Model Founder ML 320/320D
Machine Code: B260/B261

SERVICE MANUAL

May 26th, 2006
Subject to change

Safety Notices

⚠Important Safety Notices

Prevention of Physical Injury

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the copier and easily accessible.
3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main power switch is turned off.
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 and developer are non-toxic, but if you get either of them 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

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

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, developer, and organic photoconductors in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

Laser Safety

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

⚠WARNING

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

⚠WARNING FOR LASER UNIT
WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes. CAUTION MARKING: 

Symbols & Abbreviations

This manual uses several symbols and abbreviations. The meaning of those symbols and abbreviations are as follows:

	See or Refer to
	Clip ring
	Screw
	Connector
SEF	Short Edge Feed
LEF	Long Edge Feed

Machine Code

In this manual, "**Model ML 320"** is called "**B260**", "**Model ML 320 D"** is called "**B261**".

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1. Installation

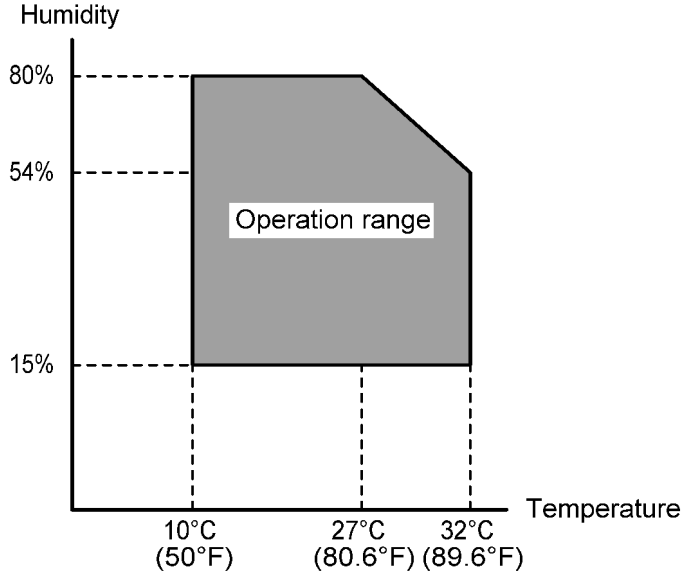
Installation Requirements

⚠CAUTION

- Before installing options, please do the following:
  - If there is a fax unit in the machine, print out all messages stored in the memory, the lists of user-programmed items, and the system parameter list.
  - If there is a printer option in the machine, print out all data in the printer buffer.
  - Turn off the main switch and disconnect the power cord, the telephone line, and the network cable.

Environment

–Temperature and Humidity Chart–



• Temperature Range:	10°C to 32°C (50°F to 89.6°F)
• Humidity Range:	15% to 80% RH
• Ambient Illumination:	Less than 1,500 lux (do not expose to direct sunlight)

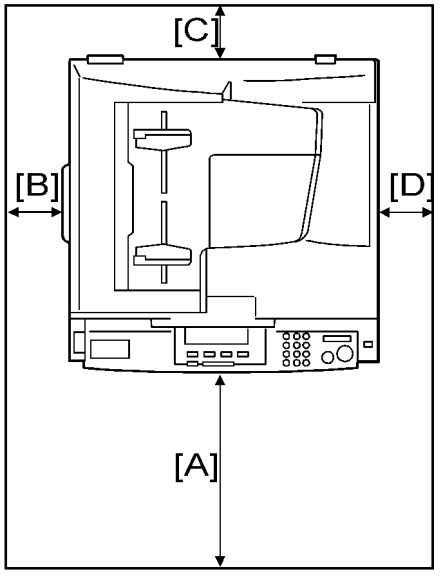
• Ventilation:	3 times/hr/person or more
• Ambient Dust:	Less than 0.075 mg/m3 (2.0 x 10-6 oz/yd3)
• Avoid areas exposed to sudden temperature changes: 1) Areas directly exposed to cool air from an air conditioner. 2) Areas directly exposed to heat from a heater.	
• Do not place the machine where it is exposed to corrosive gases.	
• Do not install the machine at any location over 2,000 m (6,500 ft.) above sea level.	
• Place the copier on a strong and level base. (Inclination on any side should be no more than 5 mm.)	
• Do not place the machine where it is subjected to strong vibrations.	

Machine Level

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

Minimum Space Requirements

Place the copier near the power source, providing clearance as shown:



A (front): 750 mm (30")

B (left): 150 mm (6")

C (rear): 50 mm (2")

D (right): 250 mm (10")

The recommended 750 mm front space is sufficient to allow the paper tray to be pulled out. Additional front space is required to allow operators to stand at the front of the machine.

Power Requirements

⚠CAUTION

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

Input voltage:

North and South America, Taiwan:	110 – 120 V, 60 Hz, 12 A
Europe, Asia:	220 – 240 V, 50/60 Hz, 7 A

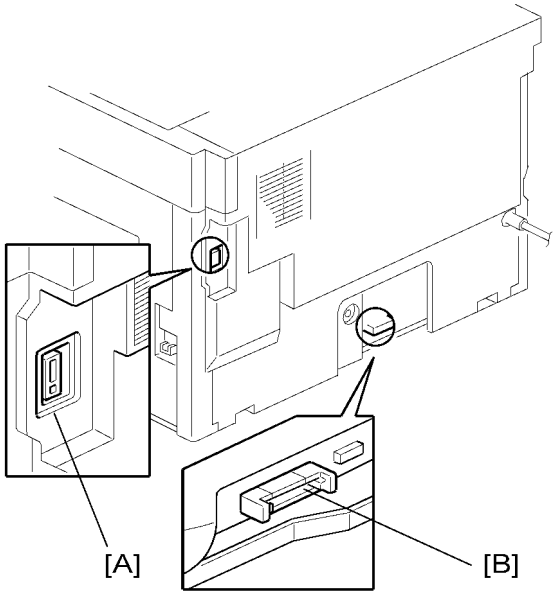
Copier Installation

1

Power Sockets for Peripherals

⚠CAUTION

- Make sure to plug the cables into the correct sockets.



[A]: Socket for ADF/ARDF (Rated voltage output max. DC24 V)

[B]: Socket for paper tray unit (Rated voltage output max. DC24 V)

Accessory Check

Check that you have the accessories in this list.

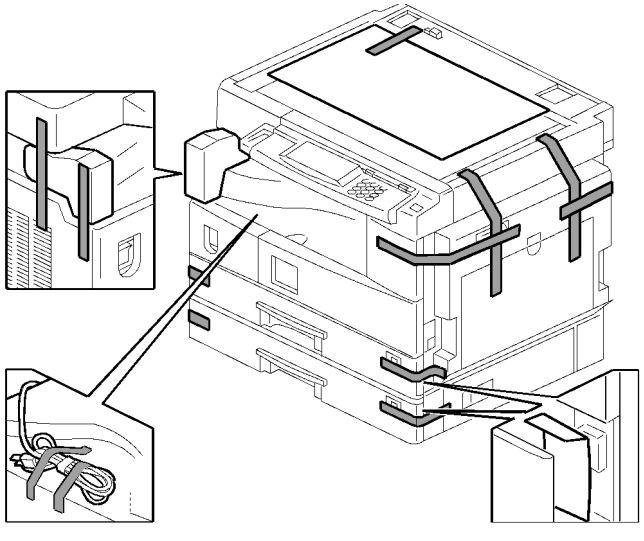
No.	Description	Q'ty
1	Operating Instructions: P&S : Chinese: Founder	1
2	Operating Instructions: NET: Chinese: Founder	1
3	Operating Instructions: FAX: Chinese: Founder	1
4	Operating Instructions: COPY: Chinese: Founder	1

No.	Description	Q'ty
5	CD-ROM: P&S Driver	1
6	CD-ROM: Font	1
7	Sheet: EULA: Chinese	1
8	Caution Seal: Chinese	1
9	Seal: Grip	1
10	Card: SAN-BOA-CARD	1
11	Developer: Founder	1
12	Toner Bottle: Packing: Founder	1

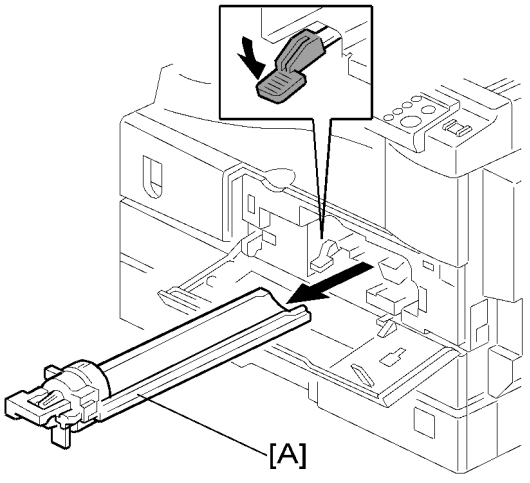
Installation Procedure

⚠CAUTION

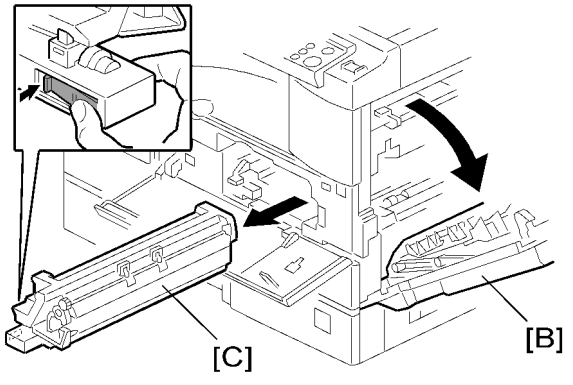
- Unplug the machine power cord before starting the following procedure.



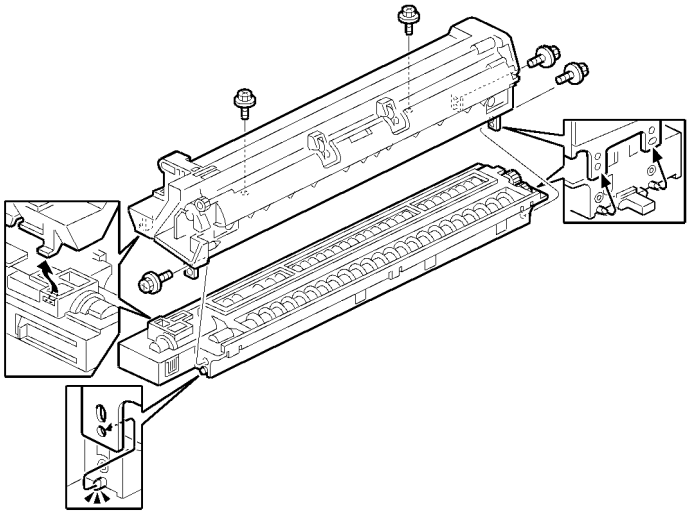
1. **Remove filament tape and other padding.**



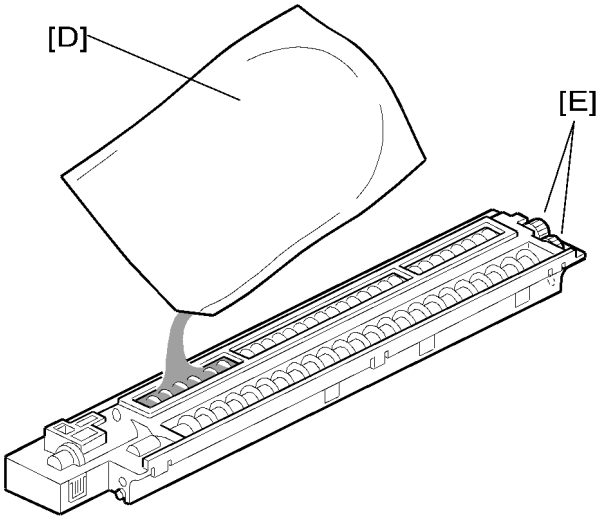
2. Open the front door and remove the toner bottle holder [A].



3. Open the right door [B], and remove the PCU (photoconductor unit) [C].
4. Separate the PCU into the upper part and the lower part (x 5).



5. **Put a sheet of paper on a level surface and place the upper part on it. (This prevents foreign material from getting on the sleeve rollers)**

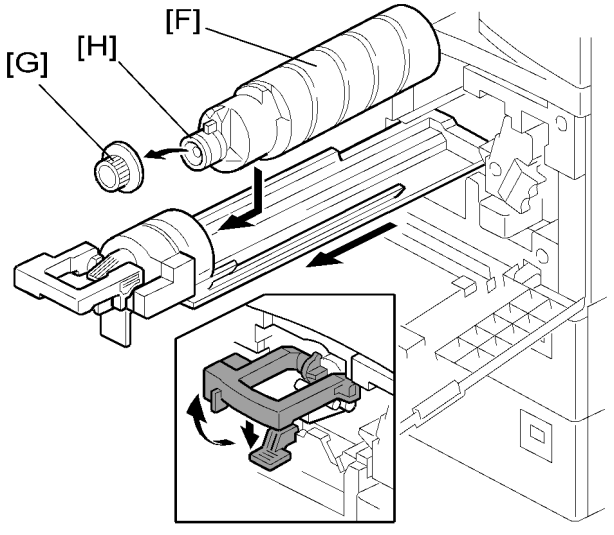


6. **Distribute a pack of developer [D] to all openings equally.**

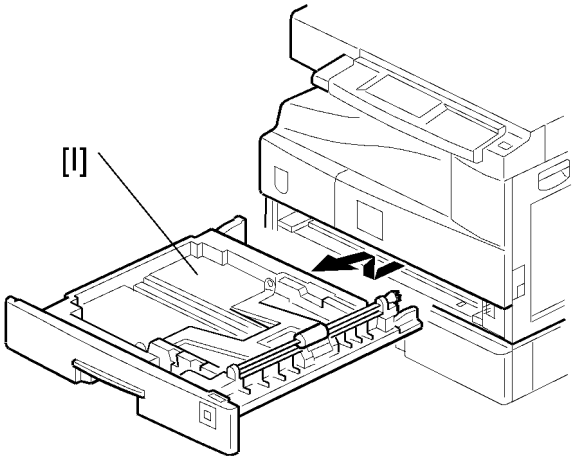
Note

- Do not spill the developer on the gears [E]. If you have spilled it, remove the developer by using a magnet or magnetized screwdriver.
- Do not turn the gear [E] too much. The developer may spill.

7. **Reassemble the PCU and reinstall it.**



8. Shake the toner bottle [F] several times. (Do not remove the bottle cap [G] before you shake the bottle.)
9. Remove the bottle cap [G] and install the bottle on the holder. (Do not touch the inner cap [H].)
10. Set the holder (with the toner bottle) in the machine.



11. Pull out the paper tray [I] and turn the paper size dial to the appropriate size. Adjust the positions of the end and side guides. (To move the side guides, release the green lock on the rear side guide.)
12. Install the optional ARDF, ADF, or platen cover.
13. Plug in the main power cord and turn on the main switch.
14. Activate the SP mode and execute "Devlpr Initialize" (SP 2214 1).

15. Wait until the message "Completed" is displayed (about 45 seconds).
16. Activate the User Tools and select the menu "Language."
17. Specify a language. This language is used for the operation panel.
18. Load the paper in the paper tray and make a full size copy, and check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations (☛ "COPY ADJUSTMENTS: PRINTING/SCANNING" in the "Replacement and Adjustment" section).

Platen Cover Installation

1

Accessory Check

Check that you have the accessories indicated below.

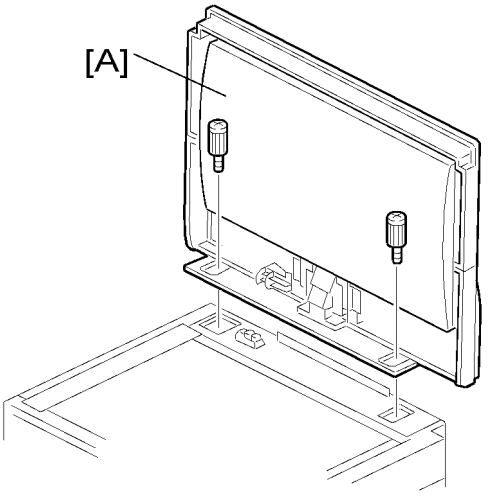
No.	Description	Q'ty
1	Stepped Screw	2

Installation Procedure

⚠CAUTION

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

1. **Install the platen cover [A] (x 2).**

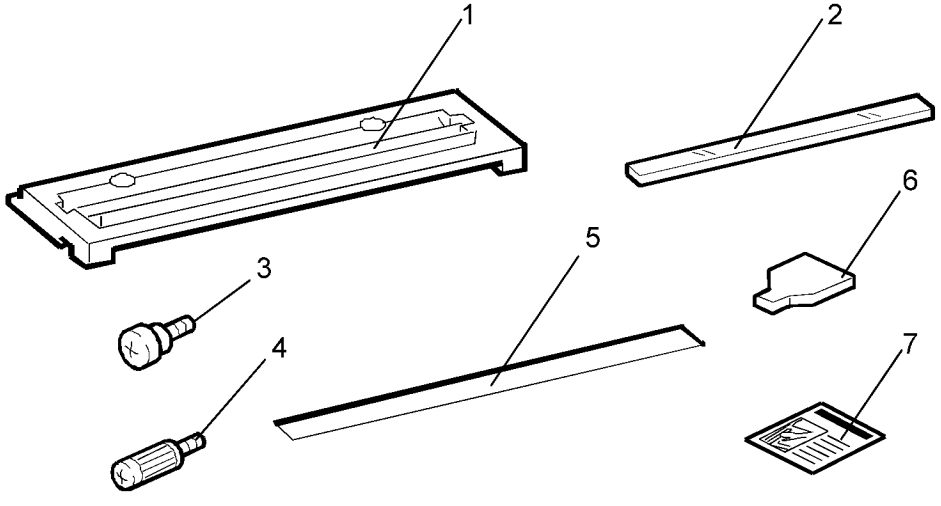


ARDF Installation

Accessory Check

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

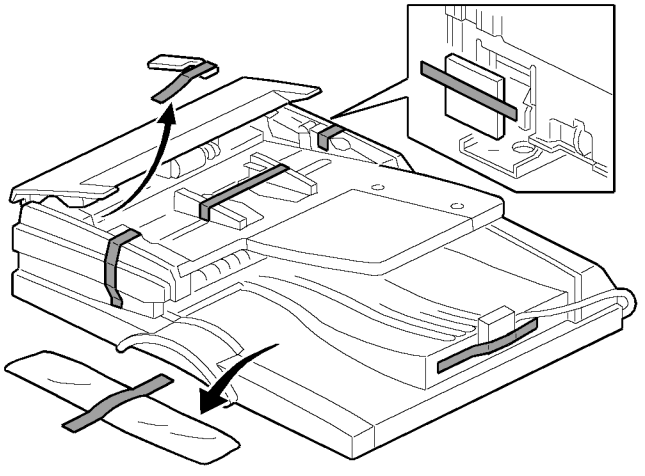
No.	Description	Q'ty
1	Scale Guide	1
2	DF Exposure Glass	1
3	Stud Screw	2
4	Knob Screw	2
5	Original Size Decal	2
6	Screwdriver Tool	1
7	Attention Decal—Top Cover	1



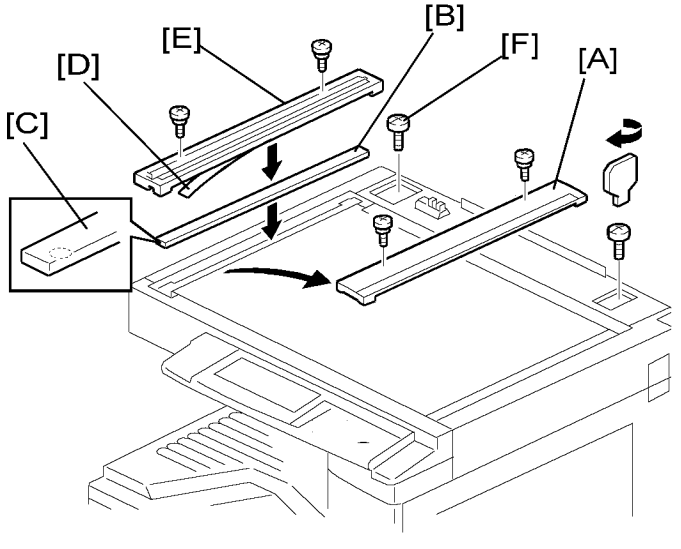
Installation Procedure

⚠CAUTION

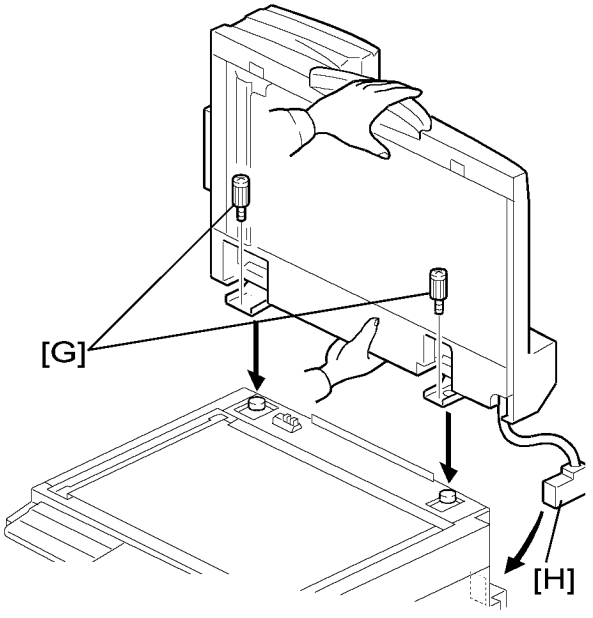
- Unplug the copier power cord before starting the following procedure.



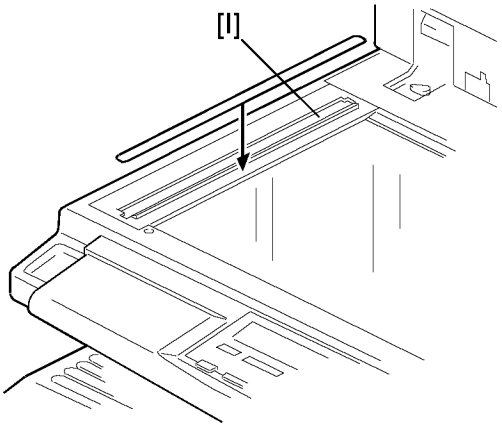
1. Remove the strips of tape.



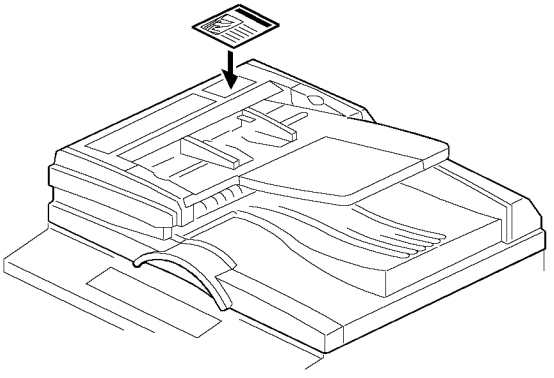
2. Remove the left scale [A] (x 2).
3. Place the DF exposure glass [B] on the glass holder. Make sure that the white mark [C] is on the bottom at the front end.
4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide [E], then install the scale guide (x 2 [removed in step 2]).
5. Install the two stud screws [F].
6. Mount the ARDF on the copier, and then slide it to the front.



7. Secure the ARDF unit with the knob screws [G].
8. Connect the cable [H] to the copier.



9. Attach the appropriate original size decal [I] as shown.



10. **Attach an attention decal to the top cover.**

Note

- The attention decals in the package are written in different languages.

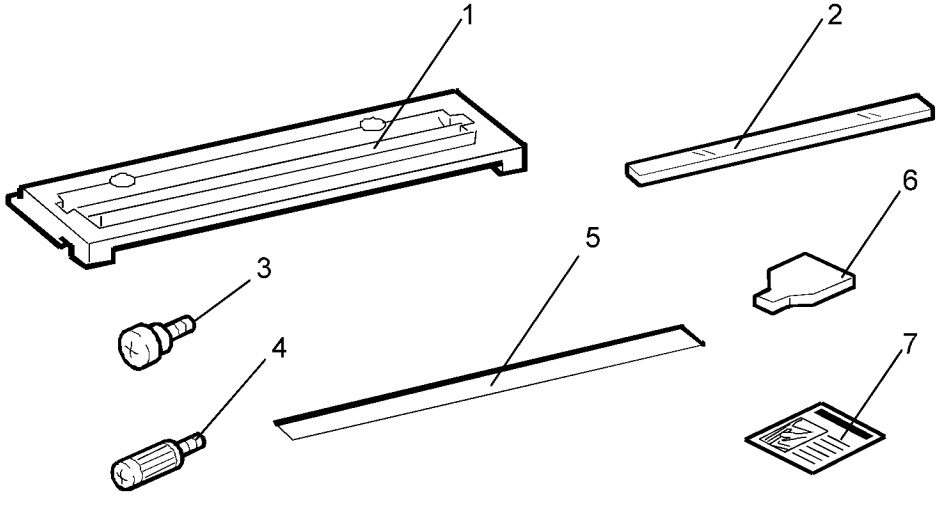
11. **Turn the main power switch on.**
12. **Check that the document feeder works properly.**
13. **Make a full size copy, and check that the side-to-side and leading edge registrations are correct. If they are not, adjust the side-to-side and leading edge registrations. (☛ "ADF Image Adjustment" in the "Replacement and Adjustment" section)**

ADF Installation

Accessory Check

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

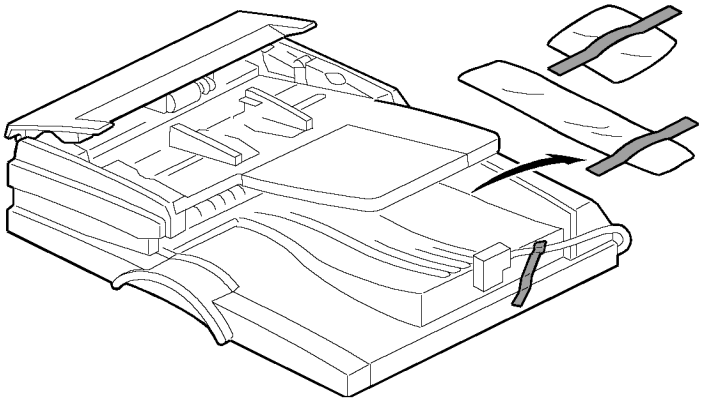
No.	Description	Q'ty
1	Scale Guide	1
2	DF Exposure Glass	1
3	Stud Screw	2
4	Fixing Screw	2
5	Original Size Decal	2
6	Screwdriver Tool	1
7	Attention Decal—Top Cover	



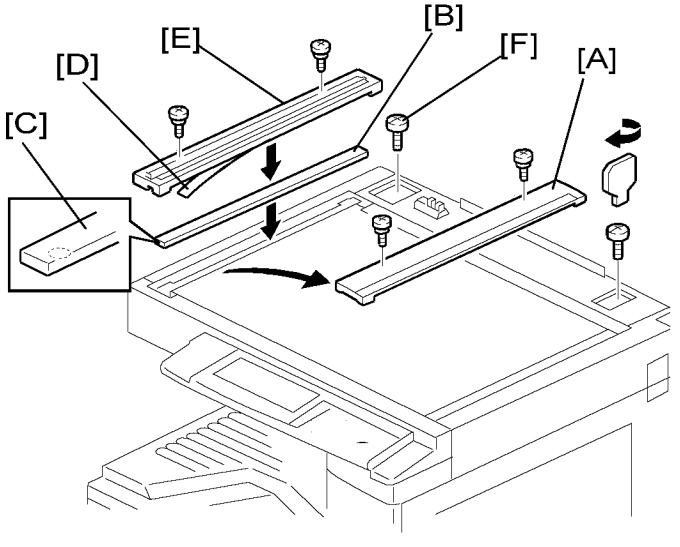
Installation Procedure

⚠CAUTION

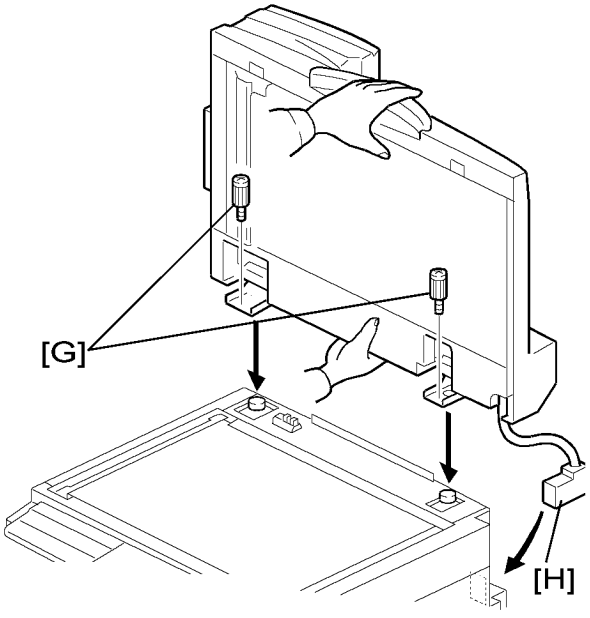
- Unplug the machine power cord before starting the following procedure.



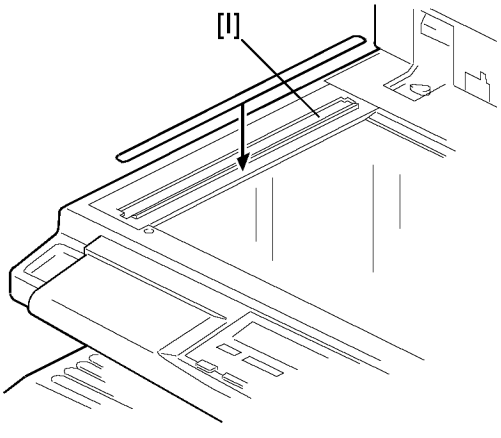
1. Remove the strips of tape.



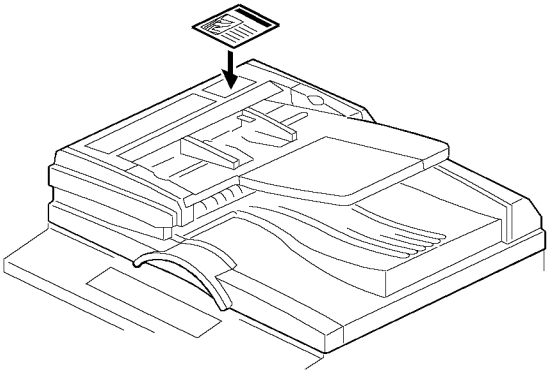
2. Remove the left scale [A] (x 2).
3. Place the DF exposure glass [B] on the glass holder. Make sure that the white mark [C] is on the bottom at the front end.
4. Peel off the backing [D] of the double-sided tape attached to the rear side of the scale guide [E], then install the scale guide (x 2 [removed in step 2]).
5. Install the two stud screws [F].
6. Mount the ADF on the copier, and then slide it to the front.



7. Secure the ADF unit with the fixing screws [G].
8. Connect the cable [H] to the copier.



9. Attach the appropriate scale decal [I] as shown.



10. **Attach an attention decal to the top cover.**

Note

- The attention decals in the package are written in different languages.

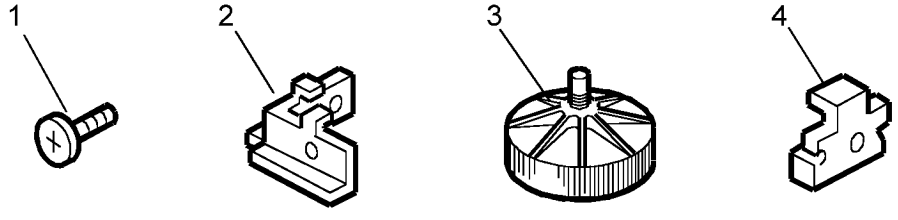
11. **Turn the main power switch on. Then check if the document feeder works properly.**
12. **Make a full size copy, and check that the side-to-side and leading edge registrations are correct. If they are not, adjust the side-to-side and leading edge registrations. (☛ "ADF Image Adjustment" in the "Replacement and Adjustment").**

Two-tray Paper Tray Unit Installation

Accessory Check

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

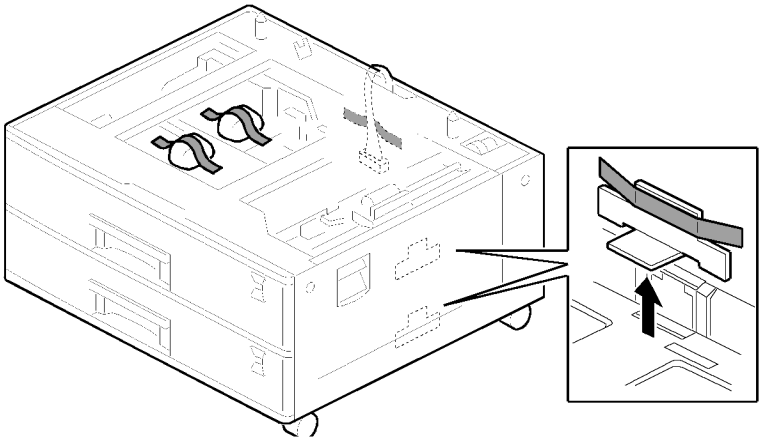
No.	Description	Q'ty
1	Screw – M4x10	10
2	Unit Holder	4
3	Adjuster	1
4	Unit Holder	2



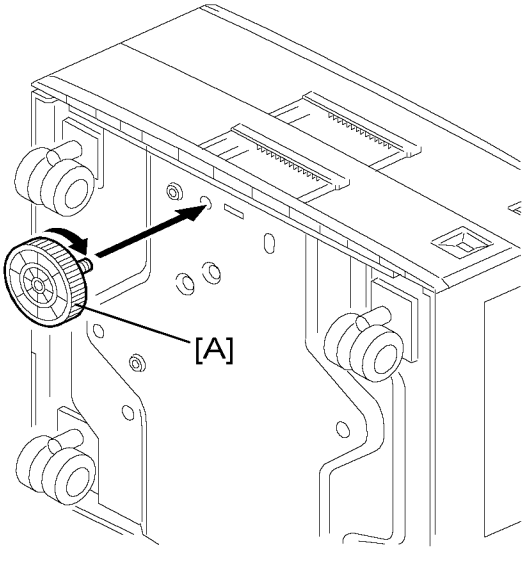
Installation Procedure

⚠CAUTION

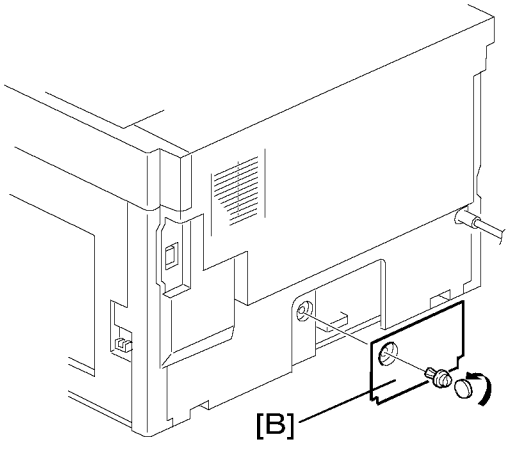
- If the optional fax unit is installed:
  - Print out all messages stored in the memory.
  - Print out the lists of user-programmed items.
  - Print out the system parameter list.
  - Disconnect the telephone line.
  - If the optional printer unit is installed:
  - Print out all data in the printer buffer.
  - Disconnect the network cable.
  - Unplug the machine power cord before starting the following procedure.



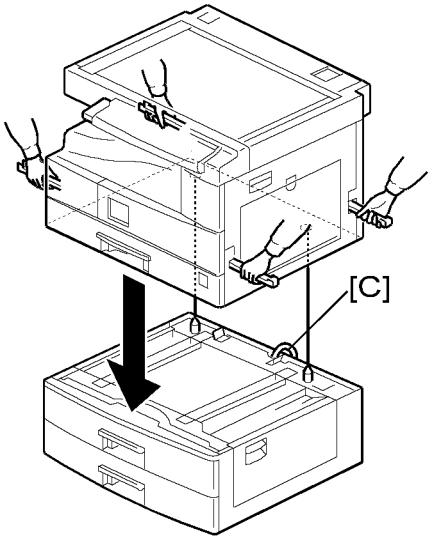
1. Remove the strips of tape. Make sure that you have removed all the strips of tape and all the pieces of cardboard.



2. Attach the adjuster [A] to the base plate as shown. (If a cabinet is installed, this step is unnecessary.)



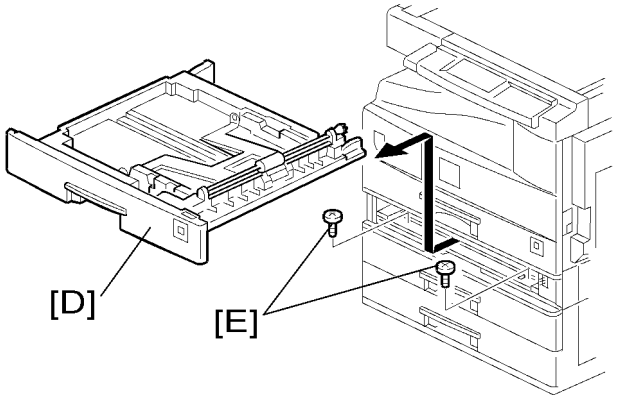
3. **Remove the cover [B] (1 rivet).**



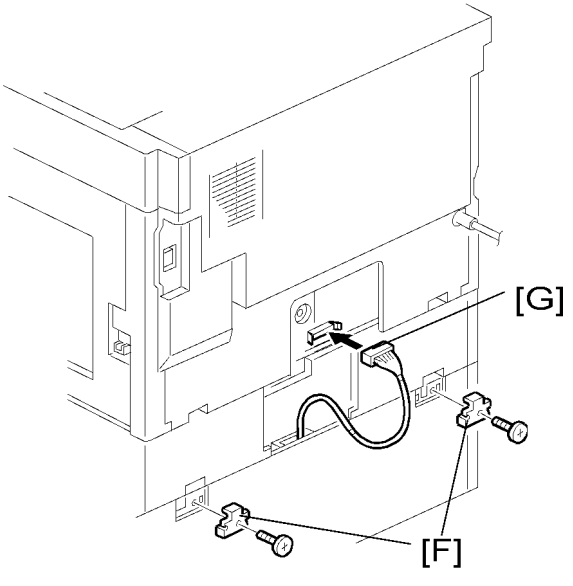
4. **Set the copier on the paper tray unit.**

⚠CAUTION

- Before placing the copier on the paper tray unit, make sure that the harness [C] is safe. The paper tray unit does not function properly if the harness is damaged.



5. **Remove the 2nd tray cassette [D].**
6. **Install the two screws [E].**
7. **Reinstall the tray cassette.**

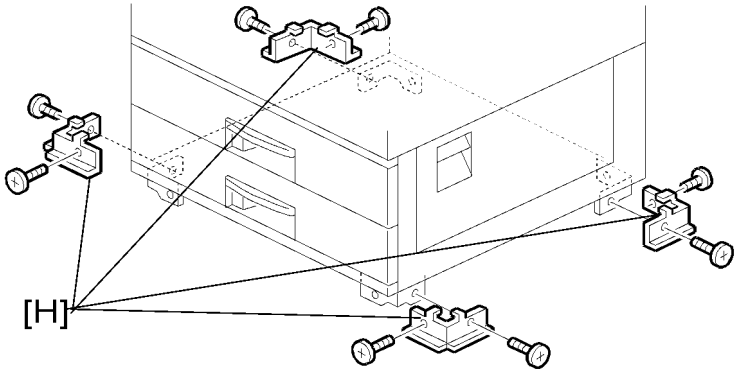


8. **Install the two brackets [F].**
9. **Connect the connecting harness [G] to the copier.**

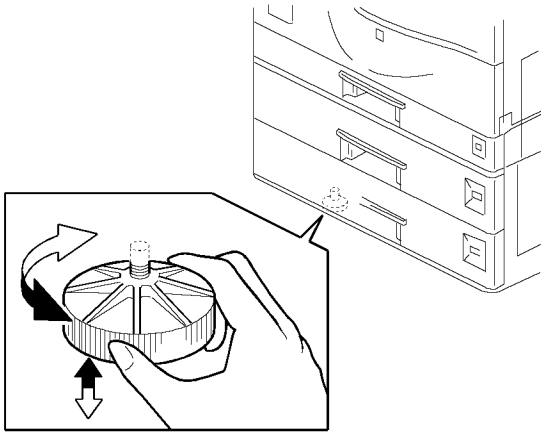
Note

- There are cutouts for the plugs on both sides. The left side has one cutout, and the right side has two.

10. **Reinstall the cover removed in step 3 (1 rivet).**



11. Install the four brackets [H] (2 screws each). (If a cabinet is installed, this step is unnecessary.)



12. Rotate the adjuster (installed at step 2) to fix the machine in place. (If a cabinet is installed, this step is unnecessary.)
13. Load the paper in the paper trays and make full size copies from each tray. Check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations (☛ "Copy Adjustments: Printing/Scanning" in the "Replacement and Adjustment").

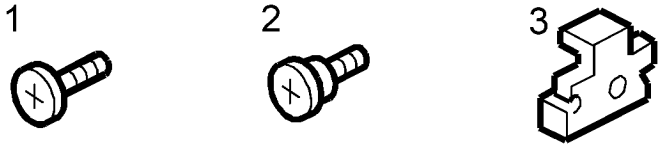
One-Tray Paper Tray Unit Installation

1

Accessory Check

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

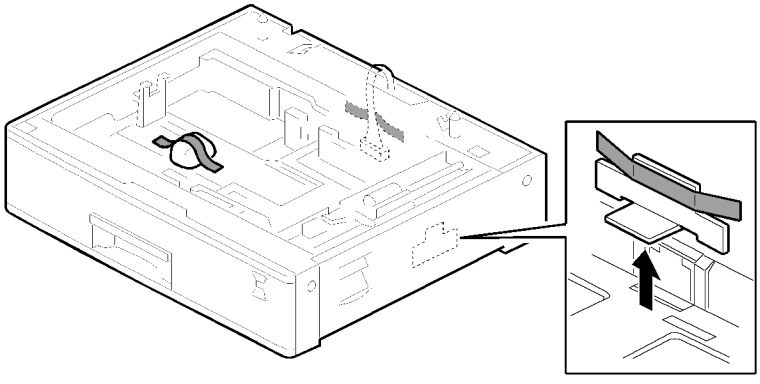
No.	Description	Q'ty
1	Screw – M4 x 10	2
2	Stepped Screw – M4 x 10	2
3	Unit Holder	2



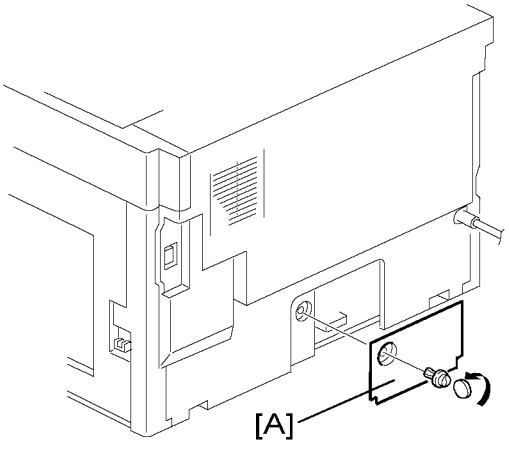
Installation Procedure

⚠CAUTION

- If the optional fax unit is installed:
  - Print out all messages stored in the memory.
  - Print out the lists of user-programmed items.
  - Print out the system parameter list.
  - Disconnect the telephone line.



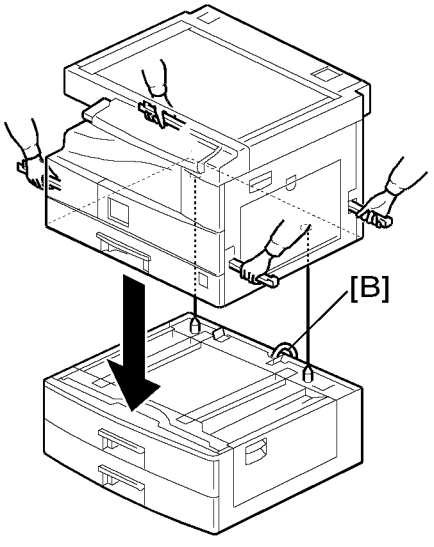
1. **Remove the strips of tape. Make sure that you have removed all the strips of tape and all the pieces of cardboard.**



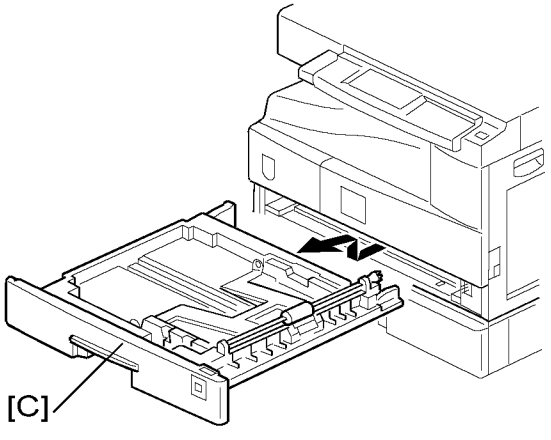
2. **Remove the cover [A] (1 rivet).**

⚠CAUTION

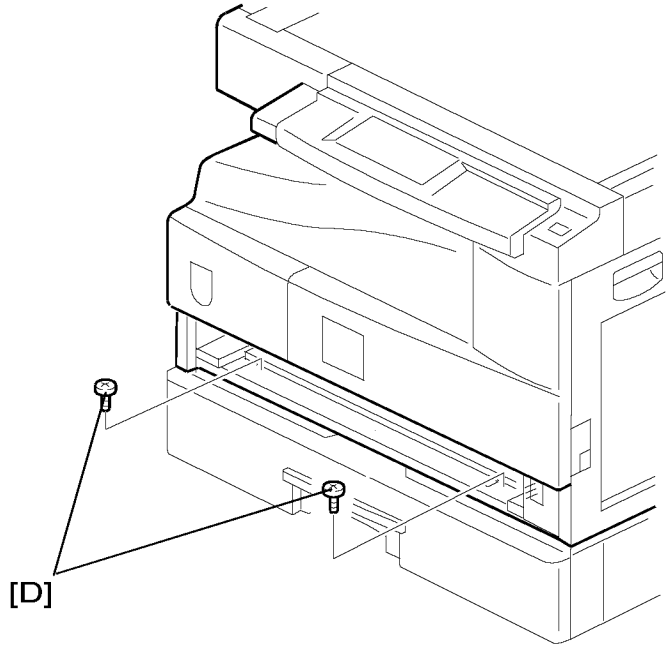
- Before placing the copier on the paper tray unit, make sure that the harness [B] is safe. The paper tray unit does not function properly if the harness is damaged.



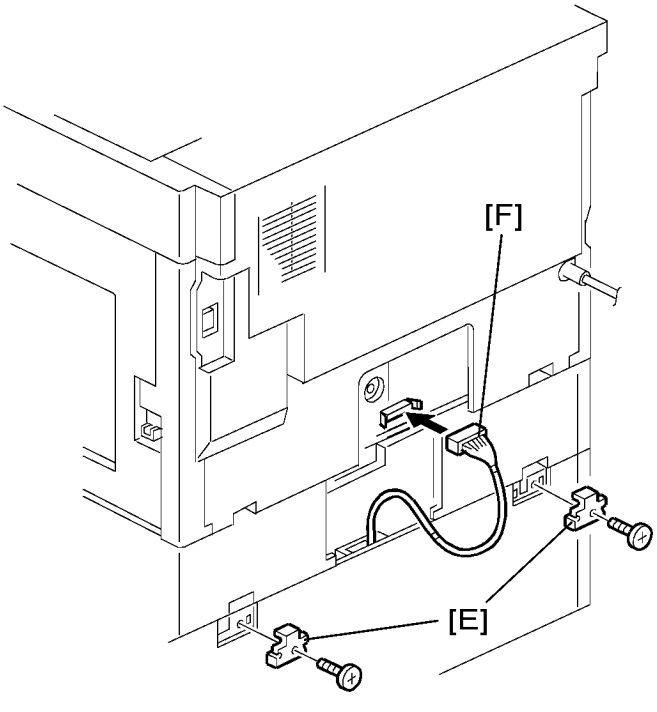
3. Set the copier on the paper tray unit.



4. Remove the 2nd tray cassette [C].



5. Install the two screws [D].
6. Reinstall the tray cassette.



7. Install the two brackets [E]. (1 stepped screw each).

8. **Connect the connecting harness [F] to the copier.**

   Note

   - There are cutouts for the plugs on both sides. The left side has one cutout, and the right side has two.

9. **Reinstall the cover removed in step 2.**
10. **Load the paper in the paper tray and make full size copies from tray. Check if the side-to-side and leading edge registrations are correct. If they are not, adjust the registrations (☛ "Copy Adjustments: Printing/Scanning" in the "Replacement and Adjustment").**

One-Bin Tray Installation

Accessory Check

Check the quantity and condition of the accessories.

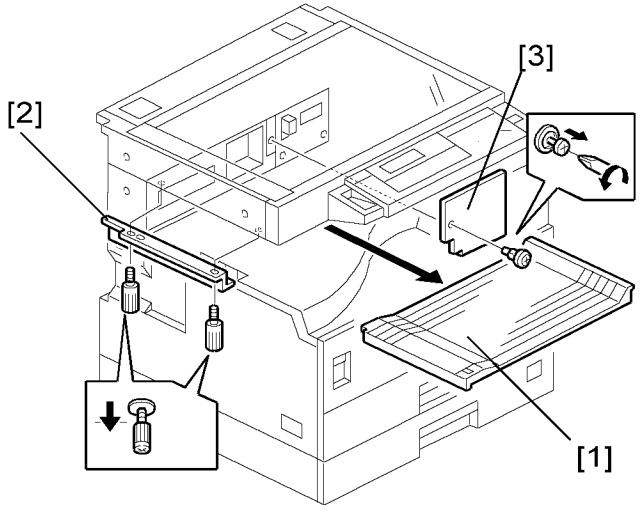
No.	Description	Q'ty
1	Installation procedure	1
2	One-bin sorter	1
3	Exit tray	1
4	Tapping screw M3 x 6	1

Installation Procedure

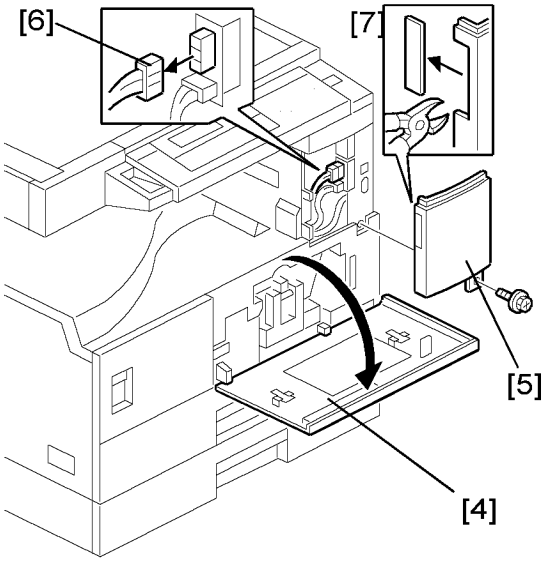
⚠CAUTION

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

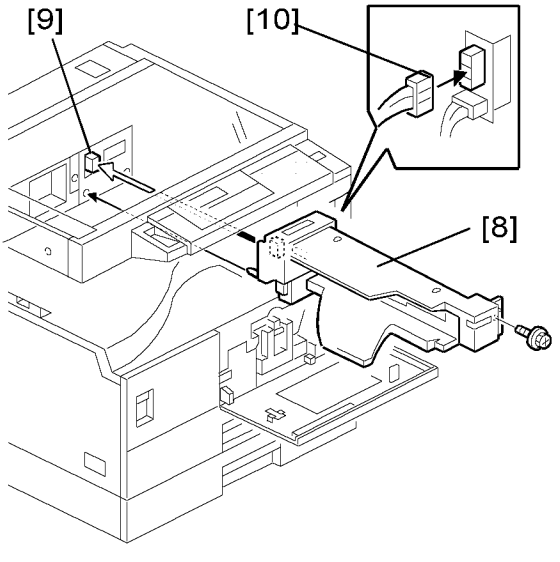
Steps 1 and 2 are for B261 only (For B260, go to step 3.)



1. **Remove the inverter tray [1].**
2. **Remove the rail [2] (2 knob screws).**
3. **Remove the cover [3] (1 rivet).**

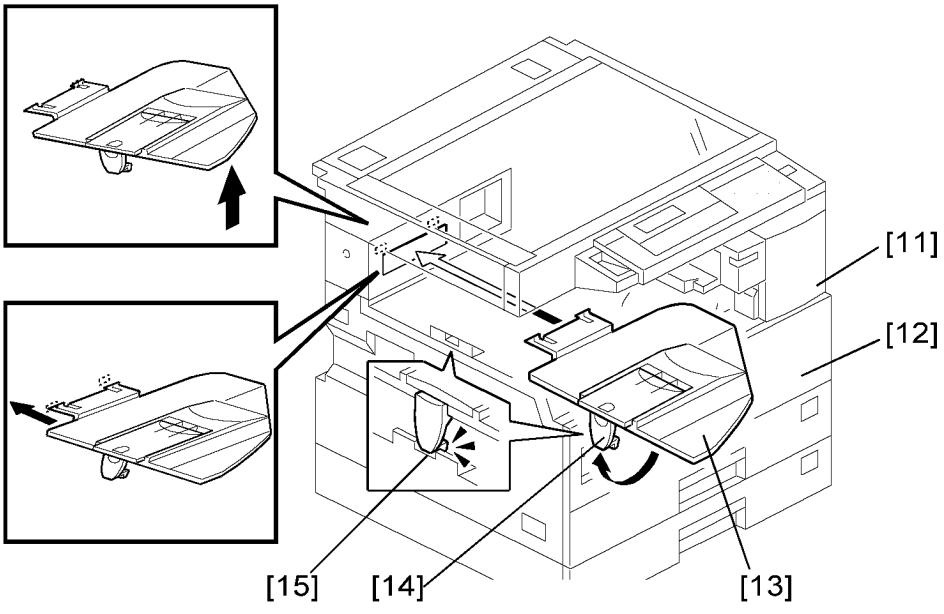


4. Open the front cover [4].
5. Remove the front right cover [5] (x 1).
6. Disconnect the connector [6].
7. Cut the front cover as shown, to make an opening [7] for the 1-bin tray.



8. Install the 1-bin tray [8].
9. Make sure the connectors [9] are connected firmly.
10. Fasten the screw.
11. Connect the connector [10] that you removed in step 6.

(Make sure that the connector is connected.)



