - While downloading is in progress, the panel displays “Writing”. When downloading has been completed, the panel displays “Completed”.
   - The Start key lights red while downloading is in progress, and then lights green again after downloading is completed.

⚠CAUTION

Never switch off the power while downloading. Switching off the power while the new software is being downloading will damage the boot files in the controller.

8. After confirming that downloading is completed, turn off the main power and remove the IC card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, perform copier SP5-801-9 (Memory All Clear – Scanner Application).

NOTE: If the download failed, an error message appears on the panel. In this case, download the firmware again using the IC card.
In this condition, if the firmware cannot be downloaded again, do the following:
Controller firmware: Turn on dip switch 1 on the controller board, and switch on. The machine boots from the IC card. Download the new firmware.
Others: Replace the appropriate PCB.

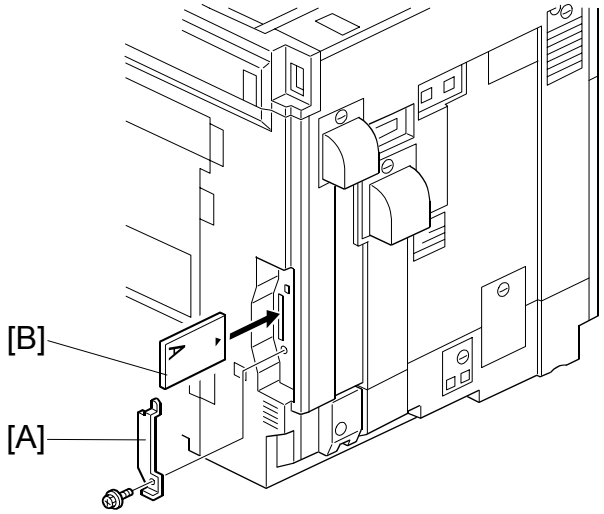
5.2.2 NVRAM DATA UPLOAD/DOWNLOAD

The content of the NVRAM can be uploaded to and downloaded from a flash memory card.

Uploading NVRAM Data (SP5-824)

The data in the NVRAM in the machine can be uploaded to a flash memory card.

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
5. Open SP5-824.
6. Touch *EXECUTE* to start uploading the NVRAM data.
7. Turn off the main switch, and then remove the IC card.



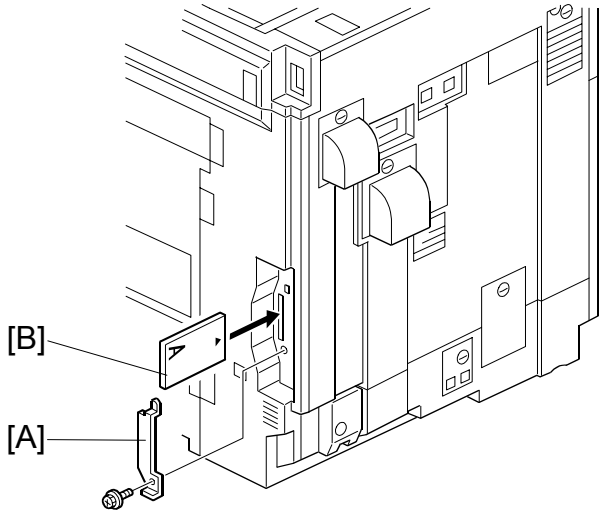
Downloading NVRAM Data (SP5-825)

SP5-825 downloads data from a flash card to the NVRAM inside the machine.

The following data are not downloaded from the flash card:

- Meter charge total counter (SP7-003-1)
- Duplex, A3/DLT/Over 420 mm, Staple and Scanner application scanning counters (SP7-007).

1. Turn off the main switch.
2. Remove the cover [A].
3. Plug the flash memory card [B] into the card slot.
4. Turn on the main switch.
8. Open SP5-825.
5. Touch *EXECUTE* to start download the NVRAM data.
6. Turn off the main switch, and then remove the IC card.



Note that the following errors may occur during downloading:

- If a card is not installed in the card slot and a message tells you that downloading cannot proceed, you cannot execute downloading, even by pressing *EXECUTE.*
- If the correct card for the NVRAM data is not inserted in the card slot, after you press *EXECUTE* a message will tell you that downloading cannot proceed because the card is abnormal and the execution halts.

5.3 SOFTWARE RESET

The software can be rebooted when the machine hangs up. Use either of the following procedures.

Procedure 1

1. Turn the main power switch off and on.
2. Check that “Now loading. Please wait” is displayed and that the copy window opens.

Procedure 2

1. Press and hold down the ⓒ/* and # keys together until the machine beeps (for about 10 seconds).
2. Release both buttons.
3. Check that “Now loading. Please wait” is displayed and that the copy window opens.

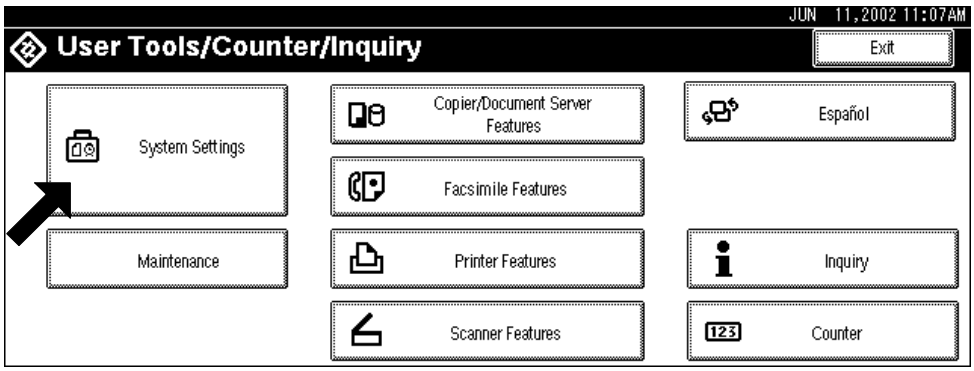
5.4 SYSTEM SETTINGS AND COPY SETTING RESET

5.4.1 SYSTEM SETTING RESET

To reset the system settings in the UP mode to their defaults. Use the following procedure.

⇒ 1. Press the User Tools/Counter key (◈/123).

2. Hold down the # key and touch *System Settings*.
   NOTE: Hold down the # key before touching *System Settings*.



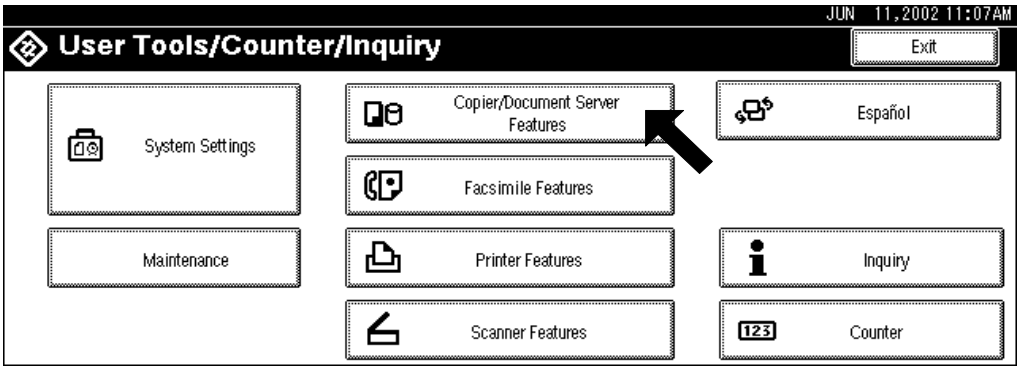
3. When the display asks if you want to reset the system settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.4.2 COPIER SETTING RESET

To reset the copy settings in the UP mode to their defaults, use the following procedure.

⇒ 1. Press the User Tools/Counter key (◈/123).

2. Hold down the # key and then touch *Copier/Document Server Features*.
   NOTE: Hold down the # key before touching *Copier/Document Server Features*.



3. When the display asks if you want to reset the Copier Document Server settings, touch *Yes*.
4. Check that the completion message appears, and touch *Exit*.

5.5 USER TOOLS

The user program (UP) mode can be accessed by users and operators, and by sales and service staff. UP mode is used to input the copier's default settings. The user can reset the default settings at any time.

5.5.1 HOW TO ENTER USER TOOLS

UP Mode Initial Screen: User Tools/Counter Display

⇒ To enter the UP mode, press the User Tools/Counter key (◈/123).

System Settings

In the User Tools/Counter display, touch *System Settings*.

Touch a tab to display the settings. If the Next button is lit in the lower right corner, touch it to display more options. Specify the settings, touch *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

Copier/Document Server Features

In the User/Tools Counter display, touch Copy/Document Server Settings.

Click a tab to display the settings. If the Next button is lit in the lower right corner, press it to display more options. Perform the settings, press Exit to return to the User Tools/Counter display, and then press Exit to return to the copy window.

Printer, Facsimile, Scanner Settings

In the User/Tools Counter display, touch Printer Settings, Facsimile, or Scanner Settings to open the appropriate screen and then touch the tab to display more settings. The screen below shows the Printer Features screen.

Inquiry

In the User/Tools Counter display, touch *Inquiry*.

The following SP mode settings will be displayed.

- Service Telephone Number (SP5-812-1)
- Service Facsimile Number (SP5-812-2)
- Telephone Number for ordering consumables (SP5-812-3)
- Sales Telephone Number (SP5-812-4)
- Toner Type (SP5-841-1~4)

Counter

In the User/Tools Counter display, touch *Counter*.

The following SP mode counters will be displayed.

- Copy Counter (SP5-914)

View the settings, touch Print Counter *Exit* to return to the User Tools/Counter display, and then touch *Exit* to return to the copy window.

5.6 DIP SWITCHES

Controller Board: SW2

DIP SW No.	OFF	ON
1	Boot-up from machine	Boot-up from IC card
2	Not used (keep at OFF)	
3		
4		

If the controller firmware download attempt failed, you must boot the machine from the IC card. To do this, set DIP SW 1 on the controller board to ON.

BICU Board: SW2

DIP SW No.	Function	OFF			ON		
1	Machine Type	B052 (32 minute B/W)			B051 (24 minute B/W)		
2	Destination	Off:	Off:	Off:	On:	On:	Off:
3		Off: JAN	On: NA	Off: EU	On: AA	Off: TWN	On: CHN
4		Off:	Off:	On:	Off:	Off:	On:
5	Not used	Keep at OFF					
6	Not used						

JAN: Japan, NA: North America, EU: Europe, AA: Asia, TWN: Taiwan, CHN: China

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 - 041 **04/30/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: COLOR STREAKS OR BACKGROUND

SYMPTOM:

Colored steaks or background when scanning/copying. In addition, SC101 or SC142 can occur.

CAUSE:

The adhesive used during manufacturing, to secure the CCD cover may break down when the optics cavity heats up. This can cause corrosion to buildup to the CCD contacts. Therefore, any of the above symptoms may occur.

SOLUTION:

Production Countermeasure:

The adhesive and method used to attach the cover has been changed during production.

Field Countermeasure:

Ricoh will replace at no charge 100% of lens block assemblies in the affected serial number range.

NOTE: *Please refer to the serial number cut-in information for this bulletin to see if your machine is affective.*

These units will be automatically shipped in random order to the locations with machines in the affected serial number range.

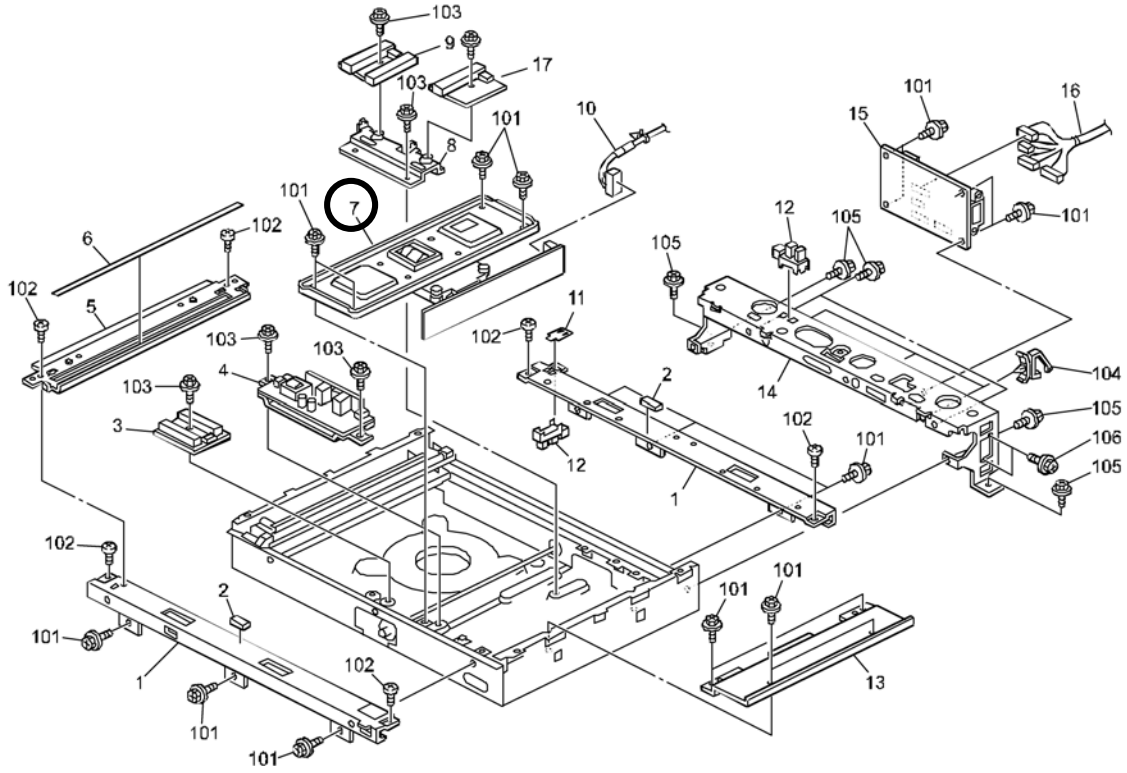
NOTE: ***The defective lens block assemblies must be returned with the prepaid FedEx return label (supplied with the replacement part). The defective lens block assemblies should be repackaged in the same box that the replacement part arrived in and the box must be clearly marked with the serial number of the machine.***

Shipping of the replacement parts will begin in May 2004 and shipping will be completed in September 2004.