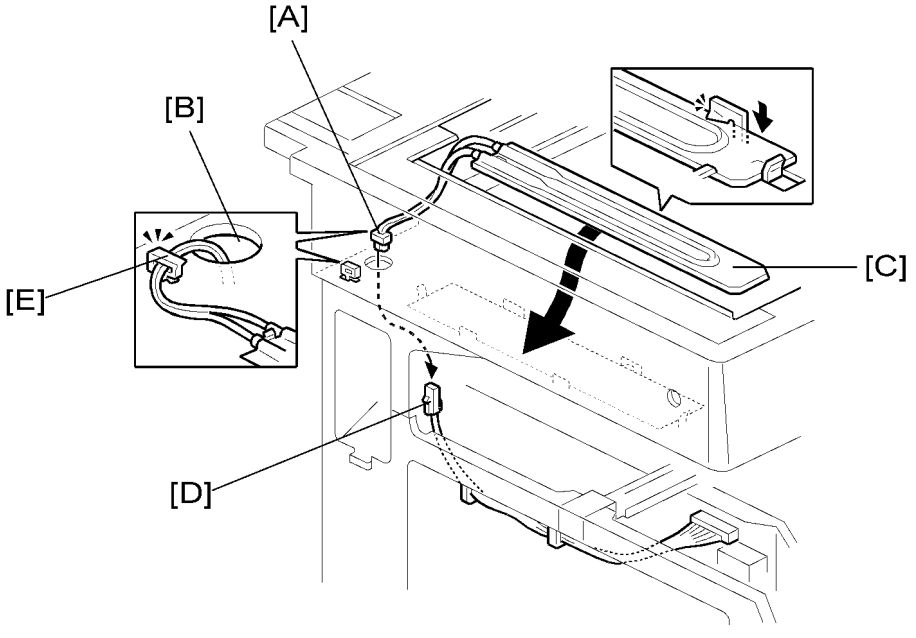
12. **Reattach the front right cover [11].**
13. **Close the front cover [12].**
14. **Install the exit tray [13] as follows:**
    - Keep the front end higher than the rear end.
    - Push the left hook into the opening in the copier.
    - Push the right hook into the opening in the copier.
15. **Pull the support [14] out of the left end of the exit tray.**
16. **Insert the support into the left end of the paper exit tray [15] (of the copier).**
17. **Turn the main switch on.**
18. **Check the operation.**

Anti-condensation Heater Installation

1

⚠CAUTION

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



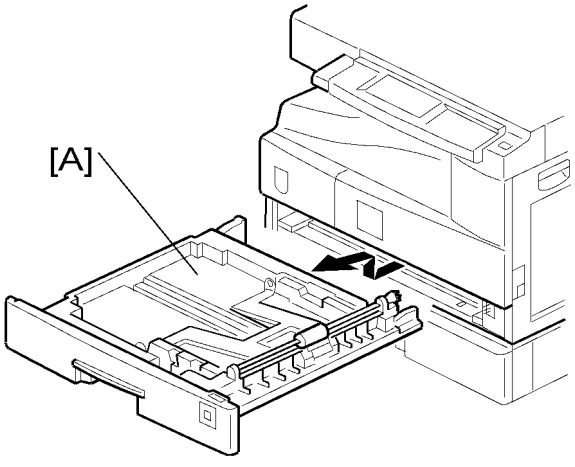
1. Remove the exposure glass ("Exposure Glass/DF Exposure Glass" in the Replacement and Adjustment" section).
2. Remove the left cover ("Left Cover" in the Replacement and Adjustment" section).
3. Pass the connector [A] through the opening [B].
4. Install the anti-condensation heater [C], as shown.
5. Join the connectors [A, D].
6. Clamp the harness with the clamp [E].
7. Reinstall the left cover and exposure glass.

Tray Heaters

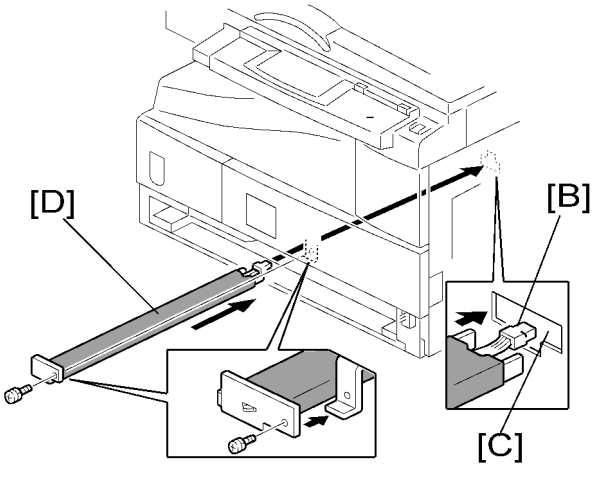
⚠CAUTION

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

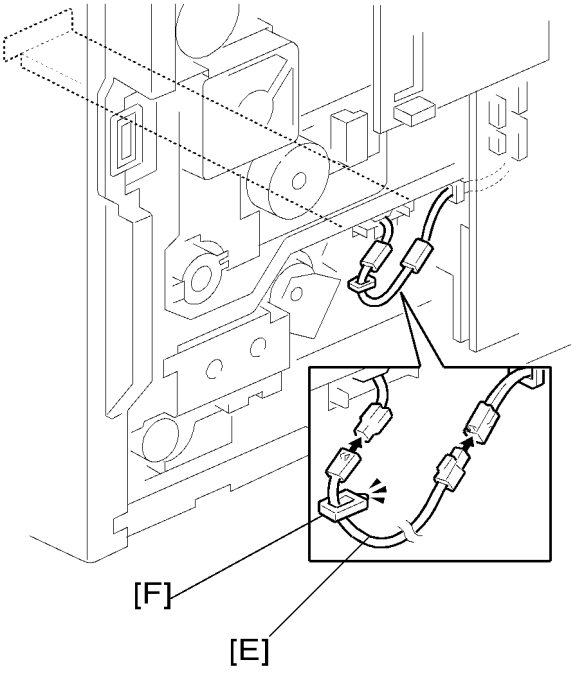
Upper Tray Heater



1. Remove the 1st tray cassette [A].
2. Remove the rear cover ("Rear Cover" in the "Replacement and Adjustment").

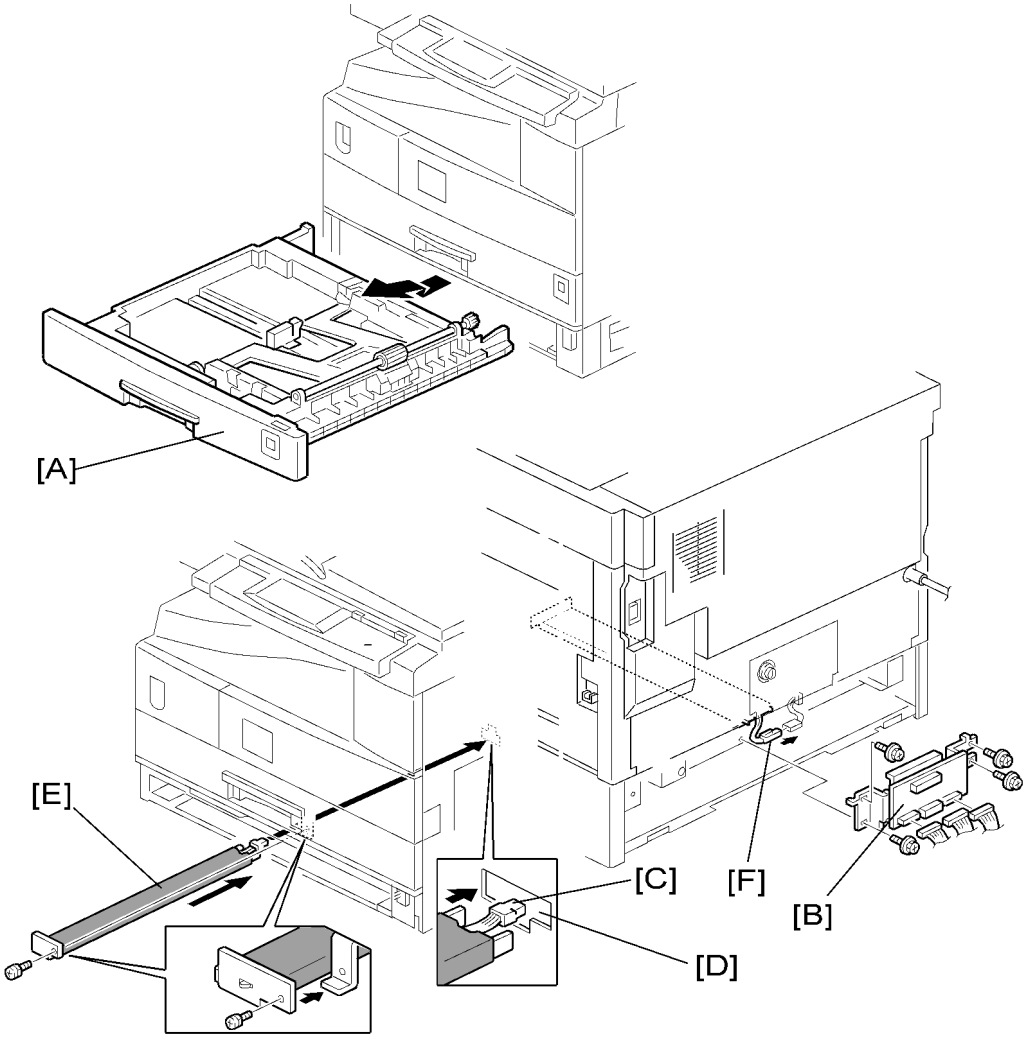


3. Pass the connector [B] through the opening [C] and install the tray heater [D] (x 1).



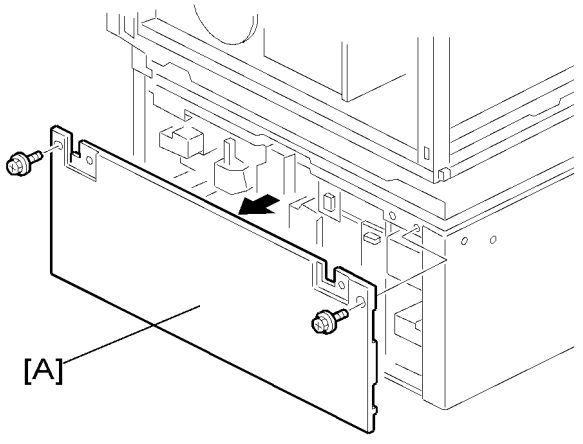
4. Install the relay cable [E].
5. Fix the cable with the clamp [F].
6. Reinstall the 1st tray cassette and the rear cover.

Lower Tray Heater (Two-Tray Model Only)

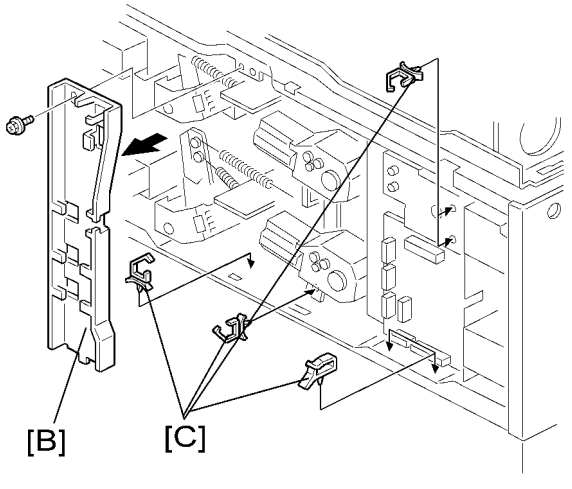


1. Remove the 2nd tray cassette [A].
2. Remove the rear lower cover.
3. B261 only:
   Remove the DCB [B] with bracket (x 4, x 3).
4. Pass the connector [C] through the opening [D] and install the tray heater [E] (x 1).
5. Join the connectors [F].
6. Reinstall the 2nd tray cassette, DCB, and rear lower cover.

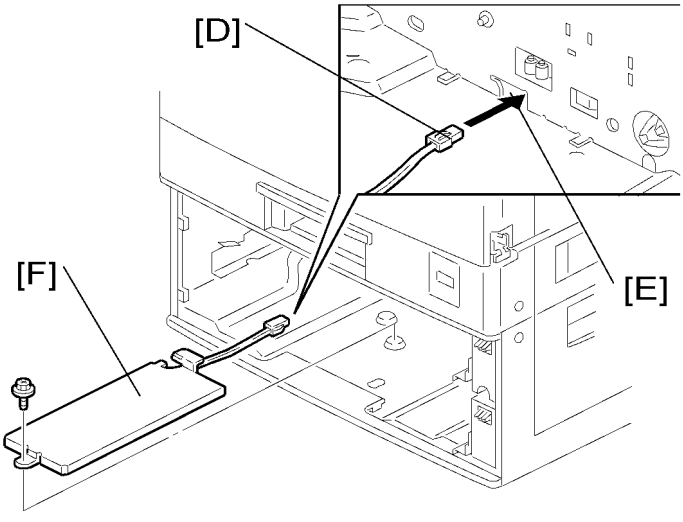
Tray Heaters For The Optional Paper Feed Units



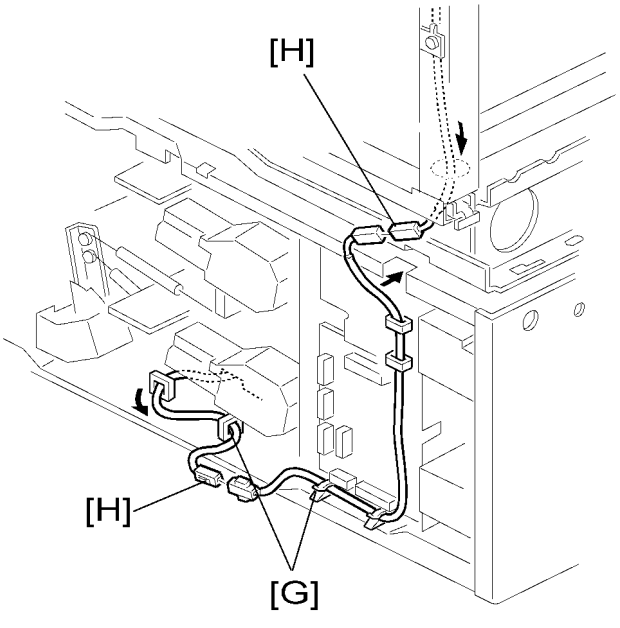
1. Remove the rear cover for the paper tray unit [A].



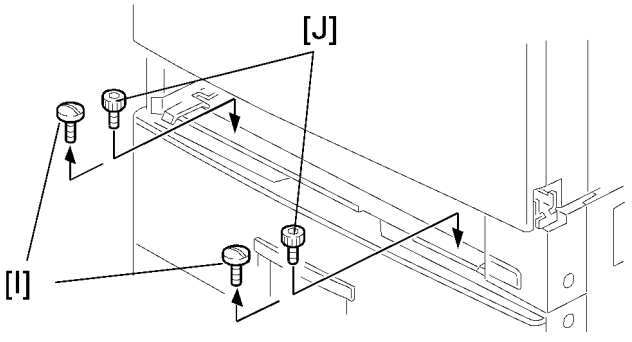
2. Two-tray unit only: Remove the cable guide [B].
3. Install the clamps [C].



4. Pass the connector [D] through the opening [E].
5. Install the tray heater [F]



6. Clamp the cables [G], as shown.
7. Join the connectors [H].
8. Two-tray unit only: Reinstall the cable guide.
9. Remove the 2nd tray cassette.



10. Remove the two screws [I] and install the two hexagonal socket screws [J].
11. Reinstall the 1st tray and rear cover.

Fax/PostScript 3 Options

⚠CAUTION

- The fax unit contain lithium batteries. The danger of explosion exists if a battery of this type is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer. Discard batteries in accordance with the manufacturer's instructions and local regulations.

This section includes the installation procedures for the optional fax.

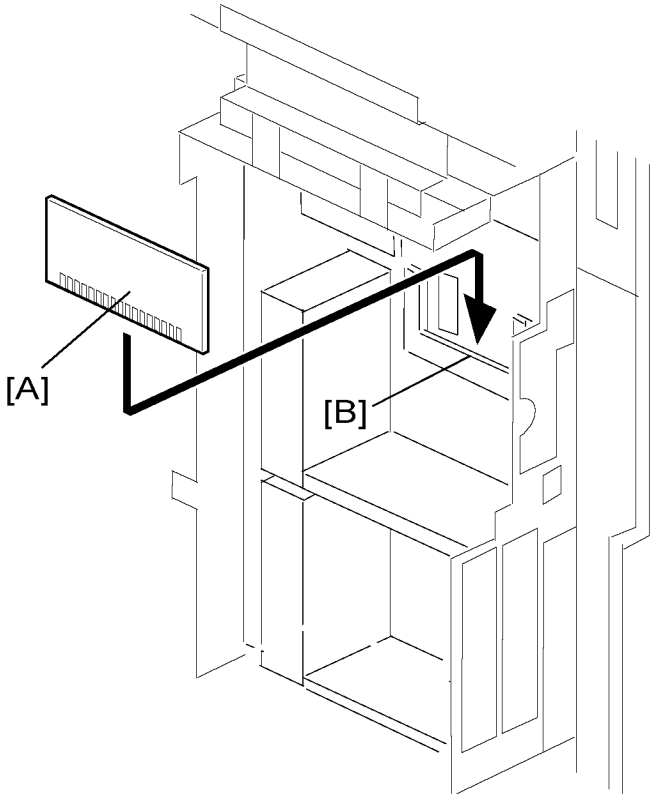
Accessory Check

	No.	Description	Q'ty
Fax	1	Installation procedure	1
	2	Dummy cover	1
	3	Key top–fax	2
	4	Cover–fax	1
	5	Right cover–fax	1
	6	FCU	1
	7	Stamp	1
	8	SG3 label	1
	9	Handset bracket (-17)	1
	10	Modular code (-17)	1
	11	User function key decal (-17, -29)	1
	12	Operating Instructions (-17, -29)	1
	13	Ferrite core (except -17)	1
	14	Connector cover	1
PostScript 3	1	PS3 card	1
	2	PS3 label	1

⚠CAUTION

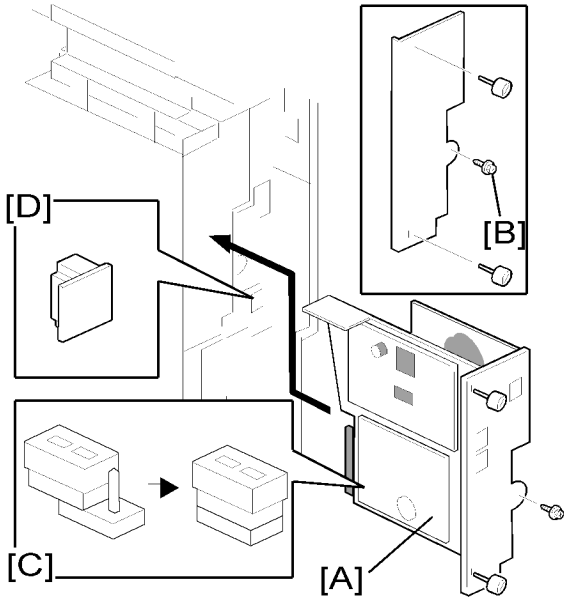
- Unplug the machine power cord before starting the following procedure.

PostScript 3

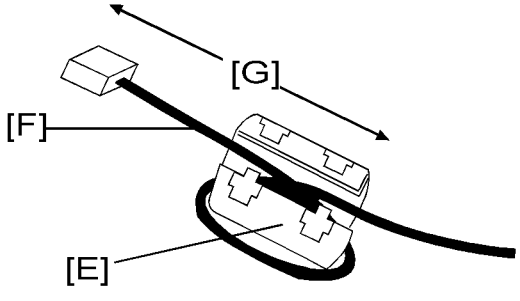


1. **Install the PS3 card [A] in the DIMM socket [B].**
2. **Reassemble the machine.**

Fax



1. Install the FCU [A] into the slot (x 3 [including the screw [B] removed in this step]).
2. Short the jumper [C]. (This jumper is the battery switch.)
3. Attach the connector cover [D] if you do not connect a LAN able.



4. Attach the ferrite core [E] to the telephone cable [F]. The end of the ferrite core must be about 5 cm (2") from the end of the cable [G].
5. Reassemble the machine.

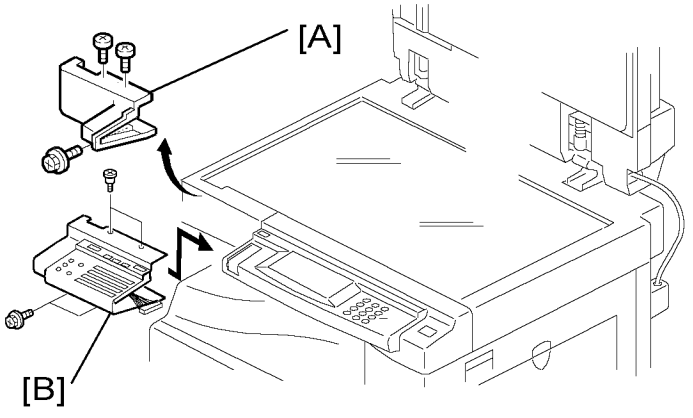
Initializing the Fax Unit

When you press the Fax key for the first time after installation, an error occurs. This is not a functional problem. Press OK. The fax starts its initialization program.

Note

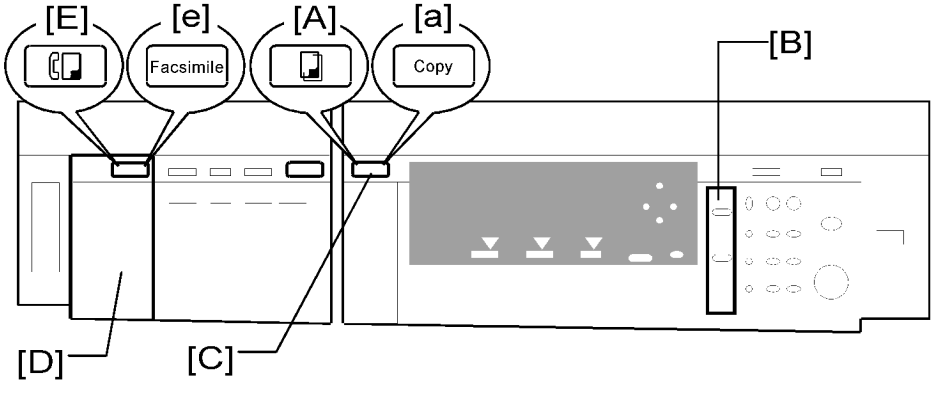
- If another error occurs after initialization, this can be a functional problem.

Installing Panels and Keys



1. Remove the front upper left cover [A] (x 3).
2. Install the optional operational panel [B] (x 1, x 4 [including three screws removed in step 1]).

Fax Keys



1. Remove the dummy cover (from the basic operation panel) and install the copy key [A] or [a].
2. Remove the dummy panel (from the basic operation panel) and install the fax panel [B].
3. Install the dummy cover [C] on the optional operation panel.
4. Install the fax panel [D] on the optional operation panel.
5. Install the fax key [E] or [e] on the optional operation panel.

Settings

Copier Settings and Time Settings

1. Turn the main switch on.
2. Start the SP mode.
3. Select SP 5801 1 and execute the initialization.
4. Turn the main switch off and on.
5. Start the SP mode.
6. Select SP 5302 2 and specify the time zone.
7. Select SP 5307 1, 3, and 4 and specify the daylight-saving-time settings.

Fax Settings

1. Select fax SP 1101 016 and specify the system switch.
2. Select fax SP 3101 1 and specify the service station.

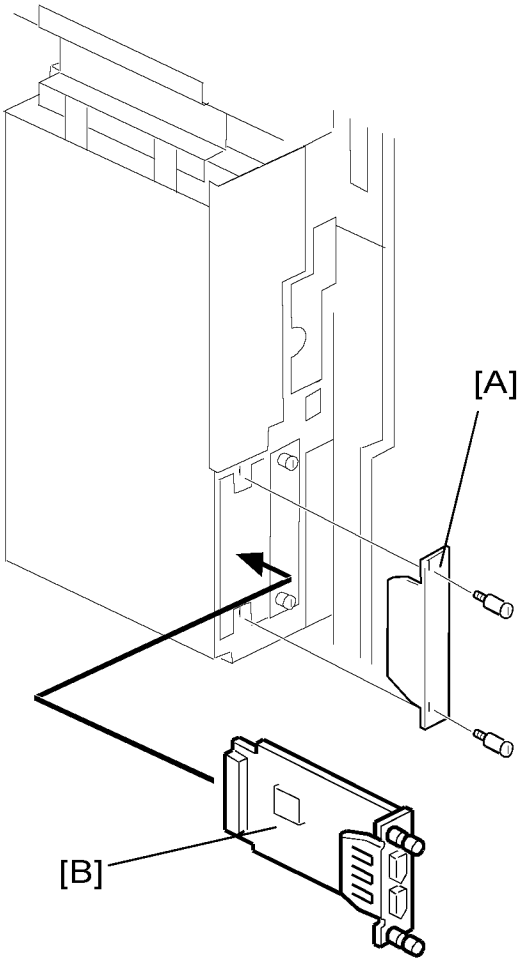
IEEE1284/IEEE1394 Interface

⚠CAUTION

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

Note

- You can install one of the IEEE1284 interface, IEEE1394 interface, wireless LAN interface, and Bluetooth interface.



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

Wireless LAN Interface

Accessory Check

Check the quantity and condition of the accessories.

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

Installation Procedure

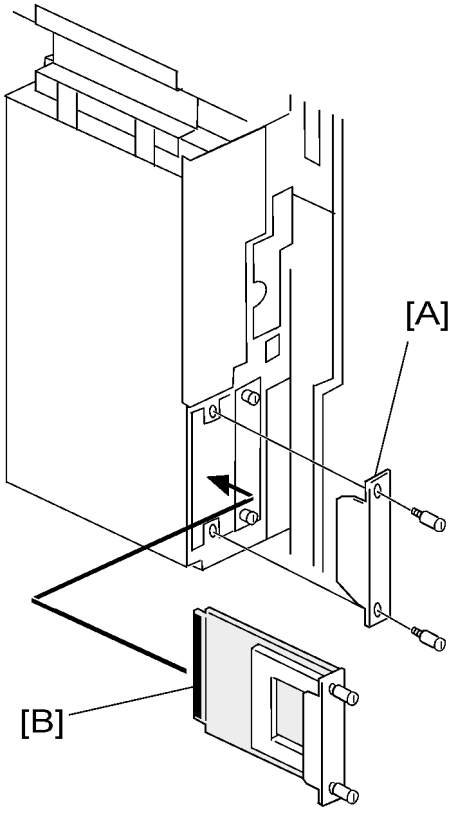
⚠CAUTION

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

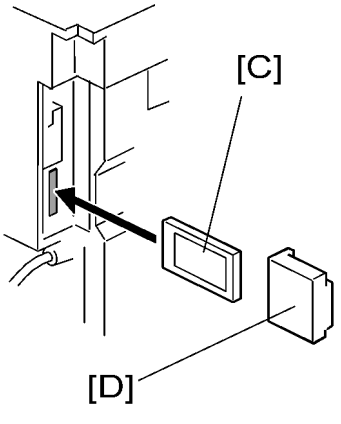
Note

- You can install one of the IEEE1284 interface, IEEE1394 interface, wireless LAN interface, and Bluetooth interface.

Board Installation



1. Remove the slot cover [A] (x 2).
2. Install the wireless LAN (IEEE 802.11b) board [B] (x 2).
3. Reattach the rear cover.



4. **With the card label facing left, insert the card [C] into the PCI slot.**
5. **Attach the cover [D].**
6. **If reception is poor, you may need to move the machine:**

Note

- Make sure that the machine is not located near an appliance or any type of equipment that can generate a strong magnetic field.
- Position the machine as close as possible to the access point.

UP Mode Settings for Wireless LAN

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

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

1. **Press the User Tools/Counter key.**
2. **On the touch panel, press System Settings.**

   Note

   - The Network I/F (default: Ethernet) must be set for either Ethernet or wireless LAN.
3. **Select Interface Settings → Network (tab) → LAN Type**
4. **Select either "Ethernet" or "IEEE 802.11b".**
5. **Press IEEE 802.11b. Only the wireless LAN options are displayed.**
6. **Transmission Mode: Select either "Ad Hoc Mode" or "Infrastructure Mode".**
7. **SSID Setting: Enter the SSID setting.**

   (The setting is case sensitive.)
8. **Channel: This setting is required when Ad Hoc Mode is selected.**

   Range: 1 to 14 (default: 11)

   Note

   - The allowed range for the channel settings may vary for different countries.
9. **WEP (Privacy) Setting: The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. In order to unlock encoded data, the same WEP key is required on the receiving side.**

   There are 64 bit and 128 bit WEP keys.

Range of Allowed Settings:	64 bits : 10 characters 128 bits : 26 characters

10. **Bandwidth Status. This setting is enabled only for the Infrastructure Mode. Press here to display the current status of the bandwidth. One of the following is displayed to reflect the reception status of the wireless LAN:**

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

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

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

    Note

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

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

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

SP Mode Settings for IEEE 802.11b Wireless LAN

The following SP commands can be set for IEEE 802.11b

SP No.	Name	Function
5840 4	SSID	Used to confirm the current SSID setting.
5840 6	Channel MAX	Sets the maximum range of the channel settings for the country.

SP No.	Name	Function
5840 7	Channel MIN	Sets the minimum range of the channels settings allowed for your country.
5840 11	WEP Key Select	Used to select the WEP key (Default: 00).
5840 18	SSID Check	Used to check the SSID.
5840 20	WEP Mode	Used to display the maximum length of the string that can be used for the WEP Key entry.

Bluetooth Installation

1

Accessory Check

Check the quantity and condition of the accessories.

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

Installation Procedure

⚠CAUTION

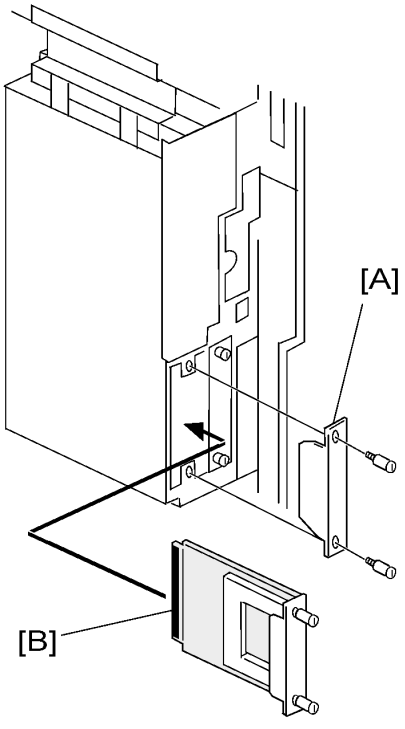
- Unplug the machine power cord before starting the following procedure.

Note

- You can install one of the IEEE1284 interface, IEEE1394 interface, wireless LAN interface, and Bluetooth interface.

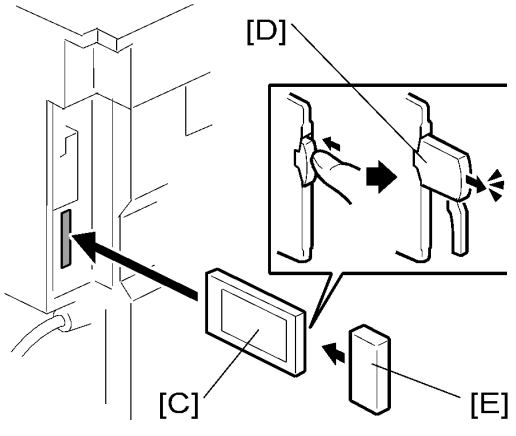
First:

- Remove the slot cover [A] (x 2).
- Install the Bluetooth board [B] on the controller board (x 2).
- Reattach the rear cover.



Then:

- Insert the Bluetooth card [C] into the slot.
- Press the antenna [D] to extend it.
- Attach the antenna cap [E].



2. PM Tables

Preventive Maintenance

Note

- After preventive maintenance work, reset the PM counter (SP 7804 1).
- PM intervals (60k, 80k, and 120K) indicate the number of prints.

Key: AN: As necessary, C: Clean, R: Replace, L: Lubricate, I: Inspect

Optics

	EM	60k	120k	AN	NOTE
Reflector	C				Optics cloth
1st mirror	C			C	Optics cloth
2nd mirror	C			C	Optics cloth
3rd mirror	C			C	Optics cloth
Scanner guide rails	C				Do not use alcohol.
Platen cover	I			C	Replace the platen sheet if necessary. Blower brush or alcohol
Exposure glass	C			C	Blower brush or alcohol
Toner shield glass	C				Blower brush
APS sensors	C				Blower brush

Drum Area

	EM	60k	120k	AN	NOTE
PCU		I			
Drum		R			
Developer		R			
Charge roller		R			

	EM	60k	120k	AN	NOTE
Cleaning brush (charge roller)		R			
Cleaning blade (OPC drum)		R			
Pick-off pawls		R			
Transfer roller			R		
ID sensor	C			C	Blower brush

Paper Feed

	EM	60k	120k	AN	NOTE
Paper feed roller (each tray)		C	R	C	Clean with water or alcohol.
Friction pad (each tray)		C	R	C	Clean with water or alcohol.
Bottom-plate pad (each tray)		C		C	Clean with water or alcohol.
Paper feed roller (bypass tray)		C		C	Clean with water or alcohol.
Friction pad (bypass tray)		C		C	Clean with water or alcohol.
Bottom-plate pad (by-pass tray)		C		C	Clean with water or alcohol.
Registration rollers		C		C	Clean with water or alcohol.
Relay rollers		C		C	Clean with water or alcohol.
Paper feed guides		C		C	Clean with water or alcohol.
Paper-dust Mylar		C		C	Clean with water or alcohol.

Fusing Unit

	EM	60k	120k	AN	NOTE
Hot roller			R		
Pressure roller			R		
Pressure roller cleaning roller			R		
Hot roller bushings			I		
Pressure-roller bushing			R		

	EM	60k	120k	AN	NOTE
Hot roller stripper pawls			R	C	Dry cloth
Thermistor		C		C	Dry cloth

ADF/ARDF

	80k	AN	NOTE
Feed belt	R	C	Clean with water or alcohol.
Separation roller	R	C	Clean with water or alcohol.
Pick-up roller	R	C	Clean with water or alcohol.
Stamp		R	Replace when necessary.
White plate		C	Clean with water or alcohol.
DF exposure glass		C	Clean with water or alcohol.
Platen cover		C	Clean with water or alcohol.

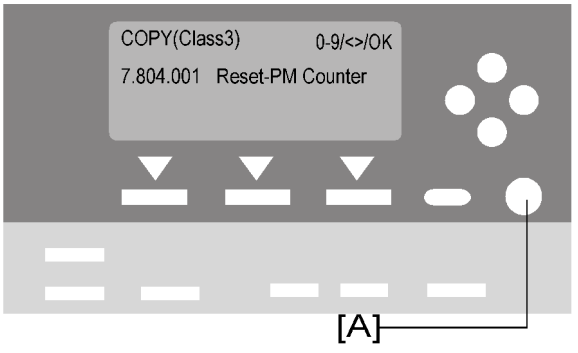
Paper Tray Unit

	60k	120k	AN	NOTE
Paper feed rollers		R	C	Dry or damp cloth
Bottom-plate pads	C		C	Dry cloth
Paper-feed guides	C		C	Clean with water or alcohol.
Friction pads		R	C	Dry or damp cloth
Relay clutch (B384 only)		I		
Feed clutches (B384 only)		I		
Relay roller (B384 only)		C	C	Dry cloth

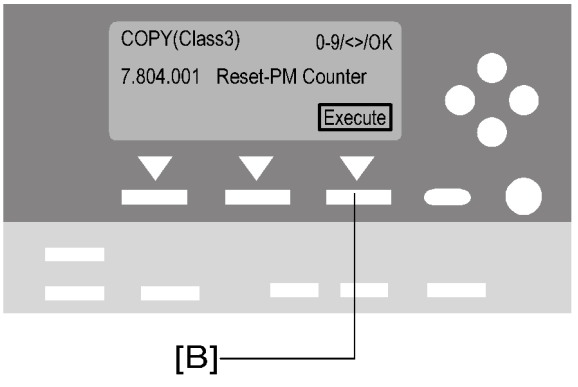
How to Reset the PM Counter

After preventive maintenance work, reset the PM counter (SP 7804 1) as follows.

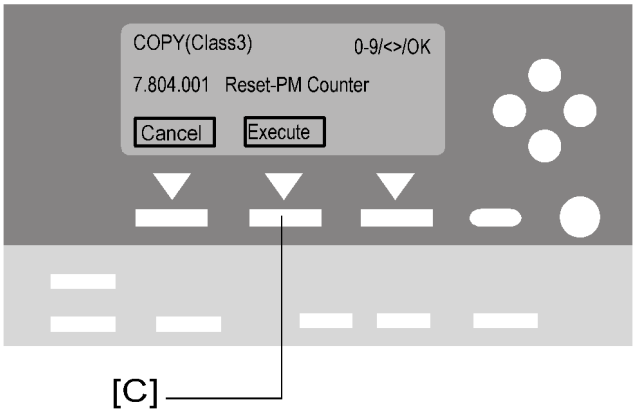
1. Activate the SP mode (see section 5).
2. Select SP 7804 1 ("Reset–PM Counter").



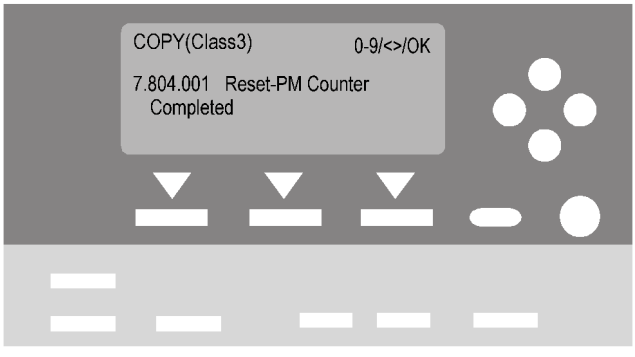
3. Press the OK key [A]. The message "Execute" is displayed.



4. Press the button [B] below the message "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.



5. To reset the PM counter, press the button [C] below the message "Execute."



6. Wait until the message "Completed" is displayed.
7. Quit the SP mode.

3. Replacement and Adjustment

General Cautions

Do not turn off the main switch while any of the electrical components are active. Doing so may result in damage to units (such as the PCU) as they are pulled out or replaced.

PCU (Photoconductor Unit)

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

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

Transfer Roller

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

Scanner Unit

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

Laser Unit

1. Do not loosen or adjust the screws securing the LD drive board on the LD unit. Doing so will throw the LD unit out of adjustment.
2. Do not adjust the variable resistors on the LD unit. These are adjusted at the factory.
3. The polygonal mirror and F-theta lens are very sensitive to dust.
4. Do not touch the toner shield glass or the surface of the polygonal mirror with bare hands.

Fusing Unit

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

Paper Feed

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

Important

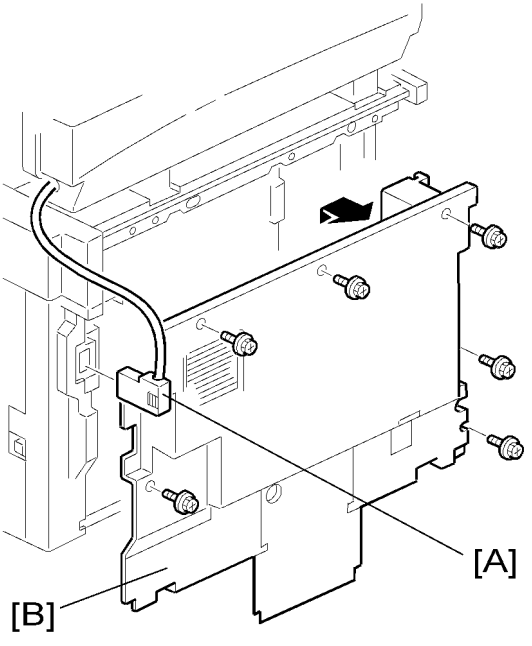
- **After installing a new PCU, you must run SP2-214 to initialize the TD sensor. After starting initialization, be sure to wait for it to reach completion (wait for the motor to stop) before re-opening the front cover or turning off the main switch.**
- **If the optional tray heater or optics anti-condensation heater is installed, keep the copier's power cord plugged in even while the main switch is off, so that the heater(s) remain energized.**

Special Tools and Lubricants

Part Number	Description	Q'ty
A0069104	Scanner Positioning Pins (4 pins/set)	1 set
A2929500	Test Chart S5S (10 pcs/set)	1 set
VSSM9000	FLUKE 187 Digital Multimeter	1
N8036701	4MB Flash Memory Card	1
A2579300	Grease Barrierta S552R	1
52039502	Grease G-501	1
B6455010	SD-Card: Ass'y	1
B6456700	SD-Card: Adapter: BN-SDAA2	1
B6456800	AD-Card: USB: Writer: BN-SDCE2	1

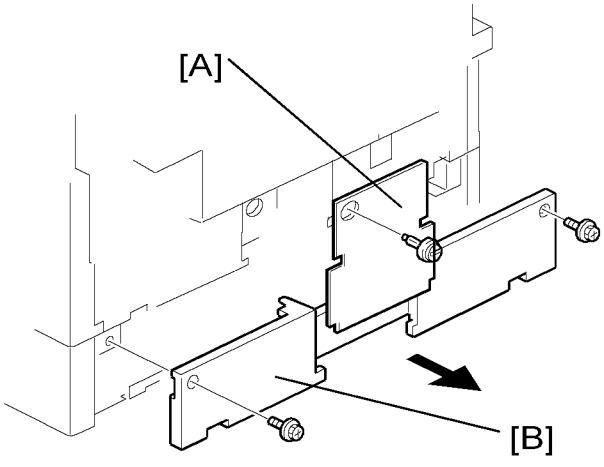
Exterior Covers & Operation Panel

Rear Cover



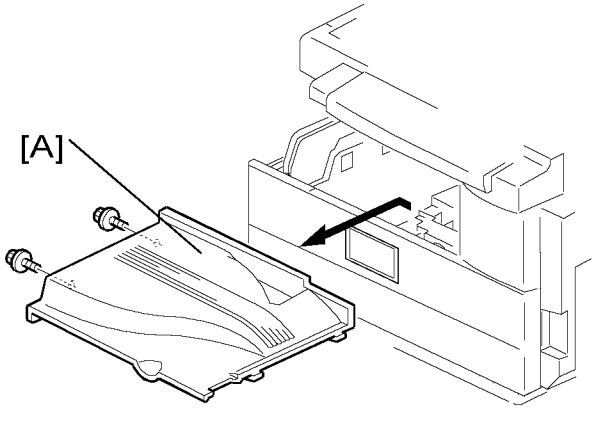
1. Unplug the DF cable [A] (if installed).
2. Rear cover [B] (x 6)

Rear Lower Cover



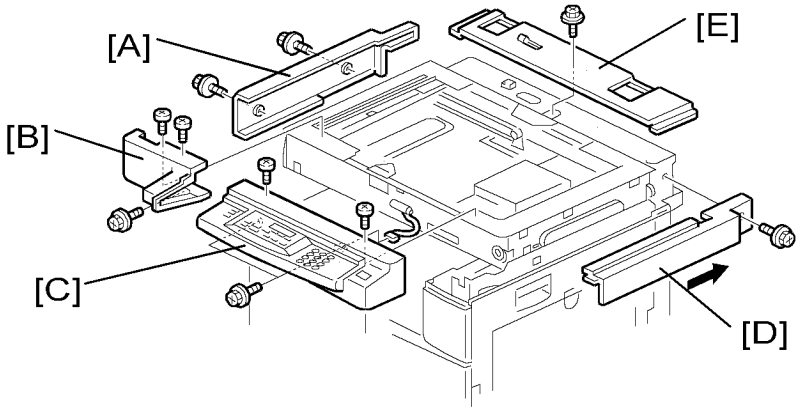
1. Rear cover (see above) or tray harness cover [A] (1 rivet).
2. Rear lower cover [B] (x 2)

Copy Tray



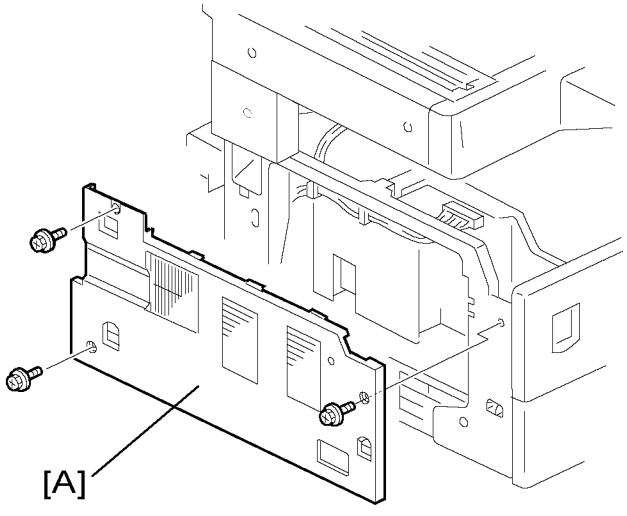
1. Copy tray [A] (x 2)

Upper Covers



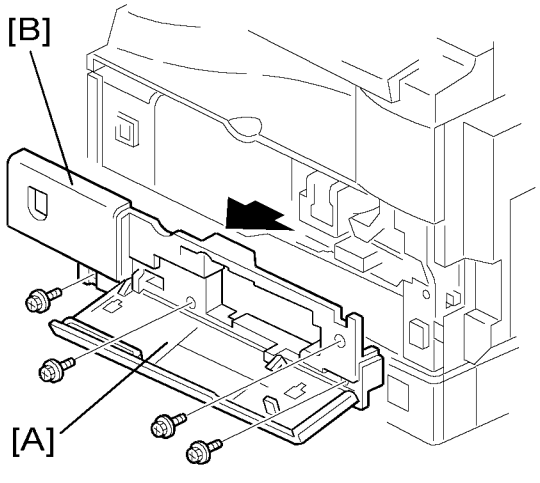
1. Platen Cover, ARDF, or ADF (if installed)
2. Rear cover
3. Left upper cover [A] (x 2)
4. Front upper left cover [B] (x 3)
5. Operation panel [C] (x 4, x 1)
6. Right upper cover [D] (x 1, 3 hooks)
7. Push the cover to the rear side to release the hooks.
8. Top rear cover [E] (x 1)

Left Cover



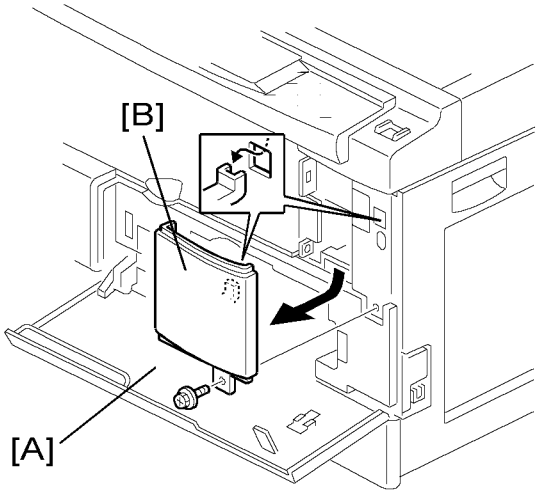
1. Left cover [A] (x 3)

Front Cover



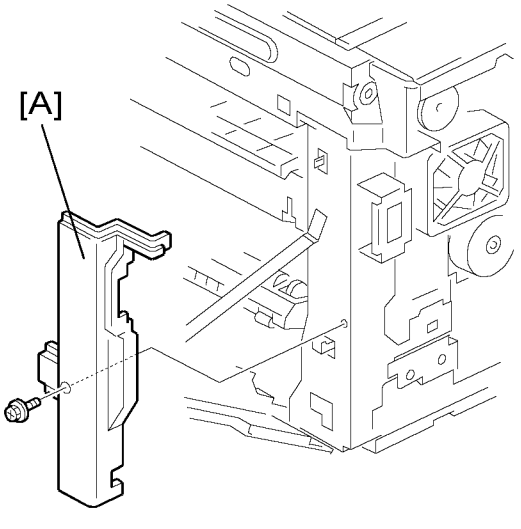
1. Pull out the (top) paper tray.
2. Open the front door [A].
3. Front cover [B] (x 4)

Front Right Cover



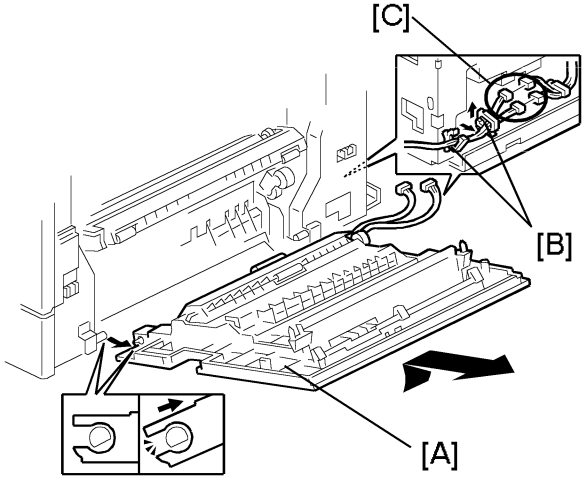
1. Open the front door [A].
2. Front right cover [B] (x 1)

Right Rear Cover



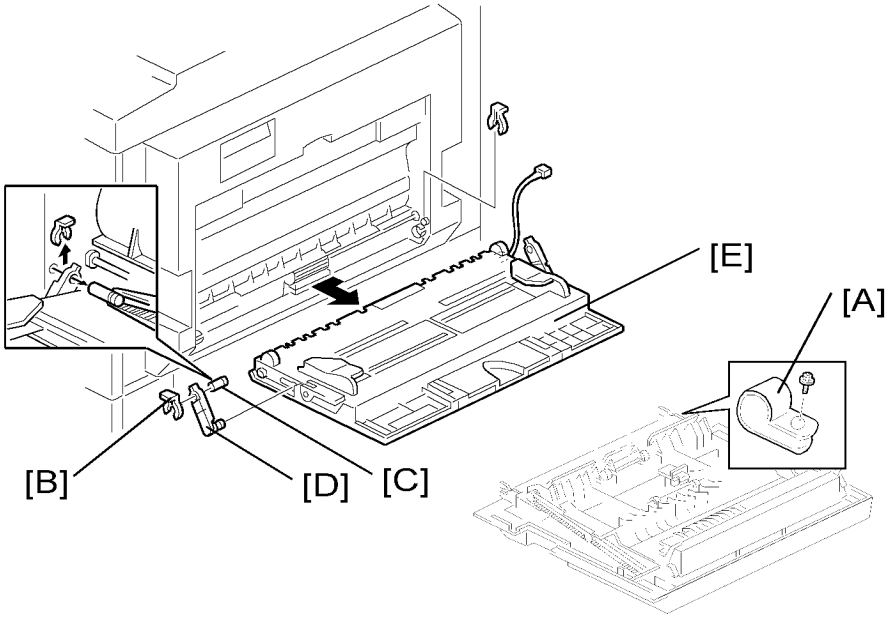
1. Right upper cover ("Upper Covers")
2. Open the duplex unit (B261 only).
3. Right rear cover [A] (x 1)

Right Door (B260)/Duplex Unit (B261)



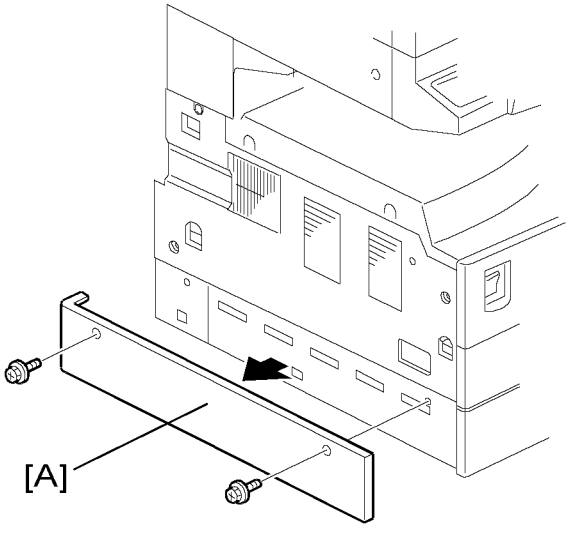
1. Right rear cover (see above)
2. Open the right door [A].
3. Open the clamps [B] and disconnect the two connectors (B260) [C] or three connectors (B261).
4. Right door [A]

By-pass Tray



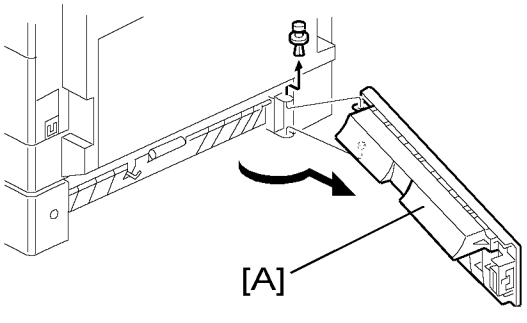
1. Right rear cover (☛ "Right Rear Cover")
2. Open the right door.
3. Release the by-pass tray cable from the clamps (see [B] on the preceding procedure) and disconnect the connector (5-pin connector with colored wires).
4. Cable holder [A] (B261 only)
5. Front-side clip ring [B]
6. Front-side pin [C] (You can push the pin from behind the right door.)
7. Front-side tray holder arm [D]
8. Remove the rear-side clip ring, pin, and tray holder arm in the same manner.
9. By-pass tray [E]

Left Lower Cover



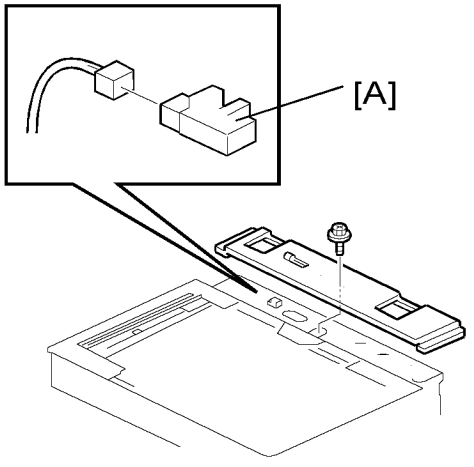
1. Left lower cover [A] (x 2)

Right Lower Cover



1. Right lower cover [A] (1 pin)

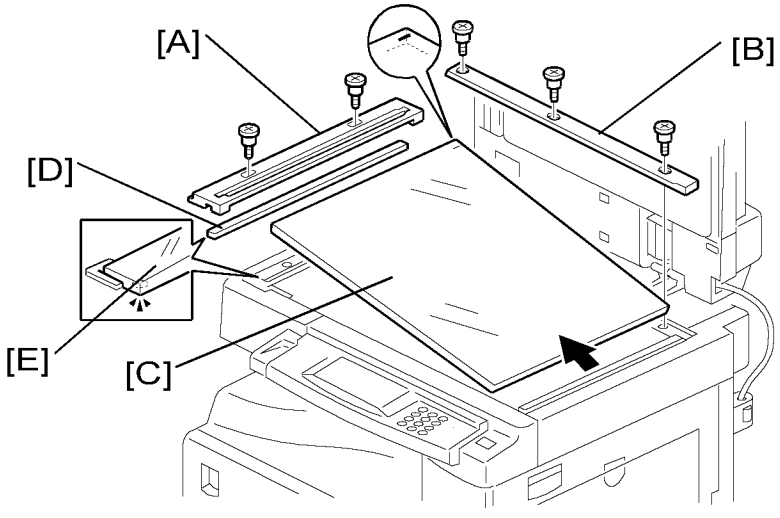
Platen Cover Sensor



1. Top rear cover
2. Platen cover sensor [A] (x 1)

Scanner Unit

Exposure Glass/DF Exposure Glass



- Exposure Glass -

1. Front upper left cover (☛ "Upper Covers")
2. Left scale [A] (🔩 x 2)
3. Rear scale [B] (🔩 x 3)
4. Exposure glass [C]

Note

- When reinstalling, make sure that the mark is at the rear left corner, and that the left edge is aligned to the support on the frame

- DF Exposure Glass -

1. Front upper left cover (☛ "Upper Covers")
2. Left scale [A]
3. DF exposure glass [D]

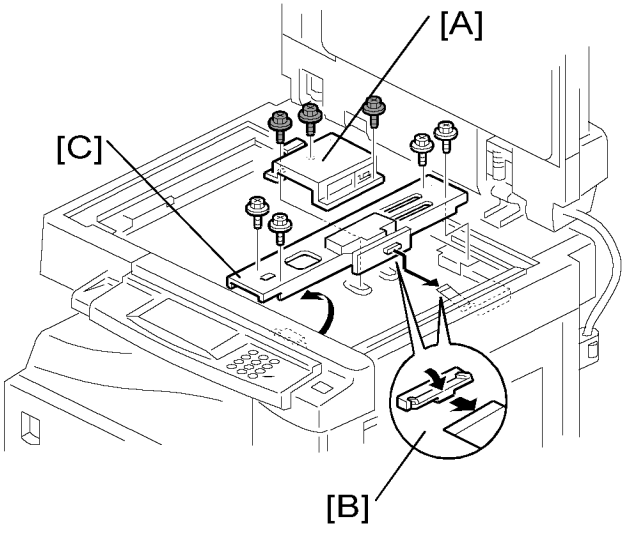
Note

- When reinstalling, make sure that the mark [E] is on the bottom.

Lens Block

⚠CAUTION

1. Do not touch the paint-locked screws on the lens block. The position of the lens assembly (black part) is adjusted before shipment.
2. Do not grasp the PCB or the lens assembly when handling the lens block. The lens assembly may slide out of position.

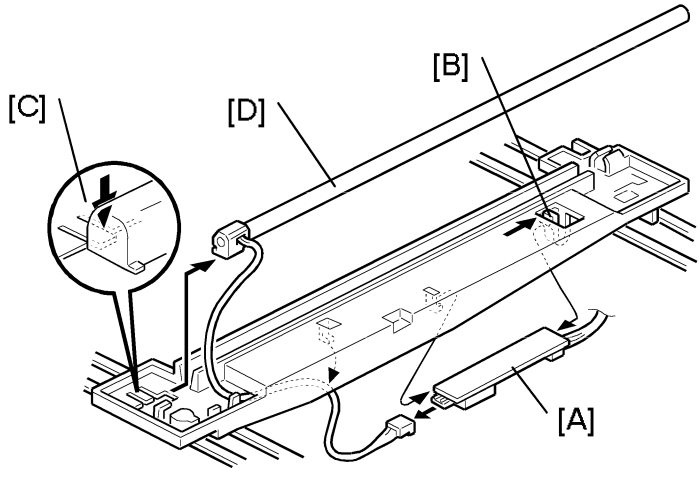


1. **Exposure glass (☛ "Exposure Glass/DF Exposure Glass")**
2. **Lens cover [A] (x 5)**
3. **Disconnect the flat cable [B].**
4. **Lens block [C] (x 4).**

Note

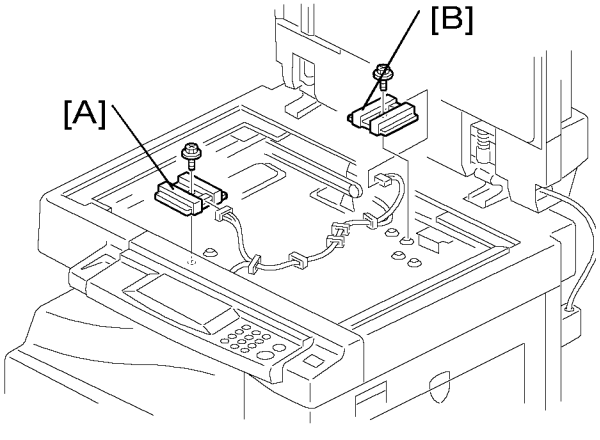
- After installing a new lens block, adjust the image quality (☛ "Copy Adjustments": "Printing/Scanning").

Lamp Stabilizer Board And Exposure Lamp



1. Operation panel ("Scanner Unit")
2. Exposure glass ("Exposure Glass/DF Exposure Glass")
3. Slide the first scanner to a position where the front end of the lamp is visible.
4. Place one hand under the lamp stabilizer board [A] and release the hook [B].
5. Lamp stabilizer board (x 2)
6. Press the plastic latch [C] and push the front end of the lamp toward the rear.
7. Lamp [D] (with the cable)

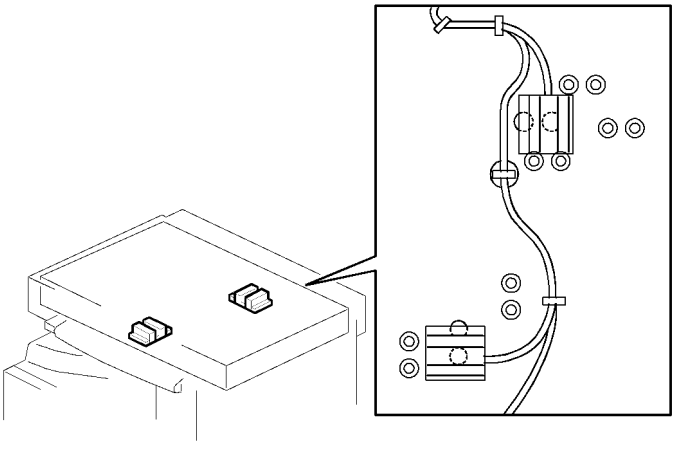
Original Width/Length Sensor



1. Exposure glass ("Exposure Glass/DF Exposure Glass")
2. Original width sensor [A] (x 1, x 1)
3. Lens block ("Lens Block")
4. Original length sensor [B] (x 1, x 1)

- Sensor Positions -

China (Sensor positions for China model (8K/16K))



- Sensor Positions for China Model (8K/16K) -

You rearrange the positions of the original width and length sensors for the copier to detect the following original sizes:

- 8K SEF (270 x 390 mm)
- 16K SEF (195 x 270 mm)
- 16K LEF (270 x 195 mm)

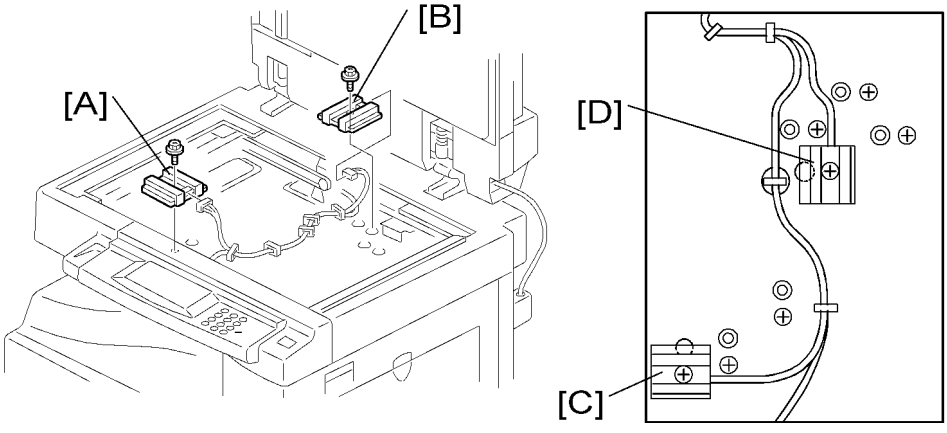
After you have rearranged the positions, the sensors work as listed in the table. Rearrange the sensor positions as follows:

Original Size	Length Sensors		Width Sensors	
8K-SEF	L1	L2	W1	W2
16K-SEF	X	X	X	O
16K-LEF	X	O	O	O
16K-SEF	O	O	X	O

1. Specify SP mode settings:

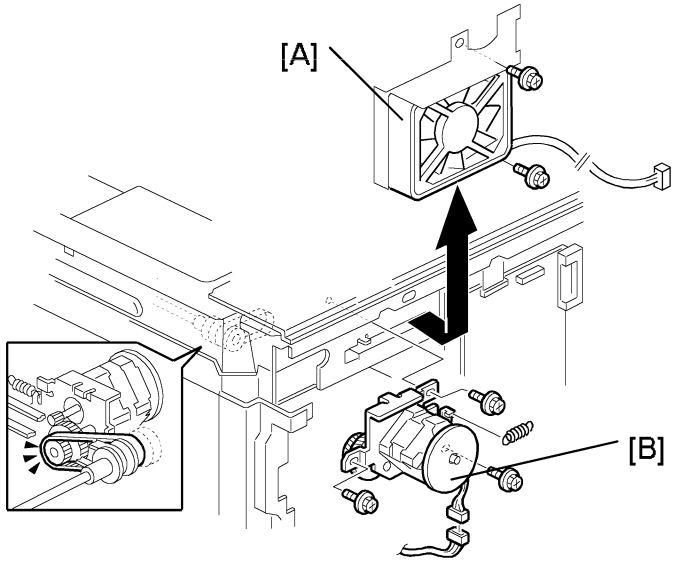
Select SP 4305 1, and specify 2 (=Yes). The machine will detect 8K/16K rather than A3/A4/B4/B5 (A3-SEF/B4-SEF ➔ 8K-SEF; B5-SEF/A4-SEF ➔ 16K-SEF; B5-LEF/A4-LEF ➔ 16K-LEF).

2. **Turn off the main switch.**
3. **Exposure glass (☛ "Scanner Unit")**



4. **Original width/length sensors [A] [B]**
5. **Rearrange the sensor positions [C] [D].**
6. **Turn on the main switch and check the operations.**

Scanner Motor

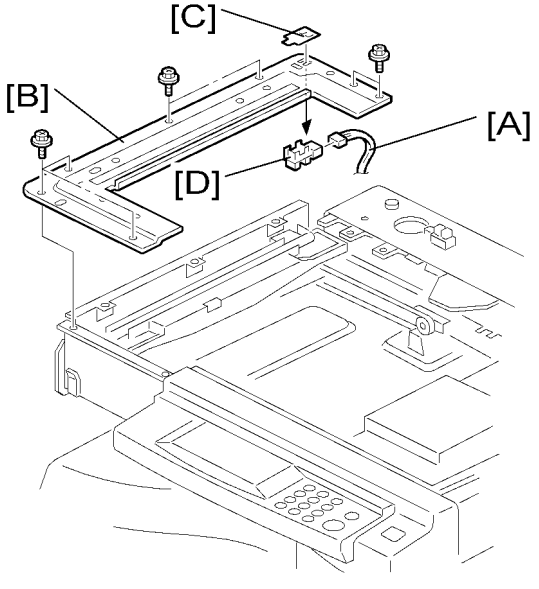


1. Left upper cover, front upper left cover, operation panel, top rear cover (☛ "Exposure Glass/DF Exposure Glass")
2. Exposure glass (☛ "Exposure Glass/DF Exposure Glass")
3. Rear exhaust fan [A] (B261 only)
4. Scanner motor [B] (x 3, x 1, 1 spring, 1 belt)

Note

- When reassembling, install the belt first, and set the spring next. Fasten the leftmost screw (viewed from the rear), and fasten the other two screws.
- After installing the motor, adjust the image quality.

Scanner Home Position Sensor



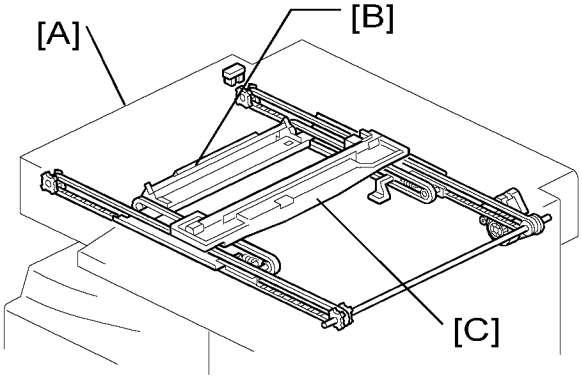
1. Left upper cover, top rear cover (☛ "Original Width/Length Sensor")
2. Exposure glass, DF exposure glass (if installed) (☛ "Exposure Glass/DF Exposure Glass")
3. Disconnect the connector [A].
4. Scanner left lid [B] (x 7)
5. Sensor tape [C]
6. Scanner home position sensor [D]

Adjusting Scanner Positions

⚠CAUTION

- **Grasp the front and rear ends (not the middle) of the first scanner when you manually move it. The first scanner may be damaged if you press, push, or pull its middle part.**

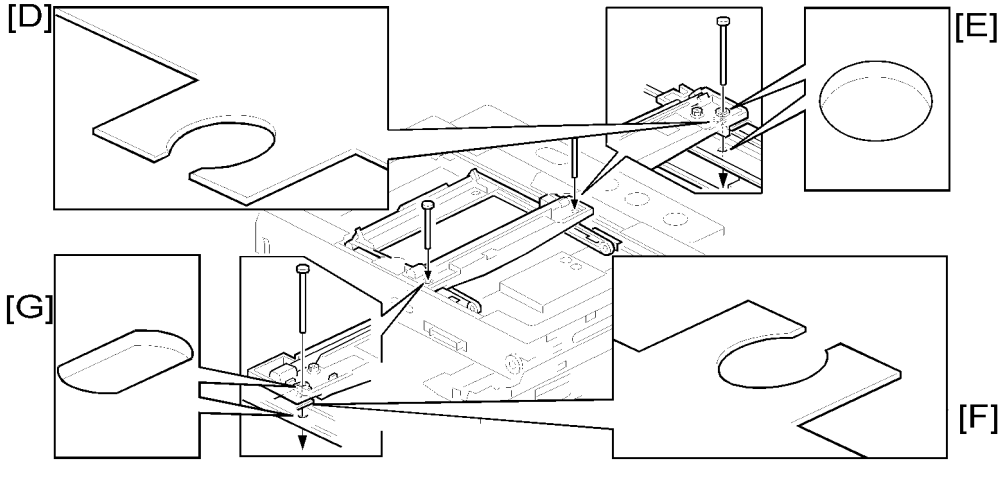
- Overview -



Adjust the scanner positions when the first scanner [C] and second scanner [B] are not parallel with the side frames [A] or when you have replaced one or more of the scanner belts.

To adjust the scanner positions, do either of the following:

- To adjust the belt contact points on the first scanner (☛ "")
- To adjust the belt contact points on the scanner bracket (☛ "")

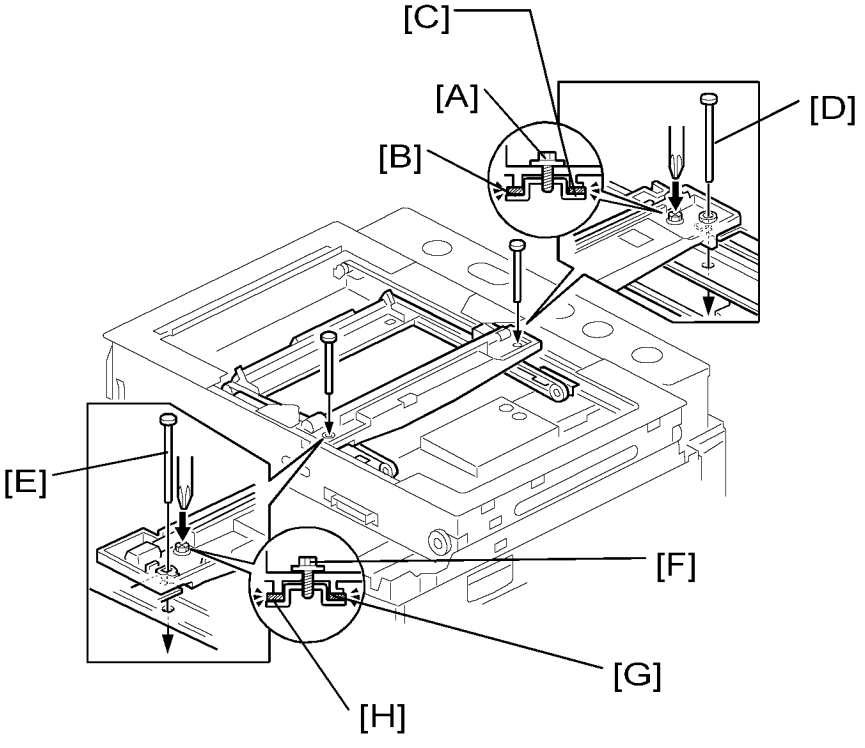


The two actions above have the same objectives--to align the following holes and marks:

- The adjustment holes [E] [G] in the first scanner
- The adjustment holes [E] [G] in the second scanner
- The alignment marks [D] [F] on the frames

The scanner positions are correct when these holes and marks are aligned.

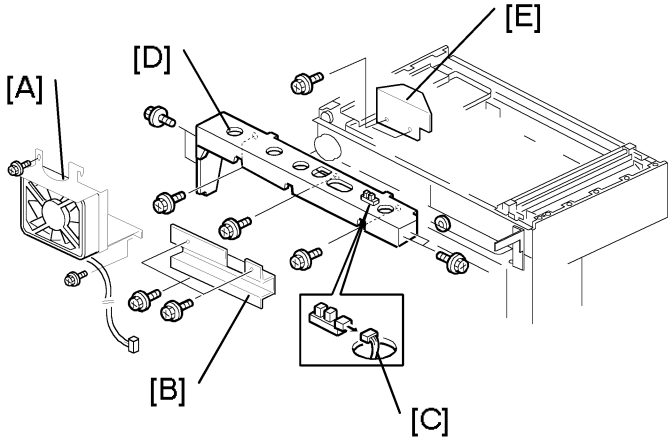
- Adjusting the First Scanner Contact Points -



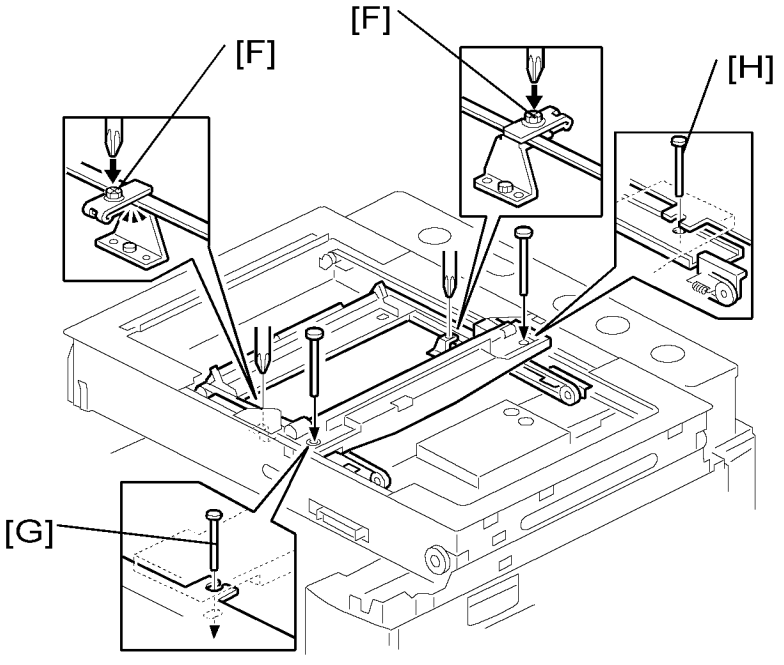
1. **A(R)DF or platen cover**
2. **Operation panel, top rear cover ("Upper Covers").**
3. **Exposure glass ("Exposure Glass/DF Exposure Glass")**
4. **Loosen the 2 screws [A] [F].**
5. **Slide the 1st and 2nd scanners, or one of them, to align the following holes and marks (""):**
   - The adjustment holes in the first scanner
   - The adjustment holes in the second scanner
   - The alignment marks on the frames
6. **Insert the positioning tools [D] [E] through the holes and marks.**

7. Check that the scanner belts [B] [C] [G] [H] are properly set between the bracket and the 1st scanner.
8. Tighten the screws [A] [F].
9. Remove the positioning tools.
10. Reassemble the machine and check the operation.

- Adjusting the Second Scanner Contact Points -



1. A(R)DF or platen cover
2. Operation panel, top rear cover ("Upper Covers").
3. Exposure glass ("Exposure Glass/DF Exposure Glass")
4. Rear exhaust fan [A] (x 2)
5. Controller bracket [B] (x 3)
6. Disconnect the platen-cover-sensor connector [C].
7. Rear frame [D] (x 7)
8. Scale bracket [E] (x 2)



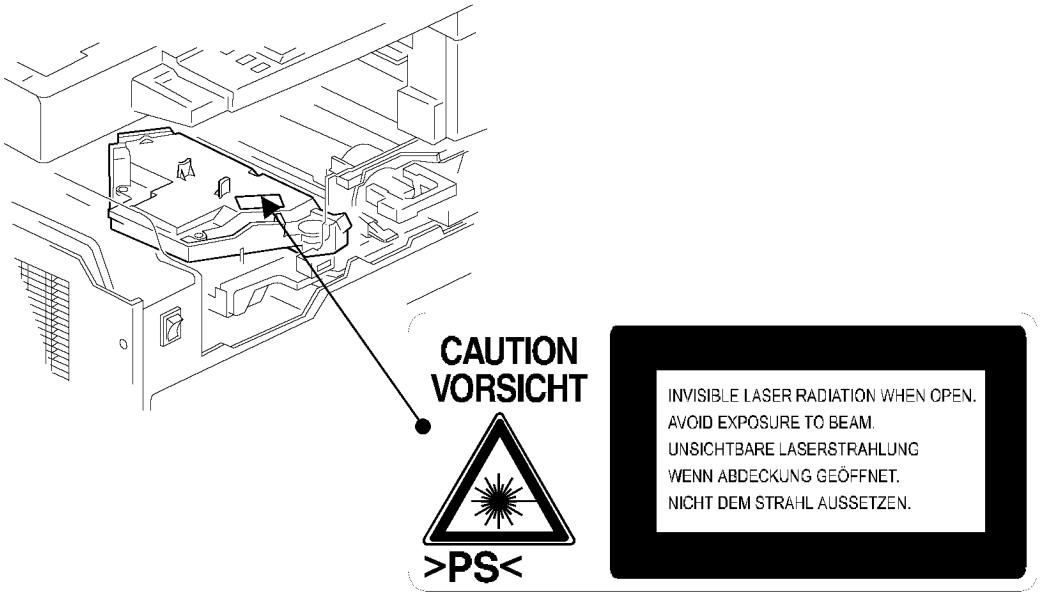
9. **Loosen the 2 screws [F].**
10. **Slide the 2nd scanner to align the following holes and marks (☛ ""):**
    - The adjustment holes in the first scanner
    - The adjustment holes in the second scanner
    - The alignment marks on the frames
11. **Insert the positioning tools [G] [H] through the holes and marks.**
12. **Check that the scanner belts are properly set in the brackets.**
13. **Remove the positioning tools.**
14. **Reassemble the machine and check the operation.**

Laser Unit

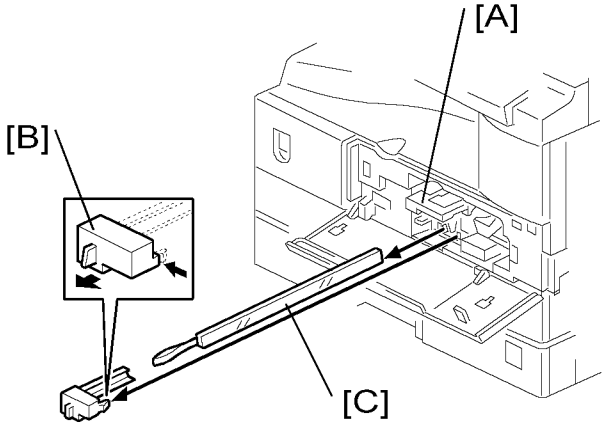
⚠WARNING

- The laser beam can seriously damage your eyes. Be absolutely sure that the main power switch is off and that the machine is unplugged before accessing the laser unit.

Location Of Caution Decal

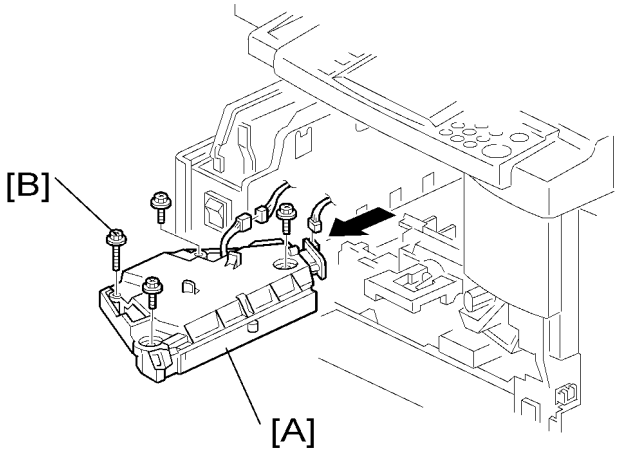


Toner Shield Glass



1. Open the front door.
2. Lift the toner cartridge latch [A].
3. Press the toner shield glass cover [B] to the left and pull it out.
4. Pull out the toner shield glass [C].

Laser Unit



1. Toner shield glass. (☛ Toner Shield Glass)

2. Copy tray (Copy Tray)
3. Pull out the (upper) paper tray.
4. Front cover (Front Cover)
5. Laser unit [A] (x 2, x 4)

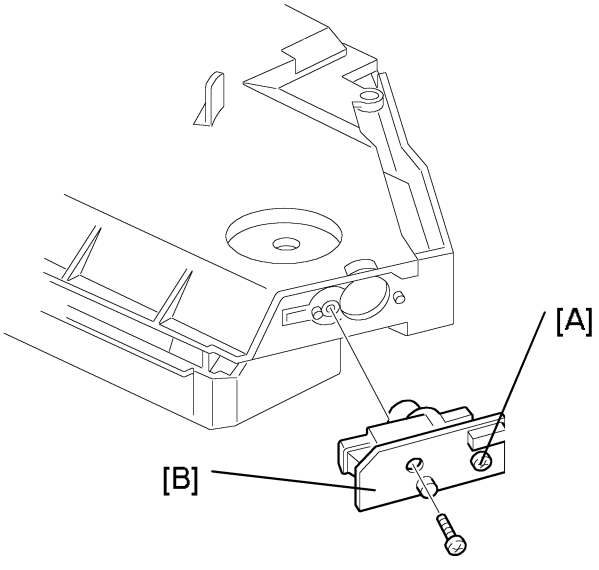
Note

- The screw at the left front position [B] is longer than the other three.

LD Unit

CAUTION

- Do not touch the paint-locked screw [A]. The LD position is adjusted before shipment.

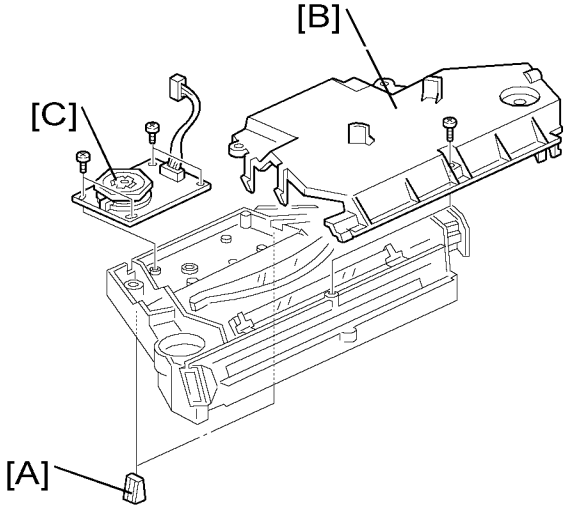


1. Laser unit (Laser Unit)
2. LD unit [B] (x 1)

Note

- Do not screw the LD unit in too tightly when installing it.

Polygonal Mirror Motor



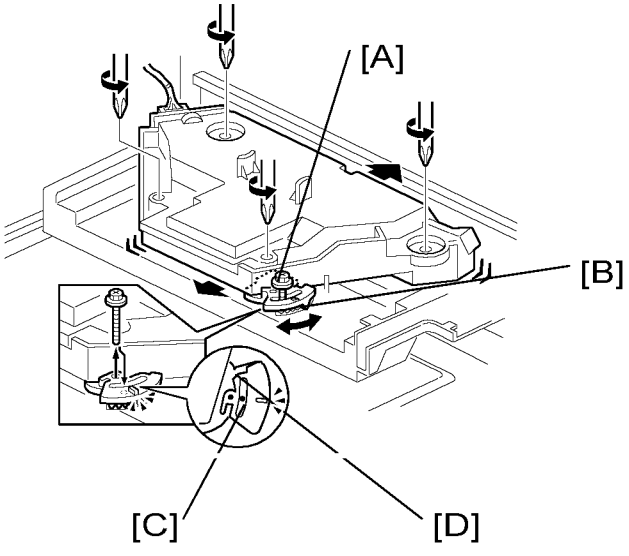
1. Laser unit (☛ Laser Unit)
2. Two rubber bushings [A]
3. Laser unit cover [B] (🔩 x 1)
4. Polygonal mirror motor [C] (🔩 x 4)
5. After reassembling, adjust the image quality (☛ "Copy Adjustments": "Printing/Scanning").

Laser Unit Alignment Adjustment

⚠WARNING

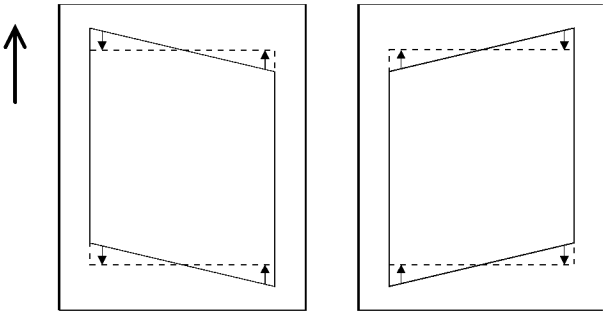
- Reinstall the copy exit tray before turning the main switch on. The laser beam may go out of the copier when the copy exit tray is not installed. The laser beam can seriously damage your eyes.

1. Start the SP mode.
2. Select SP 5902 1 and output the “Trimming Area” pattern (pattern 10).
3. Check that the four corners of the pattern make right angles:
    - If they make right angles, you do not need to adjust the laser unit alignment.
    - If they do not make right angles, go on to the next step.



4. **Check the screw position on the lever [A].**
   - If the screw is in the hole [C], go on to the next step.
   - If the screw is in the slot [D], loosen the screw on the lever, loosen the four screws on the laser unit, and go on to step 9.

   Note
   - The initial position of the screw is in hole [C].
5. **Four screws in the laser unit (☛ "Laser Unit")**
6. **Remove the lever (🔩 x 1), confirm the position of the hole beneath the slot [D], and reinstall the lever.**
7. **Install the screw (through the slot [D]) loosely into the hole beneath the slot (do not tighten the screw).**
8. **Install the four screws for the laser unit loosely (do not tighten the screws).**
9. **When you rotate the lever clockwise or counterclockwise by one notch of the lever, the corners of the pattern shift by ±0.4 mm (from the leading and trailing edges). See the trim pattern made in step 2, and find how much the corners should be shifted.**

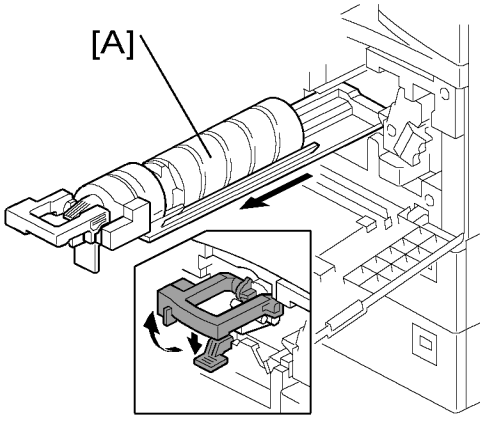


3

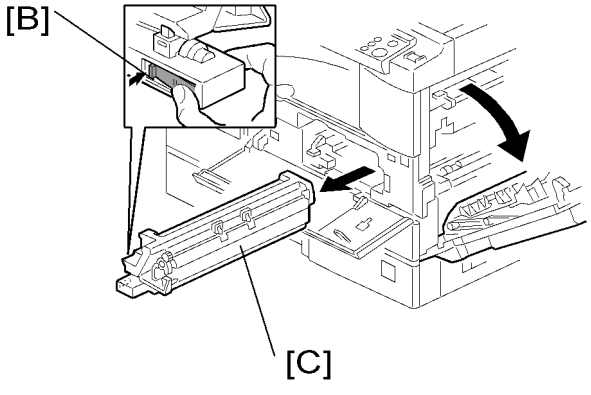
10. Tighten the screw [A].
11. Tighten the screws on the laser unit.
12. Reinstall the copy tray.
13. Print the trim pattern and check the result. If further adjustment is required, repeat this procedure.

PCU Section

PCU



1. Toner bottle with the holder [A]
2. Open the right door.



3. Press the latch [B] and pull out the PCU [C].

Note

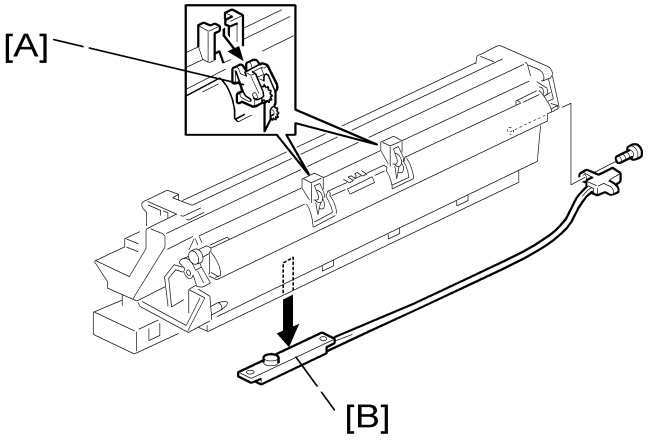
- Do not touch the OPC drum surface with bare hands.

4. Load new developer (☞ "Developer").
5. When reassembling, execute SP 2214 to reinitialize the TD sensor.

Pick-off Pawls and Toner Density Sensor

⚠CAUTION

- Do not turn the PCU upside down. This causes toner and developer to spill out.



1. **PCU (☛ PCU)**
2. **Pawl [A]**

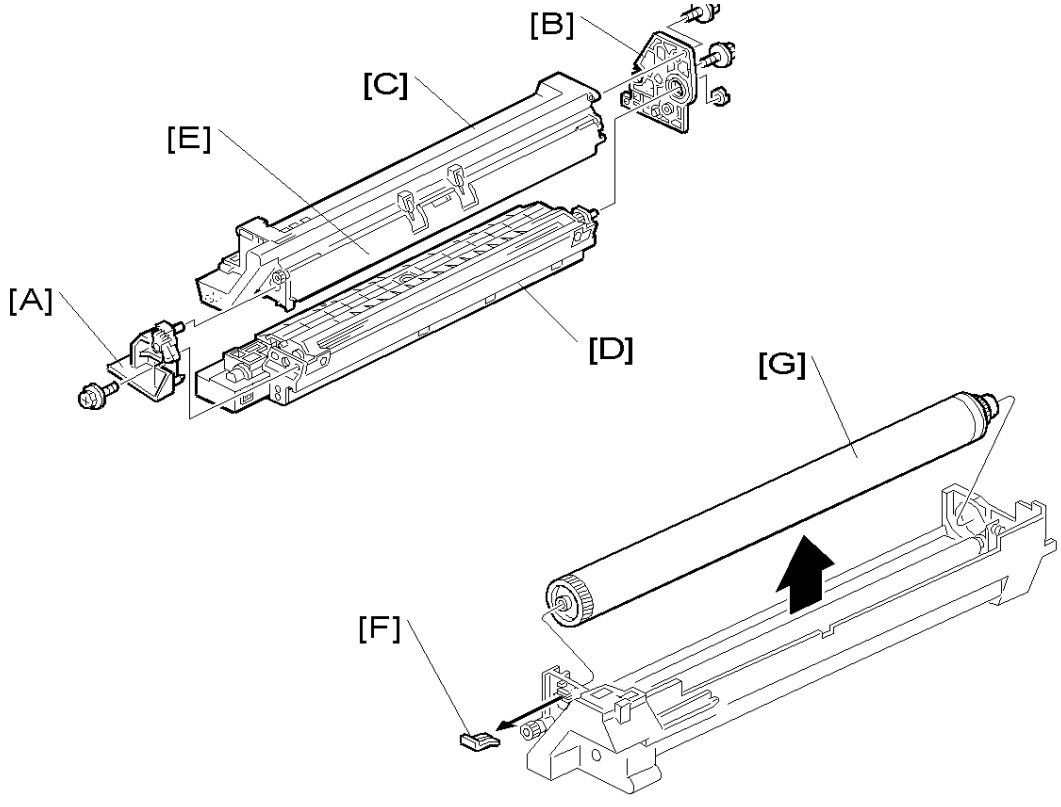
   Note

   - Pull down the pawl and release the bottom end.
3. **Toner density sensor [B] (x 1)**

   Note

   - The toner density sensor is taped to the bottom of the PCU. Pry it off with a regular screwdriver.
4. **After reinstalling the pick-off pawls or toner density sensor, adjust the image quality (☛ "After Replacement or Adjustment").**

OPC Drum



1. **PCU (☛ PCU)**
2. **Front side piece [A] (x 1)**
3. **Rear side piece [B] (x 2, 1 coupling)**
4. **Separate the drum section [C] from the developer section [D].**

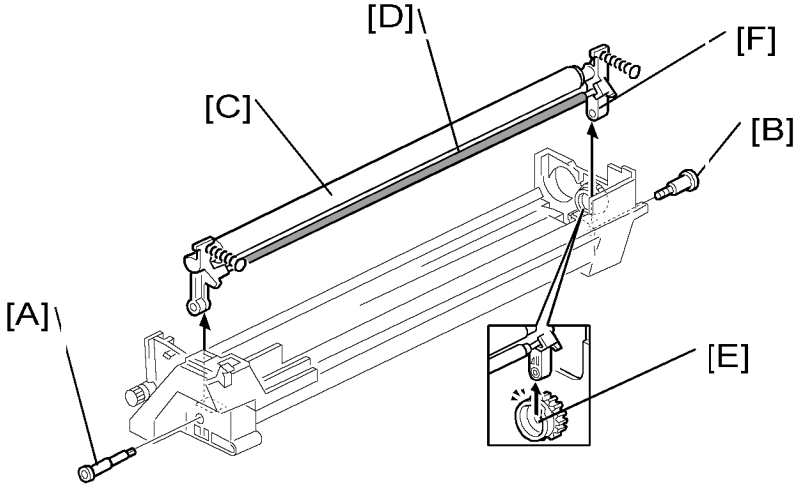
   Note

   - To ensure that the left-side gears line up, keep the drum cover [E] closed when reinserting the front side piece.
5. **Pry out the drum retaining clip [F].**

   Note

   - When reassembling, install the clip in the same orientation (with the lip facing away from the drum shaft).
6. **OPC drum [G]**
7. **When reassembling, adjust the image quality (☛ "After Replacement or Adjustment").**

Charge Roller and Cleaning Brush

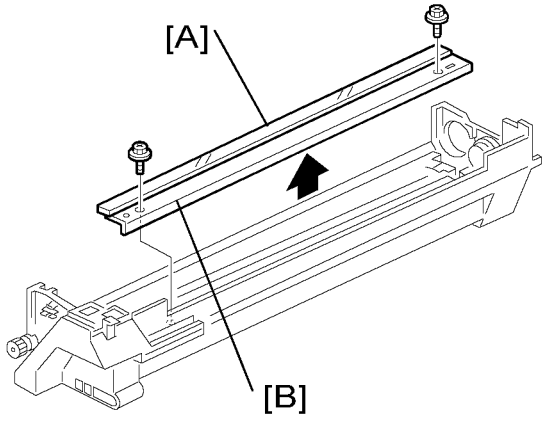


1. **OPC Drum (☛ "OPC Drum")**
2. **Holding pin [A]**
3. **Stepped screw [B]**
4. **Charge roller [C] and cleaning brush [D] (with the holders and springs)**

   Note

   - Turn the gear [E] (as necessary) so that the rear holder [F] comes out.
5. **When reassembling, adjust the image quality (☛ "After Replacement or Adjustment").**

Cleaning Blade



1. **Drum charge roller (☛ "Charge Roller And Cleaning Brush")**
2. **Cleaning blade [A] (🔩 x 2)**
3. **When reassembling, adjust the image quality (☛ "After Replacement or Adjustment").**

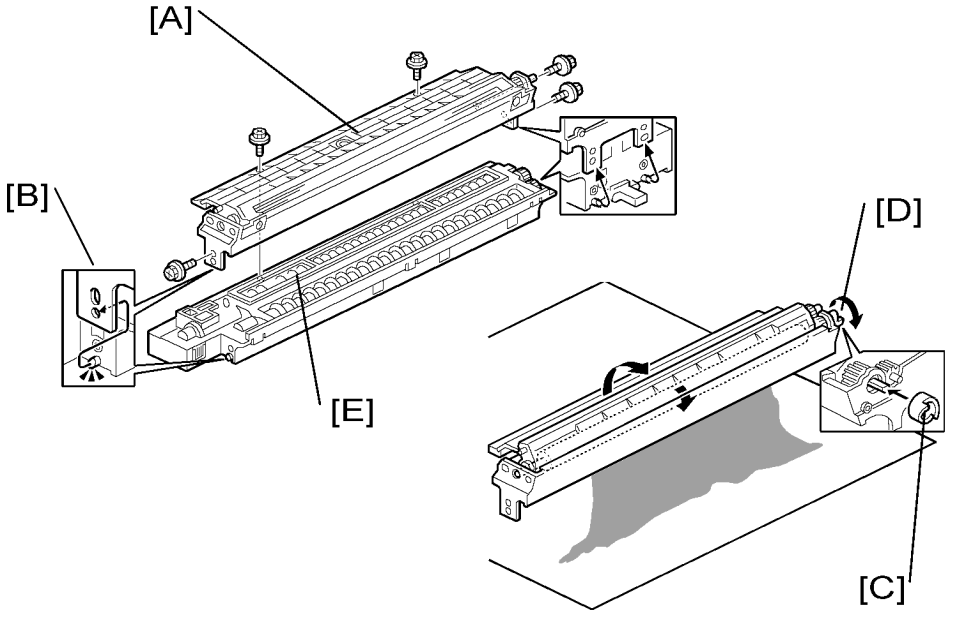
- Reassembling -

When replacing the cleaning blade, apply toner to the edge of the new cleaning blade. This prevents possible damage to the OPC drum and blade.

1. After installing the cleaning blade, remove some of the toner from the old blade with you finger.
2. Apply the toner to the edge [B] of the new cleaning blade. Make sure to apply the toner evenly along full length of the new cleaning blade.

Developer

1. **PCU (☛ "PCU")**
2. **To let the toner fall to the development section, gently tap about eight different spots on the top of the PCU with a screwdriver. Each spot must be approximately at an equal distance from the next spot.**
3. **Reinstall the PCU in the copier.**
4. **Turn the main switch on.**
5. **Open and close the front door and wait for the machine to rotate the development roller for about 10 seconds.**
6. **Repeat the previous step two more times.**
7. **PCU (☛ "PCU")**
8. **Separate the developer section from the OPC drum section (☛ "OPC Drum").**



9. **Top part [A] of the development unit (x 5)**

Note

- Release the hook [B].

10. **Set the coupling [C] back to the shaft.**
11. **Turn the coupling in the direction of the arrow [D] to remove developer from the roller.**
12. **Turn the bottom part [E] over and rotate the gears to remove the developer.**
13. **Load new developer ("Installation Procedure").**
14. **When reassembling, execute SP 2214 to reinitialize the TD sensor.**

Note

- Check that no toner or developer is stuck on a gear. Clean the gears as necessary with a blower brush, etc.
- Be sure to replace the Mylar at the rear side in the correct position. (The Mylar protects the gears at the rear side from falling toner).

AFTER REPLACEMENT OR ADJUSTMENT

Important

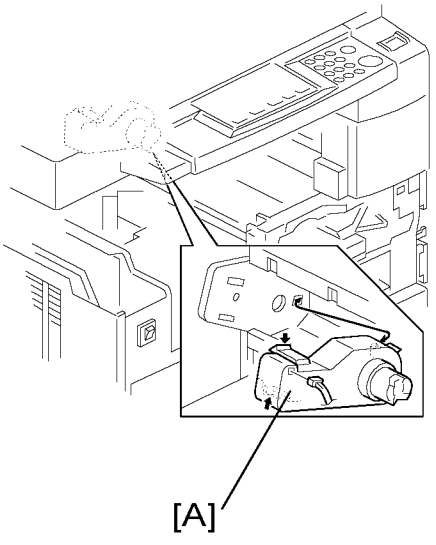
- **After replacing or adjusting any of the PCU components, do the following procedure. This procedure is not necessary when you replaced the whole PCU with a new one.**

1. **Take 5 sample copies.**
2. **If black dots (dropped toner) appear on any of the copies, continue as follows. (If all copies are clean, you don't need to carry out the following steps.)**
3. **Remove the PCU from the mainframe.**
4. **Tap the top of the PCU with a screwdriver at eight evenly spaced locations (two or three taps at each spot), to knock the recycled toner down into the development section.**
5. **Put the PCU back into the mainframe.**
6. **Turn the main power on. Then open and close the door and wait for the machine to rotate the development roller for 10 seconds. Then open and close the door two more times, so that total rotation time is 30 seconds.**
7. **Make some sky-shot copies (or solid black prints).**
   - If using A4 or $8\frac{1}{2}$" x 11" paper, make 4 copies/prints.
   - If using A3 or 11" x 17" paper, make 2 copies/prints.
   - To make solid black prints, use SP 5902 pattern 8.

Note

- Step 7 is required only after parts replacement or adjustment. There is no need to make sky-shot (or solid black) copies after replacing the developer.

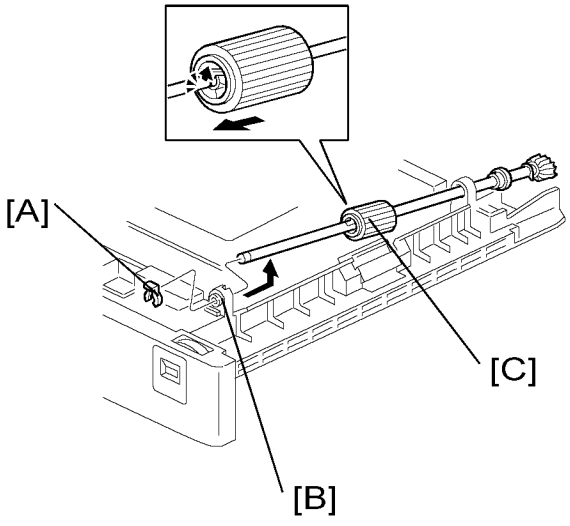
Toner Supply Motor



1. Copy tray (☛ "Upper Covers")
2. Open the front door.
3. Toner bottle holder (☛ "PCU")
4. Toner supply motor [A] (🔩 x 1)

Paper Feed Section

Paper Feed Roller

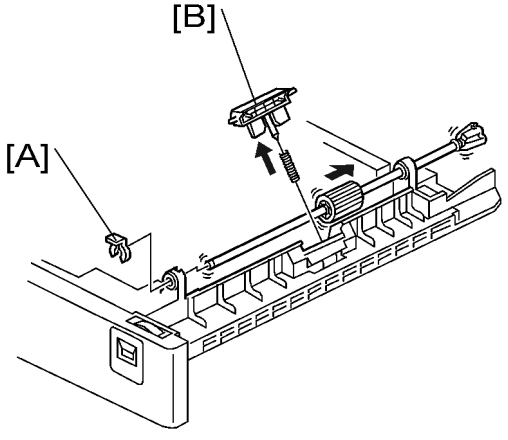


1. **Paper cassette**
2. **Clip [A]**
3. **Push the shaft back through the opening, and tilt it up.**

   Note

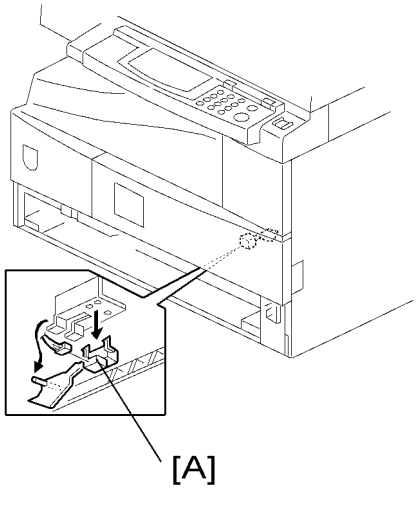
   - If the black plastic bushing [B] comes off, be sure to remount it when reinstalling the shaft.
4. **Paper feed roller [C]**

Friction Pad



1. Paper cassette
2. Clip [A]
3. Push the shaft back through the opening, so that the roller moves clear of the friction pad.
4. Friction pad [B]

Paper End Sensor

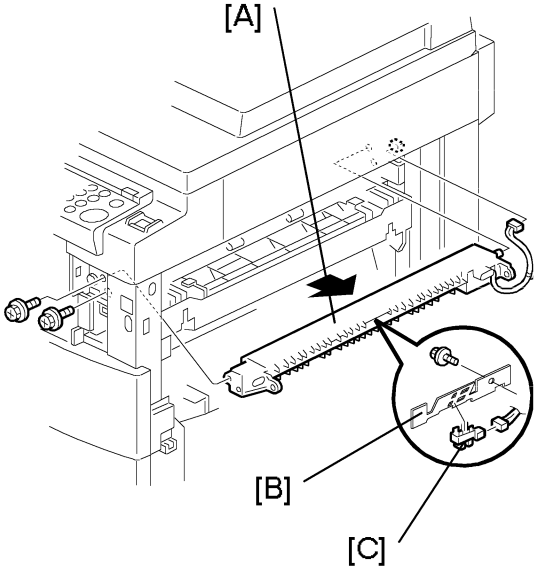


1. Paper cassette
2. Paper end sensor [A] (x 1)

Exit Sensor

- Non-Duplex Models -

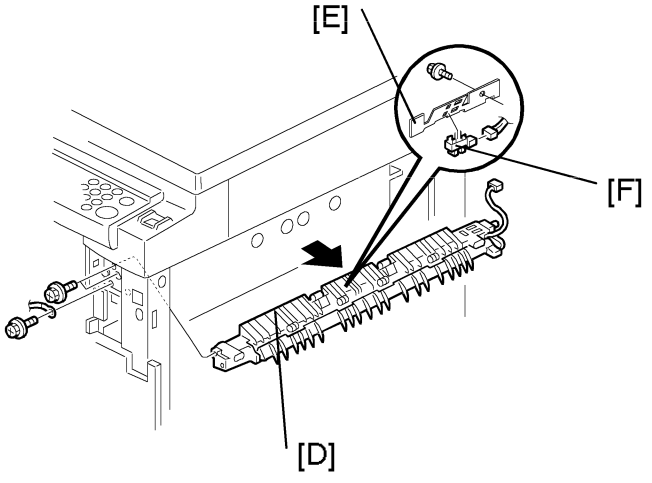
1. Open the right door.
2. Front right cover ("Front Right Cover")



3. Guide [A] (x 2)
4. Exit sensor bracket [B] (x 1)
5. Exit sensor [C] (x 1)

- Duplex Models -

1. Open the right door.
2. Front right cover ("Front Right Cover")



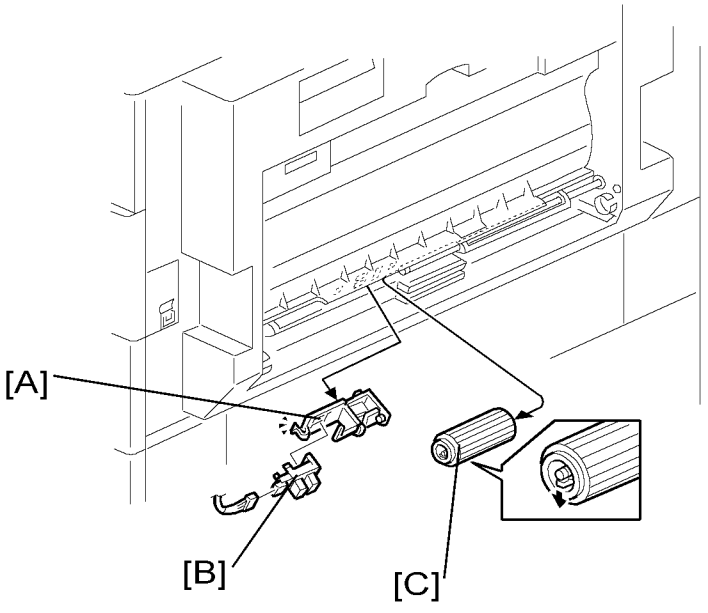
3. **Upper guide [D] (x 2)**
4. **Exit sensor bracket [E] (x 1)**
5. **Exit sensor [F] (x 1)**

By-Pass Feed Roller And Paper End Sensor

1. **By-pass tray ("By-pass Tray")**

Note

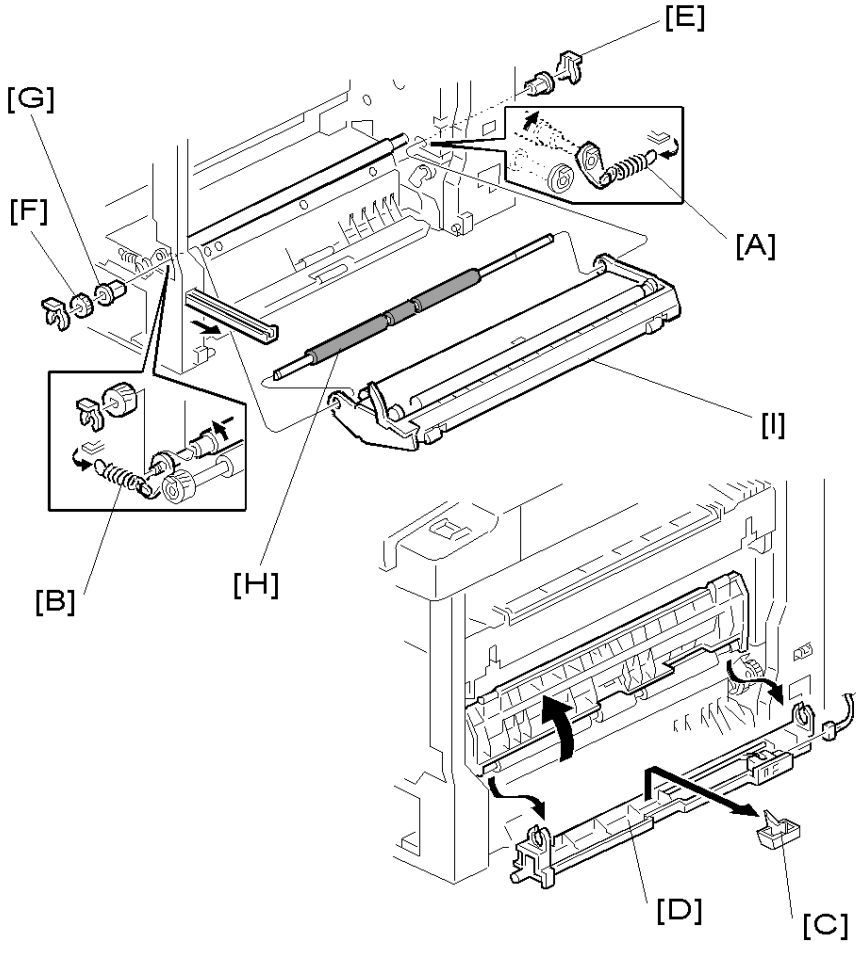
- If you have a support to keep the by-pass tray within the reach of the connector cable, you do not need to disconnect the connector. When you do so, use caution not to place too much load on the cable.