In the event that your location needs a lens block assembly before receiving the replacement part. The new style lens block assembly is available as a service part. Please order the part through your normal parts channels and contact your regional representative for any warranty credit.

GENERAL:

The following part update is being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0511689	B0511697	Lens Holder Assembly	1	1	15	7

UNITS AFFECTED:

All affected B051/B052 copiers manufactured within the serial number range listed below will be shipped the replacement lens holder assembly at not charge. Machines manufactured after the listed serial number range will have the new lens holder assembly installed during production.

MODEL NAME	SERIAL NUMBER
B051	J2527001216 to J2537101216
B052	J2627000371 to J2637001372

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: B051/B052 – 041 REISSUE ★ **09/09/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: COLOR STREAKS OR BACKGROUND

SYMPTOM:

Colored steaks or background when scanning/copying. In addition, SC101 or SC142 can occur.

CAUSE:

The adhesive used during manufacturing, to secure the CCD cover may break down when the optics cavity heats up. This can cause corrosion to buildup to the CCD contacts. Therefore, any of the above symptoms may occur.

SOLUTION:

Production Countermeasure:

The adhesive and method used to attach the cover has been changed during production.

Field Countermeasure:

Ricoh will replace at no charge 100% of lens block assemblies in the affected serial number range.

NOTE 1: *Please refer to the serial number cut-in information for this bulletin to see if your machine is affective.*

These units will be automatically shipped in random order to the locations with machines in the affected serial number range.

NOTE 2: *The defective lens block assemblies must be returned with the prepaid FedEx return label (supplied with the replacement part). The defective lens block assemblies should be repackaged in the same box that the replacement part arrived in and the box must be clearly marked with the serial number of the machine.*

★ **NOTE 3:** *When replacing the Lens Block Assembly follow the instructions in the Service Manual for important SP mode information. See pages 3-3 (Lens Block Assembly replacement) and 3-6 (Scanner White Level Adjustment).*

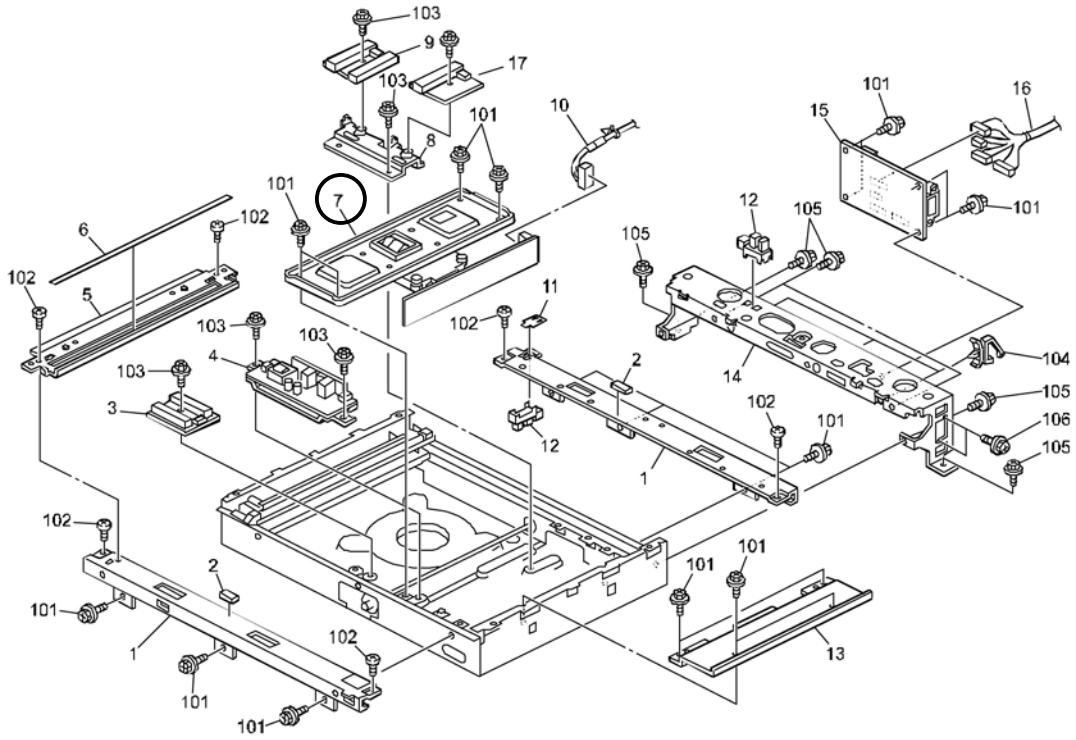
Shipping of the replacement parts will begin in May 2004 and shipping will be completed in September 2004.

In the event that your location needs a lens block assembly before receiving the replacement part. The new style lens block assembly is available as a service part. Please order the part through your normal parts channels and contact your regional representative for any warranty credit.

CÓPIA NÃO CONTROLADA

GENERAL:

The following part update is being issued for all B051/B052 Parts Catalogs.



					REFERENCE	
OLD PART NO.	**NEW PART NO.**	**DESCRIPTION**	**QTY**	**INT**	**PAGE**	**ITEM**
B0511689	B0511697	Lens Holder Assembly	1	1	15	7

UNITS AFFECTED:

All affected B051/B052 copiers manufactured within the serial number range listed below will be shipped the replacement lens holder assembly at not charge. Machines manufactured after the listed serial number range will have the new lens holder assembly installed during production.

MODEL NAME	SERIAL NUMBER
B051	J2527001216 to J2537101216
B052	J2627000371 to J2637001372

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: B051/B052 – 042 **07/14/2004**

APPLICABLE MODEL:

GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: TONER DROPPING

SYMPTOMS:

Toner dropping from the development unit, leading to the following:

- Random-pitched banding (dirty OPC grounding brush)
- Dirty spots on images
- 15mm-width bands (charge corona cleaner stops during cleaning job)
- Uneven image density, light copies, other (see Technical Service Bulletin B051/B052-014 REISSUE (05/24/2004))

CAUSES:

1. Toner leaks through the gap between the internal seal and doctor roller (L/R sides of development unit).
2. Toner leaks through the doctor and development roller NIP area, due to insufficient NIP pressure between the rollers (L/R sides of development unit).
3. Toner leaks through the entrance seal when foreign particles get caught underneath the seal (center of development unit).

NOTE: *This is intermittent, since the development roller's reverse rotation mode helps to clear away these particles.*

SOLUTION:

Follow the steps below to resolve copy quality symptoms caused by toner dropping. Attach Field Countermeasure seals to development units.

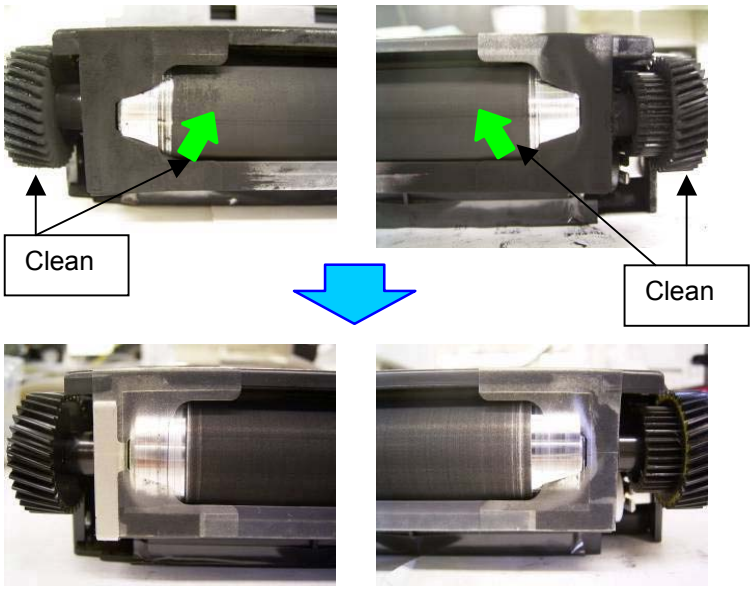
FIELD COUNTERMEASURE:

1. Turn the development roller in the reverse direction and clean the roller surface with a dry cloth. Also, please refer to Technical Service Bulletin B051/B052-014 REISSUE (05/24/2004).
2. Clean the following, including any areas inside the machine onto which toner has fallen: Development unit area, charge corona unit, PCU exterior, PCU grounding brush (see Technical Service Bulletin B051/B052-014 REISSUE (05/24/2004), pg. 16).

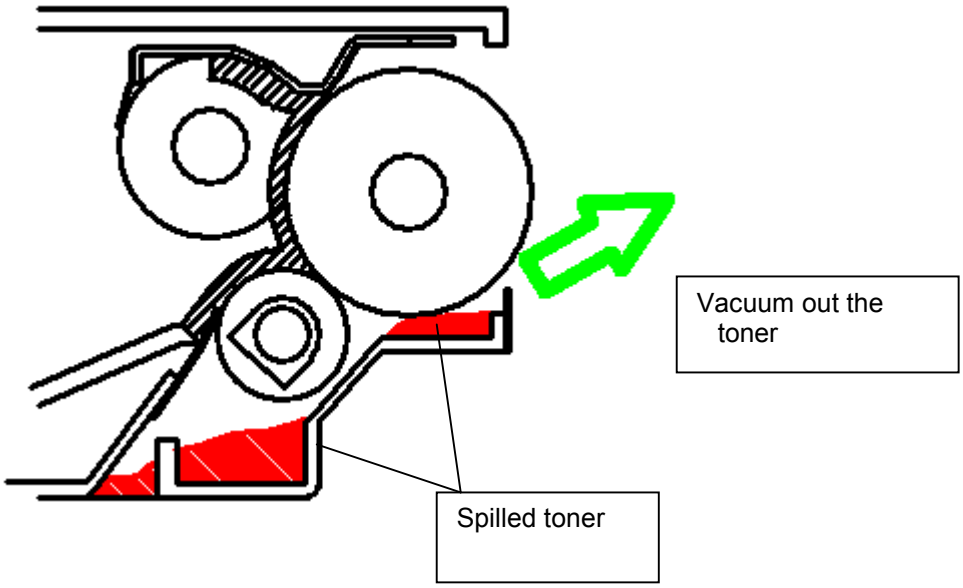
If uneven image density or light copies still appear after this cleaning, check the LD unit (esp. toner shield glass and polygonal mirror) and clean if necessary.

3. Clean both edges of the development unit (gears, development roller and development seals at both ends).

IMPORTANT: *While cleaning, make sure that no foreign particles come in contact with the development roller surface and that the development unit surface is not damaged.*



4. Clean out as much of the spilled toner as possible from the space between the development roller and seal using a vacuum.



5. Attach the field countermeasure side seals (L-shaped) to both ends of the development unit as shown on next page.
   Toner Protection sheet (P/N B0519909):– 40 pcs/set. The 40 piece set will modify 10 machines (4 Development Units per machine). The L-shaped seals will be distributed automatically to locations based upon machine shipment records.

NOTE: *The Toner Protection Sheet part number (P/N B0519909) is a control number only. This part **can not** be ordered using this number.*

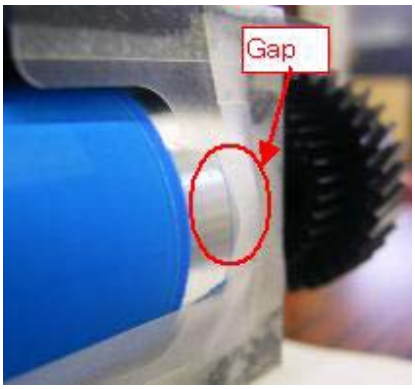
Attaching the seals:

1) Align the bottom and side edges (shown with red lines below) with the corresponding edges of the development unit.