2. Sensor holder [A]
3. By-pass paper end sensor [B] (x 1)
4. By-pass feed roller [C]

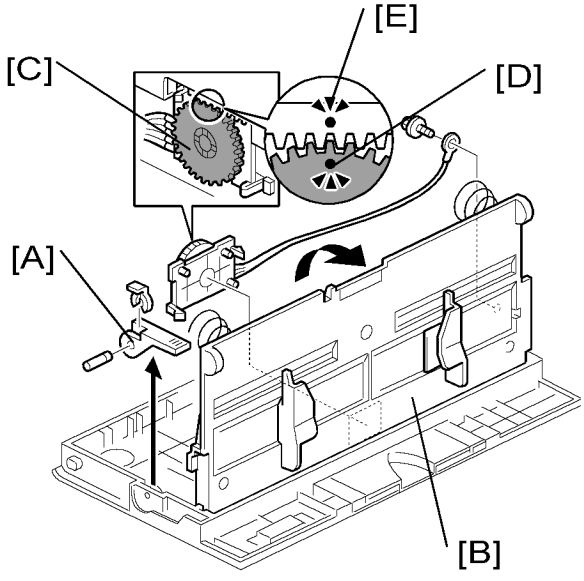
Registration Roller

1. PCU ("PCU")
2. Front cover ("Front Cover")
3. Right door ("Right Door")
4. Rear cover ("Rear Cover")
5. High-voltage power supply ("High-Voltage Power Supply Board")
6. Registration clutch ("Registration Clutch")



7. Unhook the springs [A] and [B] at the rear and front sides.
8. Guide support [C] and guide [D] (x 1, x 1)
9. Bushing [E] (x 1)
10. Gear [F] and bushing [G] (x 1)
11. Registration roller [H] with the image transfer unit [I]

By-Pass Paper Size Switch

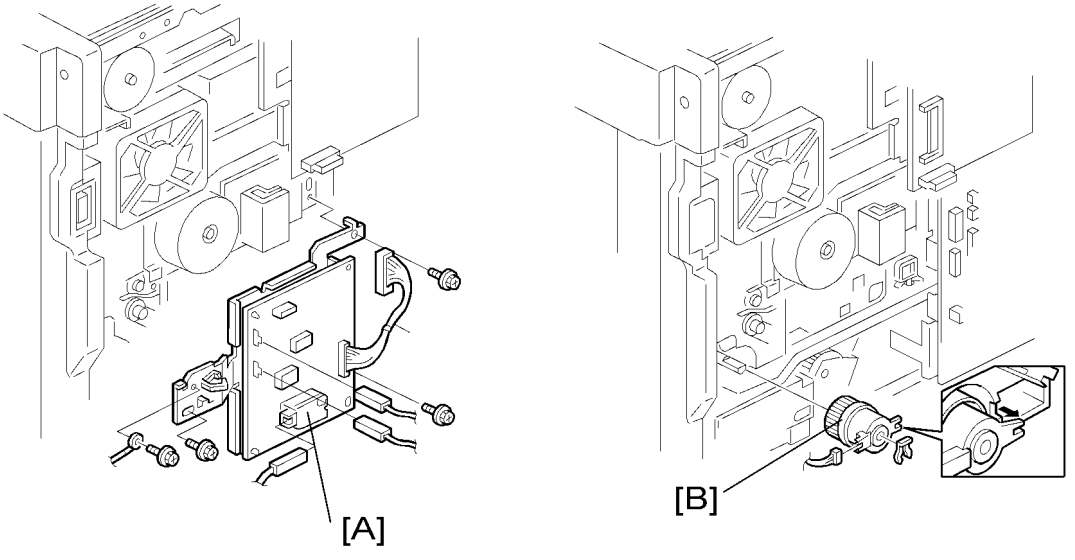


1. By-pass tray ("By-pass Tray")
2. Tray lever [A] (x 1, 1 pin)
3. Lift the upper tray [B]
4. By-pass paper size switch [C] (x 1)

Note

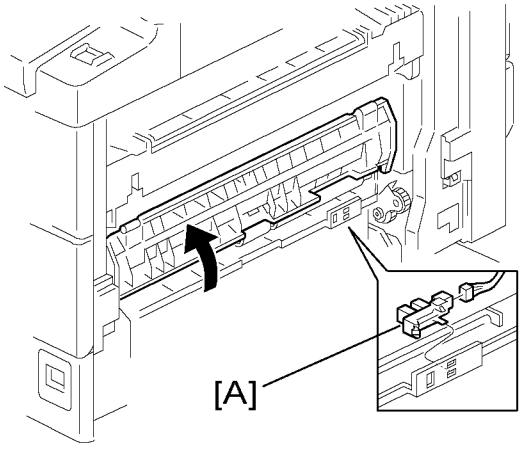
- When reinstalling the switch: Move the paper guides to their middle position (about halfway between fully open and fully closed), and install the round gear so that the hole in the gear [D] aligns with the peg [E] on the sliding gear.

Registration Clutch



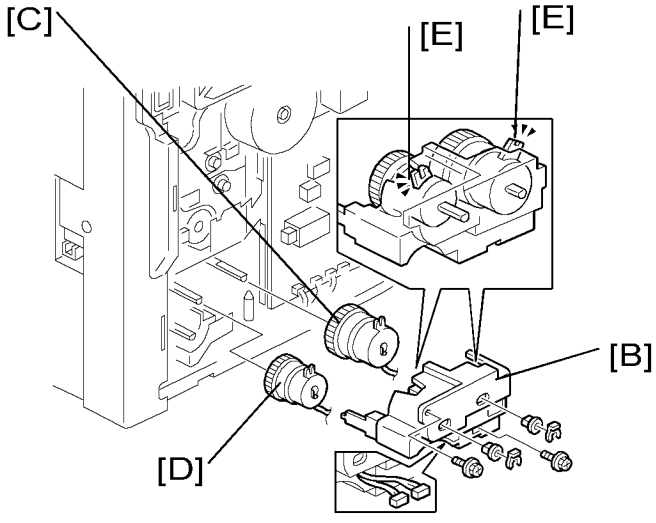
1. Rear cover ("Rear Cover")
2. High-voltage power supply board (with the bracket) [A] (x 4, all connectors)
3. Registration clutch [B] (x 1, x 1)

Registration Sensor



1. Open the right door.
2. Registration sensor [A] (x 1)

Upper Paper Feed Clutch and By-Pass Feed Clutch

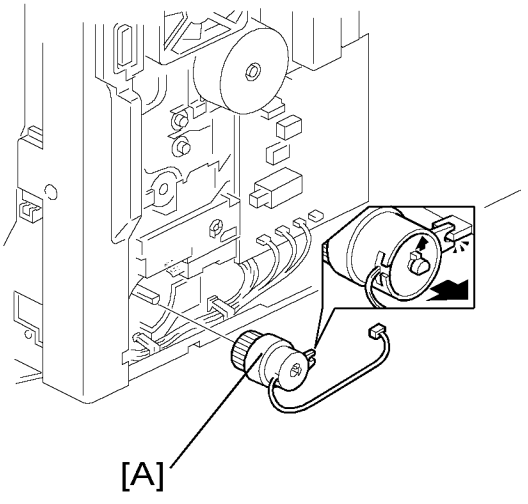


1. Rear cover ("Rear Cover")
2. High-voltage power supply board ("High-Voltage Power Supply Board")
3. Clutch cover [B] (x 2, 2 bushings, x 2)
4. Paper feed clutch [C] (x 1)
5. By-pass feed clutch [D] (x 1)

Note

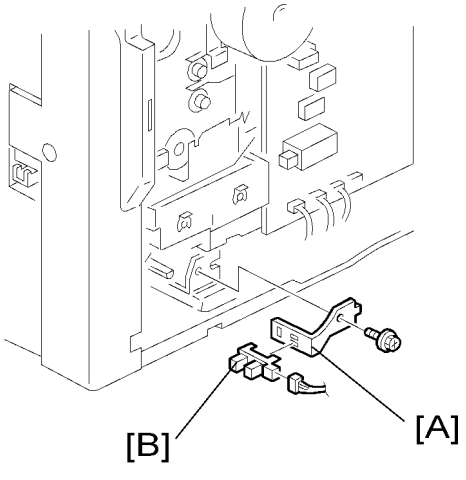
- When reinstalling, be sure that the rotation-prevention tabs [E] on the clutches fit correctly into the corresponding openings on the clutch cover.

Relay Clutch



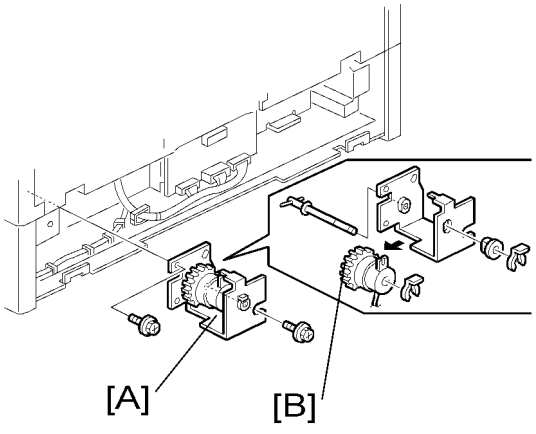
1. Rear cover ("Rear Cover")
2. Relay clutch [A] (x 1)

Relay Sensor



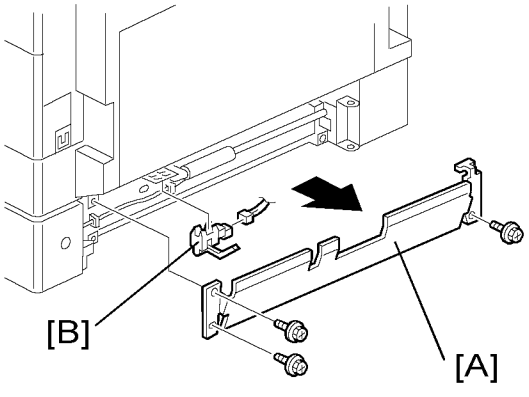
1. Relay clutch ("Relay Clutch")
2. Sensor bracket [A] (x 1)
3. Relay sensor [B] (x 1)

Lower Paper Feed Clutch



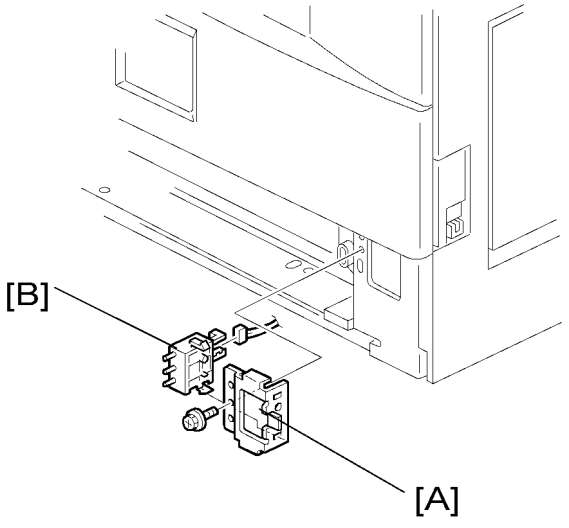
1. Rear lower cover ("Rear Lower Cover")
2. Clutch bracket [A] (x 2)
3. Lower paper feed clutch [B] (x 2, 1 bushing, x 1)

Vertical Transport Sensor



1. Right lower cover (Right Lower Cover)
2. Metal plate [A] (x 3)
3. Vertical transport sensor [B] (x 1)

Paper Size Switch



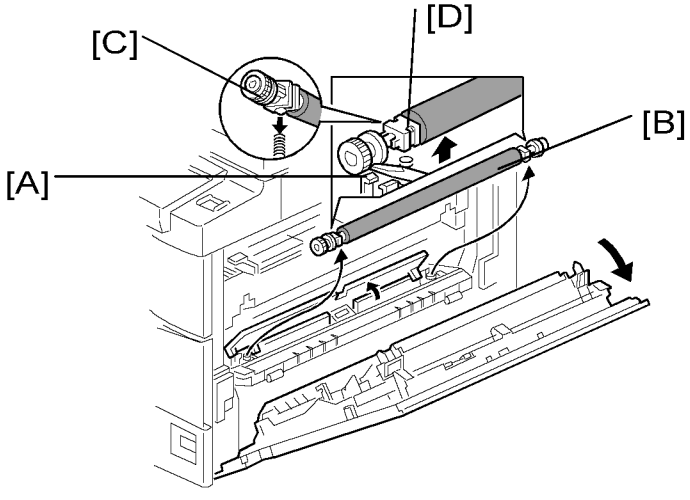
1. Paper cassette
2. Switch cover [A] (x 1)
3. Paper size switch [B] (x 1)

Image Transfer

Image Transfer Roller

⚠CAUTION

- Do not touch the transfer roller surface with bare hands

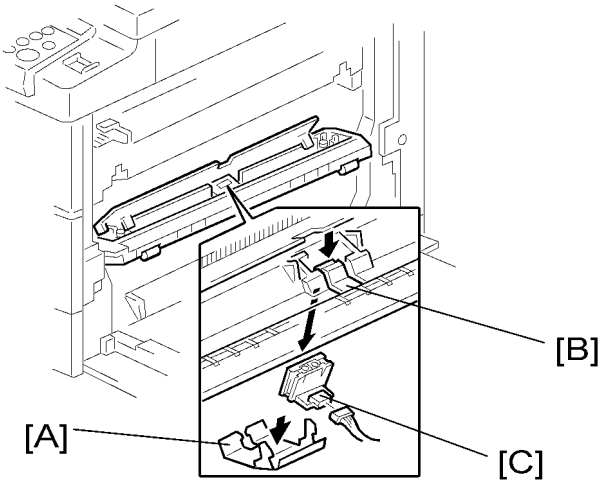


1. **Open the right door.**
2. **Lift the plastic holders [A] with the image transfer roller [B].**

Note

- Leave the springs under the holders. When reassembling, make sure that the pegs [C] on the holders [D] engage with the springs.

Image Density Sensor



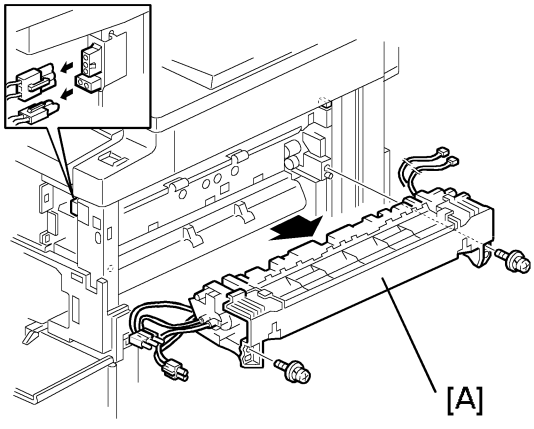
1. Open the right door.
2. Plastic cover [A]
3. Image transfer roller (Image Transfer Roller)
4. Push down on the notch [B] to free the sensor.
5. Image density sensor [C] (x 1)

Fusing

Fusing Unit

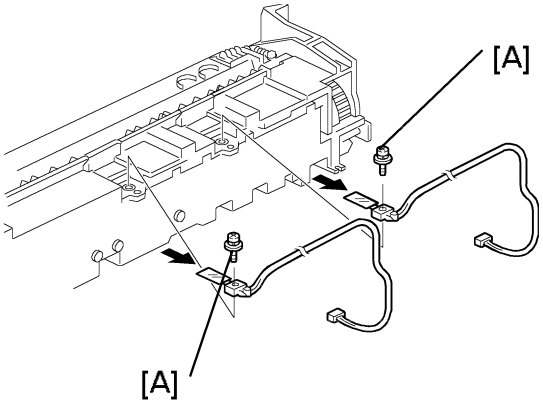
⚠CAUTION

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



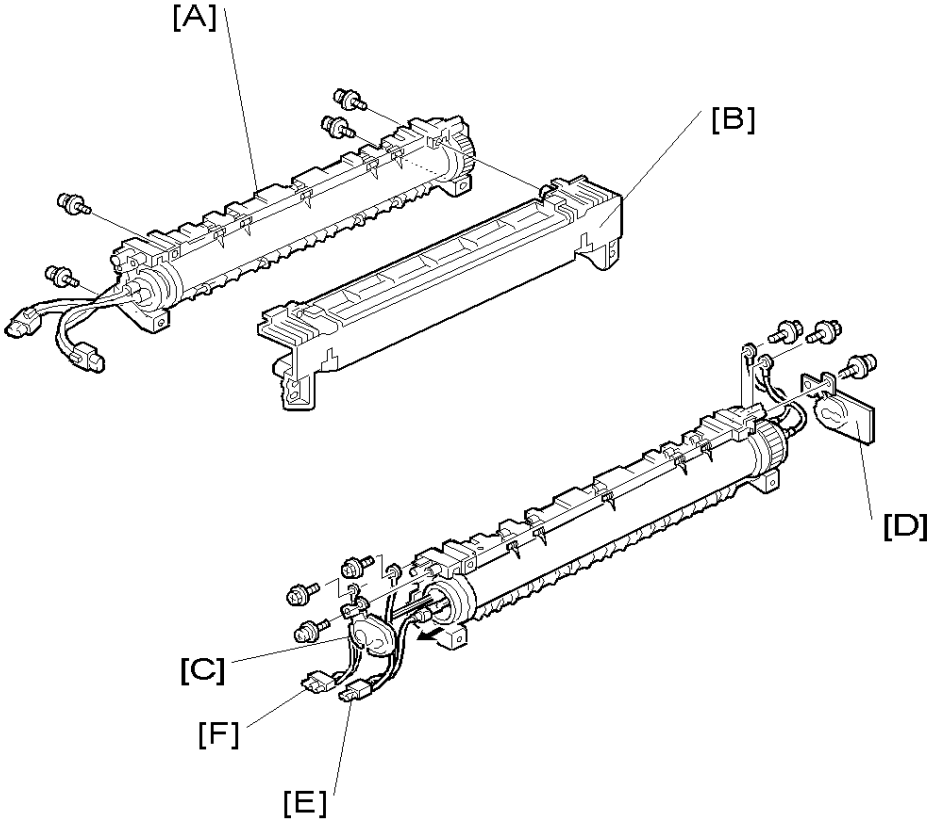
1. Turn off the main switch, and unplug the machine.
2. Front right cover ("Front Right Cover")
3. Open the right door.
4. Fusing unit [A] (x 2, x 4)

Thermistor



1. Fusing unit ("Fusing Unit")
2. Thermistors [A] (x 1, x 1 each)

Fusing Lamps

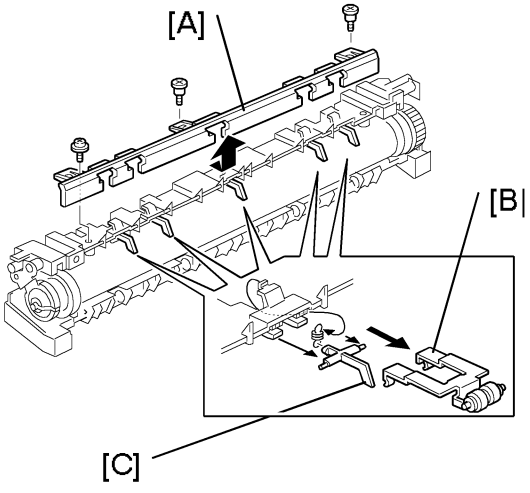


1. Fusing unit [A] ("Fusing Unit")
2. Separate the hot roller section [A] from the pressure roller section [B] (x 4).
3. Front holding plate [C] (x 1)
4. Rear holding plate [D] (x 1)
5. Fusing lamp with the connector (600W) [E] (x 2)
6. Fusing lamp with the connector (550W) [F] (x 2)

Note

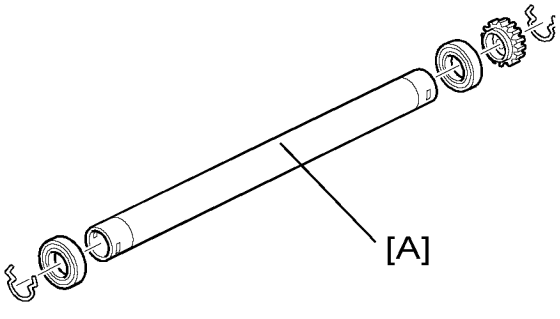
- When reassembling, check that the front ends of the two lamps fit in the front holding plate. They do not fit in there if you arrange the two lamps incorrectly.

Hot Roller Stripper Pawls



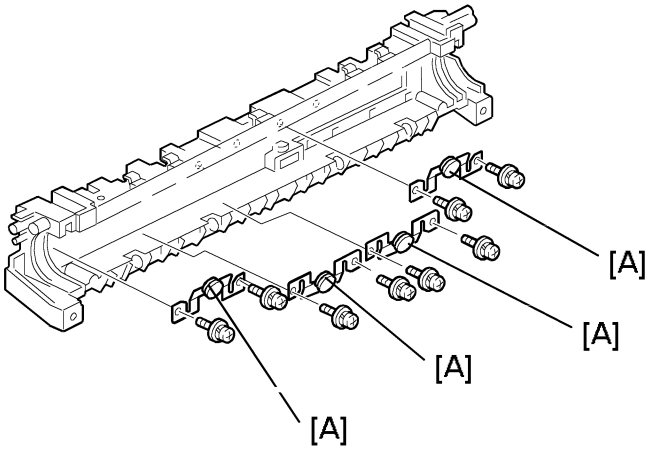
1. Hot roller (☛ "Hot Roller")
2. Roller guard [A] (🔩 x 3)
3. Metal holders [B] (1 holder for each)
4. Hot roller stripper pawls [C] (1 spring for each)

Hot Roller



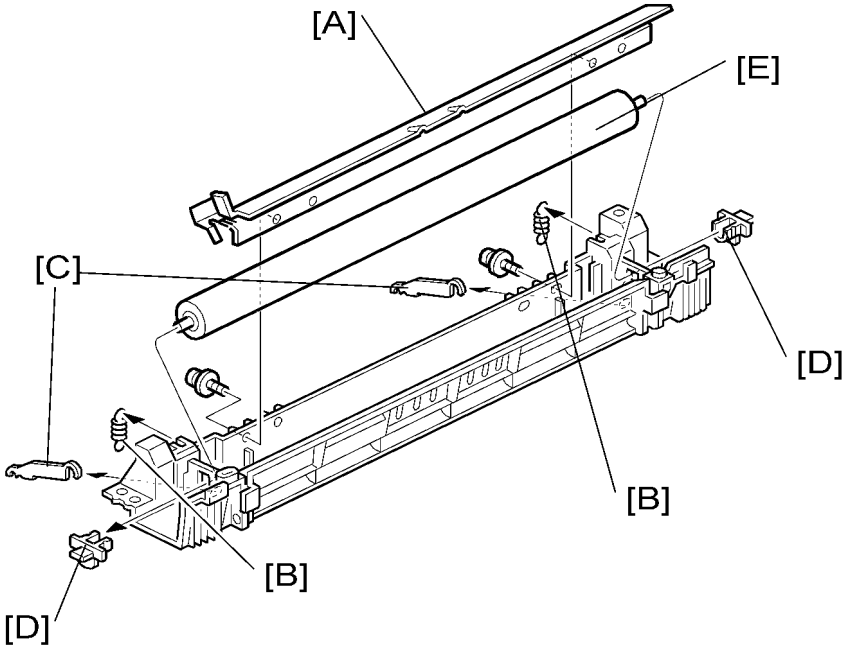
1. Hot roller stripper pawls (☛ "Hot Roller Stripper Pawls")
2. Hot roller [A] (2 C-rings, 1 gear, 2 bearings)

Thermostat



1. Hot roller ("Hot Roller")
2. Thermostats [A] (x 2 for each)

Pressure Roller and Bushings

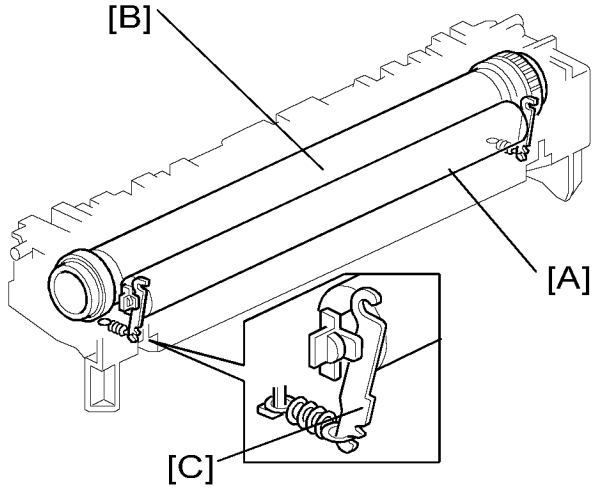


1. Separate the hot roller section from the pressure roller section ("Fusing Lamps").

2. **Fusing entrance guide [A] (x 2)**
3. **2 springs [B]**
4. **2 pressure arms [C]**
5. **2 Bushings [D]**
6. **Pressure roller [E]**

NIP Band Width Adjustment

Execute this adjustment when the fusing unit is at its operating temperature. The size of the OHP sheet must be A4/LT LEF. Any other sizes may cause a paper jam.



1. Pressure roller
2. Hot roller

1. **Place an OHP sheet on the by-pass feed table.**
2. **Enter SP mode, and run SP 1109.**
3. **Press the "Execute" key.**
4. **Press . The machine feeds the OHP sheet into the fusing section, stops it there for 20 seconds, then ejects it to the copy tray.**
5. **Press the key.**
6. **Quit the SP mode.**
7. **Check that the nip band (the opaque stripe) across the ejected OHP sheet is symmetrical, with both ends slightly thicker than the center.**

Note

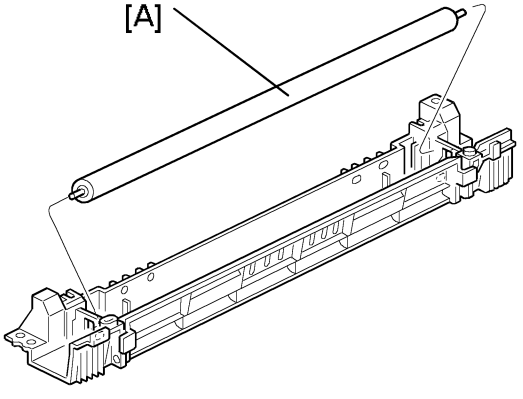
- There is no standard value for the nip band on this machine. Make the adjustment based on the band's appearance.

8. **If the band is not as described above, change the position of the spring hooks [C] (one on each side), and then check the band again.**

Note

- The higher hook position produces greater tension.

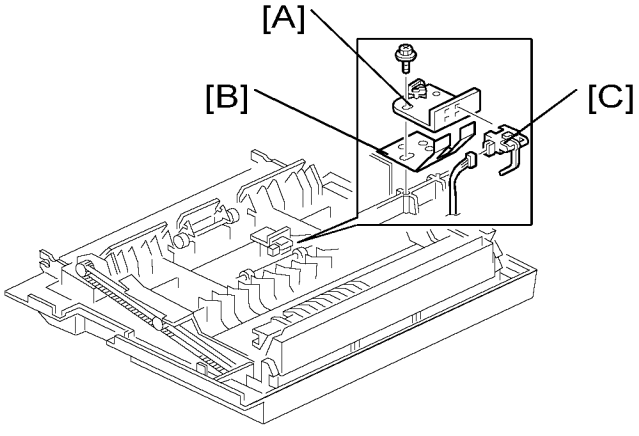
Cleaning Roller



1. **Pressure roller and bushings ("Pressure Roller and Bushings")**
2. **Cleaning roller [A]**

Duplex Unit (Duplex Models Only)

Duplex Exit Sensor

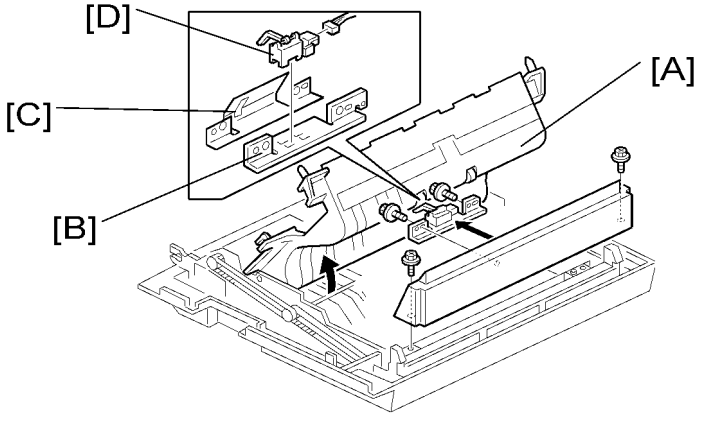


1. **Open the right door.**
2. **Sensor bracket [A] (x 1)**

   Note

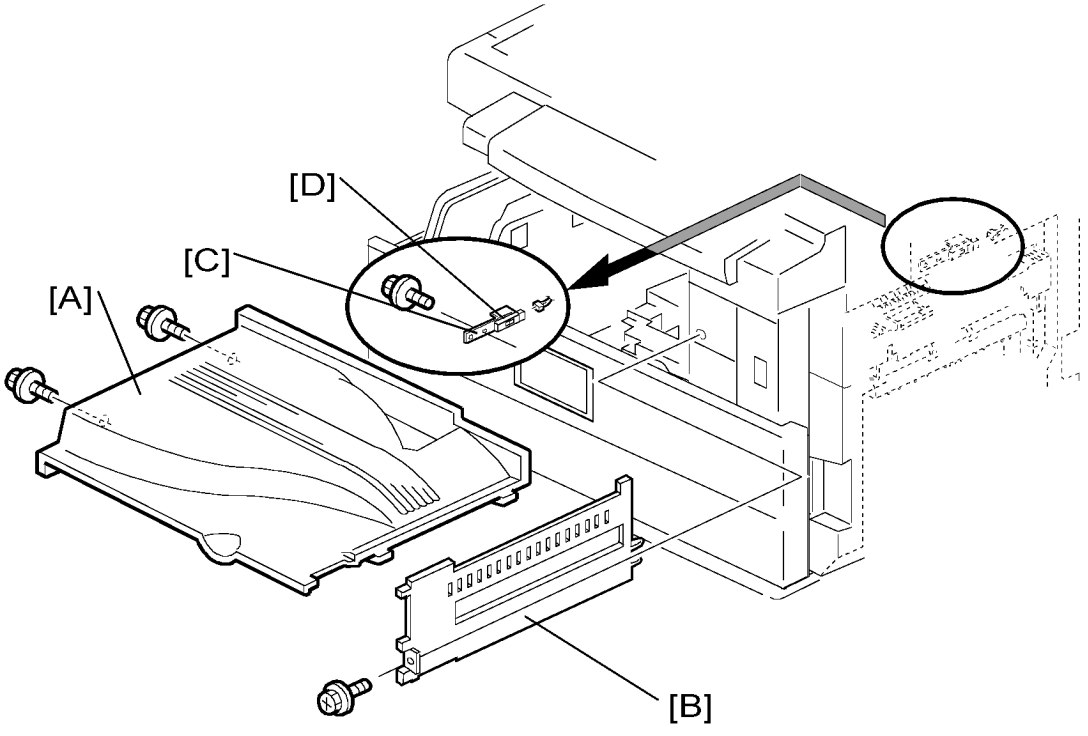
   - Another bracket [B] comes off with the sensor bracket.
3. **Duplex exit sensor [C] (x 1)**

Duplex Entrance Sensor



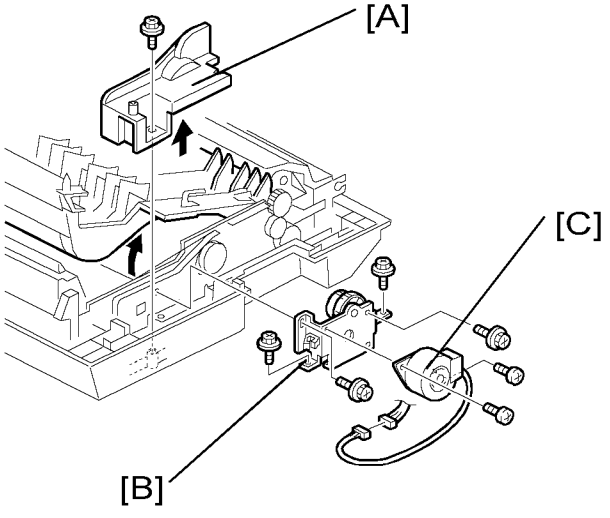
1. Open the right door.
2. Lift the duplex guide [A].
3. Entrance sensor bracket [B] and bracket cover [C] (x 2)
4. Duplex entrance sensor [D]

Duplex Inverter Sensor



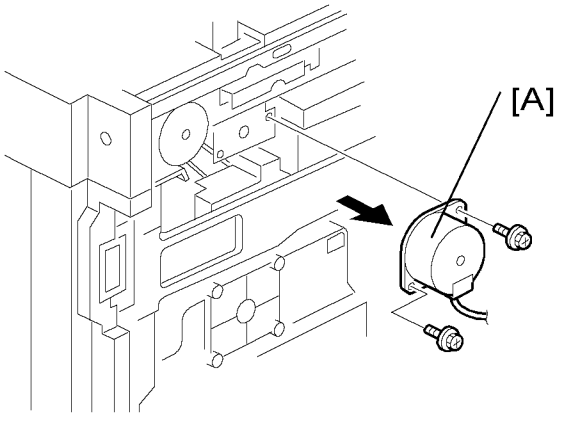
1. Copy tray [A] (x 2)
2. Exit cover [B] (x 1)
3. Sensor bracket [C] (x 1, x 1)
4. Duplex inverter sensor [D] (x 1)

Duplex Transport Motor



1. Open the right door.
2. Detach the chain and spring from the frame, and lower the right door.
3. Cover [A] (x 1)
4. Motor bracket [B] (x 4, x 1).
5. Duplex transport motor [C] (x 2)

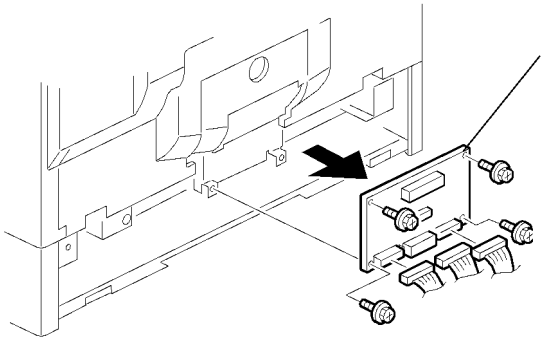
Duplex Inverter Motor



1. Rear cover
2. Exhaust fan ("Rear Exhaust Fan")

3. Duplex inverter motor [A] (x 2, x 1)

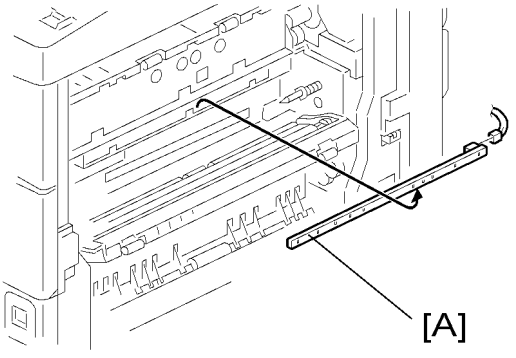
Duplex Control Board



1. Rear lower cover ("Rear Lower Cover")
2. Duplex control board [A] (x 4 , all connectors)

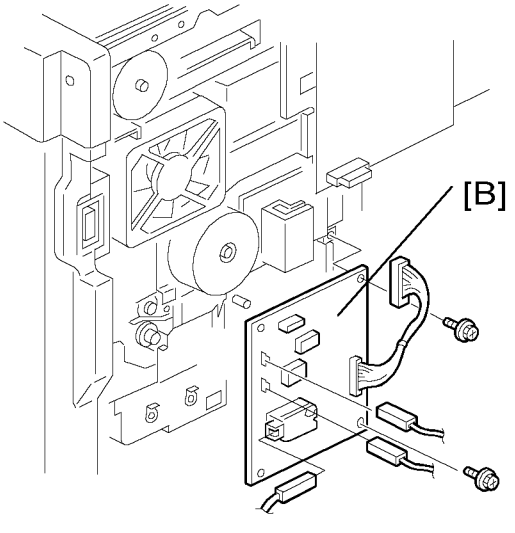
Other Replacements

Quenching Lamp



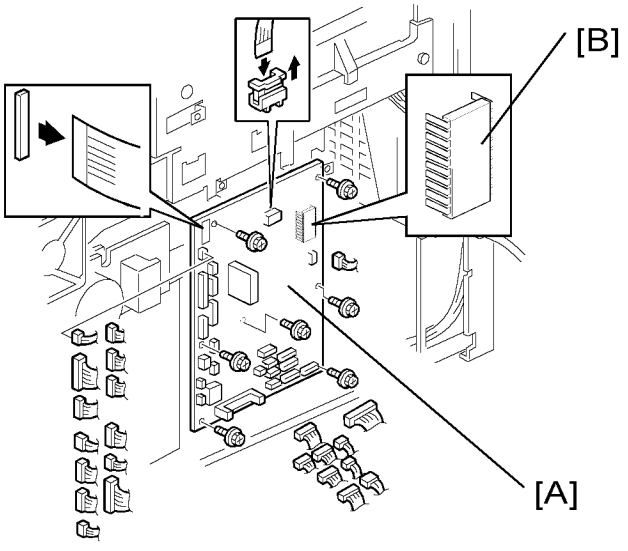
1. PCU (☛ "PCU")
2. Quenching lamp [A] (x 1)

High-Voltage Power Supply Board



1. Rear cover (☛ "Rear Cover")
2. High-voltage power supply board [B] (x 2, 3 standoffs, all connectors)

BICU (Base-Engine Image Control Unit)

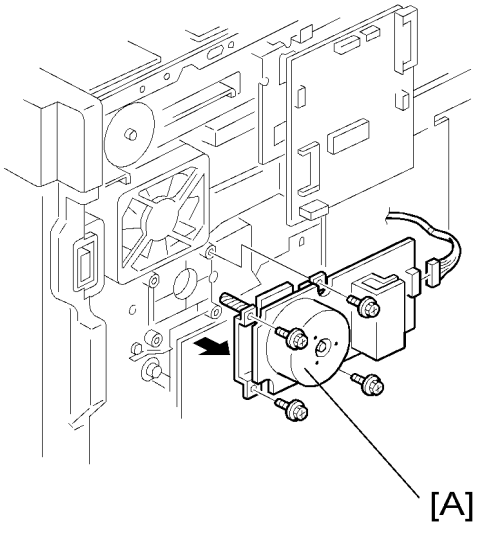


1. **Rear cover (☛ "Rear Cover")**
2. **BICU [A] (🔧 x 7, all connectors, 2 flat cables)**

Note

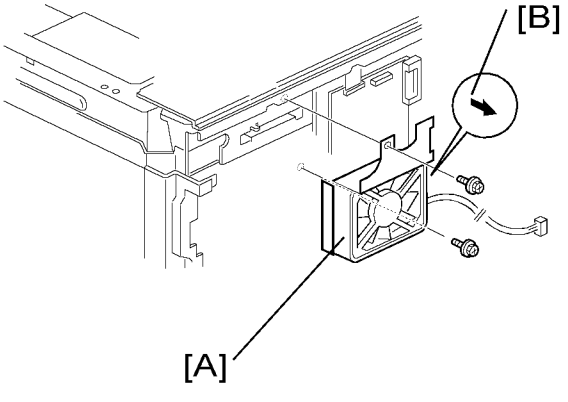
- When replacing the BICU, remove the NVRAM [B] from the old BICU and install it on the new BICU. The NVRAM stores machine-specific data.

Main Motor



1. Rear cover ("Rear Cover")
2. Main motor [A] (x 4, x 1)

Rear Exhaust Fan (B261 Only)

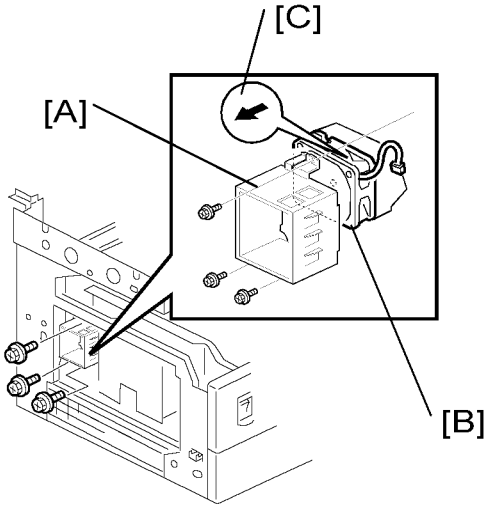


1. Rear cover ("Rear Cover")
2. Rear exhaust fan [A] (x 2, x 1)

- Reassembling -

When reassembling, make sure that the arrow on the fan [B] points the outside of the copier. The arrow indicates the direction of the air current.

Left Exhaust Fan

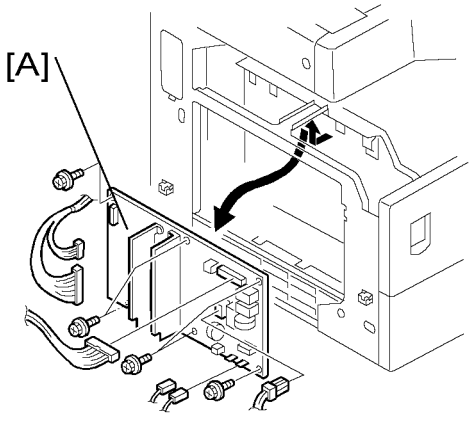


1. Rear cover ("Rear Cover")
2. Left cover ("Left Cover")
3. Fan cover [A] (x 3)
4. Fan [B] (x 3, x 1)

- Reassembling -

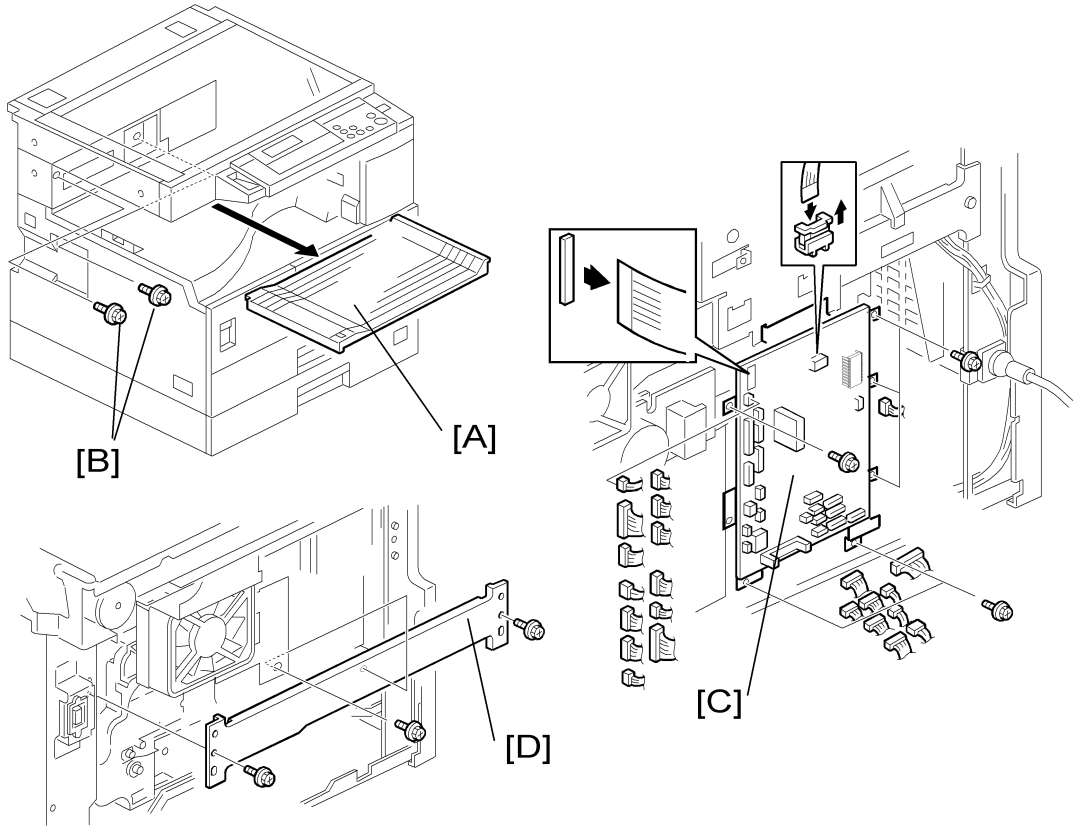
When reassembling, make sure that the arrow on the fan [C] points the outside of the copier. The arrow indicates the direction of the air current.

PSU (Power Supply Unit)



1. Left cover (☛ "Left Cover")
2. PSU [A] (All connectors, 🔩 x 6)

Gearbox



- Replacement Procedure -

1. Inverter tray [A]
2. Two screws [B] from the middle rear cover

Note

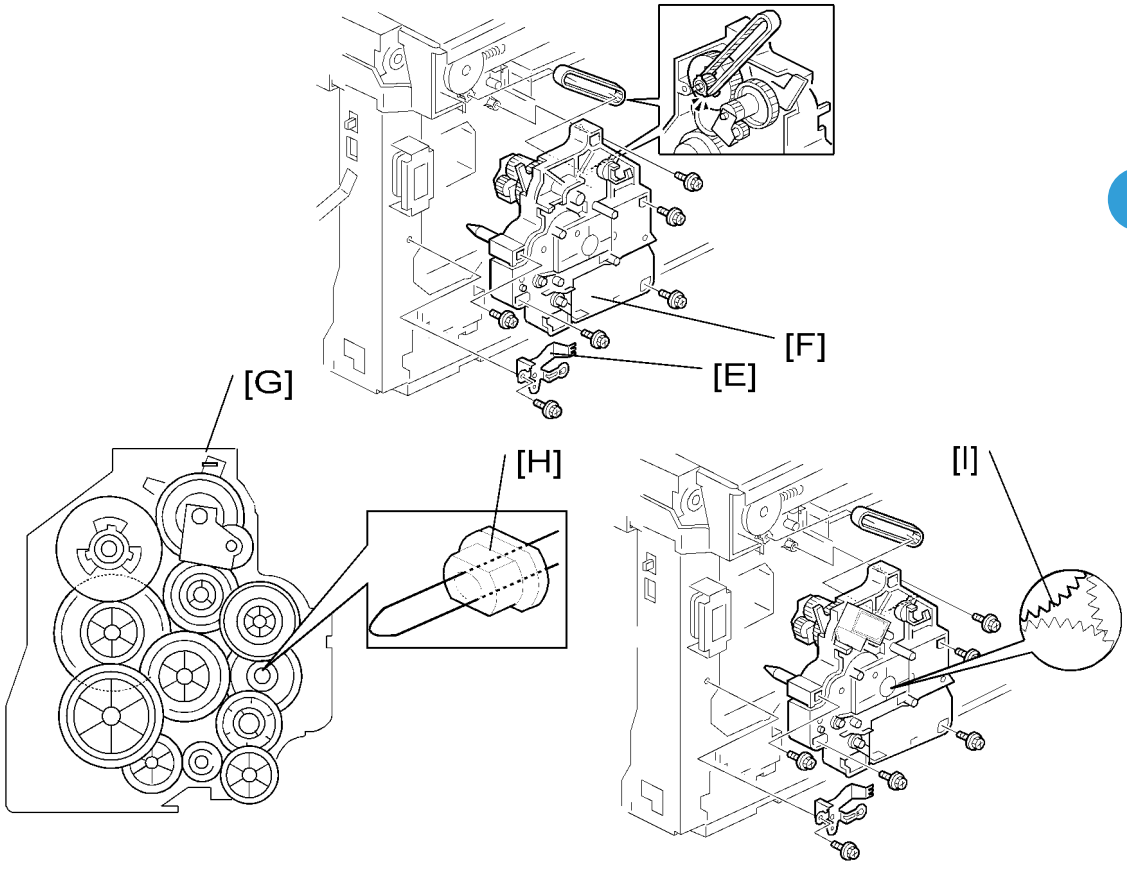
- This step releases the topmost part of the BICU bracket.

3. High-voltage power supply board (with the bracket) (☛ Registration Clutch)
4. BICU (with the bracket) [C] (🔩 x 6)

Note

- If you have difficulty to remove the bracket, remove the screw at the middle of the crosspiece (see step 6).

5. Main motor ("Main Motor")
6. Crosspiece [D] (x 3)
7. Registration clutch ("Registration Clutch")



1. PCU (PCU)

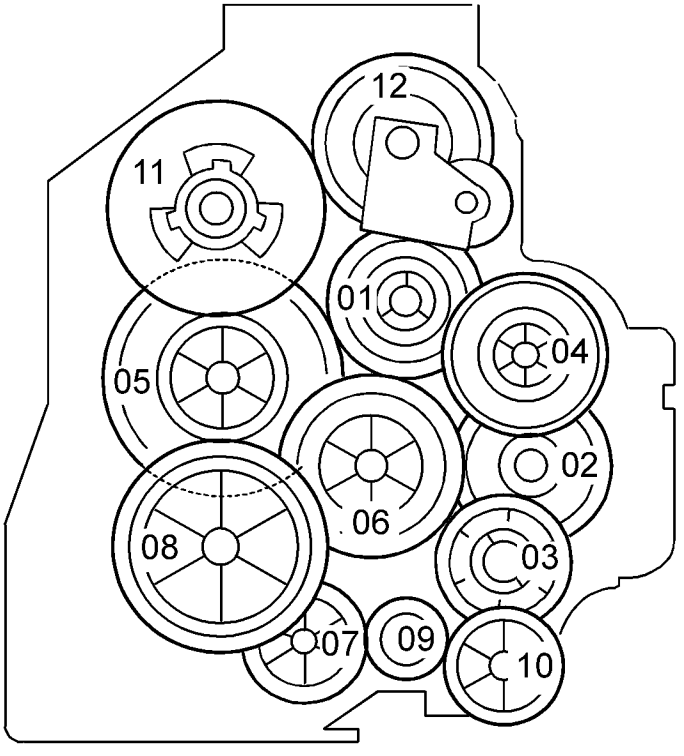
Note

- This step releases the gear (on the gearbox) that drives the PCU.

2. Ground plate [E] (x 2)
3. Gearbox [F] (x 5, 1 belt)

When reassembling, do not change the position of the spring [G] and check that the bushing [H] on the PCU drive shaft is in the correct position. You can adjust its position by rotating the gear [I] seen from the opening of the gearbox.

Gear Arrangement in the Gearbox



The gears are numbered 1 to 12 in the order in which they are to be installed in the gearbox. These numbers appear both on the gearbox and on the front (exposed) surface of each gear. If the gears fall out, start by finding gear number 1 and installing it onto location number 1 (setting it into place so that the side with the printed number remains visible). Then install the remaining gears (2 to 12) in the same way.

Copy Adjustments Printing/Scanning

Note

- You need to perform the adjustment after executing a Memory All Clear, and after replacing or adjusting any of the following parts.
  - First or second scanner
  - Lens Block
  - Scanner Motor
  - Polygonal Mirror Motor
  - Paper Tray
  - Paper Side Fence
- For detailed explanations about how to access and use the SP modes, see Section "Service Tables".

Printing

Note

- Make sure the paper is installed correctly in each paper tray before you start these adjustments.
- Use the Trimming Area Pattern (SP 5902, No.10) to print the test pattern for the printing adjustments below.
- Set SP 5902 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 each of these registrations using SP 1001.
2. Check the side-to-side registration for each paper feed station, and adjust these registrations using SP 1002. (Adjust the trays in order: the 1st tray first, then the 2nd tray, etc.)

Tray	SP mode	Specification
Any paper tray	SP 1011	2 ± 1.5 mm
By-pass feed	SP 1012	
Duplex	SP 1001 3	
1st tray	SP 1021	
2nd tray	SP 1002 2	
3rd tray	SP 1023	2 ± 1.5 mm

Tray	SP mode	Specification
(Optional PFU tray 1)		
4th tray (Optional PFU tray 2)	SP 1024	
By-pass feed	SP 1025	
Duplex	SP 1026	

A: Leading Edge Registration

B: Side-to-side Registration

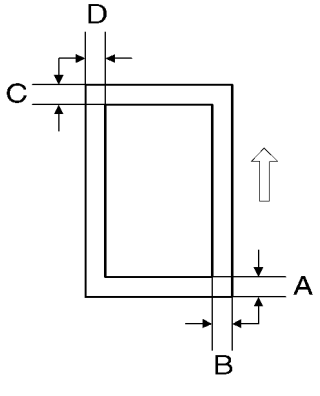
- Blank Margin -

Note

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

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

	SP mode	Specification
Trailing edge	SP 2101 2	2 +2.5/–1.5 mm
Right edge	SP 2101 4	2 +2.5/–1.5 mm
Leading edge	SP 2101 1	2 ± 1.5 mm
Left edge	SP 2101 3	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 (SP 5902 5).
2. Check the magnification (the grid size should be 2.7 x 2.7 mm), and if necessary use SP 2998 to adjust it. The specification is 100 ± 1%.

Scanning

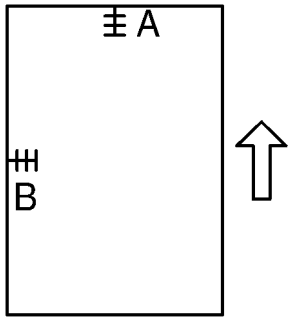
Note

- Before doing the following scanner adjustments, check and adjust the printing leading-edge and side-to-side registrations and the printing blank margins (as described above).
- Use an A3 test chart to perform the following adjustments.

- Registration: Platen Mode -

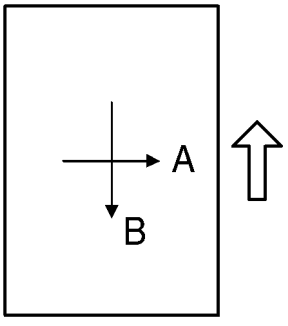
1. Place the test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the leading edge and side-to-side registration, and adjust as necessary using the following SP modes.

	SP mode	Specification
Leading edge	SP 4010	2 ± 1.5 mm
Side-to-side	SP 4011	2 ± 1.5 mm



A: Leading edge registration
B: Side-to-side registration

- Magnification -



3

A: Main scan magnification
B: Sub-scan magnification

- Main Scan Magnification -

1. Place the A3 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

	SP mode	Specification
Main Scan Magnification	SP 4009	± 1.0%

- Sub-Scan Magnification -

1. Place the OS-A3 test chart on the exposure glass and make a copy from one of the feed stations.
2. Check the magnification ratio. If necessary, adjust the magnification using the following SP mode.

	SP mode	Specification
Sub-scan magnification	SP 4008	± 1.0%

- Standard White Density Adjustment -

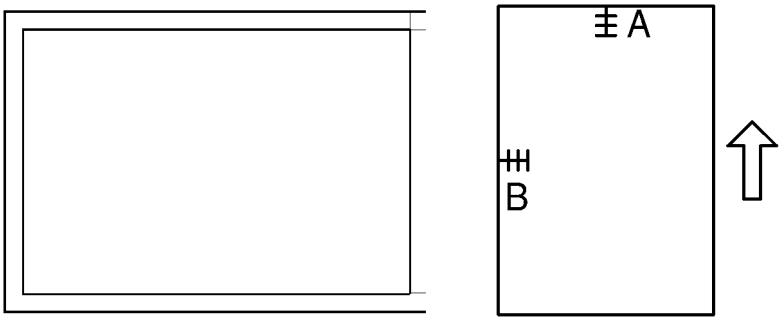
This procedure adjusts the standard white density level. Carry out this adjustment after doing any of the following:

- After replacing the standard white plate.
- After replacing the NVRAM on the BICU. (But note that you do not need to carry out this adjustment if you have replaced the BICU itself but retained the previous NVRAM board [by moving it over onto the new BICU].)
- After performing a memory all clear (SP 5801 2 for Basic machine, SP 5998 1 for MFP machine's BICU engine).

Procedure:

1. **Place 10 sheets of new A4/LTR paper (sideways, LEF) or new A3/DLT paper on the exposure glass, and close the platen cover or the ADF.**
2. **Enter SP 4428 1 and select "1: YES". The machine automatically adjusts the standard white density.**

ADF Image Adjustment



A: Leading edge registration
B: Side-to-side registration

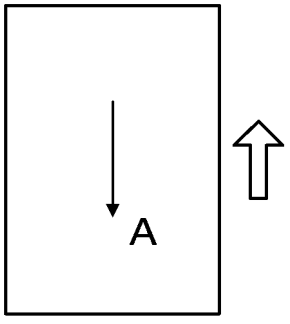
Note

- Make a temporary test chart as shown above, using A3/11" x 17" paper.

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

	SP mode
Side-to-side registration	SP 6006 1
Leading edge registration	SP 6006 2
Blank margin for the trailing edge	SP 6006 3
Side-to-side registration (Duplex: rear)	SP 6006 4

- Sub-scan Magnification -



3

A: Sub-scan magnification

Note

- Make a temporary test chart as shown above, using A3/11" x 17" paper.

1. Place the temporary test chart on the ADF and make a copy from one of the feed stations.
2. Check the registration, and if necessary adjust it using SP 6006 5. The specification is ±1.0%.

4. Troubleshooting

Service Call Conditions

Summary

There are four levels of service call conditions.

Level	Definition	Reset Procedure
A	To prevent damage to the machine, the main machine cannot be operated until the SC has been reset by a service representative (see the note below).	Enter SP mode, and then turn the main power switch off and on.
B	If the SC was caused by incorrect sensor detection, the SC can be reset by turning the main power switch off and on.	Turn the main power switch off and on.
C	The main machine can be operated as usual, excluding the unit related to the service call.	Turn the main power switch off and on.
D	The SC history is updated. The machine can be operated as usual.	The SC will not be displayed. Only the SC history is updated.

Note

- If the problem concerns electrical circuit boards, first disconnect then reconnect the connectors before replacing the PCBs.
- If the problem concerns a motor lock, first check the mechanical load before replacing motors or sensors.

SC Code Descriptions

No.	Definition	Symptom	Possible Cause
101	B	Exposure Lamp Error	
		The standard white level was not detected prop-	• Exposure lamp defective • Exposure lamp stabilizer defective • Exposure lamp connector defective

No.	Definition	Symptom	Possible Cause
		erly when scanning the white plate.	• Dirty scanner mirror or scanner mirror out of position • SBU board defective • SBU connector defective • Lens block out of position • Incorrect position or width of white plate scanning (☛ SP 4015)
120	B	Scanner home position error 1	
		The scanner home position sensor does not detect the off condition during initialization or copying.	• Scanner home position sensor defective • Scanner drive motor defective • Scanner home position sensor connector defective • Scanner drive motor connector defective • BICU board defective
121	B	Scanner home position error 2	
		The scanner home position sensor does not detect the on condition during initialization or copying.	• Scanner home position sensor defective • Scanner drive motor defective • Scanner home position sensor connector defective • Scanner drive motor connector defective • BICU board defective
143	D	SBU white/black level correction error	
		The automatic SBU adjustment has failed to correct the black level. The automatic SBU adjustment has failed to correct the white level twenty times consecutively.	• Exposure lamp defective • Dirty white plate • Incorrect position or width of white plate scanning (☛ SP 4015) • BICU board defective • SBU board defective
144	B	Communication Error between BICU and SBU	
		The BICU board cannot detect the SBU connect signal.	• The flat cable between the BICU board and the SBU has a poor connection

No.	Definition	Symptom	Possible Cause
			• The flat cable between the BICU board and the SBU is damaged • BICU board defective • SBU defective
145	D	Automatic SBU adjustment error	
		During the automatic SBU adjustment, the machine detects that the white level read from the white plate or paper is out of range. (☛ SP 4428)	• Exposure lamp defective • Dirty white plate • Incorrect position or width of white plate scanning (☛ SP 4015) • BICU board defective • SBU board defective
193	B	Image transfer error	
		Scanned images are not transferred to the controller memory within 1 minute.	• BICU board defective • Controller board defective
198	B	Memory address error	
		The BICU board does not receive memory addresses from the controller board.	• The firmware programs of the engine and the controller do not match. • BICU board defective • Controller board defective
302	B	Charge roller current leak	
		A current leak signal for the charge roller is detected.	• Charge roller damaged • High voltage supply board defective • Poor connection of the PCU
320	B	Polygonal mirror motor error	
		The polygon mirror motor does not reach operating speed within 10 seconds after the motor	• Polygon mirror motor defective • Poor connection between the polygonal mirror motor driver and the BICU board

No.	Definition	Symptom	Possible Cause
		ON signal is sent, or does not turn on within one of the 200 ms check intervals during operation.	• Damaged cable between BICU and polygonal mirror motor driver • BICU board defective
321	C	No laser writing signal (F-GATE) error	
		The laser writing signal (F-GATE) fails to turn Low after the laser crosses 5 mm on the drum surface from the laser writing start position.	• BICU board defective • The fax controller or printer controller has a poor connection • Fax controller or printer controller defective
322	B	Laser synchronization error	
		The main scan synchronization detector board cannot detect the laser synchronization signal for more than 5 consecutive 100 ms intervals.	• Poor connection between the LD unit and the BICU board • Damaged cable between BICU and LD unit • LD unit out of position • LD unit defective • BICU board defective
390	B	TD sensor error	
		The TD sensor outputs less than 0.2 V or more than 4.0 V 10 times consecutively during copying.	• TD sensor abnormal • Poor connection of the PCU
391	B	Development bias leak	
		A development bias leak signal is detected.	• Poor connection of the PCU • High voltage supply board defective
392	B	TD sensor initial setting error	

No.	Definition	Symptom	Possible Cause
		TD sensor initial setting is not performed correctly.	• ID sensor defective • No developer • Drum does not turn • Development roller does not turn • Poor connection of the PCU • The voltage is not applied to charge roller
401	B	Transfer roller leak error 1	
		A current leak signal for the transfer roller is detected. A current feedback signal for the transfer roller is not detected.	• High voltage supply board defective • Poor connection of the PCU • Transfer/separation unit set incorrectly • Transfer roller damaged
402	B	Transfer roller leak error 2	
		A current leak signal for the transfer roller is detected. A current feedback signal for the transfer roller is not detected.	• High voltage supply board defective • Poor connection of the PCU • Transfer/separation unit set incorrectly • Transfer roller damaged
500	B	Main motor lock	
		A main motor lock signal is not detected for more than 7 consecutive checks (700 ms) after the main motor starts to rotate, or the lock signal is not detected for more than 7 consecutive checks during rotation after the last signal.	• Too much load on the drive mechanism • Main motor defective
502	C	Tray 2 lift motor malfunction (Optional Paper Tray units)	

No.	Definition	Symptom	Possible Cause
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	• Paper lift sensor defective • Tray lift motor defective • Too much load on the drive mechanism • Poor tray lift motor connection
503	C	Tray 3 lift motor malfunction (optional paper tray units)	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	• Paper lift sensor defective • Tray lift motor defective • Too much load on the drive mechanism • Poor tray lift motor connection
504	C	Tray 4 lift motor malfunction (optional two-tray paper tray unit)	
		The paper lift sensor fails to activate twice continuously after the tray lift motor has been on for 18 seconds.	• Paper lift sensor defective • Tray lift motor defective • Too much load on the drive mechanism • Poor tray lift motor connection
506	C	Paper feed motor lock (optional paper tray units)	
		A motor lock signal is not detected for more than 1.5 s or the lock signal is not detected for more than 1.0 s during rotation.	• Paper feed motor defective • Too much load on the drive mechanism
541	A	Fusing thermistor open (center)	
		The fusing temperature detected by the thermistor is below 71°C and is not corrected after the main power switch is turned on.	• Fusing thermistor defective or out of position • Power supply board defective • Loose connectors
542	A	Fusing temperature warm-up error (center)	

No.	Definition	Symptom	Possible Cause
		The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds.	• Fusing thermistor defective or out of position • Fusing lamp open • Power supply board defective
543	A	Fusing overheat error (center)	
		The fusing temperature is over 230°C for 1 second (detected by the thermistor).	• Fusing thermistor defective • Power supply board defective
544	A	Fusing overheat error (center) 2	
		The fusing temperature is over 250°C for 1 second (detected by the fusing temperature monitor circuit).	• Fusing thermistor defective • Power supply board defective
545	A	Fusing lamp overheat error (center)	
		After the fusing temperature reaches the target temperature, the fusing lamp does not turn off for 12 consecutive seconds.	• Fusing thermistor defective or out of position • Power supply board defective
546	A	Unstable fusing temperature (center)	
		The fusing temperature varies 50°C or more within 1 second, and this occurs 2 consecutive times.	• Thermistor defective or out of position • Power supply unit defective
547	B	Zero cross signal malfunction	

No.	Definition	Symptom	Possible Cause
		Zero cross signals are not detected within 5 seconds after the main power switch is turned on, or are not detected within 1 second after operation begins.	• Power supply board defective • BICU defective
551	A	Fusing thermistor open (rear)	
		The fusing temperature detected by the thermistor is below 71°C and is not corrected after the main power switch is turned on.	• Fusing thermistor defective or out of position • Power supply board defective • Loose connectors
552	A	Fusing temperature warm-up error (rear)	
		The fusing temperature rises less than 7 degrees in 2 seconds, and this continues 5 times consecutively. The fusing temperature is not detected in 25 or 35 seconds.	• Fusing thermistor defective or out of position • Fusing lamp open • Power supply board defective
553	A	Fusing overheat error (rear)	
		The fusing temperature is over 230°C for 1 second (detected by the thermistor).	• Fusing thermistor defective • Power supply board defective
555	A	Fusing lamp overheat error (rear)	
		After the fusing temperature reaches the target temperature, the fusing lamp does not turn off	• Fusing thermistor defective or out of position • Power supply board defective

No.	Definition	Symptom	Possible Cause
		for 20 consecutive seconds.	
556	A	Unstable fusing temperature (rear)	
		The fusing temperature varies 50°C or more within 1 second, and this occurs 2 consecutive times.	• Thermistor defective or out of position • Power supply unit defective
590	B	Left exhaust fan motor error	
		The CPU detects an exhaust fan lock signal for more than 5 seconds.	• Loose connection of the exhaust fan motor • Too much load on the motor drive
591	B	Rear exhaust fan motor error	
		The CPU detects an exhaust fan lock signal for more than 5 seconds.	• Loose connection of the exhaust fan motor • Too much load on the motor drive
620	B	Communication error between BICU and ADF	
		The BICU does not receive a response from the ADF main board for 4 seconds or more. The BICU receives a break signal from the ADF main board.	• Poor connection between the BICU and ADF main board (DF connector) • ADF main board defective • BICU defective
621	B	ADF connection error	
		An incorrect ADF (an ADF for some other copier) is detected. (for Basic and MFP machines) An ADF (including the correct ADF) is installed while the copier is in the	• ADF incorrect (The ADF for B039/B040/B043 is installed on a B260/B261.) • The connector of the ADF is removed while the machine is in the energy saver mode.

No.	Definition	Symptom	Possible Cause
		energy saver mode. (for MFP machine only)	
632	C	Accounting error 1	
		An error is detected during the communication with the MF accounting device.	• Accounting device defective • Loose connection
633	C	Accounting error 2	
		After communication is established with the MF accounting device, a brake signal is issued.	• Accounting device defective • Loose connection
634	C	Accounting RAM error	
		An error is detected in the RAM that saves the information on the MF accounting.	• Accounting device defective
635	B	Accounting battery error	
		An error is detected in the battery that is in the MF accounting device.	• Accounting device defective
670	C	Engine start error	
		The engine-ready signal is not issued within 70 seconds after the switch is turned on.	• Engine board defective • Controller defective • Loose connection
760	B	ADF gate abnormal 1	
		The ADF Gate signal line between the ADF main board and the BICU is disconnected.	• ADF main board defective • Input/output board defective • Poor connection (ADF Gate line) between the ADF main board and the BICU.

No.	Definition	Symptom	Possible Cause
761	B	ADF gate abnormal 2	
		The FGATE signal is not issued from the ADF within 30 seconds after the ADF starts feeding.	• ADF connector defective • SBU board defective
762	B	ADF gate abnormal 3	
		The FGATE signal is not terminated by the ADF within 60 seconds after the ADF starts feeding.	• ADF connector defective • SBU board defective
800	B	Startup without video output end error	
		Video transfer to the engine is started, but the engine did not issue a video transmission end command within the specified time.	• Controller board defective
804	B	Startup without video input end	
		A video transmission was requested from the scanner, but the scanner did not issue a video transmission end command within the specified time.	• Controller board defective
818	B	Watchdog error	
		The CPU does not access the watchdog register within a certain time.	• Controller board defective • Software malfunction – download controller firmware again
819	B	Kernel mismatch error	
		Software bug	• Download controller firmware again

No.	Definition	Symptom	Possible Cause
820	B	Self-Diagnostic Error: CPU	
		The central processing unit returned an error during the self-diagnostic test.	• Controller board defective • Download controller firmware again
821	B	Self-Diagnostic Error: ASIC	
		The ASIC returned an error during the self-diagnostic test because the ASIC and CPU timer interrupts were compared and determined to be out of range.	• Controller board defective
823	C	Self-diagnostic Error: Network Interface	
		The network interface board returned an error during the self-diagnostic test.	• Network interface board defective • Controller board defective
824	B	Self-diagnostic Error: NVRAM	
		The resident non-volatile RAM returned an error during the self-diagnostic test.	• Replace the NVRAM on the controller board • Replace the controller board
826	B	Self-diagnostic Error: NVRAM/Optional NVRAM	
		The NVRAM or optional NVRAM returned an error during the self-diagnostic test.	• Replace the NVRAM on the controller board
827	B	Self-diagnostic Error: RAM	
		The resident RAM returned a verify error	• Download controller firmware again

No.	Definition	Symptom	Possible Cause
		during the self-diagnostic test.	
828	B	Self-diagnostic Error: ROM	
		The resident read-only memory returned an error during the self-diagnostic test.	• Controller board defective • Download controller firmware again
829	C	Self-diagnostic Error: Optional RAM	
		The optional RAM returned an error during the self-diagnostic test.	• Replace the optional memory board • Controller board defective
838	B	Self-diagnostic Error: Clock Generator	
		A verify error occurred when setting data was read from the clock generator via the I2C bus.	• Replace the controller board
850	C	Network I/F Abnormal	
		NIB interface error.	• NIB defective • Controller board defective
851	C	IEEE 1394 I/F Abnormal	
		IEEE1394 interface error.	• IEEE1394 interface board defective • Controller board defective
853	C	IEEE802.11b error - card not detected (power-on)	
		Wireless LAN card not detected at power-on.	• Poor connection • Defective wireless LAN card • Defective controller
854	C	IEEE802.11b error - card not detected (during operation)	

No.	Definition	Symptom	Possible Cause
		Wireless LAN card not detected during operation.	• Poor connection • Defective wireless LAN card • Defective controller
855	C	IEEE802.11b error	
		Wireless LAN card error detected.	• Poor connection • Defective wireless LAN card • Defective controller
856	C	IEEE802.11b interface board error	
		Wireless LAN interface board error detected.	• Poor connection • Defective wireless LAN interface board
857	C	USB I/F Error	
		USB interface error detected.	• Defective controller
866	C	SD card authentication error	
		The SD card does not contain a correct license code.	• Data corruption
867	B	SD card access error 1	
		After the program saved in the SD card starts running, the SD card is removed from the slot.	• SD card removed
868	B	SD card access error 2	
		Incorrect data is detected in the SD card.	• SD card defective • SD controller defective
870	C	Address Book Data Error	
		Address book data stored on the hard disk was	• Software defective

No.	Definition	Symptom	Possible Cause
		detected as abnormal when it was accessed from either the operation panel or the network.	
871	C	FCU Flash ROM Error	
		The address book written into the flash ROM mounted on the FCU is detected as defective.	• Flash ROM device defective • Replace flash ROM on the MBU
900	B	Electrical total counter error	
		The electrical total counter does not work properly.	• NVRAM on the GW controller board defective
901	B	Mechanical total counter	
		The mechanical total counter does not work properly.	• Mechanical total counter defective • BICU defective • Disconnected mechanical total counter
903	B	Engine total counter error	
		The checksum of the total counter is not correct.	• NVRAM on the BICU defective
920	C	Printer error	
		A fatal error is detected in the printer application program	• Printer application program defective • Hardware configuration incorrect (including memory shortage)
921	C	Printer font error	
		Necessary font files are not found.	• Font file not installed
925	C	Net file error	

No.	Definition	Symptom	Possible Cause
		The net-file management-file contains a fatal error.	• Data corruption
928	B	Memory error	
		The machine detects a discrepancy in the write/read data during its write/read test (done at power off/on and at recovery from low power or night/off mode).	• Memory defective • BICU defective • Poor connection between BICU and memory
929	B	IMAC hardware error	
		A memory control job is not completed within a certain period.	• IMAC on the GW controller board defective • BICU defective • Poor connection
954	B	Printer application program error	
		The printer status does not become ready when the printer application program is necessary for image processing.	• Application program defective
955	B	Image transfer error	
		The controller is not able to transfer images when the engine needs them.	• Application program defective
964	B	Status error (laser optics housing unit)	
		The optics housing unit does not become ready within 17 seconds after the request.	• Software defective

No.	Definition	Symptom	Possible Cause
981	B	NVRAM error	
		The machine detects a discrepancy in the NVRAM write/read data when attempting to save actual data to the NVRAM (i.e. during actual use).	• NVRAM defective • Poor connection between BICU and NVRAM • NVRAM is not connected • BICU defective
982	B	Localization error	
		The localization settings in the nonvolatile ROM and RAM are different (☞ SP 5807 1).	• First machine start after the NVRAM is replaced • Incorrect localization setting • NVRAM defective
984	B	Print image transfer error	
		Print images are not transferred.	• Controller defective • BICU board defective • Poor connection between controller and BICU
990	B	Software performance error	
		The software attempted to perform an unexpected operation.	• Software defective • Internal parameter incorrect • Insufficient working memory • When this SC occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP 7403. Note the above data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.
991	D	Software continuity error	
		The software attempted to perform an unexpected operation. However, unlike SC990, the object of the error is	• No operation required. This SC code does not appear on the panel, and is only logged.

No.	Definition	Symptom	Possible Cause
		continuity of the software.	
992	B	Unexpected Software Error	
		Software encountered an unexpected operation not defined under any SC code.	• Software defective • An error undetectable by any other SC code occurred
997	B	Application function selection error	
		The application selected by a key press on operation panel does not start or ends abnormally.	• Download the firmware for the application that failed • An option required by the application (RAM, DIMM, board) is not installed
998	B	Application start error. After power on, the application does not start within 60 s. (All applications neither start nor end normally.)	• Download controller firmware • Replace the controller board • 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.	• Board installed incorrectly • BICU board defective • Controller board defective • IC card defective • NVRAM defective • Loss of power during downloading • Important Notes About SC999 • Primarily intended for operating in the download mode, logging is not performed with SC999. • 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 sub-

No. Definition		Symptom	Possible Cause
			sequent downloading. If this problem occurs, the damaged PCB must be replaced.

Electrical Component Defects

Sensors

Component	CN	Condition	Symptom
Registration	111-2 (BICU)	Open	The Paper Jam message will appear whenever a copy is made (paper hasn't reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Relay	111-5 (BICU)	Open	The Paper Jam message will appear whenever a copy is made except for 1st and by-pass tray feeding.
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Upper Paper End	114-2 (BICU)	Open	The Paper End indicator lights when the 1st paper tray is selected, even if there is paper in the tray.
		Shorted	The Paper End indicator does not light when the 1st paper tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the 1st paper tray.
Vertical Transport	110-2 (BICU)	Open	The Paper Jam message will appear whenever a copy is made from an optional paper tray unit.
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Lower Paper End	113-6 (BICU)	Open	The Paper End indicator lights when the 2nd paper tray is selected, even if there is paper in the tray.
		Shorted	The Paper End indicator does not light when the 2nd paper tray is selected, even if there is no paper in the tray. The Paper Jam message will

Component	CN	Condition	Symptom
			appear whenever a copy is made from the 2nd paper tray.
		Shorted	
By-pass Paper End	136-7 (BICU)	Open	The Paper End indicator lights when the bypass tray is selected, even if there is paper in the tray.
		Shorted	The Paper End indicator does not light when the bypass tray is selected, even if there is no paper in the tray. The Paper Jam message will appear whenever a copy is made from the bypass tray.
Exit	124-2 (BICU)	Open	The Paper Jam message will appear whenever a copy is made (paper hasn't reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Toner Density	125-3 (BICU)	Open	SC390 is displayed.
		Shorted	
Image Density	123-2 (BICU)	Open	The toner density control process is changed (see the note below the table).
		Shorted	
Scanner H.P.	102-2 (BICU)	Open	SC120 is displayed.
		Shorted	
Platen Cover	102-5 (BICU)	Open	APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	If the Start button is pressed with the platen cover or A(R)DF closed, "Cannot detect original size" is displayed.
Original Width	103-3,4 (BICU)	Open	The CPU cannot detect the original size properly. APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	
Original Length	103-8,9 (BICU)	Open	The CPU cannot detect the original size properly. APS and Auto Reduce/Enlarge do not function correctly.
		Shorted	

Component	CN	Condition	Symptom
Duplex Entrance	222-2 (DCB)	Open	The Paper Jam message will appear whenever a duplex copy is made (paper hasn't reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Duplex Exit	222-5 (DCB)	Open	The Paper Jam message will appear whenever a duplex copy is made (paper hasn't reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.
Duplex Inverter	220-6 (DCB)	Open	The Paper Jam message will appear whenever a duplex copy is made (paper hasn't reached the sensor).
		Shorted	The Paper Jam message appears even if there is no paper at the sensor.

Note

- SC392 is activated when the CPU detects an ID sensor error during developer initialization (SP 2214). However, SC392 is not displayed on the LCD but simply logged in the SC log (SMC printout), unless the technician exits SP Mode as soon as an error message is displayed.

Switches

Component	CN	Condition	Symptom
Upper Paper Size	115-1,2,4 (BICU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the 1st paper tray.
		Shorted	
Vertical Transport Door	110-5 (BICU)	Open	The Cover Open indicator is lit even if the vertical transport door is closed.
		Shorted	The Cover Open indicator is not lit even if the vertical transport door is opened.

Component	CN	Condition	Symptom
Lower Paper Size	113-1,2,4 (BICU)	Open	The CPU cannot detect the proper paper size, and misfeeds may occur when a copy is made from the 2nd paper tray.
		Shorted	
By-pass Paper Size	136-1,2,4,5 (BICU)	Open	The CPU misdetects or is not able to detect the size of the paper set in the bypass tray, causing possible misfeeds when feeding from this tray.
Right Door	124-5 (BICU)	Open	The Cover Open indicator is lit even if the right door is closed.
		Shorted	The Cover Open indicator is not lit even if the right door is open.
Front/Right Cover	130-1 (BICU)	Open	The Cover Open indicator is lit even if doors are closed.
		Shorted	The Cover Open indicator is not lit even if doors are open.
Main	281-3, 4 (PSU)	Open	The machine does not turn on.
		Shorted	The machine does not turn off.

Blown Fuse Conditions

All the fuses in the following table are on the power supply board.

Fuse	Rating		Symptom when turning on the main switch
	120 V	220 – 240 V	
FU1	15A/125V	—	No response.
FU2	6.3A/250V	3.15A/250V	No response.
FU3	1A/125V	1A/250V	Anti-condensation/Tray Heater does not turn on.
FU4	4A/250V	4A/250V	No response.
FU5	4A/250V	4A/250V	No response.
FU6	4A/250V	4A/250V	SC901 is displayed.
FU7	4A/250V	4A/250V	Optional peripherals are detected but do not function.
FU8	3.15A/250V	3.15A/250V	No response.

LED Display

BICU

Number	Function
LED 1	Monitors the +5 V line for the CPU and the surrounding circuit. Usually, this LED is blinking.

5. Service Tables

Service Program Mode

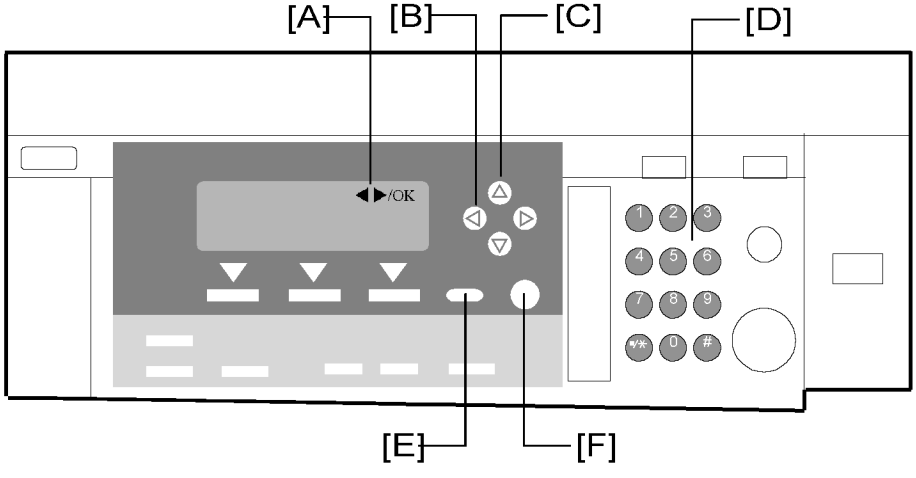
Important

- **Do not let the user access the SP mode. Only service representatives but no other persons are allowed to access the SP mode. The machine quality or its operation is NOT guaranteed after any person other than service representatives accesses the SP mode.**

How to Enter the SP Mode

The following two modes are available:

- SP Mode (Service Program Mode): The SP Mode includes the programs that are necessary for standard maintenance work.
- SSP Mode (Special SP Mode): The SSP Mode includes SP-Mode programs and some special programs. You need some extra knowledge to manipulate these special programs. For details, consult your supervisor.



Starting SP Mode

1. Type the keys as follows: [Clear Modes] > [1] > [0] > [7]
2. Press the [Clear/Stop] key and hold it down until the SP-mode menu is displayed (about 3 seconds).

Starting SSP Mode

For the basic machine (the machine without the optional controller box), perform as listed in steps 1 through 4. For the MFP machine (the machine with the optional controller box), perform as listed in steps 1 through 5.

1. Type the keys as follows: [Clear Modes] > [1] > [0] > [7]
2. Press the key and hold it down until the SP-mode menu is displayed (about 3 seconds).
3. Press the [Enter] key and hold it down.
4. While holding down the [Enter] key, press the [1] key (on the numeric keypad).
5. While holding down the [Enter] key, press the "OK" key.

Selecting Programs

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

Specifying Values

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

Activating Copy Mode

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

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

Note

- You cannot end the SP mode while the copy mode is activated.

Quitting Programs/Ending (S)SP Mode

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

SP Mode Tables

The following keys are used:

- Asterisk (*): The settings are saved in the NVRAM. Most of them return to the default values when you execute SP 5998 1 (Engine) and SP 5801 1 (All Clear) (☛ Memory Clear).
- DFU: The menu is for design or factory use only. You must not change the settings.
- Brackets ([ ]): The brackets enclose the setting rage, default value, and minimum step (with unit) as follows: [Minimum to Maximum / Default / Step].

Copier Service Mode

SP1-XXX (Feed)

1001*	Leading Edge Registration	
	Adjusts the printing leading-edge registration from paper trays.	
1001 1	All Trays	[–9.0 to 9.0 / **0.0** / 0.1 mm/step] (☛ ADF Image Adjustment)
1001 2	By-pass	
1001 3	Duplex	

1002*	Side-to-Side Registration	
	Adjusts the printing side-to-side registration from each paper feed station, using the Trimming Area Pattern (SP 5902, No.10). Adjustments are supported for all 4 possible feed trays (including optional trays). The SP 1002 1 setting is applied to all trays, not just the 1st tray. Settings for trays 2 to 4 are offsets relative to the SP 1002 1 setting. For duplex copies, the value for the front side is determined by SP 1002 1 to 4, and the value for the rear side is determined by SP1002 6.	
1002 1	1st tray	[–9.0 to 9.0 / **0.0** / 0.1 mm/step] (☛ ADF Image Adjustment)
1002 2	2nd tray	
1002 3	3rd tray	
1002 4	4th tray	

1002 5	By-pass	
1002 6	Duplex	

1003*	Paper Feed Timing	
	Adjusts the amount of buckle the paper feed clutch applies to the paper after the registration sensor is activated. A higher setting applies greater buckling.	
1003 1	1st tray	[0 to 10 / **5** / 1 mm/step]
1003 2	2nd tray	[0 to 10 / **5** / 1 mm/step]
1003 3	Optional tray	[0 to 10 / **5** / 1 mm/step]
1003 4	By-pass feed	[0 to 10 / **6** / 1 mm/step]
1003 5	Duplex	[0 to 20 / **6** / 1 mm/step]

1007	Display By-pass	
1007 1	Display By-pass	Displays the by-pass paper width switch output.

1103*	Fusing Idling	
	Selects whether or not fusing idling is performed. Normally disabled in this machine. However, enable this mode if fusing is incomplete on the 1st and 2nd copies, which may occur if the room is cold.	
1103 1	Fusing Idling	[**0 = No** / 1 = Yes]

1105*	Fusing Temperature Adjustment	
	Adjusts the target fusing temperature. "Center" indicates the center of the roller; "End" indicates the front and rear ends.	
1105 1	Warm Up-Center	[140 to 180 / **160** / 1°C/step]
1105 2	Warm Up-End	
1105 3	Standby-Center	[140 to 170 / **155** / 1°C/step]
1105 4	Standby-End	[140 to 165 / **150** / 1°C/step]
1105 5	Copying-Center	[140 to 185 / **160** / 1°C/step]

1105 6	Copying-End	
1105 7	Low Level 2-Center	[0 to 80 / **60** / 1°C/step]
1105 8	Low Level 2-End	
1105 9	Thick-Center	[140 to 185 / **175** / 1°C/step]
1105 10	Thick-End	
1105 11	Warm Up Low-Center	[140 to 180 / **170** / 1°C/step]
1105 12	Warm Up Low-End	

1106	Display Fusing	
1106 1	Display Fusing (Center)	Displays the fusing temperature on the center or on the ends of the hot roller.
1106 2	Display Fusing (End)	

1107*	Fusing Soft Start	
	Adjusts the number of zero-cross cycles of the fusing lamp AC supply needed to bring the fusing lamp power to 100% while bringing the lamp up to the standby temperature or while copying. Increase this value if the machine is experiencing sudden power dropouts (☛ Fusing Temperature Control).	
1107 1	Warm Up Soft Start	[0 = 10 cycles / **1 = 20 cycles** / 2 = 50 cycles]
1107 2	Other Soft Start	[0 = 5 cycles / **1 = 10 cycles** / 2 = 20 cycles]

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

1109	Nip Band Check
1109 1	Checks the fusing nip band (☛ Nip Band Width Adjustment).

1110*	Fan Control Timer
1110 1	[30 to 60 / **30** / 1 s/step]

	Inputs the fan control time. The fan maintains normal speed for the specified time after occurrence of an SC or following entry into Warm-up mode, Low Power mode, or Night/Off mode.

1902	Display-AC Freq.	
1902 1	Displays the fusing lamp power control frequency (as detected by the zero cross signal generator). The displayed value is 1/5 the actual frequency: 10 = 50 Hz, 12 = 60 Hz.	
1903*	Feed Clutch Boost	
	Adjusts the amount of extra push that the feed clutch gives to the paper after the skew has been corrected at registration. This feature helps the registration roller feed certain types of paper (such as thick paper). Increase the value if thick paper is jamming after feeding from the registration roller.	
1903 1	By-pass tray	[0 to 10 / **6** / 1 mm/step]
1903 2	2nd, 3rd, 4th tray	[0 to 10 / **3** / 1 mm/step]

1908*	Optional Tray Adj.	
	Adjusts the reverse time for the upper and lower paper lift motors.	
1908 1	1st optional	[–2 to +2 / **0** / 1/step] (☛ Optional Paper Tray Unit)
1908 2	2nd optional	

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

SP2-XXX (Drum)

2001*	Charge Roller Bias Adjustment	
2001 1	Printing	[–2100 to –1500 / **–1700** / 1 V/step]

	Adjusts the voltage applied to the charge roller when printing. The actually applied voltage changes automatically as charge roller voltage correction is carried out. The value you set here becomes the base value on which this correction is carried out.	
2001 2	ID sensor pattern	[0 to 400 / **300** / 1 V/step]
	Adjusts the voltage applied to the charge roller when generating the Vsdp ID sensor pattern (as part of charge roller voltage correction). The actual charge-roller voltage is obtained by adding this value to the value of SP 2001 1.	

2101*	Erase Margin Adjustment	
2101 1	Leading edge	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ Copy Adjustments Printing/Scanning) Specification: 2 ± 1.5 mm
	Adjusts the leading edge erase margin.	
2101 2	Trailing	[0.0 to 9.0 / **3.0** / 0.1 mm/step] (☛ Copy Adjustments Printing/Scanning) Specification: 2 +2.5/–1.5 mm
	Adjusts the trailing edge erase margin. The rear trailing edge is this value plus 1.2 mm.	
2101 3	Left side	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ Copy Adjustments Printing/Scanning) Specification: 2 ± 1.5 mm
	Adjusts the left edge erase margin. The rear left edge is this value plus 0.3 mm.	
2101 4	Right side	[0.0 to 9.0 / **2.0** / 0.1 mm/step] (☛ Copy Adjustments Printing/Scanning) Specification: 2 +2.5/–1.5 mm
	Adjusts the right edge erase margin. The rear right edge is this value plus 0.3 mm.	

2201*	Development Bias Adjustment	
2201 1	Printing	[–1500 to –200 / **–650** / 1 V/step]
	Adjusts the voltage applied to the development roller when printing. This can be adjusted as a temporary measure if faint copies are being produced due to an aging drum.	

2201 2	ID sensor pattern	[–2 = LL (220 V) / -1 = L (260 V) / **0 = N (300 V)** / 1 = H (340 V) / 2 = HH (380 V)]
	Adjusts the voltage applied to the development roller when generating the ID sensor pattern. The actual voltage applied is this setting plus the value of SP 2201 1. The setting affects ID sensor pattern density, which in turn affects the toner supply.	

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

2214	Developer Initialization
2214 1	Initializes both the TD sensor toner supply target voltage and the TD sensor gain value. Carry this out after replacing the developer or the TD sensor.

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

2301*	Transfer Current Adjustment	
2301 1	Normal paper	[–2 = –4 mA / **–1 = –2 mA** / 0 = 0 mA / 1 = 2 mA / 2 = +4 mA]
	Adjusts the current applied to the transfer roller when feeding from a paper tray. Use a high setting if the user normally feeds relatively thick paper (within spec) from a paper tray (☛ Image Transfer Current Timing).	
2301 2	Thick/Special paper	[–2 = –4 mA / **–1 = –2 mA** / 0 = 0 mA / 1 = 2 mA / 2 = +4 mA]

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

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

2906*	Tailing Correction	
2906 1	Shift value	[0.0 to 1.0 / **0.0** / 0.1 mm/step]
	Shifts the image writing position in intervals specified by SP 2906 2. When making many copies of an original that contains vertical lines (such as in tables), the paper may not separate correctly. This can cause tailing images (ghosts of the vertical lines continuing past the bottom of the table). This SP can be used to prevent this.	
2906 2	Interval	[1 to 10 / **1** / 1 page/step]
	Changes the interval for the image shift specified by SP 2906 1.	

2908	Forced Toner Supply
2908 1	Forces the toner bottle to supply toner to the toner supply unit. Press "1" to start. The machine continues to supply toner until the toner concentration in the development unit reaches the standard level, or for up to 2 minutes (whichever comes first).

2915*	Polygon Mirror Motor Idling Time
2915 1	[0 = None / **1 = 15 s** / 2 = 25 s] Selects the polygon mirror motor idling time. To increase the speed of the first copy, the mirror motor begins idling when the user sets an original, touches a key, or opens the platen cover or DF. If this setting is left at the default (15 s), the motor will stop if the user does nothing for 15s. If the setting is "0", the motor will not switch off during standby. (But note that regardless of the setting, the motor will switch off when the machine enters energy saver mode.)

2921*	Toner Supply Mode
2921 1	[0 = Sensor 1 / **1 = Sensor 2 (DFU)** / 2 = Fixed 1 (DFU) / 3 = Fixed 2] Selects the toner supply mode. Under normal conditions this should be set to "0". You can temporarily change this to "3" if the TD sensor is defective. Do not set to "1" or "2", as these are for design use only (☛ Toner Density Control).

2922*	Toner Supply Time
2922 1	[0.1 to 5.0 / **0.4** / 0.1 s/step] Adjusts the toner supply motor ON time for Sensor 1 and Sensor 2 toner supply mode. Accordingly, this setting is effective only if SP 2921 is set to "0" or "1" Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas (☛Toner Density Control).

2923*	Toner Recovery Time
2923 1	[3 to 60 / **30** / 1 s/step] Adjusts the toner supply motor ON time used during toner recovery from Toner Near End or Toner End. This setting is effective only if SP 2921 is set to "0" Since toner recovery is carried out in 3-second cycles, the input value should be a multiple of 3 (3, 6, 9...).(☛ Toner Density Control)

2925*	Toner Supply Rate
2925 1	Adjusts the toner supply time for fixed toner supply mode. This setting is effective only if SP 2921 is set to "2" or "3".[0 to 7 / 0]t = 200ms, and settings are as follows **0 = t 4 = 12t** 1 = 2t 5 = 16t

	2 = 4t 6 = on continuously 3 = 8t 7 = 0 s Raising this value increases the toner supply motor ON time. Set to a high value if the user tends to make many copies having high proportions of solid black image areas (☛ Toner Density Control).

2926*	Standard Vt
2926 1	[0.00 to 5.00 / **2.50** / 0.01 V/step] DFU Adjusts Vts (the Vt value for new developer). The TD sensor output is adjusted to this value during the TD sensor initial setting process]. This SP is effective only when SP 2921 is "0", "1", or "2".

2927*	ID Sensor Control
2927 1	[**0 = No** / 1 = Yes] Selects whether the ID sensor is or is not used for toner density control. This value should normally be left at "1". If the value is "0", dirty background may occur after long periods of non-use.

2928	Toner End Clear
2928 1	Clears the toner end condition without adding new toner. The following are cleared: Toner end indicator (goes out)· Toner near-end counter Toner near-end level This function should generally not be used. If you clear the toner end condition without adding new toner, there is a risk that the drum may eventually begin to attract carrier after many more copies are made and toner runs out. This attracted carrier may damage the drum.

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

2994*	ID Sensor Detection Temperature	[30 to 90 / **30** / 1 °C/step]
2994 1	While the machine is recovering from an energy saver mode, or while the machine starts, the controller ignores the ID-sensor signals if the fusing temperature is at the specified value or higher.	

2996*	Transfer Roller Cleaning
2996 1	Selects whether the transfer roller is cleaned before each copy job. Set this to "1" if dirty background is appearing on the reverse side of the first page of copy jobs. Note that this will increase the time required to generate the first copy. If the setting is "0", the transfer roller is never cleaned (☛ Transfer Roller Cleaning).

2998*	Main Scan Magnification	[–0.5 to +0.5 / **0.0** / 0.1%/step]
2998 1	Adjusts the magnification along the main scan direction, for all print modes (copy, fax, printing). The specification is 100 ± 1.0% (☛ Copy Adjustments Printing/Scanning)).	

SP4-XXX (Scanner)

4008*	Sub-Scan Magnification (Scanner)	[-0.9 to +0.9 / **0.0** / 0.1%/step]
4008 1	Adjusts the actual sub-scan direction scanning magnification. The higher the setting, the lower the scanner motor speed (☛ Copy Adjustments Printing/Scanning)).	

4009*	Main Scan Magnification (Scanner)	[–0.9 to +0.9 / **0.0** / 0.1%/step]
4009 1	Adjusts the magnification along the main scan direction, for scanning (Copy Adjustments Printing/Scanning)). The specification is 100 ± 1.0% Main scan magnification is implemented in steps of 0.5. Accordingly, your input value should be a multiple of 0.5 (–1.0, –0.5, 0, +0.5, or +1.0)	

4010*	Leading Edge Registration (Scanner)	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]
4010 1	Adjusts the leading edge registration for scanning in platen mode (☛ Copy Adjustments Printing/Scanning)). (–): The image moves toward the leading edge. (+): The image moves toward the trailing edge·	

	The specification is 2 ± 1.5 mm.

4011*	Side-to-side Registration (Scanner)	[–4.2 to +4.2 / **0.0** / 0.1 mm/step]
4011 1	Adjusts the side-to-side registration for scanning in platen mode (☛ Copy Adjustments Printing/Scanning)). Increasing the value shifts the image to the right The specification is 2 ± 1.5 mm.	

4012*	Scan Erase Margin	
	Adjusts the scanning margin individually for each of the four edges. It is generally best to adjust the scanning margin as little as possible, and use the printing margin for image adjustments.	
4012 1	Leading edge	[0 to 9.0 / **1.0** / 0.1 mm/step]
4012 2	Trailing edge	
4012 3	Left	
4012 4	Right	

4013	Scanner Free Run
4013 1	Performs a scanner free run with the exposure lamp on. Press ON or to start. Press OFF to stop.

4015*	White Plate Scanning	
4015 1	Start position	[–3.0 to +6.0 / **0.0** / 0.1 mm/step]
	Adjusts the scanning start position on the white plate for auto shading. The base value stored in the machine is 15.2 mm toward the white plate from the scanner H.P. This SP setting specifies the offset from this base value.	
4015 2	Scanning length	[–3.0 to +6.0 / **0.0** / 0.1 mm/step]
	Adjusts the length of the white plate scan, in the main scan direction. The scan begins at the start position set above [in SP 4015 1] and extends for the specified length. The base value stored in the machine is 4.76 mm. This SP setting specifies the offset from this base value.	

4301	Display-APS Data
4301 1	Displays the status of the APS sensors and platen/DF cover sensor (☛ ADF/APS Sensor Output Display).

4303*	APS Small Size Original	[**0 = No (not detected)** / 1 = Yes (A5/HLT LEF)]
4303 1	Selects whether or not the copier will consider the original to be A5/HLT LEF when the APS sensors cannot detect its size. If "Yes" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5/HLT LEF. If "No" is selected, "Cannot detect original size" will be displayed.	

4305*	APS Priority	[0 = Normal / **1 = A4/LT** / 2 = 8K/16K]
4305 1	1. A4/LT • North America model: When the ASP detects the LT size, the controller interprets it as the A4 size. • Other models: When the ASP detects the A4 size, the controller interprets it as the LT size. 2. 8K/16K (for the China model only) • When the ASP detects the A3/B4 SEF, the controller interprets it as the 8K SEF. • When the ASP detects the B5/A4 SEF, the controller interprets it as the 16K SEF. • When the ASP detects the B5/A4 LEF, the controller interprets it as the 16K LEF. The Europe model interprets undetected original sizes as A5 LEF under the following conditions: 1. SP 4303 1 is "Yes," and 2. SP 4305 1 is "Normal" The Europe model interprets undetected original sizes as LT SEF under the following conditions: 1. SP 4303 1 is "Yes," and SP 4305 1 is "A4/LT"	

4428	Scan Auto-Adjustment
4428 1	Performs the automatic scanner adjustment. Use this SP mode after replacing the white plate.

4901	SBU White Level Adjustment

4901 1	Black Display-Error	[**0 = Normal** / 1 = Error]
	Displays the return code of the black-level adjustment. When an error is detected, SC143 or SC145 is generated.	
4901 2	Black Feedback-EVEN	[0 to 8191]
	Displays the feedback value of the even channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 3	Black Feedback-ODD	[0 to 8191]
	Displays the feedback value of the odd channels given by the SBU. Normally, the value is 1, 2, 3, ..., 8188, 8189, or 8190. However, machine may operate normally even when the value is 0 or 8191.	
4901 4	Black Display-Target	[0 to 63 / **10** /step]
	Displays the target value for the black-level adjustment executed during machine initialization. Normally, the value is 10. Other values indicate that the adjustment has ended unsuccessfully.	
4901 5*	White Target	[0 to 511 / **511** / 1/step]
	Displays the target value for the white-level adjustment.	
4901 6	White Result	[0 to 511 / **0** / 1/step]
	Displays the result of the white-level adjustment.	
4901 8	White Display-Error	[**0 = Normal** / 1 = Error]
	Displays the return code of the white-level adjustment. When an error is detected, SC143 is generated.	
4901 9	White Display-Overflow	[**0 = Normal** / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result is not in the range of the values in SP 4901 6.	

4901 10	White Number of Attempt	[0 to 20 / **0** / 1/step]
	Displays how many times the white-level adjustment is retried. The value does not include the first execution of the white adjustment. For example, if the value is "2", this indicates that the white-level adjustment has been executed three times. The white-level adjustment can be executed 20 times or less. Therefore, if the value is "20," this indicates that the white-	

	level adjustment has ended abnormally (as described, the value "20" does not include the first execution). If the white-level adjustment is unsuccessful, the machine uses the result of the latest, successful white-level adjustment.	
4901 11*	Auto Adjustment Setting	[222 to 281 / **256** / 1/step]
	Displays the parameter of the white-level adjustment. The value is based on the result of SP 4901 12.	
4901 12	Auto Adjustment-Result	[0 to 600 / **0** / 1/step]
	Displays the result of the white-level adjustment. Normally, the value is between 228 and 281 (including the both values). When the value is normal, it is stored as the value of SP 4901 11.	
4901 14	Auto Adjustment-Error	[**0 = Normal** / 1 = Error]
	Displays a return code of the white-level adjustment. The code "1" (error) is returned if the adjustment result value is less than 228 or larger than 281 (☛ SP 4901 12).	

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

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

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

4905*	ADS Level	[**0 = All** / 1 = One]
4905 1	Checks the whole area (0 = All) or the area between 15 mm and 90 mm from the left edge (1 = One) to adjust the ADS level.	

4921*	Image Adj Selection (☛ Video Control Unit)	
4921 1	Image Adj Selection (Copy)	[0 to 10 / **0** / 1]
	Selects which mode the settings from SP 4922 to SP 4932 are used for.	

	0 = None, 1 = Text 1, 2 =Text 2, 3= Photo 1, 4 = Photo 2, 5 = Photo 3, 6 = Special 1, 7 = Special 2, 8 = Special 3, 9 = Special 4, 10 = Special 5	
4921 2	Image Adj Selection (Fax)	[0 to 5 / **0** / 1]
	Selects which mode the settings from SP 4922 to SP 4932 are used for. 0 = None, 1 = Text 1, 2 =Text 2, 3= Photo 1, 4 = Photo 2, 5 = Special 1	
4921 3	Image Adj Selection (Scanner)	[0 to 4 / **0** / 1]
	Selects which mode the settings from SP 4922 to SP 4932 are used for. 0 = None, 1 = Text 1, 2 =Text 2, 3= Photo 1, 4 = Photo 2	

4922*	Scanner Gamma	
	Selects "text" or "photo" as the priority output mode. This setting is applied to all image processing modes of SP 4921.	
4922 1	Scanner Gamma (Copy)	[0=System default/**1=Text/**2=Photo]
4922 2	Scanner Gamma (Fax)	
4922 3	Scanner Gamma (Scanner)	

4923*	Notch Selection (☛ Video Control Unit)	
	Selects the value of the center ID adjustment notch for the ID adjustment LEDs. Normally the center notch is 3 (range 1-5). If –1 is selected, each notch shifts down (becomes lighter). If +1 is selected, each notch shifts up (becomes darker).· This setting is applied to all image processing modes of SP 4921.	
4923 1	Notch Selection (Copy)	[–1 = Light / **0 = Normal** / +1 = Dark]
4923 2	Notch Selection (Fax)	
4923 3	Notch Selection (Scanner)	

4926*	Texture Removal (☛ Video Control Unit)	
	Adjusts the texture removal level that is used with error diffusion. 0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 and Photo 1-3 have a default of 1. 1: No removal applied.	

	2 – 5: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal). This setting is only applied to the originals in SP 4921.	
4926 1	Texture Removal (Copy)	[0 to 6 / **0** / 1/step]
4926 2	Texture Removal (Fax)	
4926 3	Texture Removal (Scanner)	

4927*	Line Width Correction	
	Adjusts the line width correction algorithm. Positive settings produce thicker lines; negative settings produce thinner lines. This setting is only applied to the originals in SP 4921 (☛ Video Control Unit).	
4927 1	Line Width Correction (Copy)	[–2 to 2 / **0** / 1/step]
4927 2	Line Width Correction (Fax)	
4927 3	Line Width Correction (Scanner)	

4928*	Independent Dot Erase	
	Selects the dot erase level. Higher settings provide greater erasure. This setting is only applied to the originals in SP 4921 (☛ Video Control Unit).	
4928 1	Independent Dot Erase (Copy)	[–2 to 2 / **0** / 1/step]
4928 2	Independent Dot Erase (Fax)	
4928 3	Independent Dot Erase (Scanner)	

4929*	Positive/Negative	[**0 = No**, 1 = Yes]
	Inverts white and black. This setting is only applied to the originals in SP 4921 (☛ Video Control Unit).	
4929 1	Positive/Negative (Copy)	
4929 2	Positive/Negative (Fax)	

4930*	Sharpness-Edge	[–2 to 2 / **0** / 1/step]

	Adjust the clarity. This setting is only applied to the originals in SP 4921 (☛Video Control Unit).
4930 1	Sharpness-Edge (Copy)
4930 2	Sharpness-Edge (Fax)
4930 3	Sharpness-Edge (Scanner)

4931*	Sharpness-Solid	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP 4921 (☛Video Control Unit).	
4931 1	Sharpness-Solid (Copy)	
4931 2	Sharpness-Solid (Fax)	
4931 3	Sharpness-Solid (Scanner)	

4932*	Sharpness-Low ID	[–2 to 2 / **0** / 1/step]
	Adjust the clarity. This setting is only applied to the originals in SP 4921 (☛Video Control Unit).	
4932 1	Sharpness- Low ID (Copy)	
4932 2	Sharpness- Low ID (Fax)	
4932 3	Sharpness- Low ID (Scanner)	

4941*	White Line Erase	[0 to 2 / **1** / 1/step]
4941 1	Selects the white line erase level (☛Video Control Unit). 0: None, 1: Weak, 2: Strong This setting is effective only Photo 1, Photo 3, Special 3 or Special 4 mode. 0: White line erase is not used, and white level correction is used instead. This setting is applied regardless of what mode has been selected in SP 4921.	

4942*	Black Line Erase	[0 to 3 / **2** / 1/step]
4942 1	Selects the black line erase level. This setting is effective only when originals are scanned by the A(R)DF (☛Video Control Unit).	

	[0 = No / 1 = Very weak / 2 = Weak / 3 = Strong] This setting is applied regardless of what mode has been selected in SP 4921.

SP5-XXX (Mode)

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

SSP **5044***	Operation Panel Bit Switch DFU

SSP **5104***	A3/DLT Double Count	[**0 = Enabled** / 1 = Disabled / 2 = Disabled if the size is undetected]
5104 1	Selects whether the machine counts twice for each sheet of A3/11"x 17". If this is set to "Yes" is selected, the total (mechanical) counter and the current user counter will both increment by two for each A3/11" x 17" sheet.	

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

5118*	Disable Copying DFU

5120*	Clr-OP Count Remv	[0=Yes / **1=Standby only** / 2=No]
5120 1	Determines under which conditions the copy job settings are reset when the key counter is removed. With 0, the settings are cleared if the counter is removed at the end of a job or midway through a job. With 1, they are only cleared if the counter is removed at the end of a job. With 2, they are not cleared at all, under either condition. With duplex copies, the job settings are always preserved, regardless of the setting of this SP mode.	

5121*	Count Up Timing	[**0 = Feed In** / 1 = Exit]

5121 1	Selects whether the key counter increments at time of paper feed-in or at time of paper exit.

5127*	APS Mode	[**0 = Enabled** / 1 = Disabled]
5127 1	Enables or disables the APS mode.	

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

5302*	Set Time	[-1440 to +1440 / **0** / 1 minute/step]
5302 2	Species the difference between your local time and GMT.	

5307*	Summer Time
5307 1	Summer Time On/Off
	Validates or invalidates the daylight-saving-time settings (SP 5307 3 and 4).
5307 3	Summer Time Start
	Specifies the start of the daylight saving time. SP 5307 1 validates SP 5307 3.
5307 4	Summer Time End
	Specifies the end of the daylight saving time. SP 5307 1 validates SP 5307 4.

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

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

5504*	Jam Alarm
5504 1	Sets the alarm to sound for the specified jam level (document misfeeds are not included). [0 to 3 / **3** / 1 step] 0: Zero (Off) 1:Low (2.5K jams) 2:Medium (3K jams) 3:High (6K jams)

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

5507*	Supply Alarm	
5507 1	Paper Supply Alarm	**0: Off**, 1: On, DFU
5507 3	Toner Supply Alarm	**0: Off**, 1: On, DFU
5507 128	Interval :Others	[00250 to 10000 / **1000** / 1 Step] DFU
5507 132	Interval :A3	
5507 133	Interval :A4	
5507 134	Interval :A5	
5507 141	Interval :B4	
5507 142	Interval :B5	
5507 160	Interval :DLT	
5507 164	Interval :LG	
5507 166	Interval :LT	
5507 172	Interval :HLT	

5508*	CC Call

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

5801	Memory Clear
5801 1	All Clear

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

5802	Machine Free Run
5802 1	Starts a free run of both the scanner and the printer. Press "ON" to start; press "OFF" to stop.

5803	Input Check
	(☛ Input Check)

5804	Output Check
	(☛ Output Check)

5807*	Area Selection
5807 1	Selects the display language group. 1 = Japan, 2 = North America' 3 = Europe, 4 = Taiwan, 5 = Asia, 6 = China, 7 = Korea SP 5807 1 is not cleared by SP 5801 1 and SP 5998 1 (☛ Memory Clear).

5810	SC Code Reset
5810 1	Resets all level-A service call conditions, such as fusing errors. If the reset is successful, the display shows "Completed." If the reset fails, an error message is displayed. (☛ Service Call Conditions)

5811*	Serial Num Input
5811 1	(☛ Serial Number)

5812*	Service TEL
5812 1	Service TEL (Telephone)
	Use this to input the telephone number of the service representative. (The number is displayed when a service call condition occurs.) To input a dash, press #. To delete the current telephone number, press 0.
5812 2	Service TEL (Facsimile)
	Use this to input the fax number printed on user counter reports. To input a dash, press #.. To delete the current fax number, press 0..

5816*	Remote Service	
5816 1	I/F Setting	[**0=Remote diagnostics off**/1=Serial (CSS or NRS) remote diagnostics on/2=Network remote diagnostics]
	Enables or disables the remote diagnostics function.	
5816 2	CE Call	
	Allows the customer representative to start or end the remote machine check using CSS or NRS by pressing the center report key.	
5816 3	Function Flag	[**0 = Disabled** / 1 = Enabled]
	Enables or disables remote diagnosis via the NRS network.	
5816 6	Device Information Call Display	[**0 = Disabled** / 1 = Enabled]
	Determines whether the device information call (NRS) is displayed.	
5816 7	SSL Disable	[**0 = Disabled** / 1 = Enabled]
	Determines whether the SSL sends the remote-communication-gate confirmation.	
5816 8	RCG Connect Timeout	[1 to 90 / **10** / 1 second/step]
	Sets the timer for the remote-communication-gate connection (NRS).	
5816 9	RCG Write to Timeout	[0 to 100 / **60** / 1 second/step]
	Sets the timer for writing data to the remote communication gate (NRS).	
5816 10	RCG Read Timeout	[0 to 100 / **60** / 1 second/step]
	Sets the timer for reading data from the remote communication gate (NRS).	
5816 11	Port 80 Enable	
	Determines whether permission is granted for access to the SOP via Port 80 (NRS).	

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

		[00000000h to FFFFFFFFh/ 00000000h /

5824	NVRAM Upload
5824 1	(☛ NVRAM Upload)

5825	NVRAM Download
5825 1	(☛ NVRAM Download)

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

SSP 5834	Operation Panel Image Exposure	[**0: Off (disabled)**/1: On (enabled)]
5834 1	Enables and disables the operation panel read (dump) feature. After powering on the machine, set this option to 1 to enable this feature. To reset the machine to 0, the machine must be turned off and on again. Selecting 0 for this option without cycling the power off and on does not restore the default setting (0).	

5839*	IEEE 1394	
5839 4	Host Name	Enter name
	Enter the name of the device used on the network. Example: RNP0000000000	

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

5839*	IEEE 1394	
	OFF: Disables. The exclusive login (LOGIN ORB exClusvie it) is ignored. ON: Enables. Exclusive login is in effect.	
5839 5839 13*	Login MAX	[0 to 63 / **8** / 1], (0 and 63: Reserved)
	Sets the maximum number of logins from the initiator (6-bits)	

5840*	IEEE 802.11b		
5840 4*	SSID	Enter ID	
	Enters a unique ID (up to 32 characters long) to identify the device when it is operating in an area with another wireless LAN network.		
5840 6*	Channel MAX	JA: [1 to 14/ **14** / 1] NA: [1 to 11 / **11** / 1 EU :[1 to 13 / **13** / 1] China, Taiwan (Same as NA)	
	Sets the maximum number of channels available for data transmission via the wireless LAN. The number of channels available varies according to location. The default settings are set for the maximum end of the range for each area. Adjust the upper 4 bits to set the maximum number of channels. Displayed only when the option 802.11b for wireless LAN is installed.		
5840 7*	Channel MIN	JA: [1 to 14 / **1** / 1] NA: [1 to 11 / **1** / 1 EU: [1 to 13 / **1** / 1] China, Taiwan (Same as NA)	
	Sets the minimum number of channels available for data transmission via the wireless LAN. The number of channels available varies according to location. The default settings are set for the minimum end of the range for each area. Adjust the lower 4 bits to set the minimum number of channels. Displayed only when the option 802.11b for wireless LAN is installed.		
5840 11*	WEP Key Select	00: Key #1	0000 0000
		01: Key #2 (Reserved)	0000 0001
		10: Key #3 (Reserved)	0000 0010

		11: Key #4 (Reserved)	0000 0011
	Selects the WEP key. [00 to 11 / 00 / 1 binary]		
5840 20*	WEP Mode	**0**: Max. 64-bit (10 characters) 1: Max. 128-bit (10, 26 characters)	
	Determines the operation mode of the WEP key. Displayed only when the option 801.11b for wireless LAN is installed.		