NOTE: *The target is to perfectly align the seal with the unit edges, with a maximum of +1 mm outward from the unit side edge. Make sure not to attach the seals inward of the unit side edge.*

2) Bend back the tabs on the lower edge of the seal, then affix them to the bottom surface of the unit.

3) Make sure to smooth out the surface of the seal and press firmly when attaching, in order to prevent any bubbles. Also, after attaching, make sure there are no gaps between the seals are doctor roller shaft (See photo below).

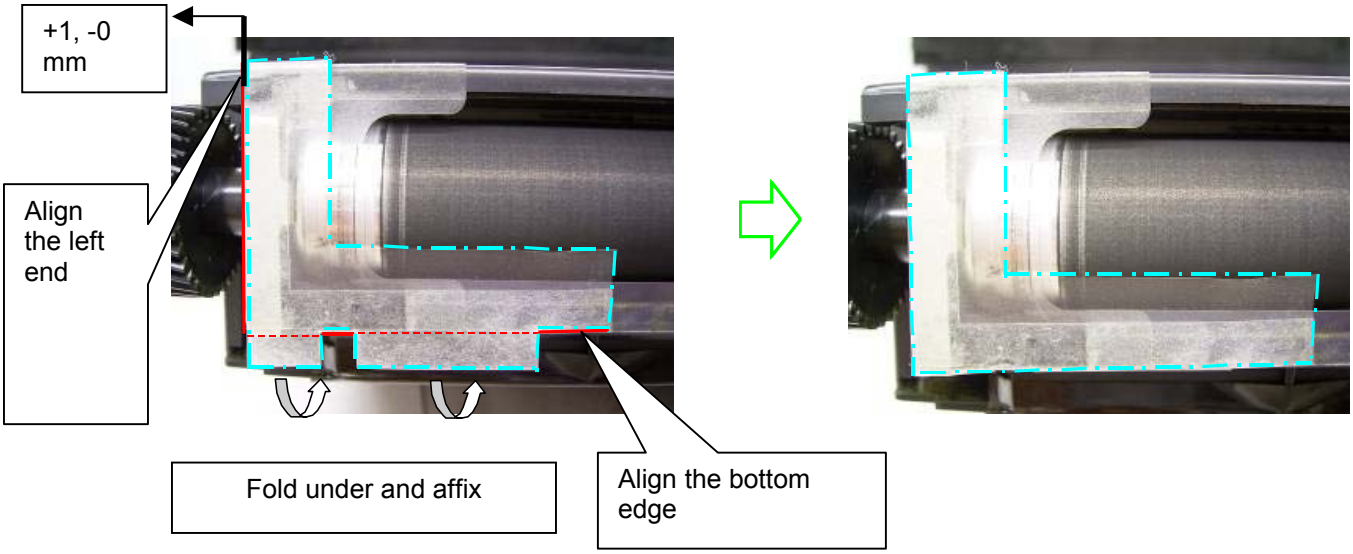


NG: There is gap between the seal and doctor roller shaft.

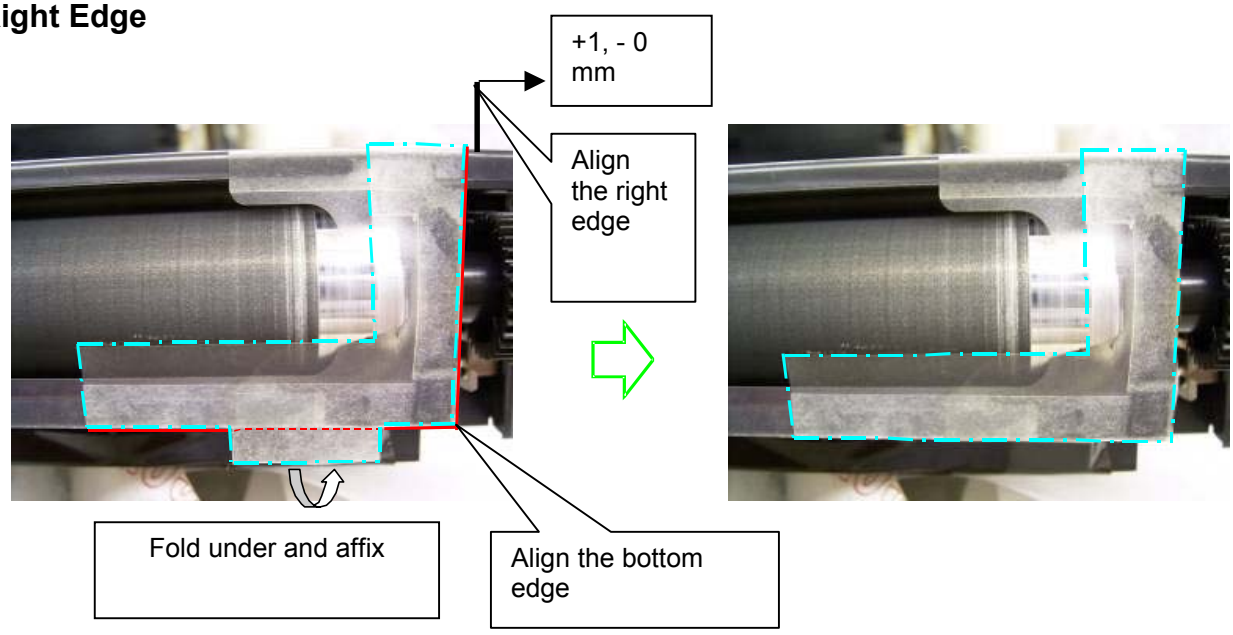
IMPORTANT*:*

1) *While attaching the Mylar seals, make sure that no foreign particles come in contact with the development roller surface and that the development unit surface is not damaged.*
2) *The actual seals are not marked with red lines. The red line is only a visual aid for the photographs on the next page.*
3) *If 54 mm-pitched marks appear after attaching the seals, the development roller surface needs to be cleaned (turn the development roller in the reverse direction 2 times and clean with a dry cloth).*

Left Edge



Right Edge



NOTE: *The target is to perfectly align the seal with the unit edges, with a maximum of +1 mm outward from the unit side edge. Make sure not to attach the seals inward of the unit side edge.*

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 043 **07/15/2004**

APPLICABLE MODEL:

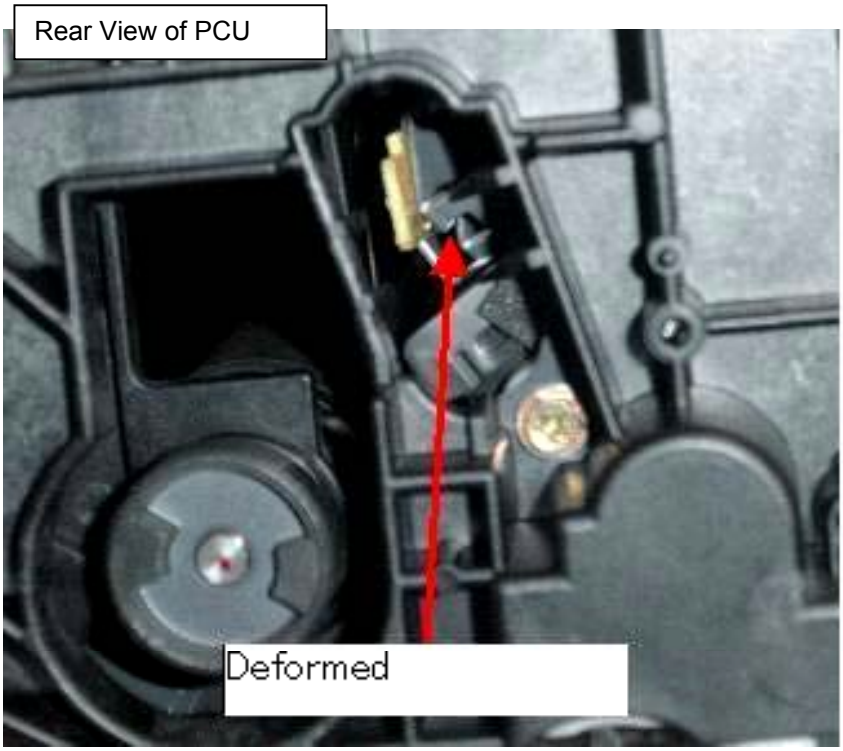
GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: PCU REPLACEMENT NOTES

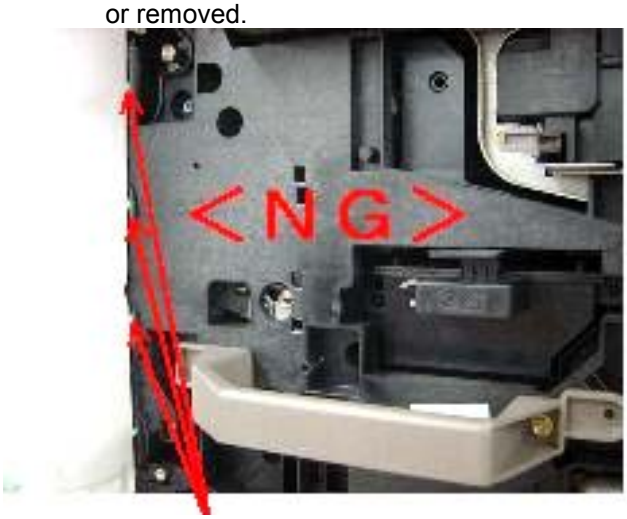
GENERAL:

Important notes for installing the PCU and Charge Corona Unit

1. When installing the PCU, be sure to insert the unit into the machine gently.
   - If the unit is installed too hastily, this can result in SC305 (charge corona unit cleaner error) or incorrect attachment of the unit, caused by damage to the QL stay as shown below.



2. <u>When removing or installing the PCU after having removed or installed the left inner cover, make sure that the projections shown below are underneath the cover (not sticking out).</u>
   - If these projections are left exposed, they can damage the OPC surface when the PCU is installed or removed.



Plastic Projections

3. <u>When removing the charge corona unit, be sure to **keep the unit level** while gently pulling it out (i.e. do not lower or turn the unit at all)</u>**.**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 044 **07/19/2004**

APPLICABLE MODEL:

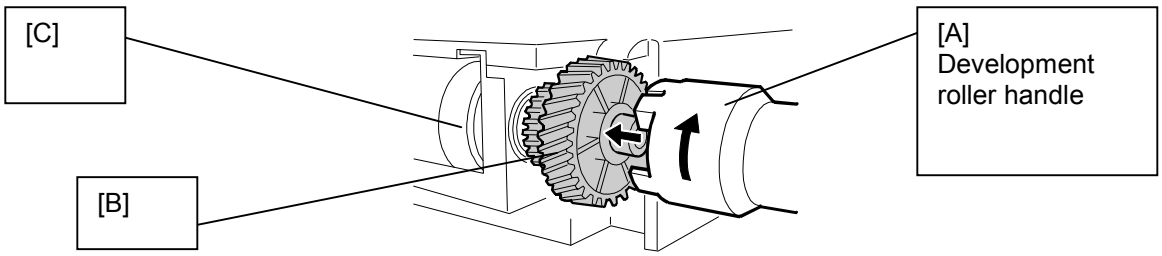
GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: DEVELOPMENT ROLLER HANDLE

GENERAL:

Important notes regarding the development roller handle

- The development roller handle shown below has been included inside the mainframes and development units spare part from the beginning of mass production, and is also registered with service parts as P/N G0703499 for use with KCMY development units. This handle is used to perform manual rotation of the development roller at unit installation (see Service Manual excerpt below).
- Please be sure to keep this handle together with all other maintenance tools (do not dispose of the handle), as this part will be removed from mainframes and development unit accessories beginning at some point in the near future (TBA). This handle is being removed from machines/accessories since only one is needed per field technician.
- The handle will however remain an active service part under its existing P/N shown above.



Service Manual excerpt:

8. Keep the development unit level and shake the development unit about 10 times from side to side.

   NOTE 1: *Do not touch the development roller or the development roller gear.*

   NOTE 2: *Use caution not to drop the cartridge or to damage it.*

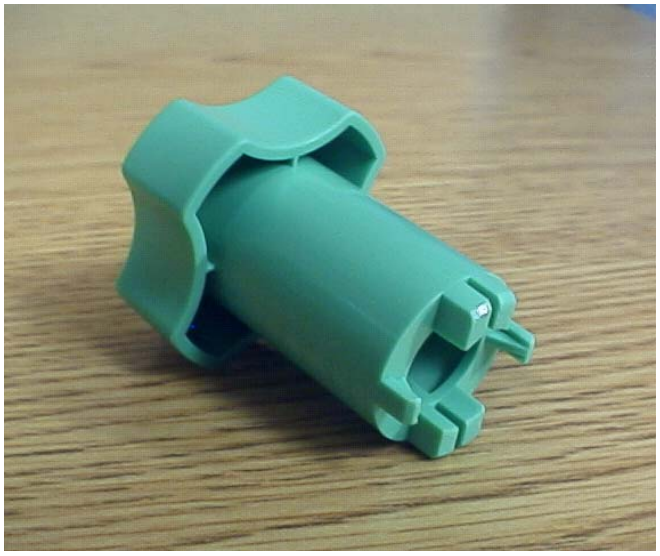
   NOTE 3: *If the cartridge has not been shaken well, the machine takes a longer time to initialize the development unit, or an error message or SC350 is displayed. When either of them is displayed, turn the main switch off and on.*

9. Engage the special tool [A] (distributed with the machine) with the development roller gear at the rear [B].

10. Turn the tool clockwise (approximately 5 times) until the toner covers the whole area of the development roller [C].

NOTE: *If the toner does not cover the whole area of the development roller, redo step 8 to 10.*

The following part update is being issued for all B051/B052 Parts Catalogs.