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

5843	Operation Panel Image Exposure	[**0: Off (disable)** / 1: On (enable)]
5843 1*	Enables and disables the operation panel read (dump) feature. After powering on the machine, set this option to 1 to enable this feature. To reset the machine to 0, the machine must be turned off and on again. Selecting 0 for this option without cycling the power off and on does not restore the default setting (0).	

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

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

	Bit3 = 1 Fax RX delivery function exists	
	Bit2 = 1 Sender password function exists	
	Bit1 = 1 Function to link MK-1 user and Sender exists	
	Bit0 = 1 Sender specification required (if set to 1, Bit6 is set to "0")	

5846*	UCS Settings		
5846 1*	Machine ID (For Delivery Server)		Displays ID
	Displays the unique device ID in use by the delivery server directory. The value is only displayed and cannot be changed. This ID is created from the NIC MAC or IEEE 1394 EUI. The ID is displayed as either 6-byle or 8-byte binary.		
5846 2*	Machine ID Clear (For Delivery Server)		Clears ID
	Clears the unique ID of the device used as the name in the file transfer directory. Execute this SP if the connection of the device to the delivery server is unstable. After clearing the ID, the ID will be established again automatically by cycling the machine off and on.		
5846 3*	Maximum Entries	[2000 to 50000 / **2000** /1]	
	Changes the maximum number of entries that UCS can handle. If a value smaller than the present value is set, the UCS managed data is cleared, and the data (excluding user code information) is displayed.		
5846 4*	Delivery Server Model	**0: Not used**, 1:SG1 Provided, 2: SG1 Package, 3: SG2 Provided 4: SG2 Package	
	Changes the model of the transfer server registered for the I/O device.		
5846 5*	Delivery Server Capability	Bit 7 = 1 Comment information Bit 6 = 1 Address direct entry possible Bit 5 = 1 Mail Rx confirmation possible Bit 4 = 1 Address book auto update Bit 3 = 1 Fax Rx function [0 to 255 / 0 / 2]	
	Changes the capability of the server registered for the I/O device.		
5846 6*	Delivery Server Retry Timer		[0 to 255 / **0** /1]

	Sets the interval for retry attempts when the delivery server fails to acquire the delivery server address book.	
5846 7*	Delivery Server Retry Times	[0 t o255 / **0** /1]
	Sets the number of retry attempts when the delivery server fails to acquire the delivery server address book.	
5846 8*	Delivery Server Maximum Entries	[2000 to 50000 / **2000** / 1]
	Sets the maximum number account entries of the delivery server user information managed by UCS.	
5846 50*	Initialize All Directory Info.	Clears all directory information managed by UCS, including all user codes.
5846 51*	Upload All Directory Info.	Uploads all directory information to the IC card.
5846 52*	Download All Directory Info.	Downloads all directory information from the IC card.
5846 80*	Backup FCU	Backs up all directory information to the FCU ROM.
5846 90*	Plain Data Forbidden	Allows you to prevent the address from plain data. This is a security function that prevents unauthorized access to address book data. 0: No check. Address book data not protected. 1: Check. Allows operation of UCS without data from SC card and without creating address book information with plain data.
SSP 5846 99*	Bit SW	Sets UCS debug output. DFU

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

5848 4*	User Directory (Lower 4 Bits)	Switches access control on and off. 0000: OFF
5848 5*	Delivery Input (Lower 4 Bits)	
5848 6*	Fax Control (Lower 4 Bits)	
5848 7*	Comm. Log Fax (Lower 4 Bits)	

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

5856	Remote ROM Update	[**0 = Not allowed** / 1 = Allowed]
5856 1	When set to "1" allows reception of firmware data via the local port (IEEE 1284) during a remote ROM update. This setting is reset to zero after the machine is cycled off and on.	

5857*	Debug Log Save Function	
5857 1*	On/Off (1:ON 0:OFF)	0: ON, 1: OFF
	Switches the debug log feature on and off. The debug log cannot be captured until this feature is switched on.	
5857 6	Save to SD Card	
	Specifies the decimal key number of the log to be written to the SD Card.	
5857 12	Erase Debug Data From SD Card	
	Erases all debug logs on the SD Card. If the card contains only debugging files generated by an event specified by SP5858, the files are erased when SP 5857 10 or 11 is executed. To enable this SP, the machine must be cycled off and on.	
5857 13	SD Card Space Available	
	Displays the amount of space available on the SD card.	
5857 14	SD to SD Latest	
	Copies the latest 4 -MB logs to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). The SP gives a unique name to the file newly saved file. You can save multiple logs from multiple machines in one SD card.	

5857 15	SD to SD Any
	Copies the specified log to the SD card. The logs are written under the /log directory (this SP does not copy data from the SD card in one slot to the SD card in the other slot). This SP copies 4-MB data at the maximum, and gives a unique name to the newly saved file. You can save multiple logs from multiple machines in one SD card.
5857 17	Make SD Debug File
	Makes a 4-MB file on the SD to save logs. The file stores the contents of key number 2225 of SCS (for example, the information of NV usage in SCS). A file is made in the SD when the first log is saved in the SD even if you do not execute this SP. This processing, however, takes a long time; the user may turn the main switch off and on before completion (the user see no message that indicates the completion of the logging when logs are made on the occurrence of an event). The logging takes a shorter time if you have made a log file beforehand. If you try to make a log file on the SD where another log file has been already made, the contents of key number 2225 is added to the log file in the SD card. In a case like this, a new log file is not made. To make a new log file to supersede an old log file, you must execute SP 5857 12 before executing this SP.

5858*	Debug Save When	
	These SPs select the content of the debugging information to be saved to the destination selected by SP 5857 2. SP 5858 3 stores one SC specified by number. Refer to Section 4 for a list of SC error codes.	
5858 1*	Engine SC Error	Stores SC codes generated by copier engine errors.
5858 2*	Controller SC Error	Stores SC codes generated by GW controller errors.
5858 3*	Any SC Error	[0 to 65535 / **0** / 1]
5858 4*	Jam	Stores jam errors.

5859*	Debug Log Save Function	[-9999999 to 9999999 / 0 / 1]
5859 1*	Key 1	These SPs allow you to set up to 10 keys for log files for functions that use common memory on the controller board.
5859 2*	Key 2	
5859 3*	Key 3	
5859 4*	Key 4	
5859 5*	Key 5	

5859 6*	Key 6	
5859 7*	Key 7	
5859 8*	Key 8	
5859 9*	Key 9	
5859 10*	Key 10	

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

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

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

5873	SD Card Application
5873 1	SD Card Application Transport
	Transports the application programs.

5873 2	SD Card Application Transport Redo
	Nullifies the processing of SP 5873 1.

5902	Test Pattern Print
5902 1	(☛ Test Pattern Print)

5907*	Plug & Play Setting
5907 1	Selects the brand name and production name for the Plug and Play function. These names are registered in the NVRAM. If the NVRAM becomes defective, these names should be re-registered. Use the right-arrow or left-arrow key to scroll through the list of brand names. To select a brand name, press the OK key. An asterisk (*) indicates which manufacture is currently selected. (☛ Memory Clear)

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

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

5918*	A3/DLT Counter Display	[**0 = Off** / 1 = On]
5918 1	Sets the key press display for the counter key. This setting has no relation to (SSP) SP5-104 A3/DLT Double Count.	

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

5974*	Cherry Server	**0: Lite**, 1: Full

5674 1	Switches writing between the Scan Router Lite application provided and the optional full (Professional) version.

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

5998	Memory Clear
5998 1	(☛ Memory Clear)

SP6-XXX (Peripherals)

6006	ADF Adjustment (☛ ADF Image Adjustment) NOTE: Available menus depend on the machine model and its configuration.	
6006 1	ADF Adjustment (StoS/Front Regist)	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]
	Adjusts the side-to-side registration for the front side of the original, for ADF mode. Use the ⊛ key to select "+" or "–" before entering the value	
6006 2	ADF Adjustment (Leading Regist)	[–5.0 to +5.0 / **0.0** / 0.1 mm/step]
	Adjusts the leading edge registration for ADF mode. Use the ⊛ key to select "+" or "–" before entering the value.	
6006 3	ADF Adjustment (Trailing Erase)	[–3.0 to +3.0 / **–1.0** / 0.1 mm/step]

	Adjusts the trailing edge erase margin for ADF mode. Use the * key to select "+" or "–" before entering the value.	
6006 4	ADF Adjustment (StoS/Rear Regist)	[–5.0 to +5.0 / **0.0** / 0.5 mm/step]
	Adjusts the side-to-side registration for the rear side of duplex originals, for ADF mode. Use the * key to select "+" or "–" before entering the value.	
6006 5	ADF Adjustment (Sub-scan Magnif)	[–0.9 to +0.9 / **0.0** / 0.1 %/step]
	Adjust the sub-scan magnification for the ADF.	
6006 6	ADF Adjustment (Original Curl Adj)	[**0 = No** / 1 = Yes]
	Enables or disables the skew adjustment for the reverse sides of originals. When you enable SP 6006 6, adjust the distance of the skew adjustment (SP 6006 7).	
6006 7	ADF Adjustment (Skew Correction)	[–20 to +20 / **0** / 1 mm/step]
	Specifies the distance of the skew adjustment. SP 6006 7 is effective when you enable SP 6006 6 (ADF Adjustment [Original Curl Adj]).	

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

6010	Stamp Position Adjustment	[–10 to +10 / **0** / 1 mm/step]
6010 1	Adjusts the stamp position in the sub-scan direction for the fax mode.	

6901	Display ADF–APS
6901 1	Displays the status of the ADF original size sensors (☛ ADF/APS Sensor Output Display).

6910	ADF Shading Time	[0 to 60 / **10** / 1 s/step]
6910 1	Adjusts the interval used for the shading processing in the ADF mode. Light and heat in the room may affect the scanner response. Reduce this setting if copy quality indicates that the white level is drifting during ADF copy jobs.	

SP7-XXX (Data Log)

7001	Total Operation

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

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

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

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

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

7504*	Counter-Each P Jam	
	Displays the total number of the paper jams classified by timing and location.	[0 to 9999 / **0** / 1/step]
7504 1	Counter-Each P Jam (At power on)	
	Paper jam occurs at power on.	

7504 10	Counter-Each P Jam (Off-Regist NoFeed)
	Paper does not reach the registration sensor (from a paper tray).
7504 11	Counter-Each P Jam (Off-1 Vertical SN)
	Paper does not reach the relay sensor.
7504 12	Counter-Each P Jam (On-1 Vertical SN)
	Paper is caught at the relay sensor.
7504 21	Counter-Each P Jam (Off-2 Vertical SN)
	Paper does not reach the vertical transport sensor.
7504 22	Counter-Each P Jam (On-2 Vertical SN)
	Paper is caught at the vertical transport sensor.
7504 31	Counter Each P Jam (Off-3 Vertical SN)
	Paper does not reach the vertical transport sensor in the optional paper feed unit.
7504 32	Counter Each P Jam (On-3 Vertical SN)
	Paper is caught at the vertical transport sensor in the optional paper feed unit.
7504 50	Counter-Each P Jam (Off-Regist Bypass)
	Paper does not reach the registration sensor (from the by-pass tray).
7504 60	Counter-Each P Jam (Off-Regist Duplex)
	Paper does not reach the registration sensor during reverse-side printing (for duplex printing).
7504 70	Counter-Each P Jam (On-Regist SN)
	Paper is caught at the registration sensor.
7504 120	Counter-Each P Jam (On-Exit SN)
	Paper is caught at the exit sensor (previous page).
7504 121	Counter-Each P Jam (Off-Exit SN)
	Paper does not reach the exit sensor.
7504 122	Counter-Each P Jam (On-Exit SN)

	Paper is caught at the exit sensor.
7504 123	Counter-Each P Jam (Off-Dup Inverter)
	Paper does not reach the duplex inverter sensor (from the registration roller).
7504 125	Counter-Each P Jam (On-Dup Inverter)
	Paper is caught at the duplex inverter sensor.
7504 126	Counter-Each P Jam (Off-Dup Entrance)
	Paper does not reach the duplex entrance sensor.
7504 127	Counter-Each P Jam (Off-Dup Entrance)
	Paper is caught at the duplex entrance sensor.
7504 128	Counter-Each P Jam (Off-Duplex Exit)
	Paper does not reach the duplex exit sensor.
7504 129	Counter-Each P Jam (On-Duplex Exit)
	Paper is caught at the duplex exit sensor.
7504 130	Counter-Each P Jam (Off-1 bin Exit SN)
	Paper does not reach the one-bin tray.
7504 131	Counter-Each P Jam (On-1 bin Exit SN)
	Paper is caught at the one-bin tray.

7505*	Counter-Each O Jam	[0 to 9999 / **0** / 1/step]
	Displays the total number of the original jams on the ADF that have occurred at a certain timing or at a certain location.	
7505 1	Counter-Each O Jam (at Power On)	
	The original jam occurs during the standby mode.	
7505 210	Counter-Each O Jam (Off-Regist SN)	
	The original does not reach the registration sensor.	
7505 211	Counter-Each O Jam (On-Regist SN)	

	The original is caught at the registration sensor.
7505 212	Counter-Each O Jam (Off-Relay SN)
	The original does not reach the exit sensor.
7505 213	Counter-Each O Jam (On-Relay SN)
	The original is caught at the exit sensor.
7505 214	Counter-Each O Jam (Off-Inverter SN)
	The original does not reach the reverse sensor.
7505 215	Counter-Each O Jam (On Inverter SN)
	The original is caught at the reverse sensor.

7506*	Counter-Each P Jam	
	Displays the total number of the paper jams classified by the paper sizes.	[0 to 9999 / **0** / 1/step]
7506 5	Counter-Each P Jam (A4 LEF)	
7506 6	Counter-Each P Jam (A5 LEF)	
7506 14	Counter-Each P Jam (B5 LEF)	
7506 38	Counter-Each P Jam (LT LEF)	
7506 44	Counter-Each P Jam (HLT LEF)	
7506 132	Counter-Each P Jam (A3 SEF)	
7506 133	Counter-Each P Jam (A4 SEF)	
7506 134	Counter-Each P Jam (A5 SEF)	
7506 141	Counter-Each P Jam (B4 SEF)	
7506 142	Counter-Each P Jam (B5 SEF)	
7506 160	Counter-Each P Jam (DLT SEF)	
7506 164	Counter-Each P Jam (LG SEF)	
7506 166	Counter-Each P Jam (LT SEF)	

7506 172	Counter-Each P Jam (HLT SEF)
7506 255	Counter-Each P Jam (Other)

7507*	Dsply-P Jam Hist
7507 1	Displays the latest 10 paper-jam history. The list below shows the possible 22 codes: 1, 10, 11, 12, 21, 22, 31, 32, 50, 60 70, 120, 121, 122, 123, 125, 126, 127, 128, 129 130, 131 The codes correspond to the menus of SP 7504. For example, the code 1 corresponds to SP 7504 1, and the code 10 corresponds to SP 7504 10.

7508*	Dsply-O Jam Hist
7508 1	Displays the total number of the original-jams history. The list below shows the possible seven codes: 210, 211, 212, 213, 214, 215 The codes correspond to the menus of SP7-505. For example, the code 210 corresponds to SP 7505 210, and the code 211 corresponds to SP 7505 211.

7801	Memory/Version/PN
7801 255	Memory/Version (ADF ROM)
	Displays the serial number and the version of the BICU and the serial number and version of the ADF software.

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

7804	Reset–PM Counter
7804 1	Resets the PM counter (SP 7803 1). When the program ends normally, the message "Completed" is displayed.

7807	Reset–SC/Jam Counters

7807 1	Resets the SC, paper, original, and total jam counters. When the program ends normally, the message "Completed" is displayed. SP 7807 1 does not reset the following logs: SP 7507 (Display-Paper Jam History) and SP 7508 (Display-Original Jam History).

7808	Reset–Counters
7808 1	Resets all counters except for the management counters. The management counters are the counters that are not changed by NVRAM Download (SP 5825 1; ☛). When the program ends normally, the message the message "Completed" is displayed.

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

7826*	MF Device Error Count	For Japan Only

7827	MF Device Error Count Clear	For Japan Only

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

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

7991	Dsply–Info Count

	Displays the total operating time or the total number of operations. The time is displayed in the following format: day:hour:minute:second.
7991 2	Dsply–Info Count (Dsply-APS Working)
	The total of the time when the APS is working.
7991 3	Dsply-Info Count (Dsply-ID S Work)
	The total of the time when the ID sensor is working.
7991 4	Dsply-Info Count (Dsply-Dev Counter)
	The total number of paper outputs.
7991 5	Dsply-Info Count (Dsply-ID Er Count)
	The total number of ID-sensor errors.

7992	Reset–Info Count
7992 5	Reset-Info Count (Reset-ID Er Count)
	Clears the counter of SP 7991 5.

SP8-XXX (History)

8191*	T: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8191 1	Displays the total number of scanned originals. The both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

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

8193*	F: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8193 1	Displays the total number of scanned originals. The both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.	

8195*	S: Total Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]

8195 1	Displays the total number of scanned originals. The both sides are counted when the front and reverse sides of an original (fed from the ADF) are scanned.

8201*	T: L Size Scan PGS	[0 to 9999999 / **0** / 1 sheet/step]
8201 1	Displays the total number of scanned originals (by copying jobs and scanning jobs) classified by paper size. The following size is counted: A3/DLT and larger.	

8205*	S: L Size Scan PGS (A3/DLT, Larger)	[0 to 9999999 / **0** / 1 sheet/step]
8205 1	Displays the total number of scanned originals (by scanning jobs) classified by paper size. The following size is counted: A3/DLT and larger.	

8221*	ADF Org Feed	[0 to 9999999 / **0** / 1 sheet/step]
8221 1	ADF Org Feed (Front)	
	Displays the total number of scanned front sides of originals fed from the ADF.	
8221 2	ADF Org Feed (Back)	
	Displays the total number of scanned reverse sides of originals fed from the ADF.	

8291*	T: Scan PGS/TWAIN	[0 to 9999999 / **0** / 1 sheet/step]
8291 1	Displays the total number of sheets stamped by the ADF in fax jobs and scanning jobs.	

8293*	F: Scan PGS/TWAIN	[0 to 9999999 / **0** / 1 sheet/step]
8293 1	Displays the total number of sheets stamped by the ADF in fax jobs.	

8295*	S: Scan PGS/TWAIN	[0 to 9999999 / **0** / 1 sheet/step]
8295 1	Displays the total number of sheets stamped by the ADF in scanning jobs.	

8301*	T: Scan PGS/Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages scanned by all application programs.	
8301 1	A3	
8301 2	A4	

8301 3	A5
8301 4	B4
8301 5	B5
8301 6	DLT
8301 7	LG
8301 8	LT
8301 9	HLT
8301 10	Full Bleed
8301 254	Other (Standard)
8301 255	Other (Custom)

8302*	Counter–Paper Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages scanned by the copier application program.	
8302 1	A3	
8302 2	A4	
8302 3	A5	
8302 4	B4	
8302 5	B5	
8302 6	DLT	
8302 7	LG	
8302 8	LT	
8302 9	HLT	
8301 10	Full Bleed	
8302 254	Other (standard size)	
8302 255	Other (custom size)	

8303*	T: Scan PGS/Size	[0 to 9999999 / **0** / 1 sheet/step]

	Displays the total number of pages scanned by the fax application program.
8303 1	A3
8303 2	A4
8303 3	A5
8303 4	B4
8303 5	B5
8303 6	DLT
8303 7	LG
8303 8	LT
8303 9	HLT
8301 10	Full Bleed
8303 254	Other (Standard)
8303 255	Other (Custom)

8305*	T: Scan PGS/Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages scanned by all application programs.	
8305 1	A3	
8305 2	A4	
8305 3	A5	
8305 4	B4	
8305 5	B5	
8305 6	DLT	
8305 7	LG	
8305 8	LT	
8305 9	HLT	
8301 10	Full Bleed	

8305 254	Other (Standard)
8305 255	Other (Custom)

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

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

8383*	F: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8383 1	Displays the print count of the fax application program.	

8384*	P: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8384 1	Displays the print count of the printer application program.	

8385*	S: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8385 1	Displays the print count of the scanner application program.	

8387*	O: Total Prt PGS	[0 to 9999999 / **0** / 1 sheet/step]
8387 1	Displays the print count of application programs other than copier, fax, printer, or scanner programs (such as external application programs).	

8391*	L size Prt PGS (A3/DLT, Larger)	[0 to 9999999 / **0** / 1 sheet/step]
8391 1	Displays the print count of the AS/DLT size and larger paper.	

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

8421*	T: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages processed for printing. This is the total for all application programs.	

8421 1	Simplex > Duplex
8421 2	Duplex > Duplex
8421 3	Book > Duplex
8421 4	Simplex Combine
8421 5	Duplex Combine
8421 6	2 >
8421 7	4 >
8421 8	6 >
8421 9	8 >
8421 10	9 >
8421 11	16 >
8421 12	Booklet
8421 13	Magazine

8422*	C: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages processed for printing by the copier application program.	
8422 1	Simplex > Duplex	
8422 2	Duplex > Duplex	
8422 3	Book > Duplex	
8422 4	Simplex Combine	
8422 5	Duplex Combine	
8422 6	2 >	
8422 7	4 >	
8422 8	6 >	
8422 9	8 >	

8422 10	9 >
8422 11	16 >
8422 12	Booklet
8422 13	Magazine

8423*	F: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages processed for printing by the fax application program.	
8423 1	Simplex > Duplex	
8423 2	Duplex > Duplex	
8423 3	Book > Duplex	
8423 4	Simplex Combine	
8423 5	Duplex Combine	
8423 6	2 >	
8423 7	4 >	
8423 8	6 >	
8423 9	8 >	
8423 10	9 >	
8423 11	16 >	
8423 12	Booklet	
8423 13	Magazine	

8424*	P: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages processed for printing by the printer application program.	
8424 1	Simplex > Duplex	
8424 2	Duplex > Duplex	
8424 3	Book > Duplex	

8424 4	Simplex Combine
8424 5	Duplex Combine
8424 6	2 >
8424 7	4 >
8424 8	6 >
8424 9	8 >
8424 10	9 >
8424 11	16 >
8424 12	Booklet
8424 13	Magazine

8425*	S: PrtPGS/Dup Comb	[0 to 9999999 / 0 / 1 sheet/step]
	Displays the total number of pages processed for printing by the scanner application program.	
8425 1	Simplex > Duplex	
8425 2	Duplex > Duplex	
8425 3	Book > Duplex	
8425 4	Simplex Combine	
8425 5	Duplex Combine	
8425 6	2 >	
8425 7	4 >	
8425 8	6 >	
8425 9	8 >	
8425 10	9 >	
8425 11	16 >	
8525 12	Booklet	

8426 13	Magazine

8427*	O: PrtPGS/Dup Comb	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages processed for printing by other application programs.	
8427 1	Simplex > Duplex	
8427 2	Duplex > Duplex	
8427 3	Book > Duplex	
8427 4	Simplex Combine	
8427 5	Duplex Combine	
8427 6	2 >	
8427 7	4 >	
8427 8	6 >	
8427 9	8 >	
8427 10	9 >	
8427 11	16 >	
8427 12	Booklet	
8427 13	Magazine	

8441*	T: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size. This is the total for all application programs.	
8441 1	T: PrtPGS/Ppr Size (A3)	
8441 2	T: PrtPGS/Ppr Size (A4)	
8441 3	T: PrtPGS/Ppr Size (A5)	
8441 4	T: PrtPGS/Ppr Size (B4)	
8441 5	T: PrtPGS/Ppr Size (B5)	
8441 6	T: PrtPGS/Ppr Size (DLT)	

8441 7	T: PrtPGS/Ppr Size (LG)
8441 8	T: PrtPGS/Ppr Size (LT)
8441 9	T: PrtPGS/Ppr Size (HLT)
8441 10	T: PrtPGS/Ppr SIze (Full Bleed)
8441 254	T: PrtPGS/Ppr Size (Other (Standard))
8441 255	T: PrtPGS/Ppr Size (Other (Custom))

8442*	C: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the copier application program.	
8442 1	C: PrtPGS/Ppr Size (A3)	
8442 2	C: PrtPGS/Ppr Size (A4)	
8442 3	C: PrtPGS/Ppr Size (A5)	
8442 4	C: PrtPGS/Ppr Size (B4)	
8442 5	C: PrtPGS/Ppr Size (B5)	
8442 6	C: PrtPGS/Ppr Size (DLT)	
8442 7	C: PrtPGS/Ppr Size (LG)	
8442 8	C: PrtPGS/Ppr Size (LT)	
8442 9	C: PrtPGS/Ppr Size (HLT)	
8442 10	C: PrtPGS/Ppr SIze (Full Bleed)	
8442 254	C: PrtPGS/Ppr Size (Other (Standard))	
8442 255	C: PrtPGS/Ppr Size (Other (Custom))	

8443*	F: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the fax application program.	
8443 1	F: PrtPGS/Ppr Size (A3)	
8443 2	F: PrtPGS/Ppr Size (A4)	
8443 3	F: PrtPGS/Ppr Size (A5)	

8443 4	F: PrtPGS/Ppr Size (B4)
8443 5	F: PrtPGS/Ppr Size (B5)
8443 6	F: PrtPGS/Ppr Size (DLT)
8443 7	F: PrtPGS/Ppr Size (LG)
8443 8	F: PrtPGS/Ppr Size (LT)
8443 9	F: PrtPGS/Ppr Size (HLT)
8443 10	F: PrtPGS/Ppr SIze (Full Bleed)
8443 254	F: PrtPGS/Ppr Size (Other (Standard))
8443 255	F: PrtPGS/Ppr Size (Other (Custom))

8444*	P: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the printer application program.	
8444 1	P: PrtPGS/Ppr Size (A3)	
8444 2	P: PrtPGS/Ppr Size (A4)	
8444 3	P: PrtPGS/Ppr Size (A5)	
8444 4	P: PrtPGS/Ppr Size (B4)	
8444 5	P: PrtPGS/Ppr Size (B5)	
8444 6	P: PrtPGS/Ppr Size (DLT)	
8444 7	P: PrtPGS/Ppr Size (LG)	
8444 8	P: PrtPGS/Ppr Size (LT)	
8444 9	P: PrtPGS/Ppr Size (HLT)	
8444 10	P: PrtPGS/Ppr SIze (Full Bleed)	
8444 254	P: PrtPGS/Ppr Size (Other (Standard))	
8444 255	P: PrtPGS/Ppr Size (Other (Custom))	

8445*	S: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the scanner application program.	

8445 1	S: PrtPGS/Ppr Size (A3)
8445 2	S: PrtPGS/Ppr Size (A4)
8445 3	S: PrtPGS/Ppr Size (A5)
8445 4	S: PrtPGS/Ppr Size (B4)
8445 5	S: PrtPGS/Ppr Size (B5)
8445 6	S: PrtPGS/Ppr Size (DLT)
8445 7	S: PrtPGS/Ppr Size (LG)
8445 8	S: PrtPGS/Ppr Size (LT)
8445 9	S: PrtPGS/Ppr Size (HLT)
8445 10	S: PrtPGS/Ppr SIze (Full Bleed)
8445 254	S: PrtPGS/Ppr Size (Other (Standard))
8445 255	S: PrtPGS/Ppr Size (Other (Custom))

8447*	O: PrtPGS/Ppr Size	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the number of pages printed by the scanner application program.	
8447 1	O: PrtPGS/Ppr Size (A3)	
8447 2	O: PrtPGS/Ppr Size (A4)	
8447 3	O: PrtPGS/Ppr Size (A5)	
8447 4	O: PrtPGS/Ppr Size (B4)	
8447 5	O: PrtPGS/Ppr Size (B5)	
8447 6	O: PrtPGS/Ppr Size (DLT)	
8447 7	O: PrtPGS/Ppr Size (LG)	
8447 8	O: PrtPGS/Ppr Size (LT)	
8447 9	O: PrtPGS/Ppr Size (HLT)	
8447 10	O: PrtPGS/Ppr SIze (Full Bleed)	
8447 254	O: PrtPGS/Ppr Size (Other (Standard))	

8447 255	O: PrtPGS/Ppr Size (Other (Custom))

8451*	C: PrtPGS/Ppr Tray	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper source.	
8451 1	C: PrtPGS/Ppr Tray (Bypass Tray)	
8451 2	C: PrtPGS/Ppr Size (Tray 1)	
8451 3	C: PrtPGS/Ppr Size (Tray 2)	
8451 4	C: PrtPGS/Ppr Size (Tray 3)	
8451 5	C: PrtPGS/Ppr Size (Tray 4)	

8461*	T: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total print count classified by paper size. This is the total for all application programs.	
8461 1	Normal	
8461 2	Recycled	
8461 3	Special	
8461 4	Thick	
8461 5	Normal (Back)	
8461 6	Thick (Back)	
8461 7	OHP	
8461 8	Other	

8462*	C: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages printed by the copier application program.	
8462 1	Normal	
8462 2	Recycled	
8462 3	Special	

8462 4	Thick
8462 5	Normal (Back)
8462 6	Thick (Back)
8462 7	OHP
8462 8	Other

8463*	F: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages printed by the fax application program.	
8463 1	Normal	
8463 2	Recycled	
8463 3	Special	
8463 4	Thick	
8463 5	Normal (Back)	
8463 6	Thick (Back)	
8463 7	OHP	
8463 8	Other	

8464*	P: PrtPGS/Ppr Type	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total number of pages printed by the fax application program.	
8464 1	Normal	
8464 2	Recycled	
8464 3	Special	
8464 4	Thick	
8464 5	Normal (Back)	
8464 6	Thick (Back)	
8464 7	OHP	
8464 8	Other	

8521*	T:PrtPGS/FIN	[0 to 9999999 / **0** / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.	
8521 1	Sort	
8521 2	Stack	
8521 3	Staple	
8521 4	Booklet	
8521 5	Z-Fold	
8521 6	Punch	
8521 7	Other	

8522*	C:PrtPGS/FIN	[0 to 9999999 / **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.	
8522 1	Sort	
8522 2	Stack	
8522 3	Staple	
8522 4	Booklet	
8522 5	Z-Fold	
8522 6	Punch	
8522 7	Other	

8523*	F:PrtPGS/FIN	[0 to 9999999 / **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Fax application. **Note:** Print finishing options for received faxes are currently not available.	
8523 1	Sort	
8523 2	Stack	

8523 3	Staple
8523 4	Booklet
8523 5	Z-Fold
8523 6	Punch
8523 7	Other

8524*	P:PrtPGS/FIN	[0 to 9999999 / **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.	
8524 1	Sort	
8524 2	Stack	
8524 3	Staple	
8524 4	Booklet	
8524 5	Z-Fold	
8524 6	Punch	
8524 7	Other	

8525*	S:PrtPGS/FIN	[0 to 9999999 / **0** / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.	
8525 1	Sort	
8525 2	Stack	
8525 3	Staple	
8525 4	Booklet	
8525 5	Z-Fold	
8525 6	Punch	
8525 7	Other	

8771	Dev Counter	[0 to 9999999 / **0** / 1]
8771 1	Counts the frequency of use (number of rotations of the development rollers) for black and other color toners. Note: For machines that do not support color, the Black toner count is the same as the Total count.	

8801	Toner Remain	[0 to 100 / **0** / 1]
8801 1	This SP displays the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time. Note: This precise method of measuring remaining toner supply (1% steps) is better than other machines in the market that can only measure in increments of 10 (10% steps). This SP is expanded for color MFP and color LP machines. For this machine, the count is done for black only.	

8941*	Machine Status	[0 to 9999999 / **0** / 1 sheet/step]
	Displays the total operating time classified by machine status. The time is displayed in the following format: day:hour:minute:second.	
8941 1	Operation Time	
	The total time when the engine is operating.	
8941 2	Standby Time	
	The total time when the machine is in the standby mode.	
8941 3	Energy Save Time	
	The total time when the machine is in the energy saver mode.	
8941 4	Low Power Time	
	The total time when the machine is in the low power mode.	
8941 5	Off Mode Time	
	The total time when the machine is executing background printing.	
8941 6	Down Time/SC	
	The total waiting time due to SC occurrences.	

8941 7	Down Time/Print Jam
	The total waiting time due to printing-paper jams.
8941 8	Down Time/Original Jam
	The total waiting time due to original jams.
8941 9	Down Time/Toner End
	The total waiting time due to toner ends.

SP9-XXX (Etc.)

9801*	DCS Debug	
9801 1	Common	Specifies the DCS debug output format. bit 0: Time (Time is added on each line of logs) bit 1: Millisecond (Millisecond is added to time.) bit 2: Colored (Text and background is colored.) bit 3: Return code (The return code is added at line ends.) bit 4: Indentation (Text data is indented.) bit 5: Not used bit 6: Not used bit 7: Not used
9801 2	IFC	Specifies the DCS IFC module debug output. bit 0: Client event transfer log bit 1: UCS event transfer log bit 2: DCS internal event (inter-module event in DCS) transfer log bit 3: Parameter data bit 4: Process flow log bit 5: Detailed process flow log bit 6: Not used bit 7: Not used
9801 3	SMM	Specifies the DCS SMM module debug output. bit 0: SCS event transfer log

		bit 1: DCS internal event (inter-module event in DCS) transfer log bit 2: Parameter data bit 3: Process flow log bit 4: Detailed process flow log bit 5: SP read-/write-related event transfer log bit 6 SP read-/write-related event parameter log bit 7: Not used
9801 4	SJM/RJM	Specifies the DCS SJM/RJM module debug output. bit 0: SJM: IFC/DSS event transfer log bit 1: SJM: Parameter data bit 2: SJM: Process flow log bit 3: SJM: Detailed process flow log bit 4: SJM: MCS event (RPC) log bit 5: RJM: Event transfer log bit 6: RJM: Parameter data bit 7: RJM: Process flow check
9801 5	DSS	Specifies the DCS DSS module debug output. bit 0: DCS internal event (inter-module event in DCS) transfer log bit 1: MCS/NAS (internal module) event log bit 2: Parameter data bit 3: Time check bit 4: Process flow check log bit 5: Error check bit 6: Initial values bit 7: Temporary check
9801 6	MRS	Specifies the DCS MRS module debug output. bit 0: DCS internal event (inter-module event in DCS) transfer log bit 1: NCS library call log bit 2: Event transfer in the internal thread for NCS bit 3: Not used bit 4: Not used bit 5: Process flow check log

		bit 6: Detailed process flow check log bit 7: Not used
9801 7	NAS	Specifies the DCS NAS module debug output. bit 0: Parameter data bit 1: DCS internal event (inter-module event in DCS) transfer log bit 2: NCS (general) library call log bit 3: NCS (SMB client) library call log bit 4: NCS (FTP client) library call log bit 5: NCS (SMTP client) library call log bit 6: Time check bit 7: Not used

Printer Service Mode

Service Program Table

SP No.	Description	Function and Setting
1001	BitSw#1 Set	Adjusts bit switch settings. **Note:** Currently the bit switches are not being used.
1003	Clear Setting	Not used
1004	Print Summary	Prints the service summary sheet (An error log is printed in addition to the configuration page).
1005	Display Version	Displays the version of the controller firmware.

Scanner Service Mode

Service Program Table

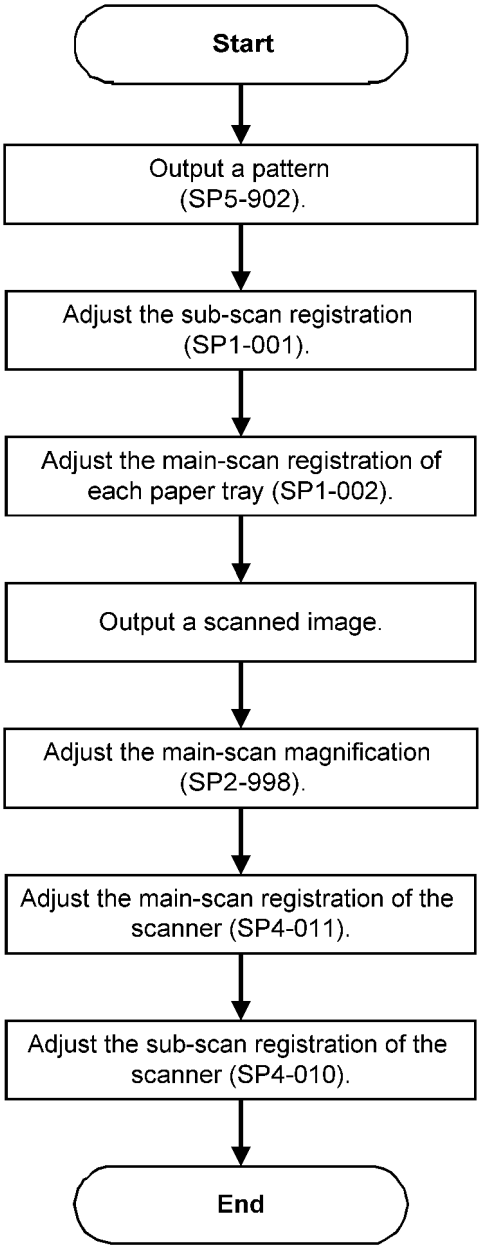
SP1	Mode Number		Function and [Setting]
1004*	1	Compression Type	Selects the compression type for binary picture processing.

			[1: MH, 2: MR, **3: MMR**]
1005*	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 mm** / 1 mm step]

Using SP Modes

Adjusting Registration and Magnification

To adjust the registration and magnification, you need to use several service programs. The chart shows an example of the procedure to adjust the machine in the basic configuration.



ID Sensor Error Analysis (SP 2221)

The image quality may become very bad when the ID sensor does not operate properly. However, there is no such SC code that indicates ID-sensor malfunction; instead, SP 2221 shows you some information on the ID sensor. Check this information when the image quality is not very good.

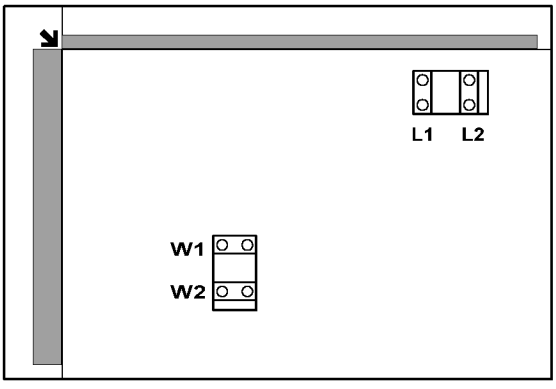
The table lists the information shown with SP 2221 (ID Sensor Error Analysis).

SP	Error condition	Possible cause	Remarks
SP 2221 1 Vsg (VG in the display)	Vsg < 2.5V or (Vsg – Vsp) < 1.00V	• ID sensor defective • ID sensor dirty • Drum not charged	
SP 2221 2 Vsp (VP in the display)	Vsp > 2.5V or (Vsg – Vsp) < 1.00V	• Toner density very low • ID sensor pattern not created	
SP 2221 3 Power (PW in the display)	Vsg < 3.5V when maximum power (979) is applied	• ID sensor defective • ID sensor dirty • Drum not get charged	Power source for the ID-sensor light
SP 2221 4 Vsdp	No Error Conditions		
SP 2221 5 Vt	Vt > 4.5V or Vt < 0.2V	• TD sensor defective	
SP 2221 6 Vts			

Display APS Data (SP 4301 1)

- Sensor Positions -

The APS (auto paper select) sensors are arranged as shown in the diagram.



- Reading the Data -

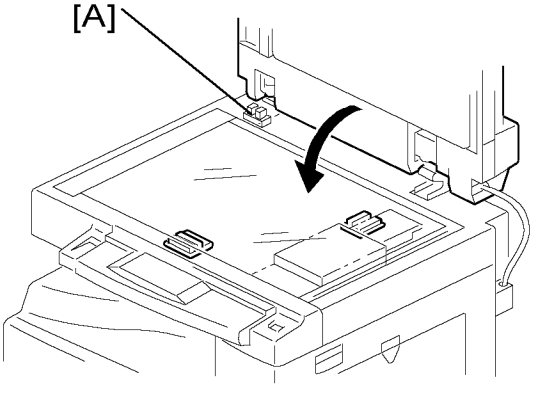
Example 1	Example 2
• Paper Size: 11000000 $8^1/_2$x13 ▭ • DF Open: 1	• Paper Size: 00110000 A4 ▯ • DF Open: 0

Example 1 indicates that the paper size and its orientation is "$8^1/_2$ x 13 SEF," and that the document feeder (or platen cover) is open. Example 2 indicates that the paper size and its orientation is "A4 LEF," and that the document feeder (or platen cover) is closed.

The "Paper Size" data starts with eight digits. The first digit indicates the output of L2; the second digit, L1; the third digit, W2; and the fourth digit, W1. The other four digits (from the fifth through the eighth) are always "0000." In Example 1, the APS sensors L2 and L1 detect paper (W2 and W1 do not).

In Example 2, APS sensors W2 and W1 detect paper (L2 and L1 do not). The paper size and its orientation is based on the outputs of these four APS sensors.

The "DF Open" data shows "1" or "0," indicating if the document feeder (or platen cover) is open or closed respectively. The data is based on the output of the platen cover sensor [A].



Memory Clear

This machine stores the engine data in the NVRAM on the BICU, and stores the other data in the NVRAM on the controller. To distinguish between the engine data and the other data, see SP 5801 3 through 15. This service program (SP 5801) handles the controller data. Any data that is not handled by SP 5801 is the engine data. The data in the BICU NVRAM (engine data) is cleared by SP 5998 1 while the data in the controller NVRAM (controller data) is cleared by SP 5801-xxx (for exceptions, see "").

Machine	Data	NVRAM	Cleared by	Remarks
Copier	Engine data	BICU	SP 5998 1	Any data other than controller data
	Controller data	Controller	SP 5801-xxx	SCS, IMH, MCS, Copier application, Fax application, Printer application, Scanner application, Web service/network application, NCS, R-Fax, DCS, UCS

- Exceptions -

SP 5998 1 clears most of the settings and counters stored in the NVRAM on the BICU (the values return to their default values). However, the following settings are not cleared:

- SP 5807 (Area Selection)
- SP 5811 1 (Serial Num Input [Code Set])
- SP 5811 3 (Serial Num Input [ID2 Code Display])
- SP 5812 1 (Service TEL [Telephone])
- SP 5812 2 (Service TEL [Facsimile])
- SP 5907 (Plug & Play)
- SP 7 (Data Log)
- SP 8 (History)

Use SP 5998 1 after you have replaced the BICU NVRAM or when the BICU NVRAM data is corrupted. When the program ends normally, the message "Completed" is displayed. When you have replaced the controller NVRAM or when the controller NVRAM data is corrupted, use SP 5801 1.

- Without Flash Memory Card -

1. Print out all SMC data lists (☛SMC Print).
2. Select SP 5998 1.
3. Press the OK key.
4. Select "Execute." The messages "Execute?" followed by "Cancel" and "Execute" are displayed.
5. Select "Execute."
6. When the program has ended normally, the message "Completed" is displayed. If the program has ended abnormally, an error message is displayed.
7. Turn the main switch off and on.
8. Adjust the printer and scanner registration and magnification (☛ Copy Adjustments).
9. Refer to the SMC lists, and enter any values that differ from the factory settings. Double-check the values for SP 4901.
10. Adjust the standard white level (SP 4428).
11. Initialize the TD sensor (SP 2214).
12. Check the copy quality and the paper path.

Input Check (SP 5803)

- Conducting an Input Check -

1. Select SP 5803.
2. Select the number (see the table below) corresponding to the component.
3. Select "Execute." The copy mode is activated.
4. The sign "01H" or "00H" is displayed (see the table below).

- Input Check Table -

Num.	Sensor/Switch	01H	00H
001	Safety SW	Open	Closed
002	Safety SW-LD 5V	Open	Closed
003	Right Cover SW	Open	Closed
004	Right Low Cover SW	Open	Closed
005	Tray Cover SW	Open	Closed
006	Upper Relay S	Paper detected	Not detected

Num.	Sensor/Switch	01H	00H
007	Lower Relay S	Paper detected	Not detected
008	Vertical Trans S	Paper detected	Not detected
009	Registration Sensor	Paper detected	Not detected
010	Exit Sensor	Paper detected	Not detected
011	Duplex Inverter S	Paper detected	Not detected
012	Duplex Entrance S	Paper detected	Not detected
013	Duplex Exit S	Paper detected	Not detected
014	By-pass PE S	Paper detected	Not detected
015	By-pass P Size S	*1	
016	Upper PE S	Paper detected	Not detected
017	Lower PE S	Paper detected	Not detected
018	Upper P Size SW	*1	
019	Lower P Size SW	*1	
020	BK-Upper Paper End S	Paper detected	Not detected
021	BK-Lower Paper End S	Paper detected	Not detected
022	BK-Up P Size SW	*1	
023	BK-Low P Size SW	*1	
024	BK-Up P Height S	*2	
025	BK-Low P Height S	*2	
026	BK-Upper Lift S	At upper limit	Not at upper limit
028	BK type	*3	
030	Duplex Installed	Installed	Not installed
031	Lower Lift S	At upper limit	Not at upper limit
032	Main M Lock	Locked	Not locked
033	Polygon M Lock	Locked	Not locked

Num.	Sensor/Switch	01H	00H
034	BK-Lift M Lock	Locked	Not locked
035	Total CO Install	Installed	Not installed
036	Key CO Install	Installed	Not installed
037	L-Synchronization	Detected	Not detected
038	DF-Position S	Detected	Not detected
039	DF-Cover Open S	Detected	Not detected
040	DF-Original Set S	Detected	Not detected
041	DF-Registration S	Detected	Not detected
042	DF-Exit S	Detected	Not detected
043	DF-Trailing S	Detected	Not detected
044	DF-Reverse S	Detected	Not detected
045	Platen Cover S	Open	Closed
046	1 bin Installed	Installed	Not installed
047	1 bin Exit S	Paper detected	Not detected
048	1 bin Paper S	Paper detected	Not detected
049	1 bin Tray S	Open	Closed
050	Fan Motor Lock	High speed	Not high speed
051	2 Tray BK Install	Installed	Not installed
053	HP Sensor	Detected	Not detected
054	Duplex Fan M Lock	Locked	Not locked

Note

- *1 Paper Size

Copier	00	01	02	03	04	05	06	07
Europe	Not set	A4 LEF	8Hx13 SEF	A4 SEF	A5 LEF	LT LEF	--	A3 SEF
North America	Not set	A4 LEF	8Hx13 SEF	LT SEF	LG SEF	LT LEF	--	DLT SEF
China	Not set	A4 LEF	B5 LEF	A4 SEF	A5 LEF	B4 SEF	--	A3 SEF

-

Paper Feed Unit	00	01	03	04	05	0A	0C	0E	0F
Europe	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF
North America	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF
China	Not set	LT SEF	LG SEF	A4 LEF	--	DLT SEF	A4 SEF	LT LEF	A3 SEF

-

By-Pass Tray	04	0C	08	00	01	03	02	06	
Europe	A5 SEF	A5 SEF	A5 SEF	A5 SEF	8x13 SEF	A4 SEF	A3 SEF	A3 SEF	
North America	HLT SEF	HLT SEF	HLT SEF	HLT SEF	HLT SEF	LG SEF	DLT SEF	DLT SEF	
China	B6 SEF	B6 SEF	A5 SEF	A5 SEF	B5 SEF	A4 SEF	B4 SEF	A3 SEF	

- *2 Paper Amount -

10	Near end
11	About 25%
00	About 75%
00	About 100%

- *3 Available Paper Feed Unit -

00	None
20	2-tray paper feed unit
30	1-tray paper feed unit

Output Check (SP 5804)

- Conducting an Output Check -

⚠CAUTION

- To prevent mechanical or electrical damage, do not keep an electrical component on for a long time.

1. **Select SP 5804.**
2. **Select the number (see the table below) corresponding to the component.**
3. **Select "ON."**
4. **To stop the operation, select "OFF."**

- Output Check Table -

Number 005, 006, 040, and 041 may not respond when the fusing temperature is high.

Num.	Component
001	Main Motor Forward
002	Main Motor Reverse
003	Quenching Lamp
004	Toner Supply Motor Forward
005	Fan Motor High
006	Fan Motor Low
007	Registration Clutch
008	By-pass Feed Clutch
009	Upper Feed Clutch
010	Lower Feed Clutch
011	BK-Low Lift Motor Up

Num.	Component
012	BK-Low Lift Motor Down
013	Relay Clutch
014	BK-Relay Clutch
015	BK-Upper Feed Clutch
016	BK-Lower Feed Clutch
017	BK-Lift Motor
018	BK-Up Lift Motor Up
019	BK-Up Lift Motor Down
020	Duplex Inv Motor Reverse
021	Duplex Inv Motor Forward
022	Duplex Trans Motor
023	Duplex Gate Solenoid
024	Duplex Inv Motor Hold
025	Dup Trans Motor Hold
026	Polygon Motor
027	Polygon M/LD
028	LD
029	DF-Transport Motor
030	DF-Feed Motor
031	DF-Feed Clutch
032	DF-Pickup Solenoid
033	DF-Stamp Solenoid
034	DF-Gate Solenoid
035	1 bin Gate Solenoid
036	1 bin Tray Motor

Num.	Component
037	1 bin Tray Motor Hold
038	Fusing Solenoid
040	Duplex Fan Motor High
041	Duplex Fan Motor Low

Serial Number Input (SP 5811)

- Specifying Characters -

SP 5811 1 specifies the serial number. You can use the numeric keypad and the operation panel.

- How to input characters -

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

- Serial Number and NVRAM -

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

Test Pattern Print (SP 5902 1)

- Executing Test Pattern Printing -

1. **Specify the pattern number and press the OK key.**
2. **Press the copy start key. The copy mode is activated ( ).**
3. **Specify copy settings and press the key.**
4. **To return to the SP mode, press the key.**

- Test Patterns -

Test Patterns Using VCU	
No.	**Pattern**
0	(No print)
1	Vertical Lines (Single Dot)

Test Patterns Using VCU	
2	Horizontal Lines (Single Dot)
3	Vertical Lines (Double Dot)
4	Horizontal Lines (Double Dot)
5	Grid Pattern (Single Dot)
6	Grid Pattern (Double Dot)
7	Alternating Dot Pattern
8	Isolated one dot
9	Black Band (Horizontal)
10	Trimming Area
11	Argyle Pattern (Single Dot)
12	Grayscales (Horizontal)
13	Grayscales (Vertical)
14	Grayscales (Vertical/Horizontal)
15	Grayscales (Vertical/Horizontal Overlay)
16	Grayscales With White Lines (Horizontal)
17	Grayscales with White Lines (Vertical)
18	Grayscales with White Lines (Vertical/Horizontal)

Test Patterns Using IPU	
No.	**Pattern**
30	Vertical Lines (Single Dot)
31	Horizontal Lines (Single Dot)
32	Vertical Lines (Double Dot)
33	Horizontal Lines (Double Dot)
34	Isolated Four Dots

Test Patterns Using IPU	
35	Grid Pattern (Double Dot)
36	Black Band (Vertical, 1024 Dots)
37	Grayscales (Horizontal, 512 Dots)
38	Grayscales (Vertical, 256 Dots)
39	ID Patch
40	Cross
41	Argyle Pattern (128-Dot Pitch)
42	Square Gradation (64 Grades)
43	Square Gradation (256 Grades)
44	Grayscales (Horizontal, 32-Dot Width)
45	Grayscales (Vertical, 32-Dot Width)
46	Trimming Area (A3)
47	A4 Gradation Patches 1 (128 Grades)
48	A4 Gradation Patches 2 (128 Grades)
49	Trimming Area (A4)

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

Paper Jam Counters (SP 7504)

The table lists the menu numbers (the last three digits of SP 7504 XXX) and the paper jam timings and locations.

Code	
001	Paper jam occurs at power on.
010	Paper does not reach the registration sensor (from a paper tray).
011	Paper does not reach the relay sensor.
012	Paper is caught at the relay sensor.
021	Paper does not reach the vertical transport sensor.
022	Paper is caught at the vertical transport sensor.
031	Paper does not reach the vertical transport sensor in the optional paper feed unit.
032	Paper is caught at the vertical transport sensor in the optional paper feed unit.
050	Paper does not reach the registration sensor (from the by-pass tray).
060	Paper does not reach the registration sensor during reverse-side printing (for duplex printing).
070	Paper is caught at the registration sensor.
120	Paper is caught at the exit sensor (previous page).
121	Paper does not reach the exit sensor.
122	Paper is caught at the exit sensor.
123	Paper does not reach the duplex inverter sensor (from the registration roller).
125	Paper is caught at the duplex inverter sensor.
126	Paper does not reach the duplex entrance sensor.
127	Paper is caught at the duplex entrance sensor.
128	Paper does not reach the duplex exit sensor.
129	Paper is caught at the duplex exit sensor.
130	Paper does not reach the one-bin tray.
131	Paper is caught at the one-bin tray.

SMC Print (SP 5990)

SP 5990 outputs machine status lists.

1. **Select SP 5990.**
2. **Select a menu:**
   - 001 All (Data List), 002 SP (Mode Data List), 003 User Program, 004 Logging Data, 005 Diagnostic Report, 006 Non-Default, 007 NIB Summary, 008 Net File Log, 021 Copier User Program, 022 Scanner SP, 023 Scanner User Program, 040 Parts Alarm Counter Print, 064 Normal Count Print, 065 User Code Counter, 066 Key Operator Counter, 067 Contact List Print, 069 Heading1 print, 071 Heading3 print, 072 Group List Print, 128 ACC Pattern, 129 User Color Pattern, or 160:ACC Pattern Scan

   Note

   - The output given by the menu "Big Font" is suitable for faxing.
3. **Press the "Execute" key.**
   - The machine status list is output.
4. **To return to the SP mode, press the key.**

Original Jam History Display (SP 7508)

- Viewing the Copy Jam History -

You can view the information on the most recent 10 events. The information on older events is deleted automatically.

Note

- The information on jam history is saved in the NVRAM.

1. **Select SP 7508.**
2. **Select one of the menu items ("Latest 1" through Latest 10").**
3. **Press the OK key. The summary of the jam history is displayed.**
4. **To view more information, select "Detail."**

Jam History Codes

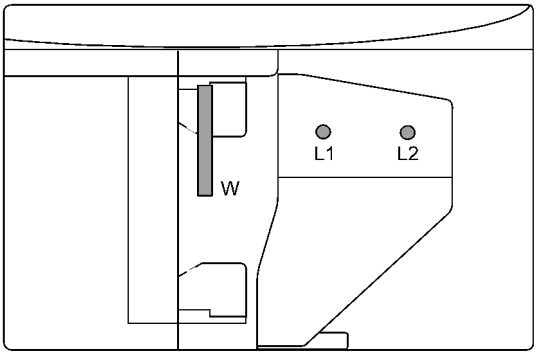
Code	Meaning
210	Original does not reach the registration sensor.
211	Original caught at the registration sensor.

Code	Meaning
212	Original does not reach the original exit sensor.
213	Original caught at the original exit sensor.
214	Original does not reach the original reverse sensor.
215	Original caught at the original reverse sensor.

ADF APS Sensor Output Display (SP 6901)

- Sensor Positions -

	Large to Small			
W1	1	0	0	1
W2	0	0	1	1



- Reading Data -

W1	W2	L1	L2	Paper Size	
				NA	EU/AA
0	0	0	0	—	B5 LEF
0	0	1	1	11" x 17"	B4
0	1	0	0	$8^1/_2$" x $5^1/_2$" LEF	A5 LEF
0	1	1	0	$8^1/_2$" x 11" SEF	A4 SEF

1	1	1	1	$8^1/_2$" x 14"	$8^1/_2$" x 13"
1	0	0	0	11" x $8^1/_2$" LEF	A4 LEF
1	0	1	1	11" x 17"	A3
1	1	0	0	$5^1/_2$" X $8^1/_2$" SEF	A5 SEF
1	1	1	0	—	B5 SEF

1: Detected

Firmware Update Procedure

This section illustrates how to update the firmware.

To update the firmware for this machine, you must have the new version of the firmware downloaded onto an SD (Secure Digital) Card. The SD Card is inserted into the lower slot on the right side of the controller box, viewed from the back of the machine.

Before You Begin

An SD card is a precision device, so always observe the following precautions when handling SD cards:

- Always switch the machine off before inserting an SD card. Never insert the SD card into the slot with the power on.
- After the power has been switched on, never remove the SD card from the service slot.
- Never switch the machine off while the firmware is downloading from the SD card.
- Store SD cards in a safe location where they are not exposed high temperature, high humidity, or exposure to direct sunlight.
- Always handle SD cards with care to avoid bending or scratching them. Never drop an SD card or expose it to other shock or vibration.

Keep the following points in mind while you are using the firmware update software:

- "Upload" means to send data from the machine to the SD card, and "download" means to send data from the SD card to the machine.
- To select an item on the LCD, touch the appropriate button on the soft touch-screen of the LCD, or press the appropriate number key on the 10-key pad of the operation panel. For example, "Exit (0)" displayed on the screen means you can touch the Exit button on the screen, or press the 0 button on the operation panel of the copier.
- Before starting the firmware update procedure, always make sure that the machine is disconnected from the network to prevent a print job for arriving while the firmware update is in progress.

Firmware Update Procedure

Note

- Before beginning the following, first confirm which firmware version(s) are currently installed in the machine with SP7-801-255.

SD Card Preparation

1. Format a pure SD card with, for example, SD Formatter v1.1.

2. Create a "romdata" folder on the card.
3. Create the following folders within the "romdata" folder: B121, B620, B622, B658, B681, B685
4. Download the firmware from the server and store the files in the folder with the corresponding model code on the SD card.

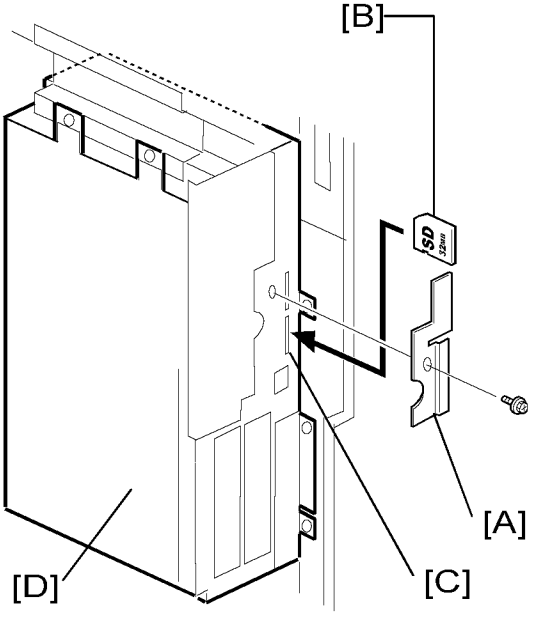
   Example:

   File B1215540B should be stored in the "B121" folder, whereas files B6585902B, B6585903B, and B6585905B should be stored in the "B658" folder.

Firmware Update

Note

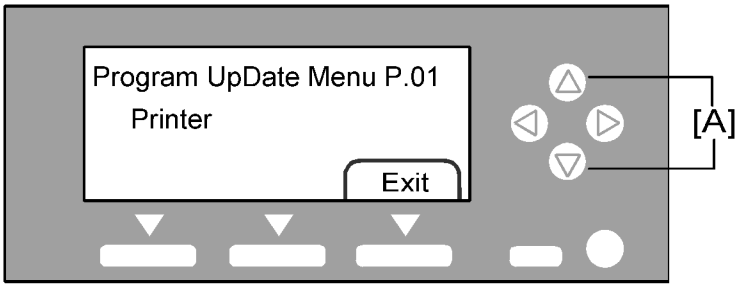
- It is strongly recommended to store only ML 320/320D files on SD cards used for downloading to the ML 320/320D. With the controller used on this model, firmware update may sometimes be interrupted if there is software for multiple models stored on the same SD card.



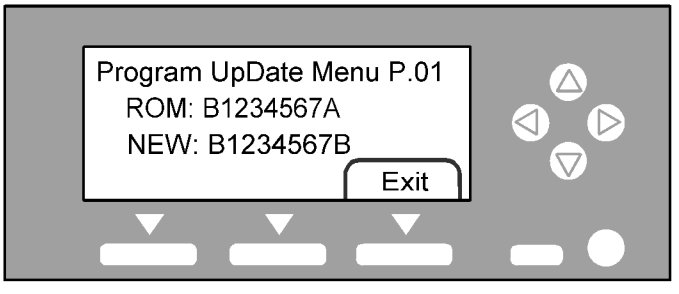
1. **Turn off the main power switch.**
2. **If the machine is connected to a network, disconnect the network cable from the copier.**
3. **Remove the slot cover [A] (x 1)**
4. **With the label on the SD card [B] facing as shown in the diagram, insert the SD card into the lower slot [C] on the controller box [D]. Slowly push the SD card into the slot so it locks in place.**
5. **Make sure the SD card is locked in place.**

(To remove the SD, push it in to unlock the spring lock and then release it so it pops out of the slot.)

6. **Switch the main power switch on. After about 5 seconds, the LCD will display "Please wait..." Then, about 60 seconds later, the LCD will display "Program UpDate Menu P.01" on the first line and the name of the firmware on the second line (e.g. System/Copy).**



7. **Press "OK" key to select a module.**
   - To scroll through the menus, press the △ or ▽ keys [A].



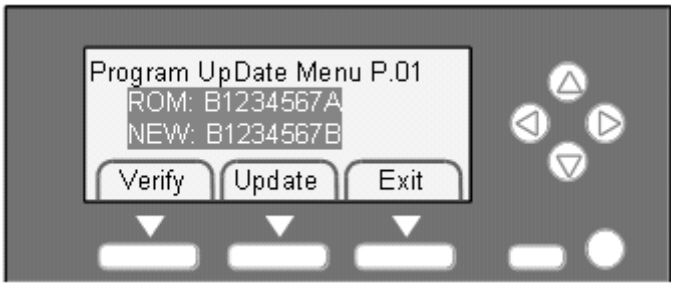
   - To view the firmware version, press the right key. "ROM" is the information on the current firmware. "NEW" is the information on the firmware in the SD card.
   - To return to the menu, press the ◁ key.
   - To select the module, press the OK key.
   - To scroll through the module name, the serial number, and the version, press the ◁ key or ▷ key.
   - If you wish to install the following firmware simultaneously, press the START key. The scroll keys can be used to confirm that these firmware have been selected (highlighted with a dark background).

     [Engine, FCU, Scanner, Printer, Printer Font, Security Module]

Important

- **Please note that the following firmware cannot be updated simultaneously. The update procedure must be repeated for each individually.**

- System/Copy, ServiceCardNetFile, ServiceCardNIB, ServiceCardFAX, ServiceCardWebSystem.



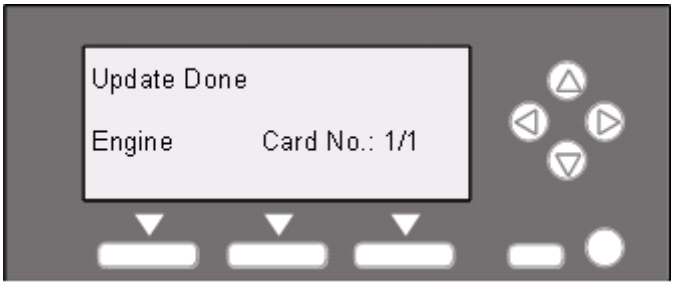
When you have selected a module, the text lines are highlighted, and the "Verify" key and the "Update" key are displayed.

8. **Select a module and press the "Update" key.**

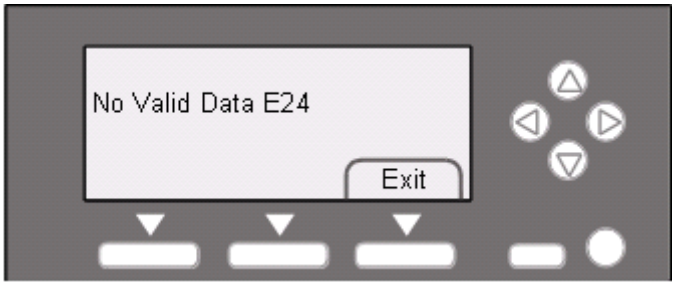
Important

- Do NOT press the “Verify” key.

9. **The firmware update program starts and the message "Loading" is displayed.**
   - The update will be begin, which will take a few minutes to complete. The LCD will initially display, “Updating... ***---------”.
   - When the update is completed, the LCD display will change to “Update done” or “Updated / Power Off On”.



10. **Check that the message "Update Done" is displayed.**



11. **Turn the main power switch off and on.**

- The LCD will display "Please wait..." for about 60 seconds, after which it will return to the "Program UpDate Menu" screen.

12. **Repeat Steps 1-8 above until all firmware updates are complete.**
13. **Turn the main power switch off.**
14. **Remove the SD card from the lower slot on the controller by pushing on the card to release the spring lock.**

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

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

Code	Cause	Necessary Action
		• Replace the controller board.
E50	Authentication error	• Store the correct data in the SD card.

*You need to reinstall the program.

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

NVRAM Data Upload/Download

Uploading Content of NVRAM to an SD card

Follow this procedure to upload SP code settings from NVRAM to an SD card.

Note

- This data should always be uploaded to an SD card before the NVRAM is replaced.

1. **Before switching the machine off, execute SP 5990 1 (SMC Print). You will need a record of the NVRAM settings if the upload fails.**
2. **Switch the copier main power switch off.**
3. **Insert the SD card into service slot C3, then switch the copier on.**
4. **Execute SP 5824 1 (NVRAM Data Upload) then press the "Execute" key**

   When uploading is finished, a file is coped to an NVRAM folder on the SD card. The file is saved to the path and filename:

   NVRAM\<serial number>.NV
   Here is an example with Serial Number "B0700017":

   `NVRAM\B0700017.NV`
5. **In order to prevent an error during the download, be sure to mark the SD card that holds the uploaded data with the number of the machine from which the data was uploaded.**

Note

- NVRAM data from more than one machine can be uploaded to the same SD card.

Downloading an SD Card to NVRAM

Follow this procedure to download SP data from an SD card to the NVRAM in the machine.

- If the SD card with the NVRAM data is damaged, or if the connection between the controller and BICU is defective, the NVRAM data down load may fail.
- If the download fails, repeat the download procedure.
- If the second attempt fails, enter the NVRAM data manually using the SMC print you created before uploading the NVRAM data. (☛ above procedure)

1. **Switch the copier main power switch off.**
2. **Insert the SD card with the NVRAM data into service slot C3.**
3. **Switch the copier main power switch on.**
4. **Execute SP 5825 1 (NVRAM Data Download) and press the "Execute" key.**

Important

- **In order for the NVRAM data to download successfully, the serial number of the file on the SD card must match the serial number of the machine. If the serial numbers do not match, the download will fail.**

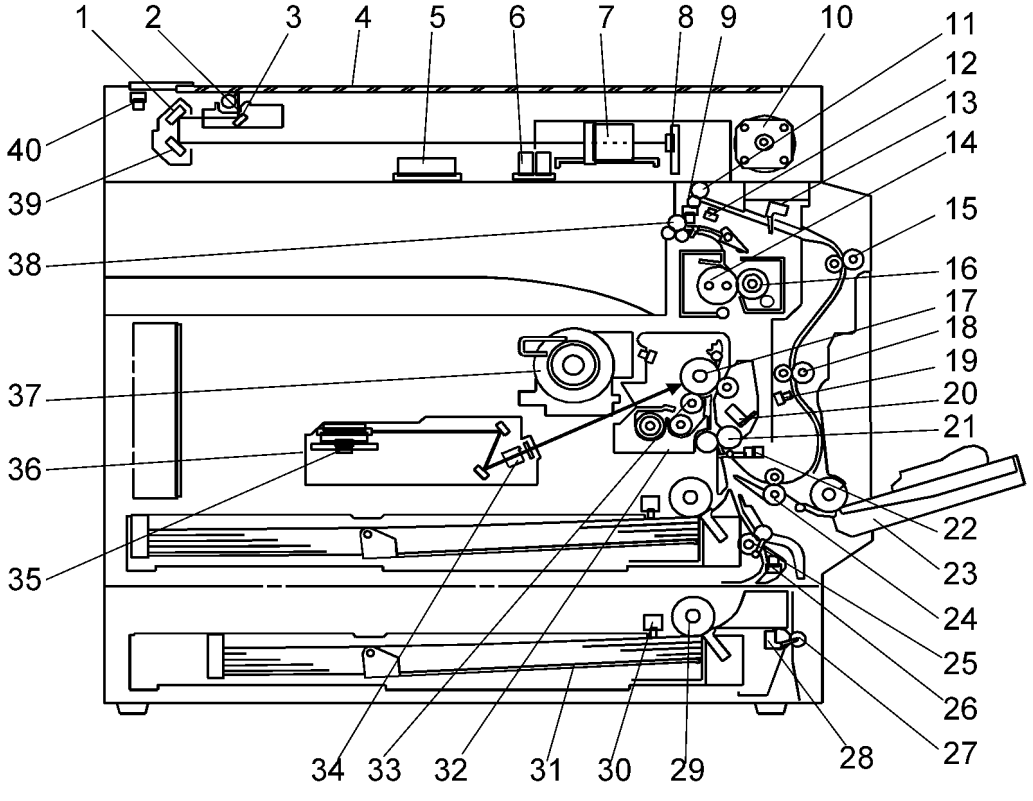
This procedure downloads the following data to the NVRAM:

- Total Count
- C/O, P/O Count

6. Detailed Section Descriptions

Overview

Component Layout



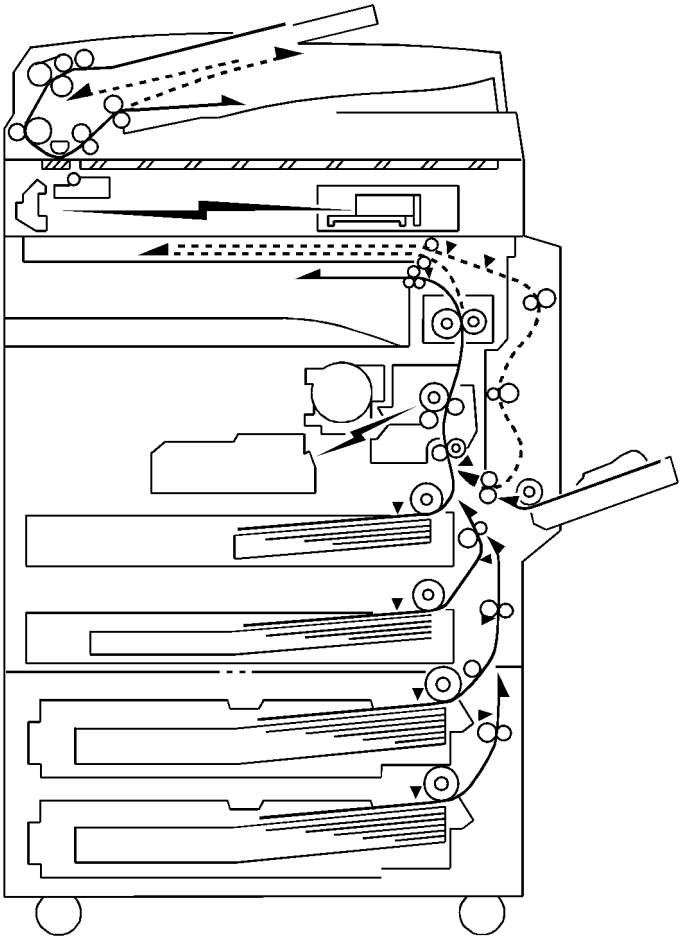
Note

- The above illustration is the B261 model.
- B260: No duplex unit

1. 2nd Mirror	21. Registration Roller
2. Exposure Lamp	22. Registration Sensor
3. 1st Mirror	23. By-pass Tray
4. Exposure Glass	24. Lower Transport Roller
5. Original Width Sensors	25. Upper Relay Roller

6. Original Length Sensors	26. Relay Sensor
7. Lens Block	27. Lower Relay Roller
8. SBU	28. Vertical Transport Sensor
9. Exit Sensor	29. Paper Feed Roller
10. Scanner Motor	30. Paper End Sensor
11. Inverter Roller	31. Bottom Plate
12. Duplex Inverter Sensor	32. PCU
13. Duplex Entrance Sensor	33. Development Roller
14. Hot Roller	34. WTL
15. Upper Transport Roller	35. Polygon Mirror Motor
16. Pressure Roller	36. Laser Unit
17. OPC Drum	37. Toner Supply Bottle Holder
18. Middle Transport Roller	38. Exit Roller
19. Duplex Exit Sensor	39. 3rd Mirror
20. Image Density Sensor	40. Scanner H.P. Sensor

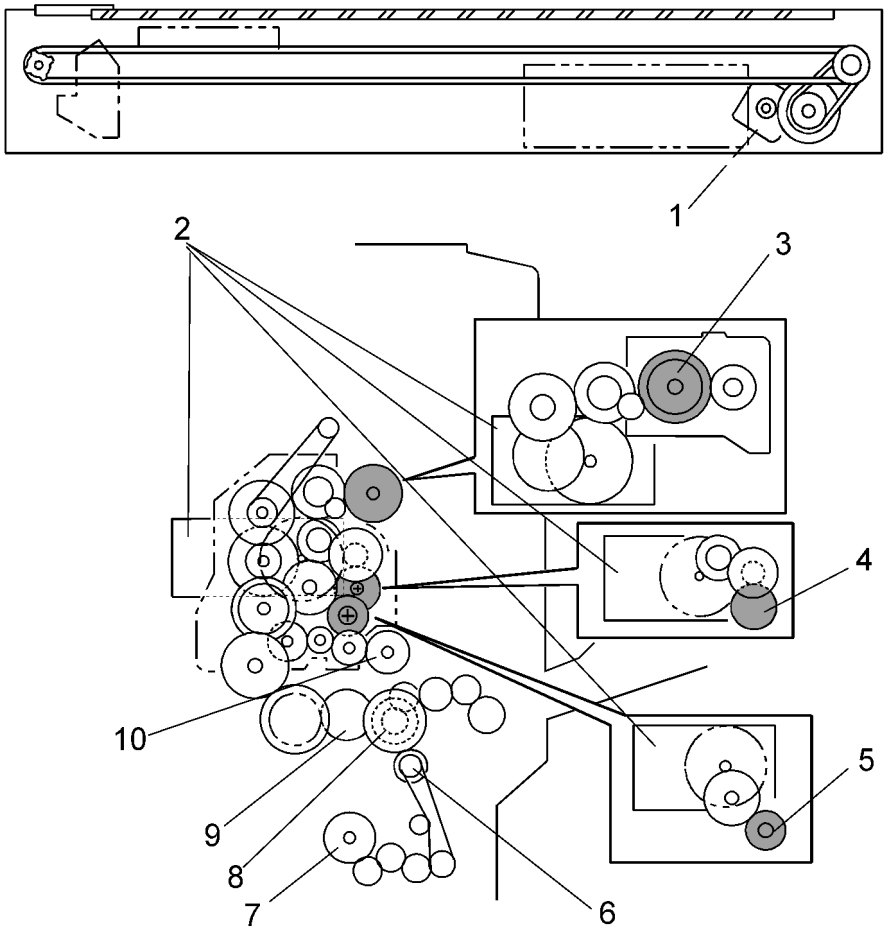
Paper Path



The B261 model has a duplex unit mounted on the right side of the machine.

All models have a by-pass tray.

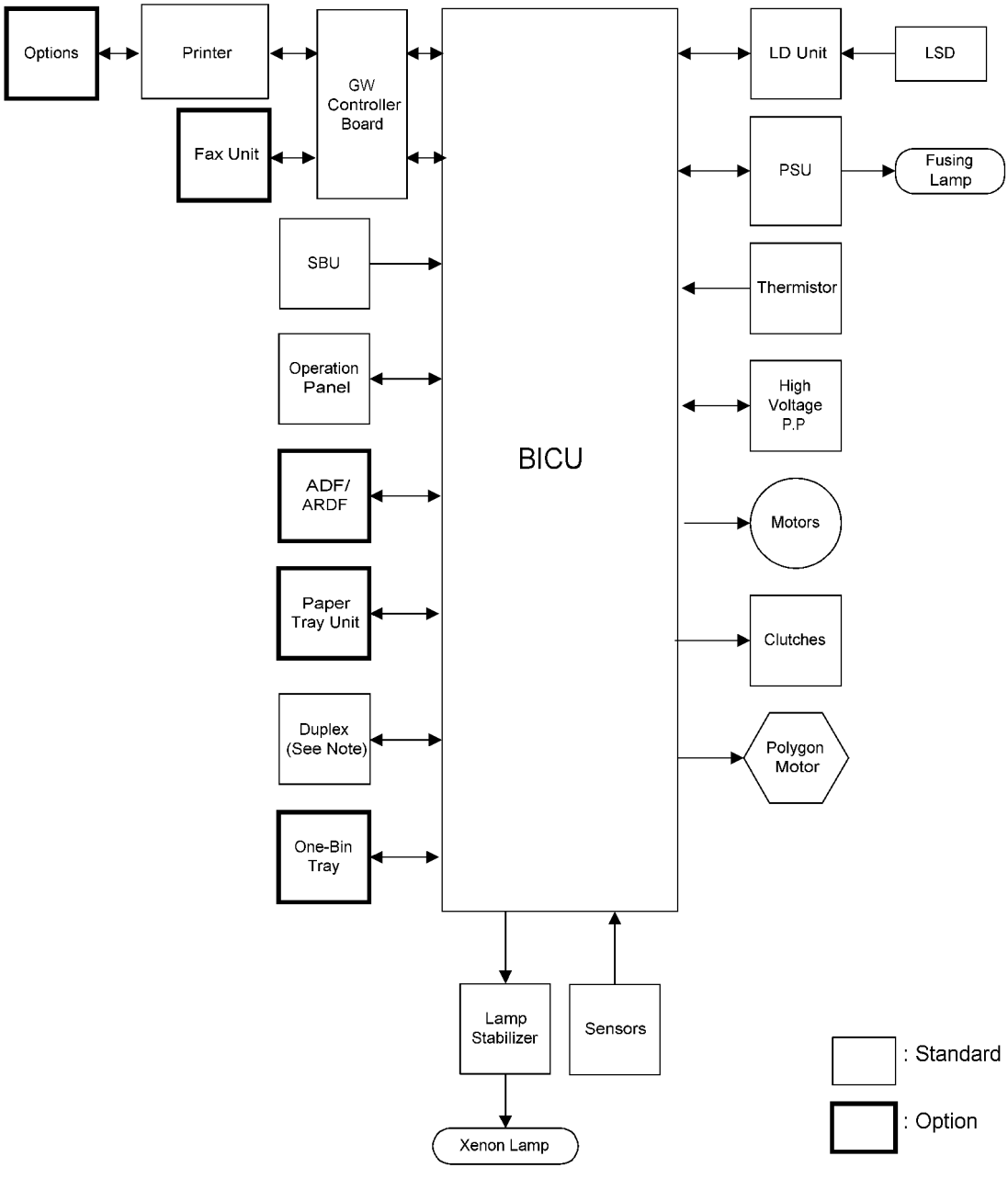
Drive Layout



1. Scanner Motor	6. Relay Clutch
2. Main Motor	7. Lower Paper Feed Clutch
3. Hot Roller	8. By-pass Feed Clutch
4. OPC Drum	9. Upper Paper Feed Clutch
5. Development Roller	10. Registration Clutch

Board Structure

Block Diagram



Note

- Only B261 models contain the duplex unit.

BICU (Base Engine and Image Control Unit)

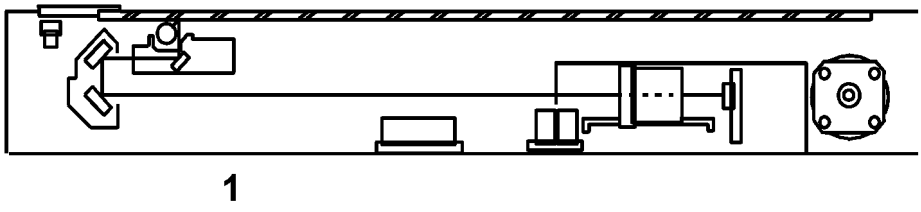
The main board controls the following functions:

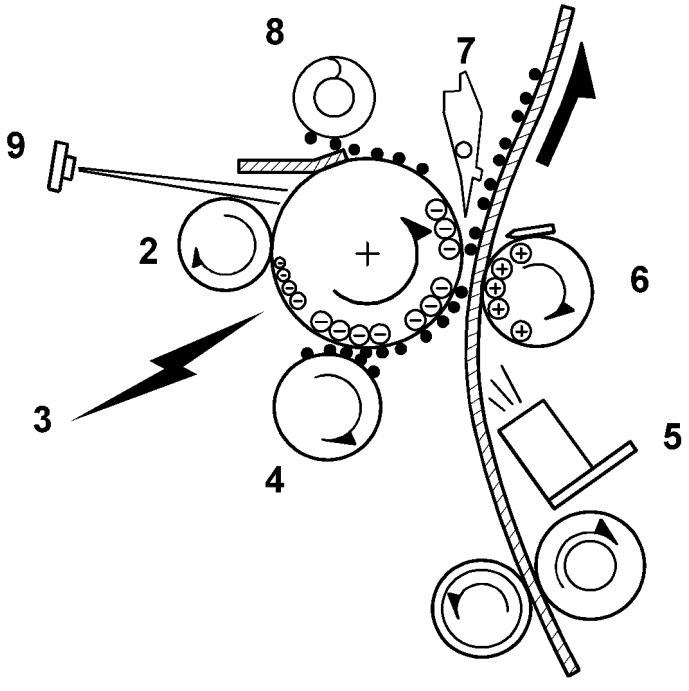
- Engine sequence
- Timing control for peripherals
- Image processing, video control
- Machine control
- Drive control for the sensors, motors, and clutches of the printer and scanner
- High voltage supply board control
- Serial interfaces with peripherals
- Fusing control

SBU (Sensor Board Unit)

The SBU deals with the analog signals from the CCD and converts them into digital signals.

Copy Process Overview





1. **Exposure**

   A xenon lamp exposes the original. Light reflected from the original passes to the CCD, where it is converted into an analog data signal. This data is converted to a digital signal, processed and stored in the memory. At the time of printing, the data is retrieved and sent to the laser diode.

2. **Drum Charge**

   In the dark, the charge roller gives a negative charge to the organic photo-conductive (OPC) drum. The charge remains on the surface of the drum because the OPC layer has a high electrical resistance in the dark.

3. **Laser Exposure**

   The processed data scanned from the original is retrieved from the memory and transferred to the drum by a laser beam, which forms an electrical latent image on the drum surface. The amount of charge remaining as a latent image on the drum depends on the laser beam intensity, which is controlled by the BICU board.

4. **Development**

   The magnetic developer brush on the development roller comes in contact with the latent image on the drum surface. Toner particles are electrostatically attached to the areas of the drum surface where the laser reduced the negative charge on the drum.

5. **ID Sensor**

   The laser forms a sensor pattern on the drum surface. The ID sensor measures the reflectivity of the pattern. The output signal is one of the factors used for toner supply control. Also, the ID sensor measures the reflectivity of the drum surface. The output signal is used for charge roller voltage control.

6. **Image Transfer**

   Paper is fed to the area between the drum surface and the transfer roller at the proper time for aligning the copy paper and the developed image on the drum surface. Then, the transfer roller applies a high positive charge to the reverse side of the paper. This positive charge pulls the toner particles from the drum surface onto the paper. At the same time, the paper is electrostatically attracted to the transfer roller.

7. **Paper Separation**

   Paper separates from the drum as a result of the electrostatic attraction between the paper and the transfer roller. The discharge plate (grounded) helps separate the paper from the drum.

8. **Cleaning**

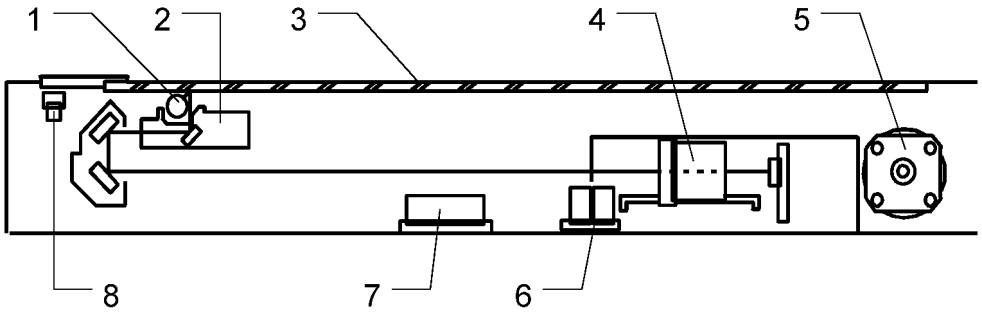
   The cleaning blade removes any toner remaining on the drum surface after the image transfers to the paper.

9. **Quenching**

   The light from the quenching lamp electrically neutralizes the charge on the drum surface.

Scanning

Overview



1. Exposure Lamp	5. Scanner Motor
2. 1st Scanner	6. Original Length Sensor
3. Exposure Glass	7. Original Width Sensors
4. Lens Block	8. Scanner H.P. Sensor

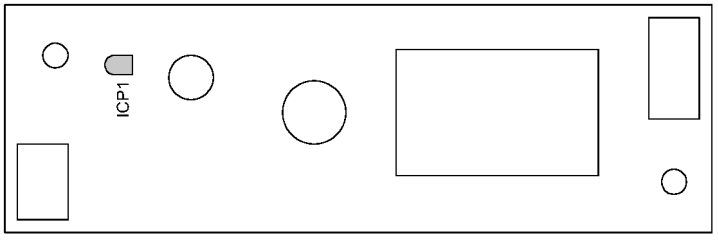
The original is illuminated by the exposure lamp (a xenon lamp). The image is reflected onto a CCD (charge coupled device) on the lens block via the 1st, 2nd, and 3rd mirrors, and through the lens on the lens block.

The 1st scanner consists of the exposure lamp, a reflector, and the 1st mirror.

A lamp stabilizer energizes the exposure lamp. The light reflected by the reflector is of almost equal intensity, to reduce shadows on pasted originals.

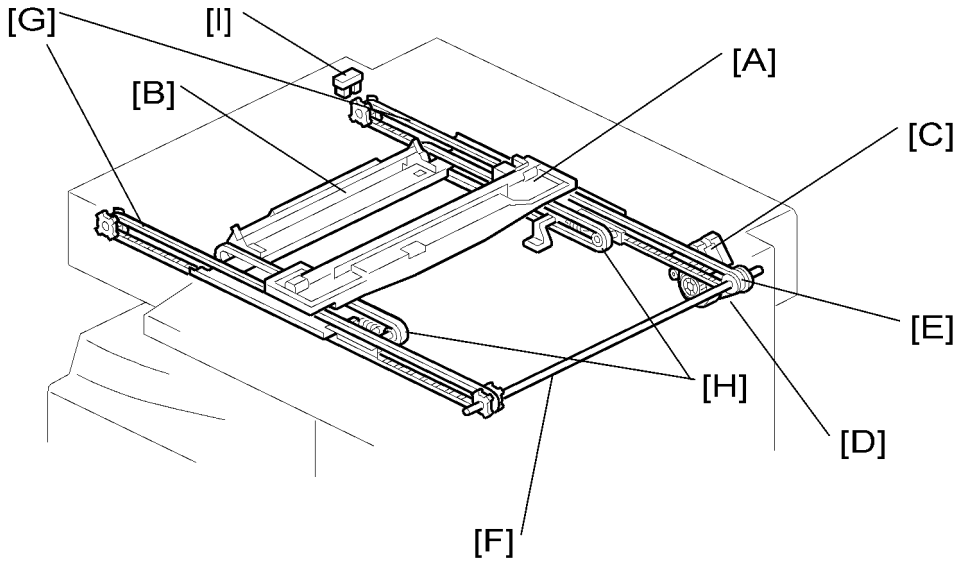
An optics anti-condensation heater is available as an option. It can be installed on the left side of the scanner. It turns on whenever the power cord is plugged in.

Lamp Stabilizer Fuse



	Rating	Manufacturer	Type No.
ICP1	DC50 V/1.5 A	ROHM CO.,LTD	ICP–N38

Scanner Drive



A stepper motor drives the 1st and 2nd scanners [A, B]. The 1st scanner is driven by the scanner drive motor [C], drive gear through the timing belt [D], scanner drive pulley [E], scanner drive shaft [F], and two timing belts [G]. The 2nd scanner is driven through the 1st scanner and two timing belts [H].

- Book mode -

The BICU controls and operates the scanner drive motor. In full size mode, the 1st scanner speed is 100 mm/s during scanning. The 2nd scanner speed is half that of the 1st scanner.

In reduction or enlargement mode, the scanning speed depends on the magnification ratio. The returning speed is always the same, whether in full size or magnification mode. The image length change in the sub scan direction is done by changing the scanner drive motor speed, and in the main scan direction it is done by image processing on the BICU board.

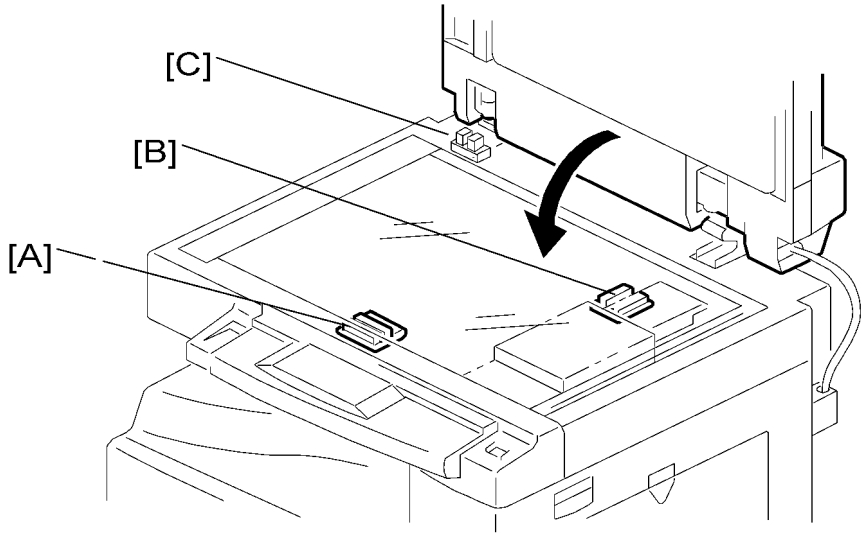
Magnification in the sub-scan direction can be adjusted by changing the scanner drive motor speed using SP 4008. Magnification in the main scan direction can be adjusted using SP 4009.

- ADF mode -

The scanners are always kept at their home position (the scanner HP. sensor [I] detects the 1st scanner) to scan the original. The ADF motor feeds the original through the ADF. In reduction/enlargement mode, the image length change in the sub-scan direction is done by changing the ADF motor speed. Magnification in the main scan direction is done in the BICU board, like for book mode.

Magnification in the sub-scan direction can be adjusted by changing the ADF motor speed using SP 6006 5. In the main scan direction, it can be adjusted with SP 4009, like for book mode.

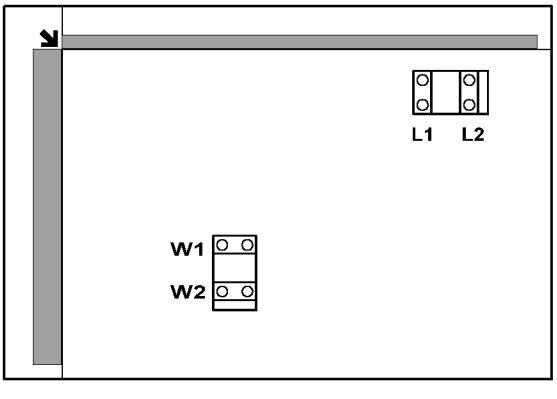
Original Size Detection in Platen Mode



In the optics cavity for original size detection, there are four reflective sensors. The original width sensors [A] detect the original width, and the original length sensors [B] detect the original length. These are the APS (Auto Paper Select) sensors. Each APS sensor is a reflective photosensor.

While the main switch is on, these sensors are active and the original size data is always sent to the CPU. However, the CPU checks the data only when the platen cover sensor [C] is activated. This is when the platen is positioned about 15 cm above the exposure glass, for example while it is being closed. The CPU can recognize the original size from the combination of on/off signals from the APS sensors.

If the copy is made with the platen fully open, the CPU decides the original size from the sensor outputs when the Start key is pressed.



Original Size	Length Sensors	Width Sensors	SP4-301

A4/A3 version	LT/DLT version	L2	L1	W2	W1	display
A3	11" x 17"	1	1	1	1	11110000
B4	8.5" x 14"	1	1	0	1	11010000
8.5" x 13"	—	1	1	0	0	11000000
A4-SEF	8.5" x 13"	0	1	0	0	01000000
A4-LEF	11" x 8.5"	0	0	1	1	00110000
B5-LEF	8.5" x 11"	0	0	0	1	00010000
A5-LEF	8.5" x 5.5"	0	0	0	0	00000000
—	8.5" x 13"	0	1	0	1	01010000

Note

- 0: High (no paper), 1: Low (paper present)

The above table shows the outputs of the sensors for each original size. This original size detection method eliminates the necessity for a pre-scan and increases the machine's productivity.

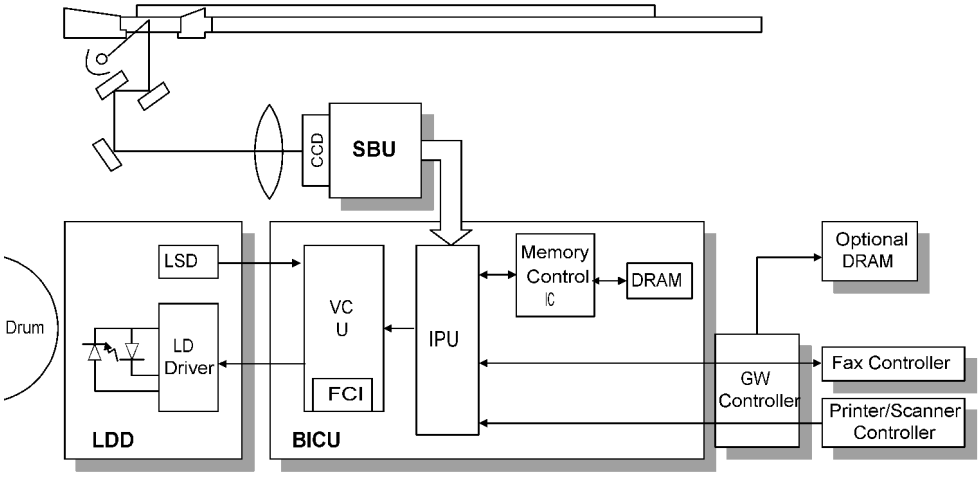
For other combinations, "Cannot Detect Original Size" will be indicated on the operation panel display (if SP 4303 is kept at the default setting).

However, if the by-pass feeder is used, note that the machine assumes that the copy paper is short-edge first. For example, if A4 paper is placed long-edge first on the by-pass tray, the machine assumes it is A3 paper and scans the full A3 area for the first copy of each page of the original, disregarding the original size sensors. However, for each page, the data signal to the laser diode is stopped to match the copy paper length detected by the registration sensor. This means that copy time for the first page may be slower (because of the longer time required for scanning), but it will be normal for the rest of the job.

Original size detection using the ADF is described in the manual for the ADF.

Image Processing

Overview



The CCD generates an analog video signal. The SBU (Sensor Board Unit) converts the analog signal to a 8-bit digital signal, then it sends the digital signal to the BICU board.

The BICU board can be divided into three image-processing blocks: the IPU (Image Processing Unit), FCI (Fine Character Image), and VCU (Video Control Unit).

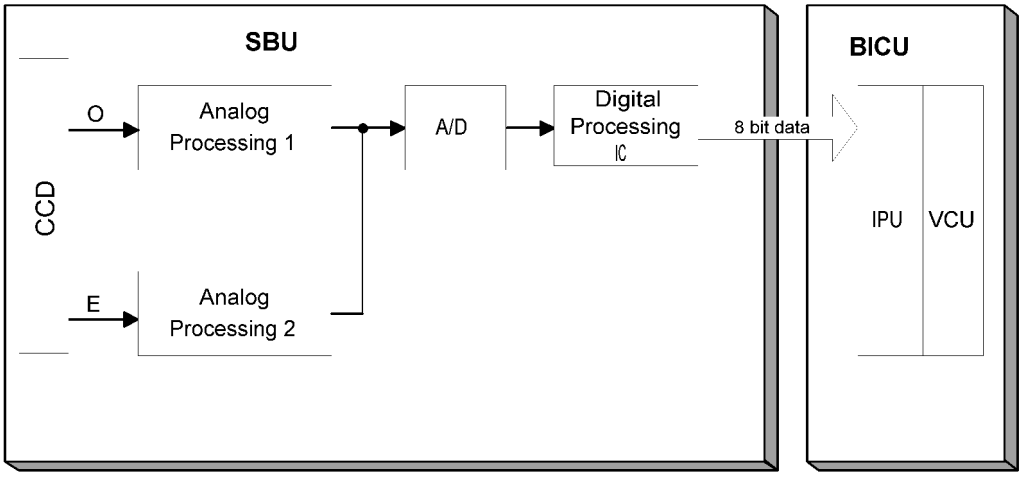
- IPU: Auto shading, filtering, magnification, scanner gamma correction, ID gamma correction
- VCU: Printer gamma correction, LD print timing control and laser power PWM control
- FCI (inside the VCU): Smoothing

Note

- The IPU and VCU are contained in the same IC called SCRATCH on the BICU.

Finally, the BICU board sends the video data to the LD drive board at the proper time. The DRAM on the BICU provides memory for the copier features. In addition, optional DRAM can be added to the GW controller board in this machine.

SBU (Sensor Board Unit)



The CCD converts the light reflected from the original into an analog signal. The CCD line has 7,400 pixels and the resolution is 600 dpi (23.6 lines/mm).

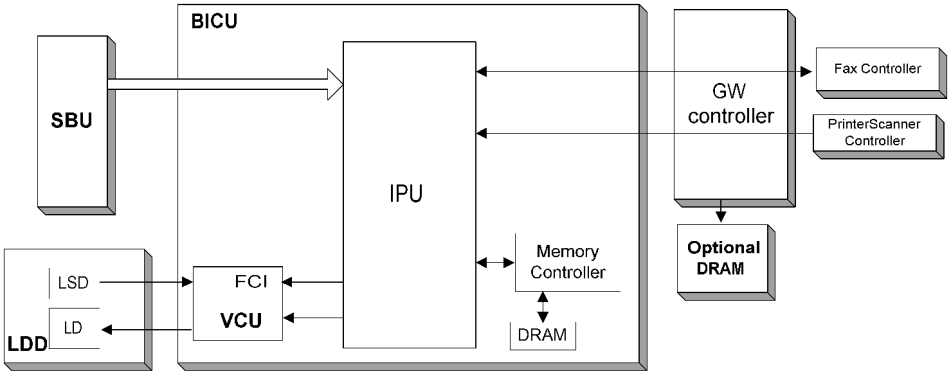
The CCD has two output lines, for odd and even pixels, to the analog processing circuit. The analog processing circuit performs the following operations on the signals from the CCD:

1. Z/C (Zero Clamp):
   Adjusts the black level reference for even pixels to match the odd pixels.
2. Signal Amplification:
   The analog signal is amplified by operational amplifiers.

After the above processing, the analog signals are converted to 8-bit signals by the A/D converter. Each pixel will be assigned a value on a scale of 256 grades. Then, the digitized image data goes to the BICU board.

IPU (Image Processing Unit)

Overview



The image data from the SBU goes to the IPU (Image Processing Unit) on the BICU board, which carries out the following processes on the image data:

1. Auto shading
2. White/black line correction
3. ADS
4. Scanner gamma correction
5. Magnification (main scan)
6. Filtering (MTF and smoothing)
7. ID gamma correction
8. Binary picture processing
9. Error diffusion
10. Dithering
11. Video path control
12. Test pattern generation

The image data then goes to the GW controller.

Note

- The IPU and VCU are contained in the same IC (called SCRATCH) on the BICU.

Image Processing Modes

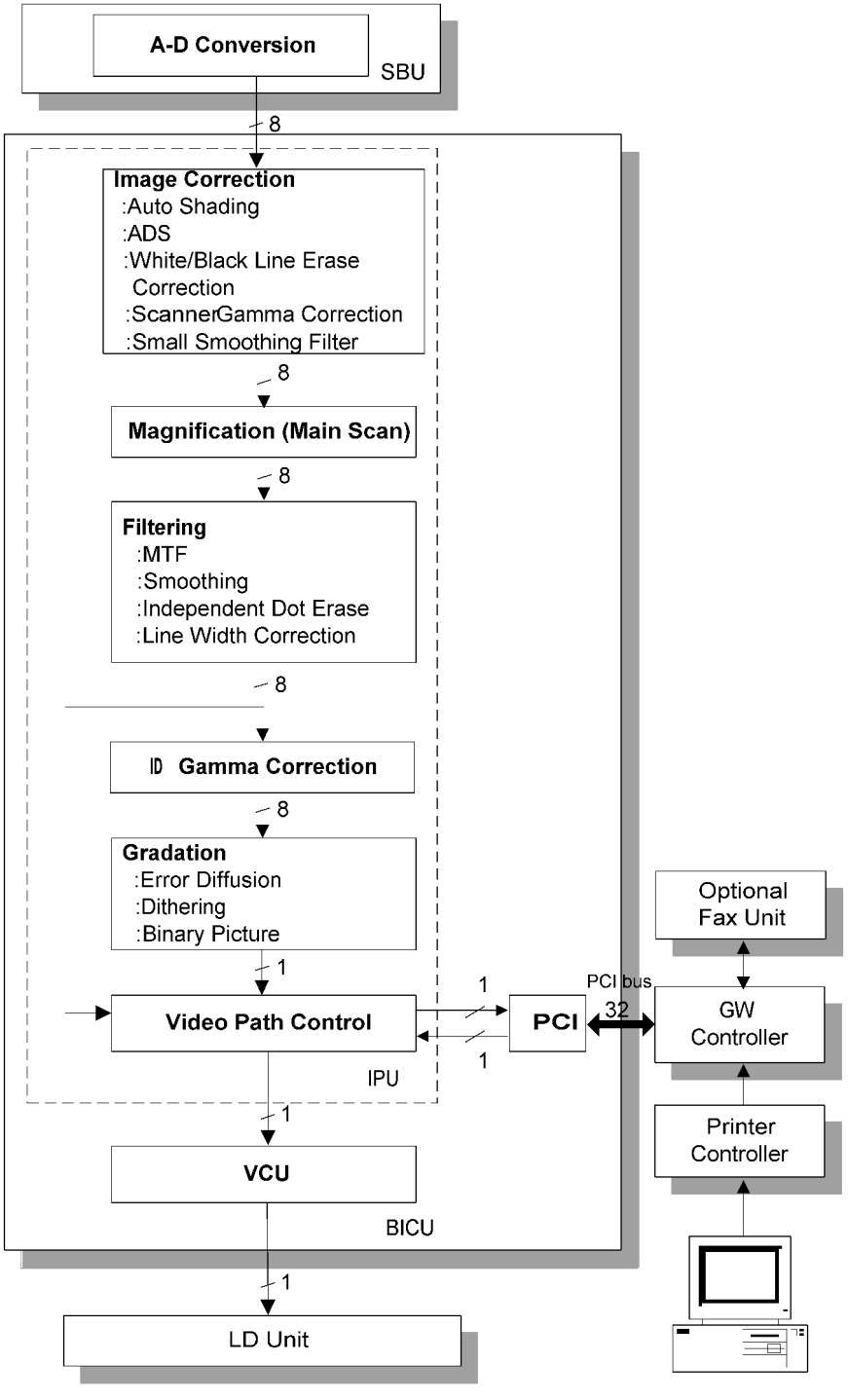
The user can select Text, Photo and Special original types. However, each of these original types has a range of different choices (such as “sharp”, “photographs”, etc), which are listed in the table below.

- All modes can be customized with a range of SP modes that can be adjusted to meet user requirements.
- The user can select the mode that best suits their original with the following user tool: Original Type: User Tools – Copier Features – Image Adjustment

Original Type	Mode	Targeted Original Type
Text	Normal	Normal text originals
	Sharp	Newspapers, originals through which the rear side is moderately visible as faint text.
Photo	Photo priority	Text/photo images which contain mainly photo areas
	Text priority	Text/photo images which contain mainly text areas
	Photographs	Actual photographs
Special	Unneeded background	Originals through which the rear side is extremely visible (or have a colored background) with faint text. Also for originals with very grainy backgrounds (some newspapers) and faint text.
	Colored text	Originals with colored text and lines.
	Normal Pixel Photo	Photo images created by dither patterns (dots visible), such as newspaper photos – normal resolution.
	Coarse Pixel Photo	Photo images created by dither patterns (dots visible), such as newspaper photos – coarse resolution.
	Preserved Background (Normal Text)	Use instead of Normal Text if, e.g. an embedded white area causes Auto Image Density to initially remove the surrounding (darker) background but leave the rest. Use if the customer wishes to keep this background.

Image Processing Path

This diagram shows the various stages of image processing and where they are performed.


A-D Conversion
SBU
8
Image Correction
:Auto Shading
:ADS
:White/Black Line Erase Correction
:ScannerGamma Correction
:Small Smoothing Filter
8
Magnification (Main Scan)
8
Filtering
:MTF
:Smoothing
:Independent Dot Erase
:Line Width Correction
8
ID Gamma Correction
8
Gradation
:Error Diffusion
:Dithering
:Binary Picture
1
Video Path Control
IPU
1
VCU
BICU
1
LD Unit
1
1
PCI
PCI bus
32
Optional Fax Unit
GW Controller
Printer Controller

Original Modes

The machine has 10 original modes. There are two text modes, three photo modes, and five "special" modes. ·

The original mode key on the operation panel has two settings, text and photo. With the default settings, the machine uses "Normal Text (Text 1)" when the Text indicator is lit, and uses "Photo Priority (Photo 1)" when the Photo indicator is lit.

The customer can allocate different modes to the Text and Photo indicators with User Tools – Copier Features – Image Adjustment. Note that the Text indicator does not have to be allocated to a Text mode and the Photo key does not have to be allocated to a Photo mode. For example, the Text indicator can be allocated to Photo 3, and the Photo indicator can be allocated to Special 4.

If the user wishes to customize one of the original modes, the technician can change the settings using SP 4922 to SP 4942. Refer to "SP Modes for Each Image Processing Step". However, only one of the original modes can be customized at any one time.

SP Modes for Each Image Processing Step

The table on the next page shows which SP modes are used for each step of image processing.

- 4921: Selects **which original mode** the settings from SP 4922 to SP 4932 will be applied to.
- 4922: Selects the scanner γ curve. You can select either a curve for text-based originals (brings out text) or a curve for photo originals (better distinctions between shades of dark colors).
- 4923: Selects the central notch position for the ID adjustment LEDs.
- 4926: Adjusts the texture removal level (used with error diffusion).
- 4927: Adjusts the line width.
- 4928: Selects the dot erase level.
- 4929: Converts white to black, and black to white
- 4930: Adjusts the clarity of line images and the edges of solid images.
- 4931: Adjusts the clarity of solid image areas.
- 4932: Adjusts the clarity of low ID lines.
- 4941: Selects the white line erase level.
- 4942: Selects the black line erase level.

If a fax option is installed, you can make separate settings for copier, fax, and scanner/printer mode with these SPs.

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

		Text		Photo			Special					Note
		Normal	Sharp	Photo Priority	Text Priority	Photographs	Unneeded Background	Colored Text	Normal Pixel Photo	Coarse Pixel Photo	Preserved Background	
SBU	ADS	ADS			ADS		ADS					
–												
Shading Correction	Shading Line Correction	Enabled		Enabled			Enabled					
	White Line Correction	Enabled		Enabled			Enabled					SP4-941
	Black Line Correction	Enabled (DF only)		Enabled (DF only)			Enabled (DF only)					SP4-942
	Scannerg Correction	Text (Reflection Ratio ID Linear)		Photo (Density Linear)	Text (Refrelcion Ratio ID Linear	Photo (Density Linear)	Text (Reflection Ratio ID Linear)		Text (Reflection Ratio ID Lineare	Photo (Density Linear)	Text (Reflection Ratio ID Linear)	SP4-922
	Small Smoothing Filter	Weak			Normal			Normal	Strong	Strong	Weak	Connected with MTF filter (Edge)
–												
Magnification	Main Scan Magnification	Enabled		Enabled			Enabled					
	Mirroring	Enabled (DF only)		Enabled (DF only)			Enabled (DF only)					
	Side-to-side Registration (Left Side)	Enabled		Enabled			Enabled					
–												
Filtering	MTF Filter (Edge)	Normal	Strong	Weak (All Area)	Normal	Weak (All Area)	Strong	Normal			Normal	SP4-930
	MTF Filter (Solid)		Normal				Normal					SP4-931
	MTF Filter (Low ID)	Normal	Normal		Normal		Normal				Normal	SP4-932
	Smoothing Filter								Normal			
	Independent Dot Erase	Weak			Weak		Strong	Weak			Weak	SP4-928
	Line Width Correction	Disabled			Disabled		Disabled	Thick			Disabled	SP4-927
–												
Graduation	IDg Correction	Normal	Sharp	Photo Priority	Text Priority	Photographs	Sharp	Normal	Normal Pixel Photo	Coarse Pixel Photo	Preserved Background	SP4-923
–												
Image Correction	Graduation	Error Diffusion	Binary	Error Difusion			Binary	Error Diffusion	Dithering (105 Lines)	Dithering (53 Lines)	Error Diffusion	SP4-926 (Error diffusion only)
–												
Path Control	Video Path Control	Enabled		Enabled			Enabled					
–												
VCU	FCI		Enabled				Enabled					
	Edge Correction	Enabled		Enabled				Enabled				
	Printerg Correction	Enabled		Enabled			Enabled					

Auto Shading

Overview

There are two auto shading methods: black level correction and white level correction. Auto shading corrects errors in the signal level for each pixel.

Black and white level correction is always done.

Black Level Correction

The IPU detects the black dummy data from one end of the CCD signal (32 pixels at the end are blacked off) and takes the average of the black dummy data. Then, the black level value from each image pixel is detected.

White Level Correction

Previous machines used 8-bit data (256 gradations), but this machine uses 6-bit data (64 gradations). When white level correction is applied to 8-bit data, white lines are more easily generated. This is because the normal variations in CCD pixel response (which are very slight), when rounded off by white level correction, will show up much easier on the copy when the data is divided into 256 gradations.

Before scanning the original, the machine reads a reference waveform from the white plate. The average of the white video level for each pixel is stored as the white shading data in the FIFO memory in the IPU (SCRATCH) chip.

The video signal information for each pixel obtained during image scanning is corrected by the IPU (SCRATCH) chip. If the maximum value of the video level is 64 or less, SC101 (exposure lamp error) is generated.

Auto shading is done before scanning for the first original as well as after scanning each page to prepare for the next page.

If the image density or the original mode is changed during a copy run, auto shading is done before scanning the next original.

White Line Erase

The white line erase feature is validated (default) when you specify a value other than "0" in SP 4941 1. This feature works as follows:

1. The copier scans the original.
2. The density level of each pixel is compared with its adjacent pixels.
3. If the density level of a pixel is extremely lower then adjacent pixels, the level is corrected. The density levels of the adjacent pixels are considered.