			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G0703499	Development Roller Handle	1	35	* 32

*** DENOTES NEW ITEM NUMBER**

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: B051/B052 – 044 REISSUE ★ **09/03/2004**

APPLICABLE MODEL:

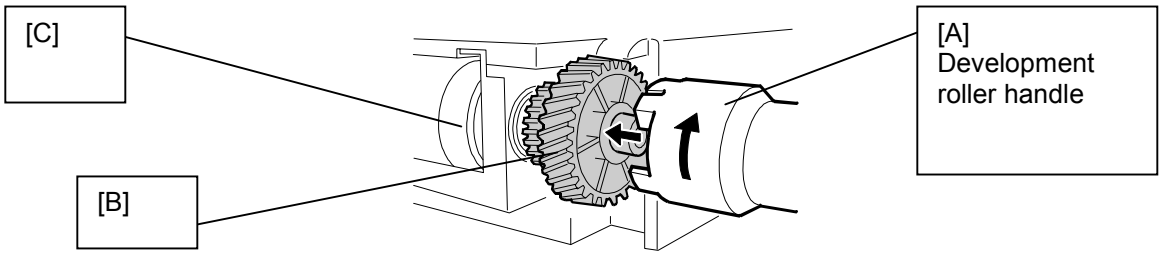
GESTETNER – DSC224/DSC232
LANIER – LD024C/LD032C
RICOH – AFICIO 1224C/1232C
SAVIN – C2408/C3210

SUBJECT: DEVELOPMENT ROLLER HANDLE

GENERAL:

Important notes regarding the development roller handle

- The development roller handle shown below has been included inside the mainframes and development units spare part from the beginning of mass production, and is also registered with service parts as P/N G0703499 for use with KCMY development units. This handle is used to perform manual rotation of the development roller at unit installation (see Service Manual excerpt below).
- Please be sure to keep this handle together with all other maintenance tools (do not dispose of the handle), as this part will be removed from mainframes and development unit accessories beginning at some point in the near future (TBA). This handle is being removed from machines/accessories since only one is needed per field technician.
- The handle will however remain an active service part under its existing P/N shown above.



Service Manual excerpt:

8. Keep the development unit level and shake the development unit about 10 times from side to side.

   NOTE 1: *Do not touch the development roller or the development roller gear.*

   NOTE 2: *Use caution not to drop the cartridge or to damage it.*

   NOTE 3: *If the cartridge has not been shaken well, the machine takes a longer time to initialize the development unit, or an error message or SC350 is displayed. When either of them is displayed, turn the main switch off and on.*

9. Engage the special tool [A] (distributed with the machine) with the development roller gear at the rear [B].

10. Turn the tool clockwise (approximately 5 times) until the toner covers the whole area of the development roller [C].

NOTE 4: *If the toner does not cover the whole area of the development roller, redo step 8 to 10.*

★ If you see lines on the roller after doing this step, turn the gear counter-clockwise about 1/4 turn (10 mm). Then, turn the gear clockwise again 2 full turns.

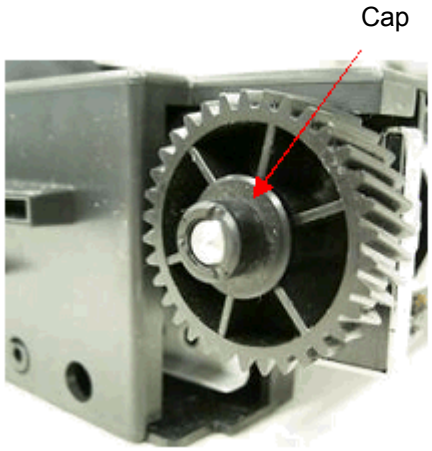
★ **NOTE 5:** *DO NOT turn the gear in the opposite direction while the toner does not cover still the whole area of the development unit because toner dropping may occur.*

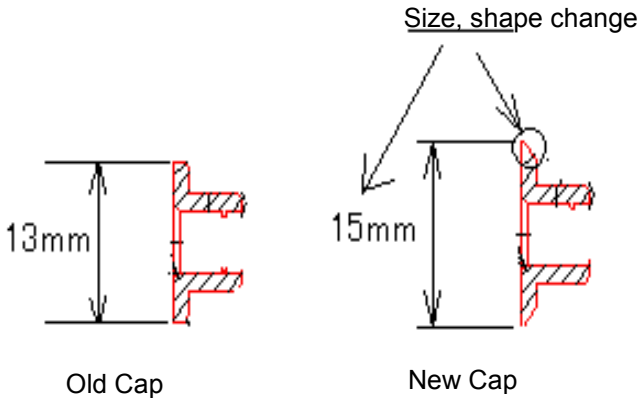
★ Important note about the development roller cap:

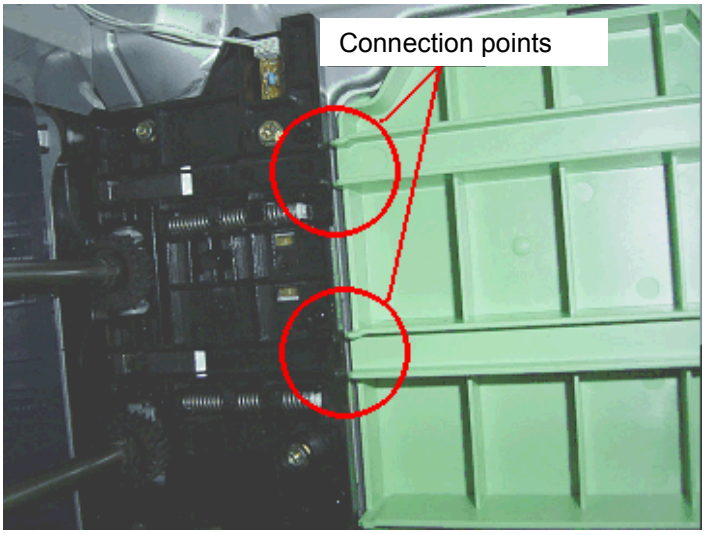
When you install development units from June 2004 production onward, remove the gear cap before you turn the roller with the special tool. Also, after turning the roller, put the cap back on the roller.

- The shape of the cap was changed, and the diameter was increased from 13mm to 15mm. This was done to make it easier to install the development unit (The new gear slides onto the rail easier).

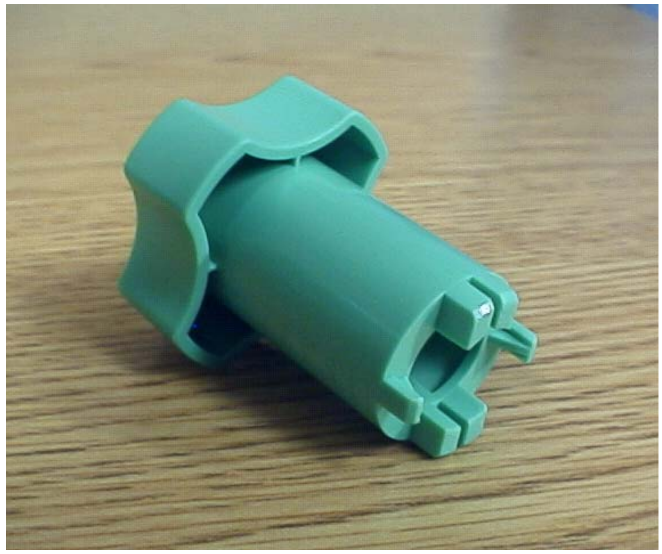
★







The following part update is being issued for all B051/B052 Parts Catalogs.



			REFERENCE	
NEW PART NUMBER	**DESCRIPTION**	**QTY**	**PAGE**	**ITEM**
G0703499	Development Roller Handle	1	35	* 32

*** DENOTES NEW ITEM NUMBER**

FIRMWARE HISTORY

CÓPIA NÃO CONTROLADA

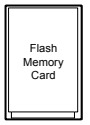
FIRMWARE HISTORY

PUBLISHED DATE: 09/30/2004

PRODUCT CODE: B051/B052

APPLICABLE MODEL:

GESTETNER - DSC224/DSC232
LANIER - LD024C/LD032C
RICOH - AFICIO 1224C/1232C
SAVIN - C2408/C3210



GENERAL:

The latest firmware version can be downloaded at the Technology Solutions Center FTP Site at 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.*

The revised areas have been highlighted by an arrow ⇒.

TABLE OF CONTENTS:

CAUTION: **Whenever updating the firmware for the printer that is below <u>version 2.00</u>, all of the firmware types must be updated at the same time to the versions listed below. In other words, individual updates cannot be performed in these cases.**

No.	Software Type	Version	Service card version
1	Controller	2.01.2	Controller version 2.01.2
2	Fax	2.00	BICU-Fax version 1.08
3	Printer	2.01	Printer version 2.01
4	NIB	3.07	Printer version 2.00
5	NFA	1.66	Printer version 2.00
6	Scanner	2.00	S2.00_PS1.06
7	Delivery	2.00	Printer version 2.00
8	BICU	1.242	BICU-Fax version 1.08

CÓPIA NÃO CONTROLADA

1. COPIER FIRMWARE:

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
1.0181	UraC1CardV1181.bin	-	August 2002
1.0192	UraC1CardV1192.bin	-	N/A
1.02	B0515557J	-	N/A
1.03	B0515557K	-	N/A
1.04	B0515557L	7C35	September 2002’
1.05	B0515557N	-	December 2002
1.06	B0515557P	BE7A	January 2003
1.07	B0515557R	A38A	February 2003
1.08	B0515557S	7D3D	March 2003
1.09	B0515557T	610C	April ‘2003
1.10	B0515557V	9BE7	June 2003
1.11	B0515557W	2C66	August 2003
1.12	B0515557Y	2224	October 2003
1.13	B0515565	89B1	November 2003
1.14	B0515565A	CBCE	December 2003
1.15	B0515565B	89B1	January 2004
1.16	B0515565C	E5CF	February 2004
1.17	B0515565D	836F	June 2004

1.1 COPIER (BICU/OPERATION PANEL LCD/FAX/FCU) SERVICE CARD CONTENTS:

Card Version	FIRMWARE PART NUMBER/VERSION							
	BICU (Engine)		Operation Panel LCD		FAX Application		FCU	
	Part Number	Version	Part Number	Version	Part Number	Version	Part Number	Version
1.018	UraC1CardV1 181.bin	1.181:01	B0515536C	1.19	B0515551D	1.17	B5025771C	02.01.00
1.019	UraC1CardV1 192.bin	1.192:01	B0515536C	1.19	B0515551D	1.17	B5025771C	02.01.00
1.02	B0515554J	1.202:01	B0515536C	1.19	B0515551D	1.17	B5025771C	02.01.00
1.03	B0515554K	1.204:1	B0515536C	1.19	B0515551D	1.17	B5025771C	02.01.00
1.04	B0515554L	1.204:1	B0515536C	1.19	B0515551D	1.17	B5025771D	03.01.00
1.05	B0515554M	1.212:01	B0515536C	1.19	B0515551D	1.17	B5025771D	03.01.00
1.06	B0515554N	1.213:01	B0515536C	1.19	B0515551D	1.17	B5025771D	03.01.00
1.07	B0515554P	1.233:01	B0515536C	1.19	B0515551E	2.00	B5025771E	04.00.01
1.08	B0515554Q	1.242:01	B0515536C	1.19	B0515551E	2.00	B5025771E	04.00.01
1.09	B0515554R	1.253:01	B0515536C	1.19	B0515551E	2.00	B5025771E	04.00.01
1.10	B0515554S	1.262:01	B0515536C	1.19	B0515551E	2.00	B5025771E	04.00.01
1.11	B0515554T	1.275:01	B0515536C	1.19	B0515551E	2.00	B5025771E	04.00.01
1.12	B0515554V	1.28:01	B0515536D	1.25	B0515551E	2.00	B5025771E	04.00.01
1.13	B0515554W	1.291:01	B0515536D	1.25	B0515551F	2.05	B5025771E	04.00.01
1.14	B0515554X	1.30:01	B0515536D	1.25	B0515551G	2.05.2	B5025771E	04.00.01
1.15	B0515554Y	1.31 :01	B0515536D	1.25	B0515551G	2.05.2	B5025771E	04.00.01
1.16	B0515554Z	1.32 :01	B0515536D	1.25	B0515551G	2.05.2	B5025771E	04.00.01
1.17	B0515568	1.333:01	B0515536D	1.25	B0515551G	2.05.2	B5025771E	04.00.01

CÓPIA NÃO CONTROLADA

1.2 BICU FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Doctor roller reverse mode timing. After 20 prints, at job end or after 50 prints (stops in the middle of the job), the machine carries out the doctor roller reverse rotation to maintain good printing quality. A4/LT SEF or shorter printing is counted as 1 and the printing longer than A4/LT SEF is counted as 2. With the prototype firmware, A4/LT LEF or shorter printing is counted as 1 and longer than A4/LT LEF is counted as 2. This is to reduce the frequency	1.181:01
Corrects the following: • SP2-905-01: (Paper transfer roller type) To improve the transferability, the shape of the paper transfer roller has been changed from the 1st production. Due to this modification, paper transfer currents (SP2-310-001 to SP2-314-032) and paper transfer adjustment (SP2-903-01) have been reviewed. The settings for August production machines have been input on the production line. This SP changes the default and factory settings for SP2-310-001 to SP2-314-032 and SP2-903-01 for both types. It is necessary to set the type to 0 and press # key when firmware version 1.181:01 or older (August production machines) is updated to 1.192:01 or newer for the first time. This is because the machine cannot judge which data (old or new) should be used for paper transfer currents. Check the SP settings after updating the firmware (SP2-310-001 to SP2-314-032, and SP2-903-01). **NOTE:** *All settings will be initialized to their new defaults (see tables below), therefore any previously input field customized settings must be re-input manually.* **0: New paper transfer roller type** (Drum type), 1: Old paper transfer roller type (straight type) SP2-321-7 and –9: (Paper transfer bias of edge) The default settings have been changed from 1.0 to 0.8 to improve image quality in low temperature and low humidity conditions. SP7-931-001 to –017 (Engine status display) Engine log can be checked by SP mode for field symptom evaluation, as if the machine stalls, the SMC cannot be printed out. Checking the indication in this SP can be helpful in problem/cause identification. • Reducing fan motor rotation period The development fan stops and the fusing unit fan is rotated at half speed for 15 seconds after the last sheet of paper exits the printer. With the previous firmware, the fusing unit fan and development fan both ran for 3 minutes after paper exit.	1.192:01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Process control mode timing To reduce the cycle of process control mode (every 200 printings), Mono (BK) prints are no longer counted for process control. • Charge corona cleaning Charge corona cleaning mode-entering timing has been changed from 640 to 700. After 700 development counts (stops in the middle of the job), charge corona cleaning is carried out. • SC560 (Zero cross error) If the following abnormal Hz for the power source is detected when the main switch is turned on, SC560 is displayed (upper limits eliminated, as they are unnecessary). Old control for SC560: 50Hz: 45>Detected Hz or 54<Detected Hz, 60Hz: 55>Detected Hz or 64<Detected Hz New control for SC560: 50Hz: 45>Detected Hz, 60Hz: 55>Detected Hz • SP1-905-01 (pressure roller type): To prevent fusing jams (wrapping around the pressure roller) the layer thickness of the pressure roller has been changed from 1.5 mm to 2.1mm from the first production machines. When updating from v1.192:01 or older to v1.202.01 or later for the first time, even if the new pressure roller is installed, it is necessary to select ' new ' in SP1-905-01 to initialize fusing temperature control. The settings for the August production machines have been input on the production line. When firmware 1.192:01 or older is updated to 1.202.01 or later for the first time, the machine cannot judge which data (old or new) should be used for fusing control. **NOTE:** *When selecting 0 in SP1-905-1 and then pressing # on the LCD, the new control data is applied to fusing control.* 0: **new pressure roller type (2.1 mm)**, 1: old pressure roller type (1.5 mm) • SP2-944-4 and –5 :(OPC Lubrication – High Coverage) The default settings for SP2-944-4 and –5 have been reviewed and changed to reduce the cycle of OPC lubrication mode. SP2-944-4: Sheets-1: [10 to 80/ 30 / 1sheet/step] SP2-944-5: Sheets-2: [10 to 80/ 60 / 1sheet/step]	1.202:01
Corrects the following: • Toner end and/or toner near end may be detected even when the toner cartridge still contains enough to continue printing	1.204:1
Corrects the following: • SC546 & SC556 Detection conditions for SC546/556 have been changed so that they are triggered by a 50°C/sec jump or drop in thermistor temperature data (old: 20°C/sec). This is because these SCs were being reported from the field in Japan in environments below 5°C (installation requirements: 10°C minimum), i.e. unnecessary SC occurrences. **NOTE:** *When the actual fusing temperature is below 5°C, the temperature curve for thermistor data is unstable and nonlinear, triggering the SCs more easily.*	1.212.01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • The paper feed/transport timing for the duplex interleaf function (one sheet in duplex unit, one fed from tray) has been improved to ensure better paper transport.	1.213:01
Corrects the following: • The detection conditions for SC412 (2nd transfer disconnection) have been changed from 60ms to 240ms to prevent misdetections that can sometimes occur in low-temperature conditions. This is because this SC was being reported from the field in Japan in environments below 5°C (installation requirements: 10°C minimum), i.e. unnecessary SC occurrences. **NOTE:** *When the temperature is below 5°C, the high voltage supply board does not supply the target transfer roller current due to the high resistances of the image transfer belt and paper transfer roller, triggering the SC more easily.* • SP2-801-03 (Additional Value of the charge corona cleaning interval) has been newly added. The cleaning interval for the additional charge corona unit has been adjusted as shown. [0 ~ 5000 / 100 / 100 counts/step] With this new SP, it is possible to adjust the interval for charge corona cleaning in the middle of a job: Old: The charge corona cleaning is carried out after 600 (SP2-801-1) development counts, at job end or after 700 (no adjustment) development counts (stops in the middle of the job). After The charge corona cleaning is carried out after 600 (SP2-801-1) development counts, at job end or after 700 (= the sum of the settings in SP2-801-1 and -3) development counts (stops in the middle of the job). • SC571 Software changed so that oil end detection is not counted for supplying oil from the oil tank to the oil reservoir in the oil supply unit while the fusing unit is not working (i.e. SCs and jams). This is to avoid oil overflow conditions that can be caused by winter humidity (humidification). • Text mode in mono color mode Text Mode in mono color mode also uses the separation filter, which may sometimes cause separation errors. The separation filter has been reviewed. • Machine may freeze when a paper jam occurs or when the main switch is turned on • SC120 was displayed instead of SC122 when the scanner home position was initialized. SP2-803-01 (Charge Cleaning Off time) newly added: [0 ~ 200 / 60 / 10 seconds/step] • Although a 60-second interval already exists for performing an idle discharge after corona wire cleaning, this new SP mode allows the interval to be adjusted. The idle discharge is to maintain an even charge wire surface, ensuring proper charging.	1.233:01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • In color mode (2C or more) with LT LEF and duplex, SC280 is misdetected if 5 or more originals are scanned during machine warm-up. • Machine may freeze up when returning to stand-by mode from panel-off or low power mode under the following: LEF job → SEF job → Enters panel-off/low-power within 3 minutes → Next job initiated, enters stand-by mode. • SC670 is sometimes mis-detected when the SMC is printed out.	1.242:01
Corrects the following: • To ensure proper printing quality, the default values for the following SP modes have been revised while some SP modes have been added. -SP3-920-001 (Lubrication Cleaning Time) ( ): previous default [0 ~ 100 / **50** (100) / 1% /step] -SP2-941-001(OPC Lubricant Time – Interrupt) [0 ~ 30 / **14** (20) / 1s /step] -SP3-922-001 (Lubricant Clutch OFF: 1C): Newly added -SP3-922-002(Lubricant Clutch OFF: 2C/3C/4C): Newly added [0 ~ 11 / **6** / 1s /step] Allows the image transfer belt-cleaning clutch off timing to be adjusted. The setting determines the number of seconds after image transfer belt cleaning roller charging that the clutch is turned off. With previous versions, the clutch is always running while the development roller motor rotates. -SP2-938-001 (OPC Reverse Interval): Newly added [0 ~ 100 / **10** / 10 counts /step] The Main motor rotates the OPC belt backwards for 500ms at the end of every job, in order to remove foreign particles between the OPC belt and OPC cleaning blade. However, this does not need to be performed so often. In addition, reducing the frequency of OPC belt reverse rotation improves the cleaning blade performance. This SP adjusts the counter for the OPC belt reverse rotation, and is incremented as follows: LT/A4 LEF or smaller: 1, larger than LT/A4 LEF: 2. When this SP reaches its set maximum, reverse rotation is performed for 500ms at job end. **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to v2.01.5 or later. For details, please refer to TSB B051/B052 - 021 (Black Faint Images).*	1.253:01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • The “toner cartridge setting error” is sometimes displayed even when the cartridge has been set correctly. This is due to misdetection of the information on the cartridge memory chip. • 8”x13” SEF is misdetected as A4 SEF in the by-pass tray. (EU/Asia versions only). • Default settings for the following have been changed (new defaults underlined). SP1-003-5, -6, -7 (Paper Buckle for By-pass Tray): • SP1-003-5 By-pass: Plain [-4 ~ 6 / 3 / 1mm /step] (Previous default: 0) • SP1-003-6 By-pass: Thick [-4 ~ 6 / 0 / 1mm /step] (Previous default: -2) • SP1-003-7 By-pass: OHP [-4 ~ 6 / 0 / 1mm /step] (Previous default: -2) • Eliminated unnecessary occurrences of SC410 (2nd transfer electric leakage): SC410 tends to occur frequently when using paper with high moisture content under high-temperature, high-humidity when the resistance on the paper transfer roller is low. The roller current was previously lowered for mono-color mode (45% that of full color), which lowered the resistance and caused frequent occurrences. This version uses the color mode current for mono-color until job end to eliminate unnecessary occurrences under the conditions described above. Default for SP2-803-01 (Charge Cleaning Off time) changed to minimize idling time during wire cleaning. . [0 ~ 200 / 10 / 10 seconds/step] (previous default: 60) **NOTE:** *This adjustment was added from version 1.233:01, and the description has been added to the version 1.233.01 description below (previously missing).* • SP modes newly added (listed below). These SPs have been added to ensure proper (higher) transfer belt cleaning by applying the following bias voltages at job end (OPC lubrication time): SP2-400-008: Cleaning Bias LL1: OPC lubrication time SP2-401-008: Cleaning Bias LL2: OPC lubrication time SP2-402-008: Cleaning Bias NN1: OPC lubrication time SP2-403-008: Cleaning Bias NN2: OPC lubrication time SP2-404-008: Cleaning Bias HH: OPC lubrication time [0 to 2000/ 1400 / 10 Volt/step] • Minimum value changed for SP2-941-01, -02 (OPC lubrication time). Minimum increased from 0 to 6: SP2-941-01: Job End: [6 ~ 30 / 14 / 1 s/step] SP2-941-02: OPC Lubrication Interval: [6 ~ 60 / 10 / 1 s/step] **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to version 2.02 or later.*	1.262:01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Toner accumulates on the edge of the ITB cleaning blade. Turning the ITB clutch Off/On, forces accumulated toner on the blade edge to drop on the ITB while the image is not transferred on the ITB for cleaning. If it is not performed, toner may drop on the printing image. These SP's adjust the time and number of times for blade cleaning. -2-924-001(ITB Cleaning Clutch Off/On – Time) [100 ~ 500/ 300 / 10ms /step] -2-924-002 (ITB Cleaning Clutch Off/On – Number) [0 ~ 5/ 2 / 1 /step] • The lubrication cleaning time has been revised. SP mode has been subdivided into time for 1C and time for 2C/3C/4C. -SP3-920-001 (Lubrication Cleaning Time: - 1C) [0 ~ 100 / 50 / 1% /step] -SP3-920-002 (Lubrication Cleaning Time: - 2C/3C/4C) [0 ~ 100 / 100/ 1% /step] • Eliminated unnecessary occurrences of SC420 (Fusing bias discharge error). SC420 will not be shown when a leak occurs because of a small hole on the fusing belt surface. Field experience has confirmed that belt lifetime is actually longer when the SC is not shown in these conditions. If a leak should occur, the machine turns SP2-501 OFF (fusing bias SW), and the fusing bias is not applied until the fusing counter is cleared and the SP is set back to ON or PM counter (SP7-803-7) is cleared. -SP2-501-001 (Fusing Bias SW) [0 ~ 1 / 1/ 1: ON 0: OFF] • When printing the magenta mono color, Cyan color may mix slightly on the magenta image. • The separation error may occur in the "Generation" mode selected in the operation panel. To correct this, the image processing has been reviewed. **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to version 2.02.9 or later.*	1.275
Corrects the following: • The following SP modes will be displayed from this firmware version, but will not be operational until the next version. Therefore please do not change these settings until the next instruction. -SP2-927-001 (Disable Time (ITB Cleaning) [0 ~ 14 / **3** / 1 s/step] DFU -SP2-925-001 (ITB Cleaning Execution Variable) [0 ~ 100 / **20** / 1 sheet/step] DFU -SP2-926-001 (Cover Ratio Reference (MC) [0 ~ 10 / **1.7** / 0.1 %/step] DFU -SP2-925-002 (Cover Ratio Reference (FC) [0 ~ 10 / **1.7** / 0.1 %/step] DFU • SC571 (fusing oil overflow) misdetection from oil end detection control malfunction. **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to version 2.04.1 or later.*	1.28:01

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Final solution for black faint images: • Default setting for SP3-970-004 (Image Area Rate: Bk) has been changed to 4.7 as follows: [0 ~ 10.0 / 4.7 / 0.1 %/step] This was based on tests that show a theoretical 4.7% pixel coverage ratio normally corresponds to a 5% actual image coverage ratio. • New SP added to control frequency of ITB clutch on/off: SP2-970-05 (ITB Cleaning Clutch Off/On Number in Oil removal mode) [0 ~ 5 / 2 / 1/step] This SP sets the number of times ITB clutch on/off is performed at the end of oil removal mode (SP2-970-01), a mode that removes oil from the ITB to ensure uniform image density. Turning the ITB clutch on/off helps to remove excess toner that can cling to and then drop from the edge of the newly added ITB cleaning blade during oil removal. **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to version 2.05.01 or later.*	1.291:01
Corrects the following: • Extra toner may sometimes stick to the transfer roller and then to the rear side of the next copy sheet (main motor Off timing has been optimized). • The Copier main motor may sometimes continue running if Sort jobs are printed out to the 500-sheet Finisher (B458).	1.30:01
Corrects the following: • SP2-954-001 (New PCU Settings) newly added: This mode facilitates servicing in the field with individual settings for new and old PCUs. SP2-954-001 (New PCU Settings) 0: New 1: Old **NOTE:** *Enabling/Disabling this SP mode will change the settings of all of the SP modes listed in the table below.* • A misdetection of SC481 (Transfer belt mark detection error) or SC280 (Image transfer belt mark detection error) may occur when the main motor rotational direction is changed from backwards to forwards. **NOTE:** *Along with this BICU version, be sure to update the main unit controller firmware to version 2.06 or later.* …continued	1.31:01

<table>
<tr><th>SYMPTOM CORRECTED</th><th>FIRMWARE VERSION</th></tr>
<tr><td>

Affected Service Programs When SP 2-954-001 is Set:

<table>
<tr><th rowspan="3">SP No.</th><th rowspan="3">Description</th><th colspan="2">SP2-954-01</th></tr>
<tr><th>0:New</th><th>1:Old</th></tr>
<tr><th>Setting for New</th><th>Setting for Old</th></tr>
<tr><td>2-400-008</td><td>Cleaning Bias LL1: OPC lubrication time</td><td>1400</td><td>1400</td></tr>
<tr><td>2-401-008</td><td>Cleaning Bias LL2: OPC lubrication time</td><td>1400</td><td>1400</td></tr>
<tr><td>2-402-008</td><td>Cleaning Bias NN1: OPC lubrication time</td><td>1400</td><td>1400</td></tr>
<tr><td>2-403-008</td><td>Cleaning Bias NN2: OPC lubrication time</td><td>1400</td><td>1400</td></tr>
<tr><td>2-404-008</td><td>Cleaning Bias HH: OPC lubrication time</td><td>1400</td><td>1400</td></tr>
<tr><td>2-920-01</td><td>ITB Cleaning CL OFF Time</td><td>0</td><td>0</td></tr>
<tr><td>2-921-01</td><td>ITB Cleaning CL OFF Mode</td><td>0□New PCU</td><td>1□Old PCU</td></tr>
<tr><td>2-922-01</td><td>Dev CL ON after Job End</td><td>0□OFF</td><td>1□ON</td></tr>
<tr><td>2-923-01</td><td>Lubricant after Toner End</td><td>1□ON</td><td>1□ON</td></tr>
<tr><td>2-924-01</td><td>ITB Cleaning Clutch Off/On - Time</td><td>300</td><td>300</td></tr>
<tr><td>2-924-02</td><td>ITB Cleaning Clutch Off/On - Number</td><td>2</td><td>0</td></tr>
<tr><td>2-925-01</td><td>ITB Cleaning Execution Variable</td><td>20</td><td>20</td></tr>
<tr><td>2-926-01</td><td>Cover Ratio Reference (MC)</td><td>1.7</td><td>1.7</td></tr>
<tr><td>2-926-02</td><td>Cover Ratio Reference (FC)</td><td>1.7</td><td>1.7</td></tr>
<tr><td>2-927-01</td><td>Disable Time (ITB Cleaning)</td><td>3</td><td>3</td></tr>
<tr><td>2-970-05</td><td>ITB Cleaning Clutch Off/On Number in Oil removal mode</td><td>2</td><td>0</td></tr>
<tr><td>3-920-02</td><td>Lubrication Cleaning Time – 2C/3C/4C</td><td>100</td><td>100</td></tr>
</table>

</td><td>1.31:01 continued</td></tr>
<tr><td>Corrects the following:
• Changes applied to SP modes for Japan version only.</td><td>1.32:01</td></tr>
</table>

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Software modified so that process control and charge corona wire cleaning are performed just prior to switching over to low power mode, to minimize the possibility of interrupting a print job. • The ACC sheet is not printed out correctly if the machine receives a Fax while printing out the sheet. • The title and accompanying pictorial symbols for all fusing unit jams are now displayed as one “B/C Jam” message, in order to ensure panel displays are consistent with machine decals. Specifically: - The “B/C jam” display instructs users to open both the right cover and right-upper cover. - The “B jam” display now instructs users to open the right cover only. • “Toner End” is displayed if the main power is turned On without the toner cartridge installed, even if the cartridge is then properly installed following this (main power Off/On necessary). • Machine emits a continuous beeping sound while shifting the paper stack inside the LCT following the LCT paper end condition (auto tray switching Off). **NOTE:** *In addition to this BICU version, be sure to update the main unit controller firmware to Version 2.07.2 or later.*	1.333:01

August production serial numbers

B051-17: J2526800001 to J2526800023

B051-27: J2526800024 to J2526800043

B052-17: J2626800001 to J2626800042

B052-27: J2626800043 to J2626800061

When updating the BICU firmware for August production machines-
The BICU firmware is updated from the August production machines to version 1.204:1 or later for the first time, be sure to update the main unit controller firmware to version1.332 or later at the same time. (Refer to the main unit controller firmware history. Then, change the following SP modes after updating the firmware.

SP2-905-01: (Paper transfer roller type): Select 0, then press #.

SP1-905-01 (pressure roller type): Select 0, then press #.

SP2-944-4 and –5: (OPC Lubrication – High Coverage): -4: Change setting from 20 to 30. –5: Change the setting from 40 to 60.

1.3 OPERATION PANEL LCD FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Thin, Normal in Spanish (US version), French (European version). The words in the Spanish user tools (US version) and French user tools (EU version), which had been corrected in English from first production, have been corrected as follows: The Spanish user tools is standard for the US version, and the French user tools is standard for the EU version as a second language. * Thin → Normal * Normal → Middle Thick/90 -105 g/m2 These words are located in the following screens: User tool - Maintenance - Plain paper type • Clean / Adjust in Spanish, French The indication for the Clean/Adjust key and its instruction in Spanish or French was temporarily displayed in English until the displays for Spanish and French were available. The new firmware contains these French and Spanish displays for user tools: User tool - Maintenance - Clean/Adjust • First release for Asia version	1.19
Corrects the following: • Taiwanese words/phrases and fonts added. **NOTE:** *For Asia and Taiwan models only.*	1.20
Corrects the following: • Incorrect indication of the Korean and Russian words/phrases in the scanner user tools has been corrected. • Taiwanese words correction • Korean words correction	1.25

1.4 FAX APPLICATION FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.17
Corrects the following: • Supports Media Link Board function.	2.00
Corrects the following: • Minor bug correction for Japanese version.	2.05
Corrects the following: • Key input from the operation panel is sometimes disabled when changing over from Copier to FAX mode under the following conditions. - Function Priority is set to Copier in User Tools. - Nothing is input for TTI No. 1 & 2. - Korea is registered as the country code in SP 1-101-016.	2.05.2

1.5 FCU FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	02.01.00
Corrects the following: • Job numbers for standby for FAX transmission by LAN FAX (P/C FAX): System Switch 19 No.4 (SP1-101-026; page 57 in Service Manual) System Switch 19 No.4 (SP1-101-026; page 57) added to FAX SP mode. • Job numbers for standby for FAX transmission by LAN FAX (P/C FAX) are limited as follows: 0: 64 1: Depends on memory (400: standard, 800: with Fax Function Upgrade Unit) • Taiwan area Taiwan Area parameters added.	03.01.00
Corrects the following: • Supports Media Link Board function. • Main power OFF/ON during original scanning If the main power is turned OFF while the machine is scanning the original, the memory capacity remains decreased when the power is turned back ON.	04.00.01
Corrects the following: • TX level of DTMF tone in Taiwan is slightly high.	05.00.00

New Defaults for SP2- 310 to 314

SP code Class1 and 2					
SP	**2-310**	**2-311**	**2-312**	**2-313**	**2-314**
Class 3	**LL1**	**LL2**	**NN1**	**NN2**	**HH**
-1	25	27	28	29	30
-2	25	28	30	30	30
-3	25	29	32	31	30
-4	25	28	31	30	28
-5	25	27	30	28	26
-6	26	28	29	30	31
-7	26	29	31	31	31
-8	26	30	33	32	31
-9	26	29	32	31	29
-10	26	28	31	29	27
-11	14	15	15	16	16
-12	15	15	15	15	15
-13	16	15	14	15	15
-14	18	16	14	14	14
-15	20	17	14	14	14
-16	28	28	27	29	30
-17	30	29	28	31	33
-18	28	29	30	33	36
-19	28	29	30	32	34
-20	28	29	30	31	32
-21	29	29	28	30	31
-22	31	30	29	32	34
-23	29	30	31	34	37
-24	29	30	31	33	35
-25	29	30	31	32	33
-26	12	13	14	14	14
-27	16	16	16	15	15
-28	20	19	17	17	16
-29	24	23	23	23	22
-30	28	29	30	29	28
-31	16	17	17	18	18
-32	20	21	21	22	22

New defaults for SP2- 903

[0 to 70.0 /**1.0**/ 0.1μA/step]

NEW SERVICE PROGRAMS:

950	Start Registration Adjustment		
	1	Start Registration Adjustment 1–K (32 CPM)	Color registration adjustment: Adjusts the start timing of imaging for each color. [–3 ~ 3 / **0** / 1 line/step]
	2	Start Registration Adjustment 1–M (32 CPM)	[–3 ~ 3 / 0 (**–1)** / 1 line/step]
	3	Start Registration Adjustment 1–C (32 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	4	Start Registration Adjustment 1–Y (32 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	5	Start Registration Adjustment 2–K (32 CPM)	[–3 ~ 3 / 2 (**0)** / 1 line/step]
	6	Start Registration Adjustment 2–M (32 CPM)	[–3 ~ 3 / 0 (**–1**) / 1 line/step]
	7	Start Registration Adjustment 2–C (32 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	8	Start Registration Adjustment 2–Y (32 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	9	Start Registration Adjustment 1–K (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	10	Start Registration Adjustment 1–M (24 CPM)	[–3 ~ 3 / 0 (**–1)** / 1 line/step]
	11	Start Registration Adjustment 1–C (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	12	Start Registration Adjustment 1–Y (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	13	Start Registration Adjustment 2–K (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	14	Start Registration Adjustment 2–M (24 CPM)	[–3 ~ 3 / 0 (**–1**) / 1 line/step]
	15	Start Registration Adjustment 2–C (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]
	16	Start Registration Adjustment 2–Y (24 CPM)	[–3 ~ 3 / **0** / 1 line/step]

NOTE: *The new service programs numbers are noted in ( ).*

2. MAIN UNIT CONTROLLER FIRMWARE:

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
V1.22	B0515550 **G**	-	August 2002
V1.251	B0515550 **H**	-	Not applied to the production machines
V1.252	B0515550 **J**	-	Not applied to the production machines
V1.29	B0515550 **K**	-	Not applied to the production machines
V1.33	B0515550 **L**	-	November 2002
V1.332	B0515550 **M**	6CEF	November 2002
V1.39	B0515550 **N**	-	December 2002
V2.00.1	B0515550 **P**	E2B8	February 2003
V2.01.2	B0515550 **Q**	0F04	March 2003
V2.01.4	B0515550 **R**	6A3B	April 2003
V2.01.5	B0515550 **S**	5CE2	April 2003
V2.02	B0515550 **T**	C3AE	Jun production '03
V2.02.9	B0515550 **U**	2D2F	Not applied to the production machines. For updating the machines in the field, produced before August, 2003 production
V2.03.1	B0515550 **V**	81DA	August 2003
V2.03.2	B0515550 **W**	3C9B	September 2003
V2.04.1	B0515550 **X**	EB37	October 2003
V2.05.1	B0515550 **Y**	22E0	November 2003
V2.05.2	B0515550 **Z**	9FC4	December 2003
V2.06	B0515566	909E	January 2004
V2.07.2	B0515566 **A**	EEF3	June 2004

2002 **August Production Serial Numbers:**

B051-17: J2526800001 to J2526800023

B051-27: J2526800024 to J2526800043

B052-17: J2626800001 to J2626800042

B052-27: J2626800043 to J2626800061

NOTE: *When the main unit controller firmware is updated from the August production machines to 1.332 or later for the first time, be sure to update BICU firmware to version 1.204: 1 or later at the same time. Refer to the BICU Firmware History for the copier firmware service card.*

2.1 MAIN UNIT CONTROLLER FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	V1.22
Corrects the following: • '@' & '_' keys in the touch screen As per a field request, the '@' and '_' keys are now displayed in the first touch screen. • Firmware correction for CSS function (Domestic version only) SP7901 cannot be read through CSS system. Refer to the BICU firmware history in this TSB for the service card (BICU: 1.192:01). • Default and factory settings for SP2-310-001 to SP2-3***14***-032 (paper transfer currents) and SP2-903-01 (Paper transfer Adjustment) have been changed. SP2-321-7 and –9: (Paper transfer bias of edge) The default settings have been changed from 1.0 to 0.8 to improve image quality in low temperature and low humidity conditions. • SP2-905-01: (Paper transfer roller type) Refer to the BICU firmware history in this TSB for the service card (BICU: 1.192:01).	V1.251
Corrects the following: • Default DHCP ON • Default Autonet OFF • New IC chip on the new wireless LAN option The IC chip on the new wireless LAN option has been changed (old chip discontinued). This version works with both the old IC chip and new IC chip on the wireless LAN option. Also NIB version 3.54 or later is necessary when the new IC chip on the wireless LAN is installed.	V1.252
Corrects the following: • Machine may freeze during printing in the following conditions: • Combine and page numbering mode. • Original jam during printing in combine mode. • SP1-905-01 (pressure roller type) and Default value SP1-105 **0 : new pressure roller type (2.1mm)**, 1 : old pressure roller type (1.5mm) Refer to the BICU firmware Default value SP1-105 • Some default values have been changed. Refer to the New Default table. • SP2-944-4 and –5 :(OPC Lubrication – High Coverage) The default settings for SP2-944-4 and –5 have been reviewed and changed to reduce the cycle of OPC lubrication mode. SP2-944-4 : Sheets-1 : [10 to 80/ **30** (old : 20) / 1sheet/step] SP2-944-5 : Sheets-2 : [10 to 80/ **60** (old : 40) / 1sheet/step]	V1.29

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Paper may not be fed with a certain application, by-pass feed, and N-job ON after a jam or paper end condition occurs and a jam or paper end condition is cleared. • SC819 is indicated after a copy job is finished with 'Store file' then, printing 'Stored file'.	V1.33
Corrects the following: • Wireless LAN card may not communicate with the printer when the WEP key is ON.	V1.332
Corrects the following: • Wireless LAN card may not communicate with the printer when the WEP key is ON.	V1.332
Corrects the following: • Minor bug correction.	V1.39
Corrects the following: • Supports Media Link Board function • SP mode newly added: SP2-801-03 (Additional Value of the charge corona cleaning interval). Refer to BICU firmware history.	V2.00.1
Corrects the following: • Specification change: The counter specifications have been changed as described in PUB(C) – 047. • Media Link Board minor bug correction. Default DHCP: OFF Default Autonet: ON • See Symptom Corrected for V2.01.4.	V2.01.2
Corrects the following: • GSA version model names #12-15 (NA only) have been added to SP5-907-1 (Plug & Play). • The following defaults have been returned to their values as mentioned in v1.252, as they were reversed due to a programming error in v2.00.1: Default DHCP: ON Default Autonet: OFF • Machine may stall when the memory full condition is reached while storing an image into memory if the MLB is not installed.	V2.01.4
Corrects the following: • Modified in accordance with the BICU version 1.253:01 modification. • In addition to this main unit controller version, be sure to update the BICU firmware to V1.253 :01 or later. For details, please see TSB #B051/B052-021R (black faint images).	V2.01.5
Corrects the following: • SC819 when printing out the Scanner History List. (for China, Taiwan, and Russia only) • Some Korean characters appear garbled on the SMC report.	V2.02

<table>
<tr><th>SYMPTOM CORRECTED</th><th>FIRMWARE VERSION</th></tr>
<tr><td>Corrects the following:
This version has been released for machines produced before August 2003. The firmware download display is indicated as 2.02AugSP, B0515550W. This firmware is version after version 2.02. The August and September production Firmware was found to have the following symptoms:

For firmware V2.02 or before the document stored by the document sever could not output after the controller firmware is updated to August or September production version. The document stored by the document server after updating the firmware can output. To solve this problem, this version is released. This firmware is the same level of the August production without the problem before 2003 August production. However, the document stored by the document server when the controller firmware version is August or September could not output after the controller firmware is modified to this V2.02.9. Therefore, do not use this firmware for the August production or September production machines. The August production and September production machines do not cause this problem if the controller firmware is updated to V2.02.9. For details, please refer to the table below.

We will release the controller firmware of October production machines at the end of September. This will solve the above problem for all production month machines.
Modified in accordance with the BICU v1.275 :01 modification. In addition to this main unit controller version, be sure to update the BICU firmware to V1.275 :01 or later.
• To improve the image quality of the text part received in the FAX text/photo mode, data in the IPU processing has been revised</td><td>V2.02.9</td></tr>
<tr><td>Corrects the following:
• Paper jam/SC687 sometimes occur while printing documents scanned with mixed-size scanning.</td><td>V2.03.1</td></tr>
<tr><td>Corrects the following:
• The mechanical counter (covered with a seal) does not increment enough when using Printer color mode with the mechanical counter set for development counts. See “NG” in the table below.
This does not occur under any other conditions, such as when using the Copier function, setting the counter for page counts, or making B/W prints or copies.
<table>
<tr><th></th><th>Electronic Counter (YMC)</th><th>Electronic Counter (K)</th><th>Mechanical Counter 2 (YMC)</th><th>Mechanical Counter 1 (K)</th></tr>
<tr><td>Full-color Copier</td><td>+3</td><td>+1</td><td>+3□OK□</td><td>+1□OK□</td></tr>
<tr><td>Full-color Printer</td><td>+3</td><td>+1</td><td>+1□NG□</td><td>0□NG□</td></tr>
</table></td><td>V2.03.2</td></tr>
<tr><td>Corrects the following:
• Documents stored on the document server cannot be printed out.
→ This version contains the correction for machines from <u>all production months</u>
(symptom is the same as described in v2.02.09 below, which only contains the correction for machines produced until July ‘03).

NOTE: In addition to this main unit controller version, be sure to update the BICU firmware to Version 1.28 :01 or later.</td><td>V2.04.1</td></tr>
</table>

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Modified in accordance with the BICU version 1.291:01 modification. **NOTE:** *In addition to this main unit controller version, be sure to update the BICU firmware to Version 1.291:01 or later.*	V2.05.1
Corrects the following: • The Copier sometimes stalls on machines with the optional MLB installed while the optional FAX unit is storing documents.	V2.05.2
Corrects the following: • Modified in accordance with the BICU v1.31:01 modification. **NOTE:** *In addition to this main unit controller version, be sure to update the BICU firmware to Version 1.31:01 or later.*	V2.06
Corrects the following: • SC991 (communication error between main controller and HDD) occurs while an image scanned with the Scanner is being temporarily stored in HDD memory following recovery from panel-off → low power mode. Supplementary: When recovering from low power mode, the HDD sends the Ready condition signal to the main controller as soon as the HDD is brought on line. Since the HDD is not actually in its Ready condition, it is unable to receive data from the controller, triggering the SC. With this firmware, the HDD will send its ready condition signal only after it has fully reached its Ready status following recovery from low power mode. • "Almost empty" is mistakenly displayed when the waste toner bottle reaches the near-full condition (Czech only). **NOTE:** *In addition to this main unit controller version, be sure to update the language group 1 firmware to version 3.04 or later.* • SC687 misdetection when printing out a Printer Document Server document with Date Printing. • The date and time for the last time ACC was performed is not displayed on the operation panel (Korea models). • SC990 misdetection when attempting to print out with Electrical Sort without the standard HDD installed. • SC804 misdetection when scanning non-standard paper sizes 217mm to 219mm in length in ADF mode. • Print job sometimes stalls when printing out a Printer Document Server document with Date Printing, which is mistakenly displayed as a paper jam on the operation panel. **NOTE:** *In addition to this main unit controller version, be sure to update the BICU firmware to version 1.333:01 or later.*	V2.07.2

NOTE: *Updating the Main Unit Controller firmware for August production machines-*

When the **Main Unit Controller** firmware is updated from the August production machines (Serial Number range: B051: J2526800001 to J2526800023 and B052: J2626800001 to J2626800042) to version 1.332 or later for the first time, be sure to update BICU firmware to V1.204:1 or later at the same time.

MACHINE VS CONTROLLER FIRMWARE TABLE:

	Machines updated to V2.02.9 or before	Machine updated to V2.03.1 or V2.03.2 (2003 August and September)	October production controller firmware *(V2.04.1)*
Document stored by the document server in the controller firmware of V2.02.9 or before.	Can output	Cannot output	Can output
Document stored by the document server in the controller firmware of V2.03.1 or V2.03.2 (2003 August and September)	Cannot output	Can output	Can output

SERVICE PROGRAMS (New Defaults → Old Defaults):

105*	Fusing Temperature		
	1	Heating: Idling	Sets the temperature at which the heating roller starts idling. [100 ~ 180 / **145** / 1°C/step]
	2	Heating: Ready	Sets the temperature at which the heating roller enters the print ready condition. [100 ~ 180 / **155** (165) / 1°C/step]
	3	Heating: Standby	Sets the heating roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the heating roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Pressure roller: SP1-105-16 [100 ~ 180 / **160** (175) / 1°C/step]
	4	Heating: Plain/1 Color	Sets the heating roller temperature for thin paper in single-color mode. [120 ~ 190 / **155** (160)/ 1°C/step]
	5	Heating: Plain/Full Color	Sets the heating roller temperature for thin paper in full-color mode. [120 ~ 190 / **160** (170) / 1°C/step]
	6	Heating: Middle Thick/1 Color	Sets the heating roller temperature for normal plain paper in single-color mode. [120 ~ 190 / **165** (170) / 1°C/step]
	7	Heating: Middle Thick/Full Color	Sets the heating roller temperature for normal plain paper in full-color mode. [120 ~ 190 / **170** (180**)** / 1°C/step]
	8	Heating: Thick/1 Color	Sets the heating roller temperature for thick paper in single-color mode. [120 ~ 190 / **165** (170) / 1°C/step]
	9	Heating: Thick/Full Color	Sets the heating roller temperature for thick paper in full-color mode. [120 ~ 190 / **170** (175) / 1°C/step]
	10	Heating: OHP/1 Color	Sets the heating roller temperature for OHP sheets in single-color mode. [120 ~ 190 / **165** (170) / 1°C/step]
	11	Heating: OHP/Full Color	Sets the heating roller temperature for the OHP sheets in full-color mode. [120 ~ 190 / **175** (180) / 1°C/step]
	12	Heating: Duplex/1 Color	Sets the heating roller temperature for duplex printing (both sides) in single-color mode. [120 ~ 190 / **150** (155) / 1°C/step]
	13	Heating: Duplex/Full Color	Sets the heating roller temperature for duplex printing (both sides) in full-color mode. [120 ~ 190 / **155** (165) / 1°C/step]
	14	Pressure: Idling	Sets the temperature at which the pressure roller starts idling. [30 ~ 100 / **10** / 1°C/step]

105	15	Pressure: Ready	Sets the temperature at which the pressure roller becomes ready for printing. [60 ~ 150 / **65** (70) / 1°C/step]
	16	Pressure: Standby	Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3 [60 ~ 150 / **115** (120) / 1°C/step]
	27	Heating: OFFSET +	Sets the heating roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **5** / 1°C/step]
	28	Pressure: OFFSET +	Sets the pressure roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / **0** / 1°C/step]
	29	Heat: OFFSET –	Sets the heating roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **5** / 1°C/step]
	30	Pressure: OFFSET –	Sets the pressure roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / **0** / 1°C/step]

3. LANGUAGE GROUP 1 FIRMWARE:

US English, UK English, French, Spanish, German, Italian, Dutch, Norwegian, Danish, Swedish, Portuguese, Czech

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
2.65	B0515533	30CB	1st mass production
2.68	B0515533A	5104	January 2003
3.02	B0515533B	F239	September 2003
3.04	B0515533C	6E57	May 2004

3.1 LANGUAGE GROUP 1 FIRMWARE HISTORY:

SYMPTOM CORRECTED		FIRMWARE VERSION
Initial Production Release		2.65
Corrects the following: • The translations for “Sort” and “Stack” were reversed.	**Affected Language** Portuguese	2.68
Corrects the following: • Wording corrections in Dutch: "Printen zal starten an opwarmen" ----> "Printen zal starten na opwarmen" "Zwart" ---> "Blanco"	Dutch	3.02
• Some German wording correction.	German	
• Some Portuguese wording correction	Portuguese	
• Incorrect terms correction in system settings in the user tool.	All	
Corrects the following: • “Almost empty” is mistakenly displayed when the waste toner bottle reaches the near-full condition.	Czech	3.04

4. LANGUAGE GROUP 2 FIRMWARE:

Japanese, US English, UK English, French, Spanish, German, Italian, Finnish, Polish, Hungarian, Russian

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
2.65	B0515533	30CB	1st mass production
3.02	B0515534A	9858	September 2003

4.1 LANGUAGE GROUP 2 FIRMWARE HISTORY:

SYMPTOM CORRECTED		FIRMWARE VERSION
Initial Production Release		2.65
Corrects the following:	**Affected Language**	3.02
• Incorrect terms correction in system settings in user tool.	All	

USING THE LANGUAGE KIT:

1. Insert the IC card containing the firmware into the controller IC card slot.
2. Turn ON the main power. Then, chose either the First or Second display language for the update.

It is also possible to write to both the First and Second languages.
3. Start the update.
4. Select the appropriate display language in User Tools.
5.

As shown in the table below, there are some cases where certain languages cannot be displayed, depending on the type of operation panel software:

Possible Display Languages for Operation Panel Software

Key:
O: Can be displayed.
▲: Can be displayed, but printer application window is not displayed correctly.
X: Cannot be displayed.

Op. Panel Software Display Language	B0515536
Japanese	O
English-NA	O
English-UK	O
French	O
German	O
Italian	O
Spanish	O
Dutch	O
Norwegian	O
Danish	O
Swedish	O
Polish	O
Portuguese	O
Hungarian	O
Czech	O
Finnish	O
Taiwan	---

5. PRINTER SERVICE CARD FIRMWARE:

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
1.00	B4635570	CE7B	August 2002
1.01	B4635570A	079D	Not apply to the production machine
1.02	B4635570B	0784	Not apply to the production machine
1.03	B4635570C	393F	October 2002
1.04	B4635570D	22B9	January 2003
2.00	B4635570E	59C1	February 2003
2.01	B4635570F	E9D4	March 2003
2.01.4	B4635570G	90F9	April 2003
2.02	B4635570H	7022	July 2003
2.02.2	B4635570J	117C	August 2003
2.05.2	B4635570K	7CE3	December 2003

The Program Card Contains the Following Firmware:

Card Version	FIRMWARE PART NUMBER/VERSION							
	PRINTER		NCS (NIB)		NFA		DELIVERY	
	Part Number	Version	Part Number	Version	Part Number	Version	Part Number	Version
1.00	B4635550B	1.09	B0535552B	3.53	B0535553B	1.26	B0535554B	1.01
1.01	B4635550B	1.09	B0535552C	3.54	B0535553C	1.27	B0535554C	1.05
1.02	B4635550D	1.29	B0535552D	3.55	B0535553C	1.27	B0535554D	1.13
1.03	B4635550E	1.33	B0535552D	3.55	B0535553C	1.27	B0535554E	1.15
1.04	B4635550F	1.33.3	B0535552D	3.55	B0535553C	1.27	B0535554E	1.15
2.00	B4635550G	2.00	B0535552E	3.70	B0535553D	1.66	B0535554F	2.00
2.01	B4635550H	2.01	B0535552E	3.70	B0535553D	1.66	B0535554F	2.00
2.01.4	B4635550H	2.01	B0535552F	3.72	B0535553D	1.66	B0535554G	2.02
2.02	B463555H	2.01	B0535552G	3.73	B0535553E	1.67	B0535554H	2.03
2.02.2	B4635550H	2.01.2	B0535552G	3.73	B0535553E	1.67	B0535554H	2.03
2.05.2	B4635550H	2.01.2	B0535552H	3.74	B0535553E	1.67	B0535554H	2.03

NOTE: *Whenever updating any of the firmware types in Service Card v.104 or earlier to any of those in v2.00 or later, all types must all be updated at the same time to the versions below. In other words, individual updates cannot be performed in these cases.*

NO.	SOFTWARE TYPE	VERSION	SERVICE CARD VERSION
1	Controller	2.01.2	Controller ver. 2.01.2
2	Fax	2.00	BICU-Fax ver. 1.08
3	Printer	2.01	Printer ver. 2.01
4	NIB	3.07	Printer ver. 2.00
5	NFA	1.66	Printer ver. 2.00
6	Scanner	2.00	S2.00_PS1.06
7	Delivery	2.00	Printer ver. 2.00
8	BICU	1.242	BICU-Fax ver. 1.08

5.1 PRINTER FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.09
Corrects the following: • PJL Echo does not respond correctly. • When inputting the elapsed time (time setting), the machine does not enter On Line mode.	1.29
Corrects the following: • Figures appear black when the memory capacity is low. • When selecting font stored in the HDD and running the Copy/Assign command (ESC>*c6F), the machine will freeze. • When selecting the Bitmapped Font, the character "θ" does not print. • When printing UDFP large-size (over printable size), the image will be shifted. • The machine freezes when printing Macro data. • The value for Form Lines (PCL Menu) changes after rebooting the machine. • The software version for the printer applications does not appear on the SMC list or in SP mode.	1.33
Corrects the following: • The RAM work area is reduced whenever fonts that have been downloaded to the HDD are used. • Response to PJL INFO CONFIG command does not include serial number.	1.33.3

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • Duplex face settings (front/rear) not applied correctly when specified with PCL commands. • Binding position not applied correctly when specified with PCL commands • CAD print files: - Modified so that the "null" character is ignored when it is included in HP/GL2 data to increase speed - The status flag for the bold selection command is refreshed when it is selected for HP/GL2 data • The following image problem may occur in Black Over Print mode. 1. The image is blank around Bk figures 2. Gradation images will not print • Supports the Card Save function. **NOTE:** *To enable this function, set Printer SP1-1 Bit SW1, bit 4 to "1".* • Selecting HDD font or DIMM font may reduce available memory • Supports SAP Barcode & OCR printing. • PCL command "<ESC>&l11G" (select MailBoxBin8 as output tray) does not work correctly.	2.00
Corrects the following: • Supports KS/KSSM Emulation (for Korea).	2.01
Corrects the following: • Merged PCL job cannot print.	2.01.2

5.2 NCS (NIB) FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	3.53
Corrects the following: • Changed default setting of “diprint” to Enabled.	3.54
Corrects the following: • Supports the new IC chip on the new wireless LAN option (old chip discontinued) • TCP ports can be opened/closed. **NOTE:** *After disabling HTTP, it is not possible to access the target device through web browser. To change the setting, please use telnet to open HTTP. When the telnet port is disabled, it is necessary to clear the network settings (Memory Clear for NCS) to open the port.* • Changed default setting of Autonet to OFF • Changed default setting of DHCP to ON.	3.55
Corrects the following: • When TCP/IP is disabled as the Effective Protocol in UP mode, the program version and NCS number will not be displayed in SP mode or on the SMC list • The following functions are added for SMTP E-mail transmission: SMTP Authentication POP before SMTP	3.70
Corrects the following: • Default for DHCP changed to: ON. • Default for Autonet changed to: OFF. • Communication between the LAN card and printer in 802.11adhoc mode is sometimes terminated when the condition of the EM waves remains constant.	3.72
Corrects the following: • SC819 occurs after continuously receiving damaged packets from NetBEUI	3.73
Corrects the following: • The printer is unable to access the target local Netware server. • The printer is unable to log on to the Netware server even when the Netware Server SAP setting is unchecked.	3.74

5.3 NFA FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.26
Corrects the following: • Following delivery, the next Rx document cannot be delivered to the server, even if the machine is connected to the server. The machine does not enter the auto off mode after the waiting Rx document for delivery has been deleted.	1.27
Corrects the following: • Supports File Format Converter (Media Link Board) function.	1.66
Corrects the following: • The machine sometimes does not enter Auto Off mode when the operation switch is turned OFF following Plumeria capturing, fax reception or remote delivery.	1.67

5.4 DELIVERY FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.01
Corrects the following: • If the operation SW is pressed while the machine is scanning the third set of 2000 originals (SADF mode), the machine goes into auto off mode.	1.05
Corrects the following: • Operation flow for multiple scanning in platen mode improved.	1.13
Corrects the following: • Minor delivery module bug.	1.15
Corrects the following: • Supports the File Format Converter (Media Link Board) function	2.00
Corrects the following: • Attached file is sometimes delivered as a text file.	2.02
Corrects the following: • File full condition may occur following repeated connections to the POP server with APOP auto connection.	2.03

6. PS3/SCANNER FIRMWARE:

FIRMWARE PART NUMBER/VERSION					
PS3		**SCANNER**			
Part Number	**Version**	**Part Number**	**Version**	**CHECK SUM**	**PRODUCTION DATE**
B5225917B	1.00	B0725551B	1.02	273C	August 2002
B5225917B	1.00	B0725551C	1.05	94BD	Not apply to the production machine
B5225917E	1.04	B0725551D	1.13	39A4	Not apply to the production machine
B5225917E	1.04	B0725551E	1.15	4CD6	October 2002
B5225917F	1.06	B0725551E	1.15	51D4	January 2003
B5225917F	1.06	B0725551F	2.00	F4A6	February 2003
B5225917F	1.06	B0725551G	2.02	3A23	April 2003
B5225917F	1.06	B0725551H	2.03	B31D	July 2003 Prod.
B5225917G	1.08	B0725551H	2.03	9E96	August 2003 Prod.
⇒ B5225917H	1.09	B0725551H	2.03	B4C7	July 2004 Prod.

6.1 PS3 FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.00
Corrects the following: • Modified to support ctlz. • Modified job information character string. • The panel displays remaining jobs reset when a memory over flow occurs. • Problem with Dither cash. • Improved PS 600 dpi word/picture dither combination quality. • Euro currency symbol does not print out. • Size mismatch when printing a custom size with a main tray. • Communication with Printer Utility for MAC OSX not possible • Stall with certain Acrobat files. • Modified so that the “^D^Z” tag at the end of files is not processed. • Modified so that a job reset occurs when illegal parameters are received for Locked Print jobs. • Image problem when not specifying “Reset halftone type.”	1.04

SYMPTOM CORRECTED	FIRMWARE VERSION
Corrects the following: • With MKY images, the total quantity regulation and gamma processing is not performed correctly. • Color processing bug with RCM color profile. • Incorrect polling with halftone and profile settings • Total quantity regulation not applied to text. • Image is stalled without gamma processing. • Default halftone setting changed from type1 to type5. • Image problem with indexed color space. • Modified for Adobe certification	1.06
Corrects the following: • The PS logo color printed on the PS configuration sheet appeared slightly blue. It should be red. • The black over print mode sometimes does not work correctly.	1.08
⇒ Corrects the following: • White or light pixels that don't show in the screen image get scattered throughout areas of dark pixels in the printout. This makes the dark areas appear lighter than they are supposed to be. • Using Photoshop v7.0, if Dithering is set to anything other than "User setting" a line is sometimes drawn through the image. • The wording is incorrect on the PS config/font page. The value of Color Profile under <Printing Configuration> should be "auto", not "business".	1.09

6.2 SCANNER FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	1.02
Corrects the following: • If the operation SW is pressed while the machine is scanning the third set of 2000 originals (SADF mode), the machine goes into auto off mode.	1.05
Corrects the following: • Operation flow for multiple scanning in platen mode improved. • Scanning stops while scanning with the TWAIN driver for printer output.	1.13
Corrects the following: • Minor bug with delivery module.	1.15
Corrects the following: • Supports the File Format Converter (Media Link Board) function.	2.00
Corrects the following: • Attached file is sometimes delivered as a text file.	2.02
Corrects the following: • File full condition may occur following repeated connections to the POP server with APOP auto connection. • Some Korean and Russian characters appear garbled on the SMC report.	2.03

7. G3 INTERFACE UNIT & ISDN OPTION CARD FIRMWARE:

CARD VERSION	PART NUMBER	CHECK SUM	PRODUCTION DATE
1.00	B5035430	-	From First production
2.00	B5035430E	-	March 2003
4.00	B5035430J	-	November 2003
4.00	B5035430K	03F5	May 2004

7.1 G3 INTERFACE UNIT & ISDN OPTION SERVICE CARD CONTENTS:

Card Version	FIRMWARE PART NUMBER/VERSION			
	G3 INTERFACE UNIT		ISDN OPTION (G4)	
	Part Number	Version	Part Number	Version
1.00	49	H3107235C	19	H5477207F
2.00	66	H3107235C	19	H5477207F
4.00	71	H3107235K	19	H5477207F
4.00	73	H3107235L	19	H5477207F

7.2 G3 INTERFACE UNIT FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	49
Corrects the following: • (minor bugs corrected)	66
Corrects the following: • (minor bugs corrected)	71
Corrects the following: • The FCU does not switch to Energy Saver Mode after communication is completed if the incoming ring has a frequency of 1300Hz or a duration of 200ms or less. • Communication error sometimes occurs when receiving a PC Fax from a non-Ricoh machine.	73

7.3 ISDN OPTION FIRMWARE HISTORY:

SYMPTOM CORRECTED	FIRMWARE VERSION
Initial Production Release	19