When you validate the white line erase feature, the feature works for all originals. This feature erases the white lines of 1- through 6-pixel width (approximately, up to 0.25 mm). The white lines that exceed this width are not erased.

When you specify "2," instead of "1," in SP 4941 1, the feature erases darker white lines (namely, less whiter lines). Note that this SP does not affect the width of white lines to be erased.

Black Line Erase

The black line erase feature is the function that erases black lines made by the dust or dirt on the exposure glass. The feature is validated (default) when you specify a value other than "0" in SP 4942 1.

When you specify a larger value in this SP, the feature erases weaker black lines (namely, less blacker lines). This SP also affects the width of black lines to be erased. If you specify "1" or "2," the feature erases the black lines of 1- through 4-pixel width (approximately, up to 0.17 mm); if you specify "3," the feature erases the black lines of 1- through 6-pixel width (approximately, up to 0.25 mm). Note that some black lines on the original may be erased when you specify a larger value in the SP.

Auto Image Density (ADS)

In the SBU

ADS prevents the background of an original from appearing on copies. As the scanner scans down the page, the IPU on the BICU detects the peak white level for each scan line. The IPU determines the reference value for the A/D conversion for a particular scan line using the peak white level for that scan line. Then, the IPU sends the reference value data to the reference controller on the SBU.

When an original with a gray background is scanned, the density of the gray area is the peak white level density. Therefore, the original background will not appear on copies. Because peak level data is taken for each scan line, ADS corrects for any changes in background density down the page.

As with previous digital copiers, the user can select manual image density when selecting ADS, and the machine will use both settings when processing the original.

By Original Type

ADS mode is only enabled when the user has selected:

- Text mode 1 or 2 (Normal or Sharp), Photo mode 2 (Text/Priority), or Special mode 1 or 2 (Unneeded background or Colored Text).

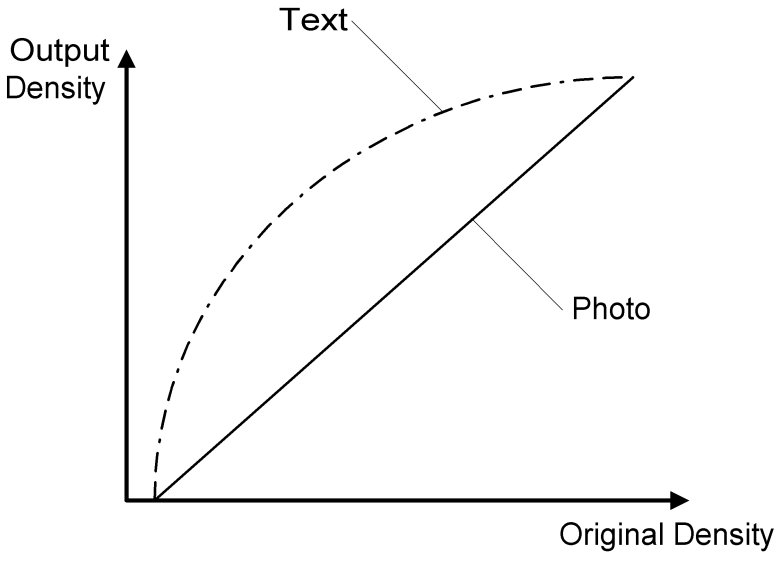
This can be done using Adjust Original Mode (3) in User Tools (Copier Features).

Scanner Gamma (γ) Correction

The CCD output is not proportional to the quantity of light received. Scanner γ correction corrects the CCD output so that grayscale data is proportional to the quantity of light received.

The machine has two possible scanner gamma curves: Text and Photo. When selecting Text, the machine does not use scanner γ correction. As a result, the output is darker than the image density on the original. The advantage of this is that the machine can bring out gradations in paler areas. The disadvantage is that the machine cannot bring out gradations in darker areas, i.e. differences in shades of dark colors are hard to distinguish.

When selecting Photo, the machine uses scanner γ correction. One advantage of this is that the machine can bring out gradations in dark areas of photo image originals. The disadvantage is that it in some cases images come out lighter than the customer desires.

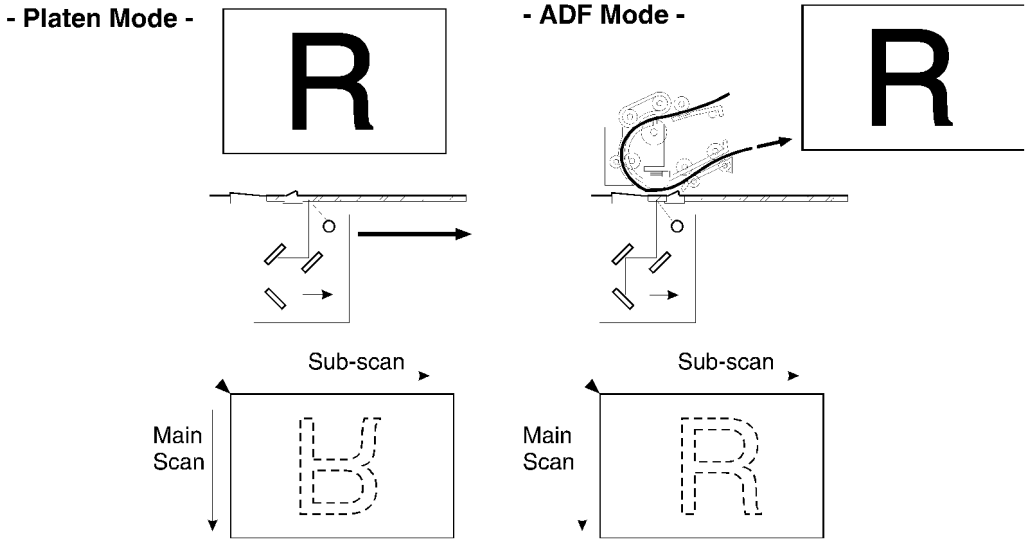


6

Main Scan Magnification

Changing the scanner speed enables enlargement and reduction along the sub scan direction. However, enlargement and reduction along the main scan direction is handled by the IPU (SCRATCH) chip. The processing for main scan enlargement/reduction is the same as in previous digital machines.

Mirroring for ADF Mode



When making copies using the ADF, the magnification circuit creates a mirror image. This is because the scanning start position along the main scan direction in ADF mode is at the opposite corner of platen mode.

In platen mode, the original is placed face down on the exposure glass. The main scan start position is at corner [A], and the scanner moves down the page. In ADF mode, the ADF feeds the leading edge of the original to the DF exposure glass. Therefore as mentioned above, the main scan start position will be at the opposite corner.

To create the mirror image, the IPU stores each line in LIFO (Last In First Out) memory.

Filtering

Overview

There are several software filtering processes for enhancing the desired image qualities of the selected original mode. There are three MTF filters, a smoothing filter, independent dot erase, and line width correction. Each can be used only when certain modes are selected (details below) and are automatically applied.

The strength levels for the MTF are controlled by SP 4932. The levels for line width correction and independent dot erase are controlled by SP 4927 and 4928, respectively.

The MTF filters bring out sharpness. The three MTF filters are Edge, Solid Image and Low ID Line. Line width correction adjusts the line width. Independent dot erase removes unwanted dots from the image.

MTF Filter Adjustment - Edge

In order to determine whether a given dot is part of an edge or not, the IPU checks all surrounding dots (vertical, horizontal, and diagonal). If the IPU determines that the dot is part of an edge, the machine applies the MTF filter for edges, using the value set in SP 4930. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 1, Text 2, Photo 1-3, Special 1, Special 2, or Special 5.

The default value is "0" for each mode. However the actual strength of "0" differs from mode to mode.

MTF Filter Adjustment - Solid

If the IPU detects that the dot is not part of an edge, the machine applies the MTF filter for solid areas using the value set in SP 4931. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 2.

The default value is "0" for each mode. However the actual strength of "0" differs from mode to mode.

MTF Filter Adjustment - Low ID Line

The IPU also checks the image density of all dots. If a succession of low-density dots is detected, the machine interprets this as a low ID line and applies the MTF filter for low ID lines, using the value set in SP 4932. The higher the setting, the sharper the image. However, this is only used when the customer uses Text 1, Text 2, Photo 2, Special 1, Special 2, or Special 5.

The default value is "0" for each mode. However, the actual strength of "0" differs from mode to mode.

Independent Dot Erase

When the user selects Text 1 and 2, Photo 2, and Special 1, 2, and 5 modes, independent dots are detected using a matrix and erased from the image. The detection level can be adjusted with SP 4928.

The higher setting, the greater number of dots the machine will erase. The machine erases the dots regardless of their image density. However, note that dots in mesh-like images may be mistakenly detected as independent dots.

Line Width Correction

When the user selects Text 1 and 2, Photo 2, Special 1, 2, and 5, the thickness of lines is adjusted using the setting of SP4-927. Note that the default for all modes except Special 2 is OFF.

Line width correction is done by the IPU (SCRATCH) chip.

ID Gamma (γ) Correction

The machine automatically selects the most appropriate ID gamma correction based on the selected original type and the operation panel ID setting.

In all modes, ID gamma correction can be adjusted with SP 4923.

Gradation Processing

Overview

There are three types of gradation processing (listed below). Refer to the "Default Image Processing Mode for Each Original Type" section for more details on which processes are used for each original mode.

- Binary picture processing
- Error diffusion
- Dithering

Binary Picture Processing

The 8-bit image data is converted into 1-bit data (black and white image data). This is done when the user selects Text 2 or Special 1. The threshold for deciding whether a pixel is black or white cannot be adjusted.

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 compared with an error diffusion matrix.

Error diffusion is applied when the user selects Text 1, Photo 1-3 and Special 2 and 5.

As the final step in error diffusion, a process called Texture Removal is applied to Text 1, Photo 2, Special 2, and Special 5 by default, but can also be applied to Photo 1 and 3 by changing the value of SP 4926.

Texture removal uses 256 threshold values in an 8 x 8 matrix. The value of SP 4926 controls the application of Texture Removal for each of the 6 modes listed above. The settings are as follows:

0: The default value for each mode is used. Text 1, Photo 2, Special 2, and Special 5 have a default of 3 (see below) and Photo 1 and 3 have a default of 1.

1: No removal applied.

2 – 6: Removal applied at the level specified here. The higher the setting (level), the less clear the image will become (more texture removal).

Dithering

Each pixel is compared with the threshold in a dither matrix. Several matrices are available to bring out half-tone areas in images such as newspaper-type photographs. Dithering is only used for Special 3 and Special 4.

Video Control Unit (VCU)

Fine Character and Image (FCI)

The FCI performs image smoothing. This functions only affects binary picture processed images for certain original modes.

Fig. A

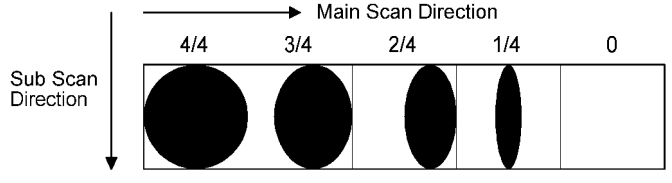


Fig. B

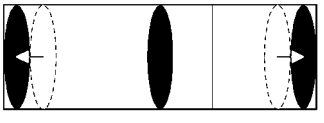
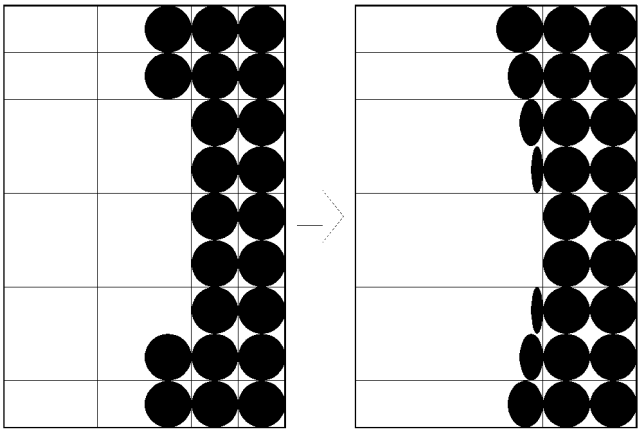


Fig. C



Usually, binary picture processing generates jagged edges on characters, as shown in the above illustration. These are reduced using edge smoothing. The FCI changes the laser pulse duration and position for certain pixels.

Fig. A shows the four possible pulse durations, and Fig. B shows how the laser pulse can be in one of three positions within the pixel. Fig. C shows an example of how edge smoothing is used.

FCI smoothing is only effective when Text 2 or Special 1 is selected. There is no SP adjustment for this.

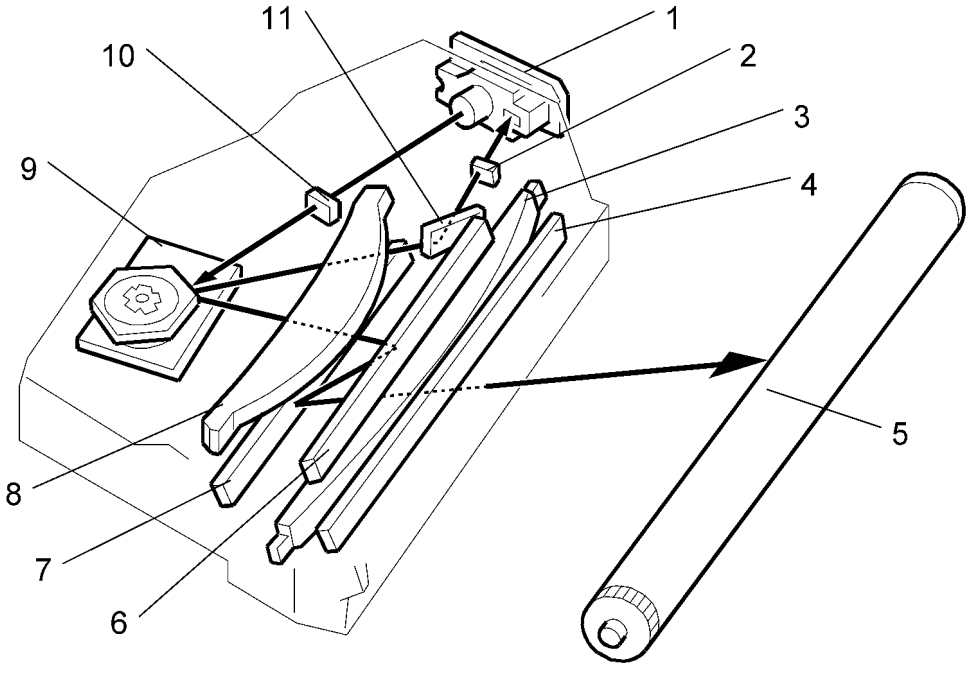
Printer Gamma Correction

Printer correction corrects the data output from the IPU to the laser diode to account for the characteristics of the engine components (e.g. drum, laser diode, lenses).

The machine chooses the most suitable gamma curve for the original type selected by the user. There is no SP adjustment for this.

Laser Exposure

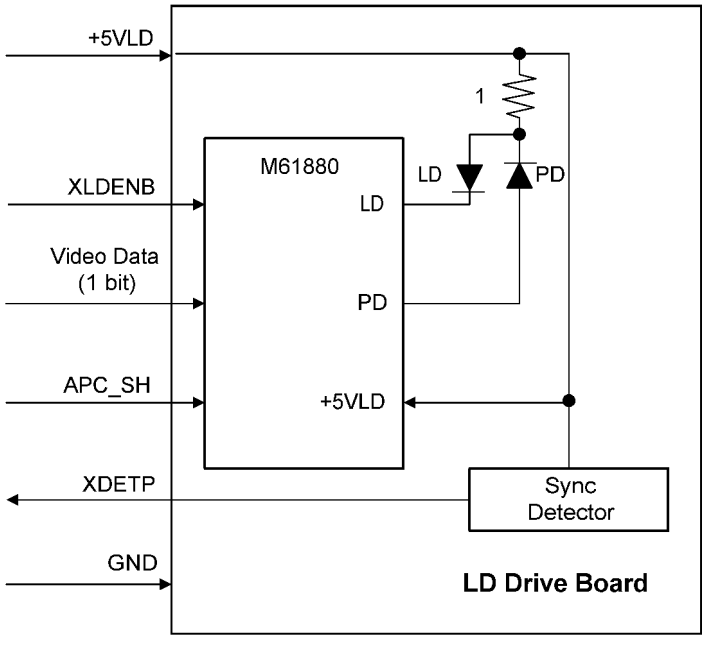
Overview



1. LD unit 2. Synchronization detector lens 3. Double toroidal lens 4. Shield glass 5. OPC drum 6. 1st mirror	7. 2nd mirror 8. F-theta lens 9. Polygon mirror 10. Cylindrical lens 11. Synchronization detector mirror

- The LD drive board controls both the laser output and laser synchronization mechanism.
- The machine cuts off the power supply to the LD drive board if the front or right cover is opened.

Auto Power Control (APC)



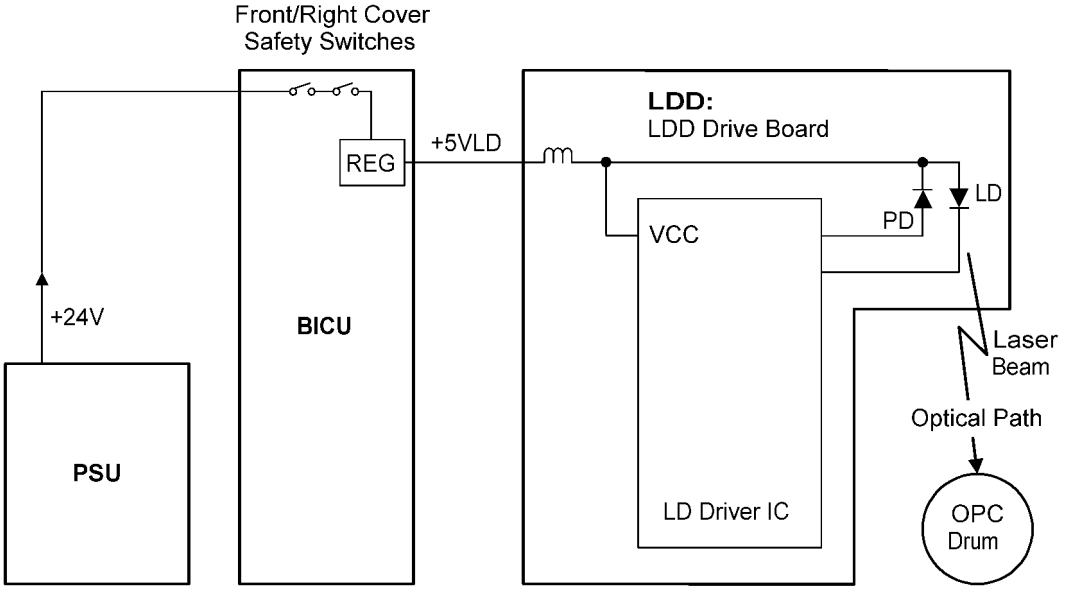
The LD driver IC drives the laser diode. To prevent the intensity of the laser beam from changing because of the temperature, the machine monitors the current passing through the laser diode (LD). The machine adjusts the current to the laser diode by comparing it with the reference level from the reference circuit. This auto power control is done just after the machine is turned on and during printing.

The laser diode power is adjusted on the production line.

Note

- Do not touch the variable resistors on the LD unit in the field.

LD Safety Switch



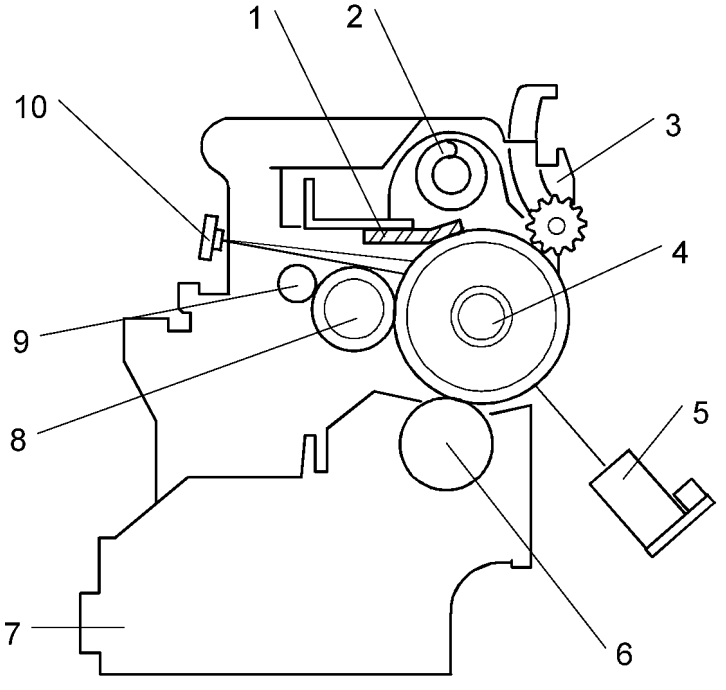
To ensure technician and user safety and to prevent the laser beam from inadvertently switching on during servicing, there are safety switches at the front and right covers.

When the front cover or the right cover is opened, the power supply to the laser diode is interrupted.

The switches are installed on the +24V line coming from the power supply unit, then the +5VLD is generated from the +24V supply after it goes through the interlock switches.

Photoconductor Unit (PCU)

Overview



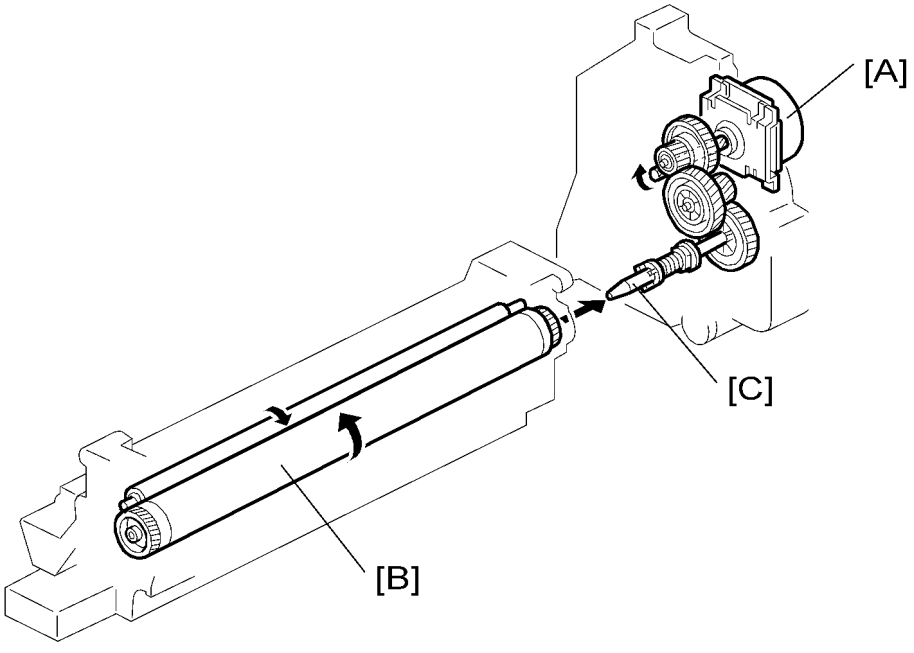
The PCU consists of the components shown in the above illustration. An organic photoconductor (OPC) drum (diameter: 30 mm) is used in this machine.

1. Cleaning Blade	6. Development Roller
2. Toner Collection Coil	7. Development Unit
3. Pick-off Pawl	8. Charge Roller
4. OPC Drum	9. Charge Roller Cleaning Brush
5. ID Sensor (see note)	10. Quenching Lamp (see note)

Note

- The ID sensor and quenching lamp are not included in the PCU.

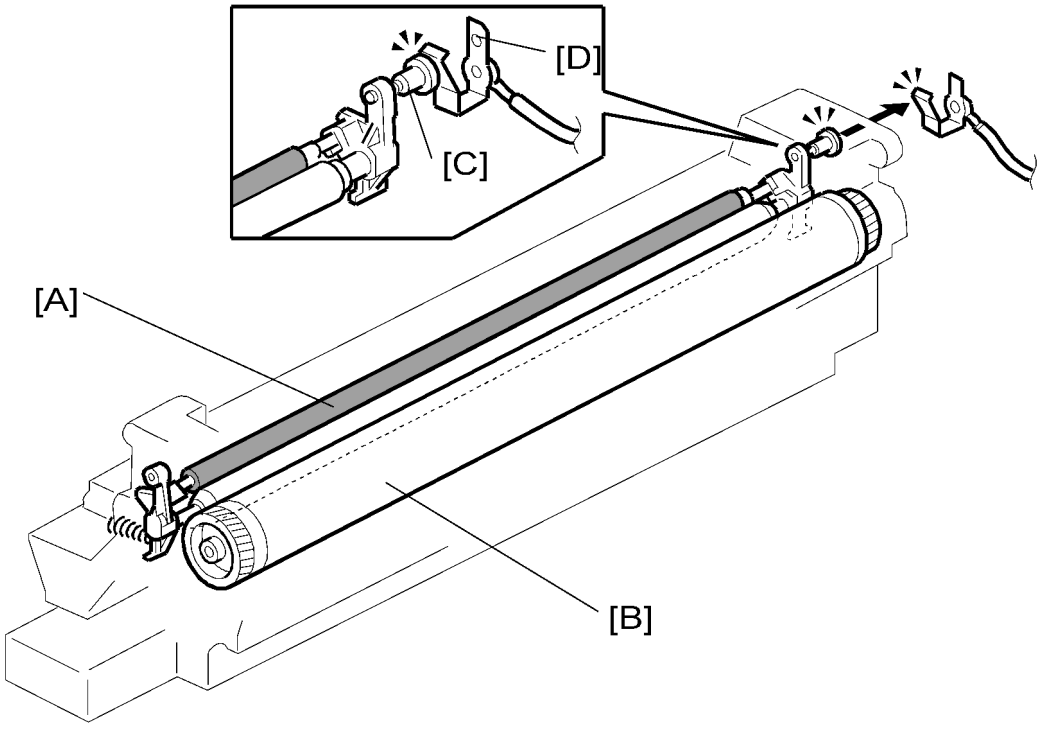
Drive



The main motor [A] drives the drum [B] through a series of gears and the drum drive shaft [C]. The main motor assembly includes a drive controller, which outputs a motor lock signal when the rotation speed is out of the specified range.

Drum Charge

Overview

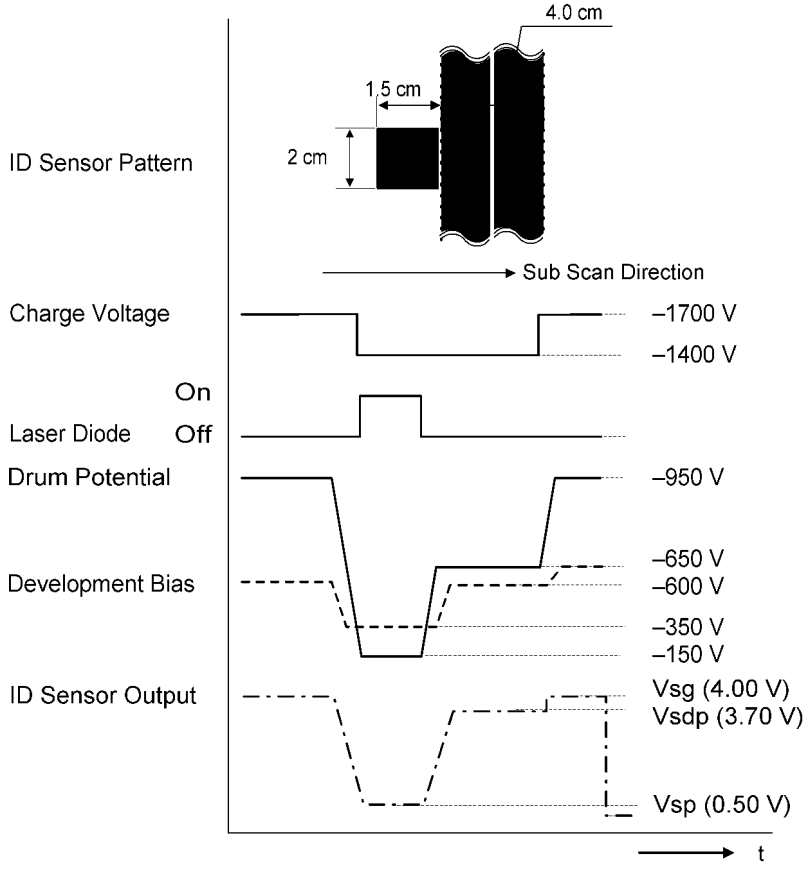


This copier uses a drum charge roller to charge the drum. The drum charge roller [A] always contacts the surface of the drum [B] to give it a negative charge of –950 V.

The high voltage supply board gives a negative charge of –1700 V to the drum charge roller through the screw [C] and terminal plate [D]. This voltage can be changed using SP 2001 1.

Charge Roller Voltage Correction

Correction for Environmental Conditions



With a drum charge roller system, the voltage transferred from roller to drum varies with the temperature and humidity around the drum charge roller. The higher the temperature or humidity is the higher the applied voltage required.

To compensate, the machine uses the ID sensor to measure the effects of current environmental conditions. For this measurement, the process control parameters are balanced so that any small change in drum potential caused by environmental effects is reflected in a change in the amount of toner transferred to the drum.

This measurement is made immediately after the ID sensor pattern for toner density control. Immediately after making ID sensor pattern [A], the charge roller voltage stays the same, but the development bias goes up to –600 V; as a result the drum potential is reduced to –650 V. The laser diode is not switched on, and the drum potential is now slightly higher than the development bias, so a very small amount of toner transfers

to the drum. The ID sensor measures the density of this pattern [B], and the output voltage is known as Vsdp. This voltage is compared with Vsg (read from the bare drum at the same time).

If the humidity drops, the drum potential goes up (to a higher –ve voltage) even if the charge roller voltage supply stays the same (efficiency of voltage transfer is higher with lower humidity). As a result, less toner is transferred to ID sensor pattern [B]. If the sensor output reaches a certain point, the drum charge voltage will be reduced.

To determine whether to change the drum charge roller voltage, the machine compares Vsdp with Vsg.

- Vsdp/Vsg > 0.95 = Make the drum charge voltage less –ve (smaller) by 50 V
- Vsdp/Vsg < 0.90 = Make the drum charge voltage more –ve (larger) by 50 V

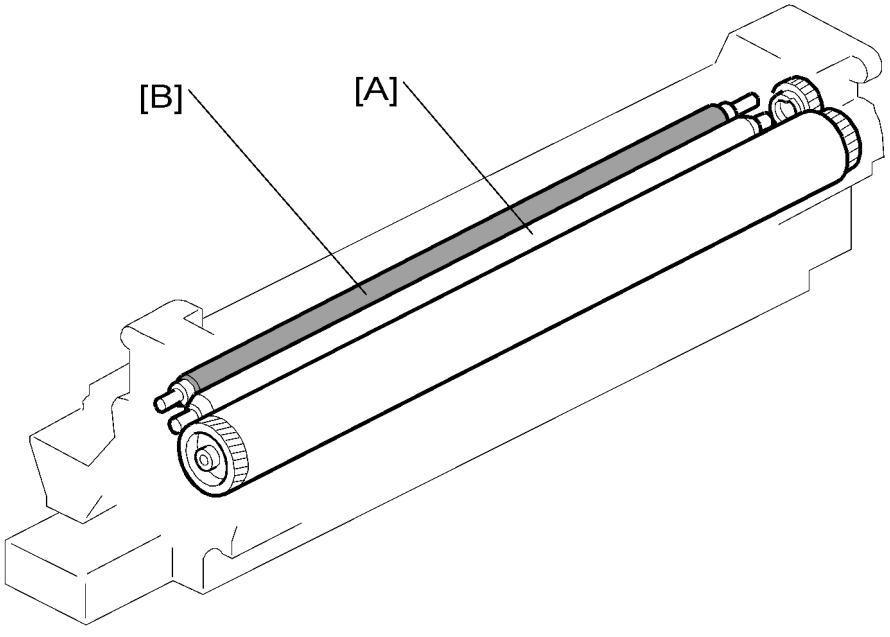
ID Sensor Pattern Production Timing

The ID sensor pattern is not made every page or every job.

It is only made in the following conditions:

- During warm-up at power on
- If the fusing temperature is specified temperature or less when the machine recovers from the energy saver mode. This target temperature can be adjusted with SP2-994-001 (default: 30°C).
- If the machine copies/ prints 100 sheets of paper or more after the machine has made the ID sensor pattern.

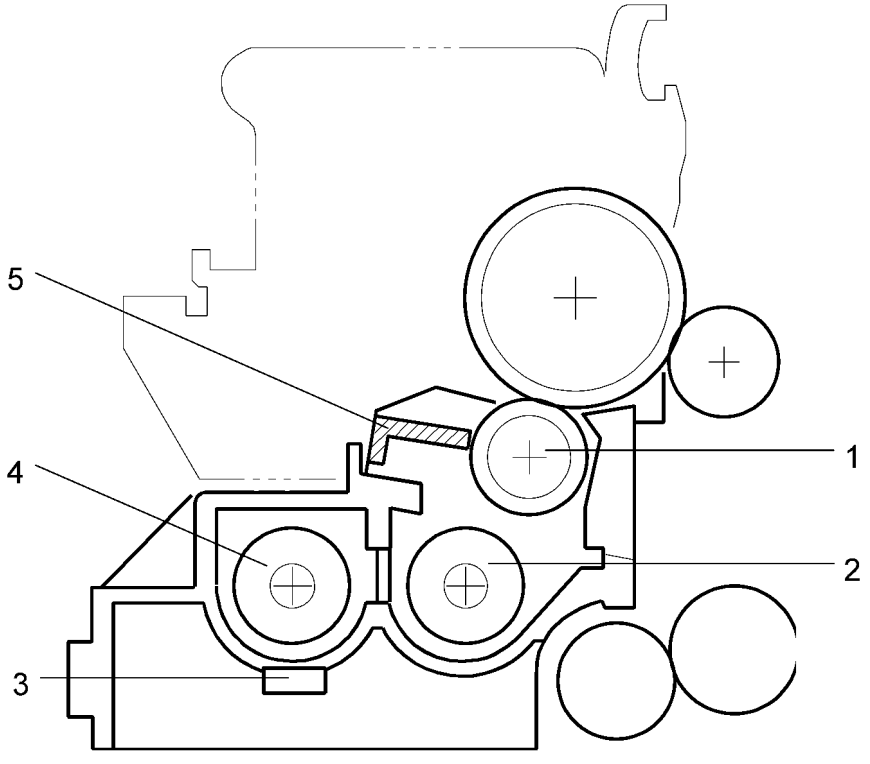
Drum Charge Roller Cleaning



Because the drum charge roller [A] always contacts the drum, it gets dirty easily. So, the cleaning brush [B] also contacts the drum charge roller all the time to clean the surface of the drum charge roller.

Development

Overview

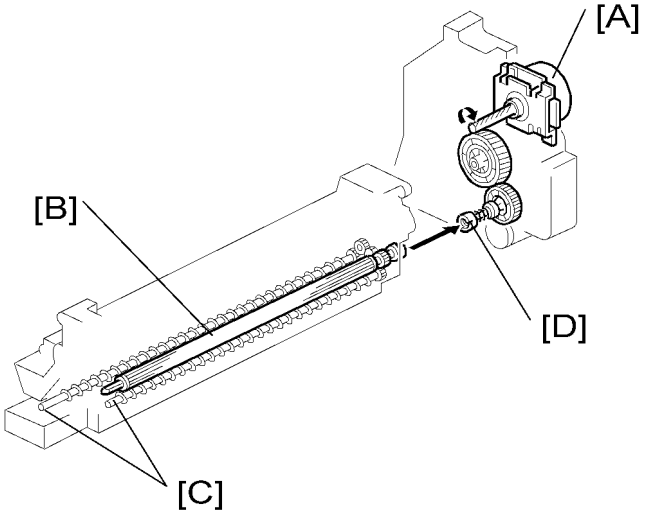


The development unit consists of the following parts.

1. Development roller
2. Mixing auger 2
3. TD sensor
4. Mixing auger 1
5. Doctor blade

This machine uses a single-roller development system. Two mixing augers mix the developer. The toner density (TD) sensor and image density (ID) sensor (see the illustration in the PCU section) are used to control the image density on the copy.

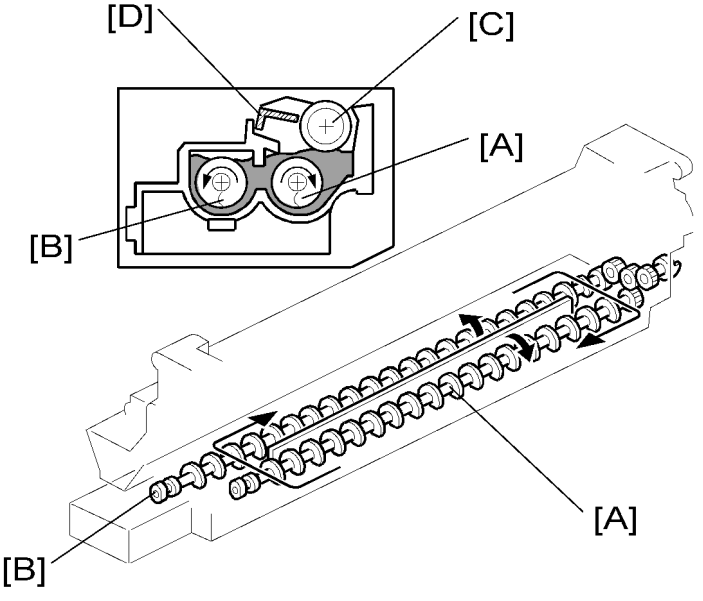
Drive



The main motor [A] drives the development roller [B] and mixing augers [C] through a train of gears and the development drive shaft [D]. When the PCU is pushed in, the development drive shaft engages the development roller gear.

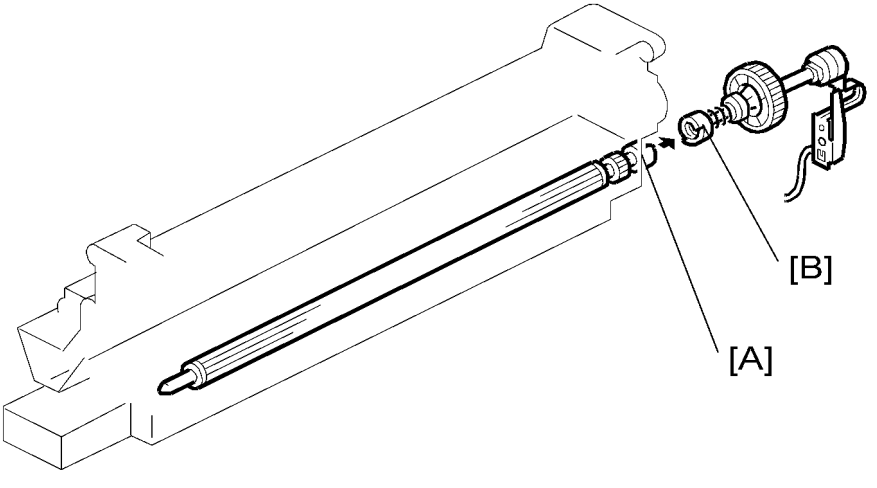
The development drive gears (except for the gears in the development unit) are helical gears. These gears are quieter than normal gears.

Developer Mixing



The two mixing augers, [A, B] keep the developer evenly mixed. Mixing auger 2 [A] transports excess developer, scraped off the development roller [C] by the doctor blade [D], towards the front of the machine. Mixing auger 1 [B] returns the excess developer, along with new toner, to the rear of the mixing assembly. Here the developer is reapplied to the development roller.

Development Bias



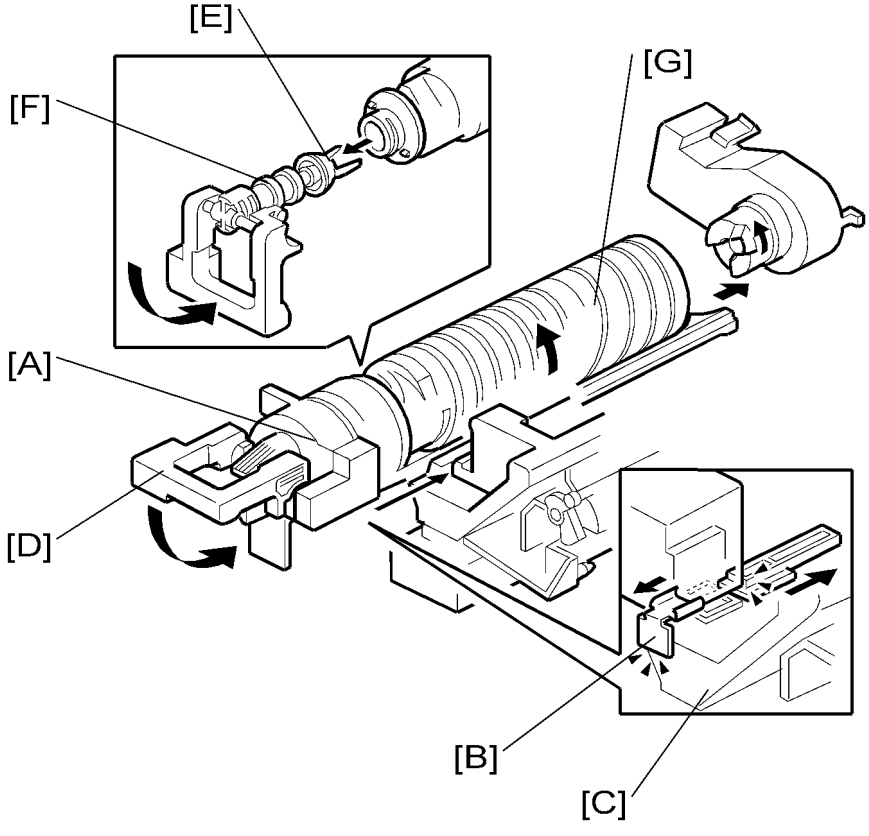
This machine uses a negative-positive development system, in which black areas of the latent image are at a low negative charge (about –154 ± 50 V) and white areas are at a high negative charge (about –950 V).

To attract negatively charged toner to the black areas of the latent image on the drum, the high voltage supply board applies a bias of –650 volts to the development rollers throughout the image development process. The bias is applied to the development roller shaft [A] through the drive shaft [B].

The development bias voltage (–650 V) can be adjusted with SP 2201 1.

Toner Supply

Toner Bottle Replenishment Mechanism



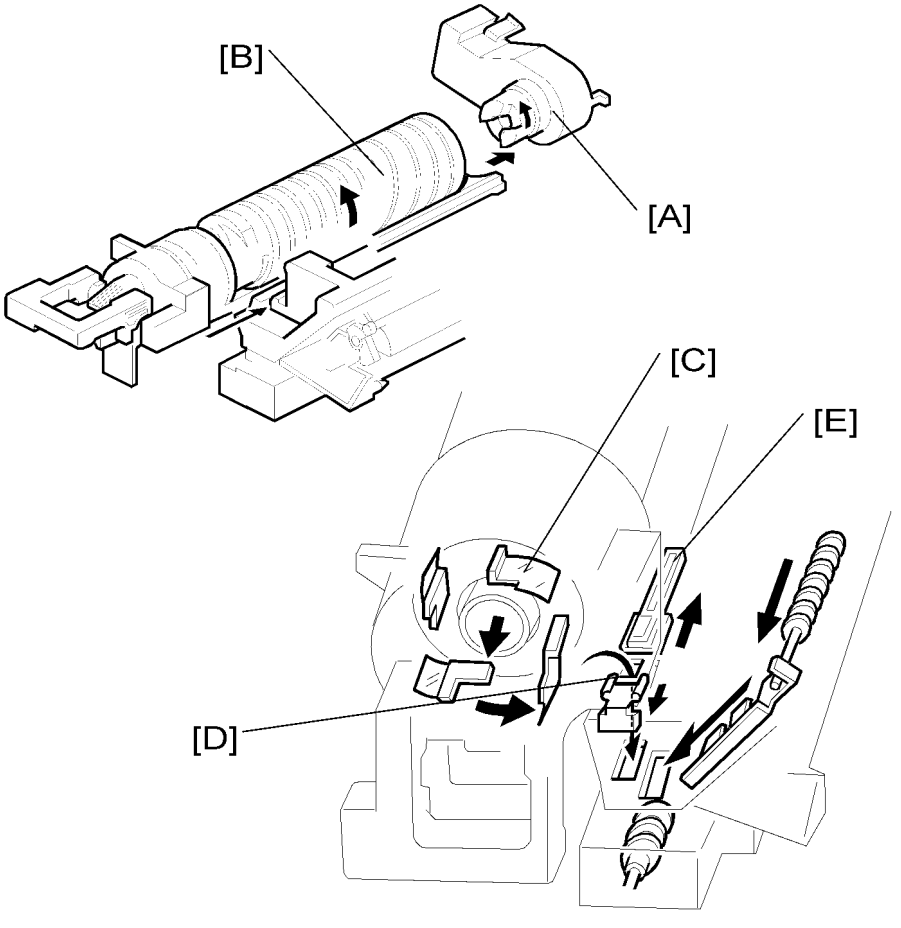
When a toner bottle is placed in the bottle holder unit [A] and the unit is pushed in completely, toner shutter [B] moves against the side [C] of the PCU. When the toner bottle holder lever [D] is put back in the original position, the cap [E] on the toner bottle is pulled away and kept in place by the chuck [F].

The toner supply mechanism transports toner from the bottle to the development unit. The toner bottle has a spiral groove [G] that helps move toner to the development unit.

To add a new toner bottle, first lift the toner bottle holder. When this is done, the chuck releases the toner bottle cap into its proper position to prevent toner from scattering.

Then, when the bottle holder unit is pulled out to add a new toner bottle, the toner shutter shuts to block the opening as a result of pressure from a spring.

Toner Supply Mechanism



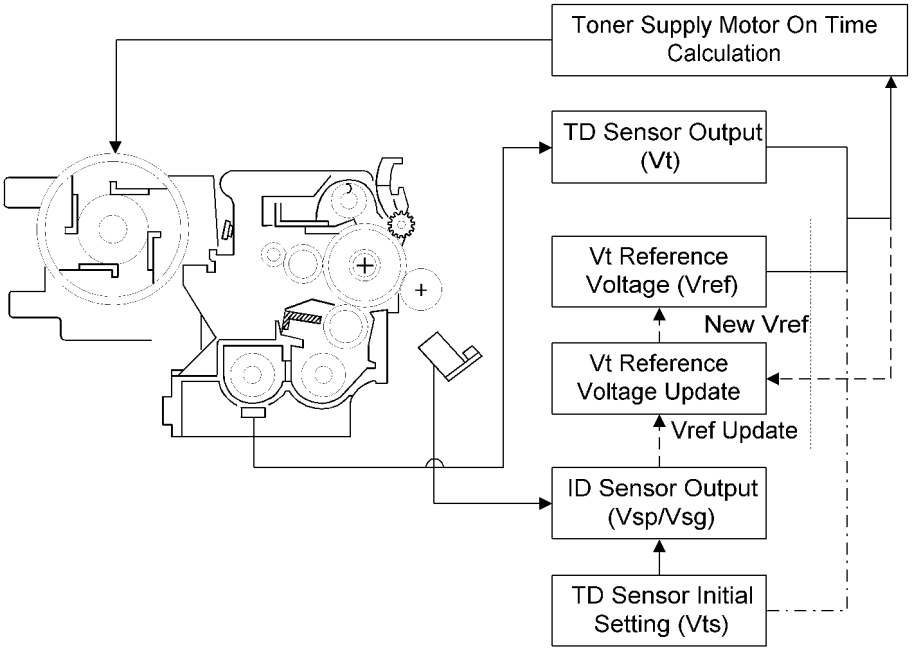
The toner supply motor [A] drives the toner bottle [B] and the mylar blades [C]. First, the toner falls down into the toner bottle holder. The toner supply mylar blades transfer the toner to the slit [D]. When the PCU is installed in the machine, the shutter [E] above the PCU is opened by the toner bottle holder. Then the toner falls down into the development unit through the slit and the shutter.

Toner Density Control

Overview

There are four modes for controlling toner supply as shown in the following tables, which can be changed with by SP 2921. The factory setting is sensor control 1 mode.

Basically, the toner concentration in the developer is controlled using the standard TD sensor voltage (Vts), toner supply reference voltage (Vref), actual TD sensor output voltage (Vt), and ID sensor output data (Vsp/Vsg).



The four-toner density control modes are as follows.

Mode	Sensor control 1 (SP 2921, "0"): Normally use this setting only
Toner supply decision	Compare Vt with a reference voltage (Vts or Vref)
Toner control process	Toner is supplied to the development unit when Vt is higher than the reference voltage (Vts or Vref). This mode keeps the Vref value for use with the next toner density control. Vts is used for the first toner density control after a new PCU has been installed, until it has been corrected with the ID sensor output. Vref is used after Vts has been corrected with the ID sensor output voltage (corrected during the first toner density control for a new PCU).

Toner supply amount	Varies
Toner end detection	Performed

Mode	Sensor control 2 (SP 2921, "1"): For designer's use only; do not use in the field
Toner supply decision	Compare Vt with a reference voltage (Vts)
Toner control process	This toner control process is the same as sensor control 1 mode. However, the reference voltage used is always Vts.
Toner supply amount	Varies
Toner end detection	Performed

Mode	Fixed control 1 (SP 2921, "2"): For designer's use only; do not use in the field
Toner supply decision	Compare Vt with a reference voltage (Vts or Vref)
Toner control process	This toner control process is the same as sensor control 1 mode.
Toner supply amount	Fixed (SP 2925)
Toner end detection	Performed

Mode	Fixed control 2 (SP 2921, "3"): Use temporarily if the TD sensor needs to be replaced
Toner supply decision	None
Toner control process	Toner is supplied every printed page regardless of Vt.
Toner supply amount	Fixed (SP 2925)
Toner end detection	Not performed

Toner Density Sensor Initial Setting

The TD sensor initial setting (SP 2214: Developer Initialize) procedure must be done after replacing the developer. During TD sensor initial setting, the TD sensor is set so that the TD sensor output is the value of SP 2926 (default: 2.4 V). This value will be used as the standard reference voltage (Vts) of the TD sensor.

Toner Concentration Measurement

The toner concentration in the developer is detected once every copy cycle. The sensor output voltage (Vt) during the detection cycle is compared with the standard reference voltage (Vts) or the toner supply reference voltage (Vref).

Vsp/Vsg Detection

The ID sensor detects the following voltages.

- Vsg: The ID sensor output when checking the drum surface
- Vsp: The ID sensor output when checking the ID sensor pattern

In this way, the reflectivity of both the drum surface and the pattern on the drum are checked, compensating for any variations in the reflectivity of the pattern on the drum or the reflectivity of the drum surface.

The ID sensor pattern is made on the drum by the charge roller and laser diode.

Vsp/Vsg is not detected every page or job; it is detected at the following times to decide Vref.

- During warm-up at power on

If the machine starts warming up when the fusing temperature is 30°C or less (default) after entering night mode or low power mode (SP 2994 specifies the temperature setting).

Toner Supply Reference Voltage (Vref) Determination

The toner supply reference voltage (Vref) is used for toner supply determination (see below). Vref is determined using the following data:

- ID sensor output (Vsp/Vsg)
- (Vts or the current Vref) - Vt

Toner Supply Determination

The reference voltage (Vts or Vref) is the threshold voltage for determining whether or not to supply toner. If Vt becomes greater than the reference voltage, the machine supplies additional toner.

This can be checked using SP 2220.

Toner Supply Motor On Time Determinations

For fixed control mode, the toner supply motor on time is specified by the setting of SP 2925, and does not vary. The default setting is 200 ms for each copy. The toner supply motor on time for each value of SP 2925 is as follows.

Value of SP2-925	Motor On Time (t = 200 ms)

0	t
1	2t
2	4t
3	8t
4	12t
5	16t
6	Continuously
7	Not supplied

For sensor control modes 1 and 2, the toner supply motor on time is decided by the following factors.

- Vt
- Vref or Vts
- TD sensor sensitivity (coefficient: S, value is 0.4)

There are seven levels for toner supply motor on time as shown below.

Level	Decision	Motor On Time (seconds)
1	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/16	t (0.4)
2	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/8	t x 2 (0.8)
3	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/4	t x 4 (1.6)
4	(Vts or Vref) < Vt ≤ (Vts or Vref) + S/2	t x 8 (3.2)
5	(Vts or Vref) < Vt ≤ (Vts or Vref) + 4S/5	t x 16 (6.4)
6	Vt ≥ (Vts or Vref) + 4S/16 (near-end)	T (30); see note 3
7	Vt ≥ (Vts or Vref) + S (toner end)	T (30); see note 3

Note

- The value of "t" can be changed using SP 2922 (default: 0.4 second)
- The value of "T" can be changed using SP 2923 (default: 30 seconds)
- T (30) means that toner is supplied intermittently in a 1/3 duty cycle (1 s on, 2 s off) for 30 seconds

Toner Supply in Abnormal Sensor Conditions

ID Sensor

Readings are abnormal if any of the following conditions occur:

- Vsg ≤ 2.5V
- Vsg < 3.5V when maximum power (979) is applied
- Vsp ≥ 2.5V
- (Vsg – Vsp) < 1.0V
- Vt ≥ 4.5V or Vt ≤ 0.2V

The above ID sensor values can be checked using SP 2221.

When this is detected, the machine changes the value of Vref to 2.5 V then does the toner density control process (in a similar way to sensor control mode 2).

No SC code is generated if the ID sensor is defective.

TD Sensor

The TD sensor output is checked every copy. If the readings from the TD sensor become abnormal, the machine changes the toner density control mode to fixed supply mode 2, and the toner supply amount per page is always 200 ms, regardless of the value of SP 2925. If the machine detects the TD sensor error condition 10 times consecutively, an SC code is generated (SC390) and the machine must be repaired.

Toner Near End/End Detection and Recovery

The toner near end and end conditions are detected using the Vt and Vref values, in a similar way to toner density control.

This is done in all toner supply modes except for fixed mode 2, when toner end is not detected.

Toner Near End Detection

If Vt is at level 6 (see the table on the previous page) five times consecutively, the machine enters the toner near end condition and the toner end indicator starts blinking. Then the machine supplies toner for a certain time, which depends on the setting of SP 2923 (see the previous page).

Toner Near End Recovery

If the machine detects "Vt < (Vref or Vts) + 4S/5" twice consecutively in any of the following situations, the machine clears the toner near end condition.

- While in the toner recovery cycle (supplying toner on and off for 30 s—see the previous page) after the machine has detected a toner near end condition.
- During copying in the toner near end condition.
- If the front cover is opened and closed for more than 10 seconds while a toner near end condition exists.

Toner End Detection

There are two situations for entering the toner end condition.

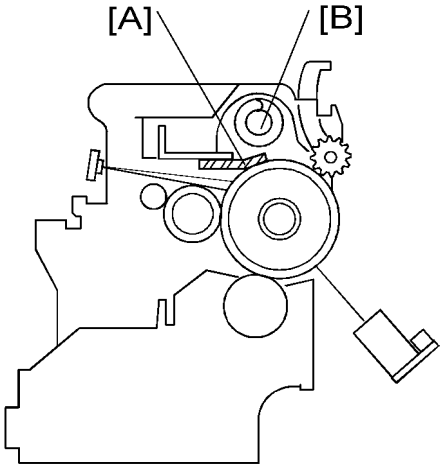
- When Vt is level 7 three times consecutively, the machine enters the toner end condition.
- When 50 copies have been made since entering the toner near end condition. The number of copies between toner near-end and toner end can be changed using SP 2213.

Toner End Recovery

While turning on the main switch, if the front cover is opened for 10 seconds or more and then closed while a Toner End condition exists (following toner bottle replacement), the machine clears the Toner End condition. The recovery procedure is the same as for toner near end. It takes about two minutes.

Drum Cleaning and Toner Recycling

Drum Cleaning

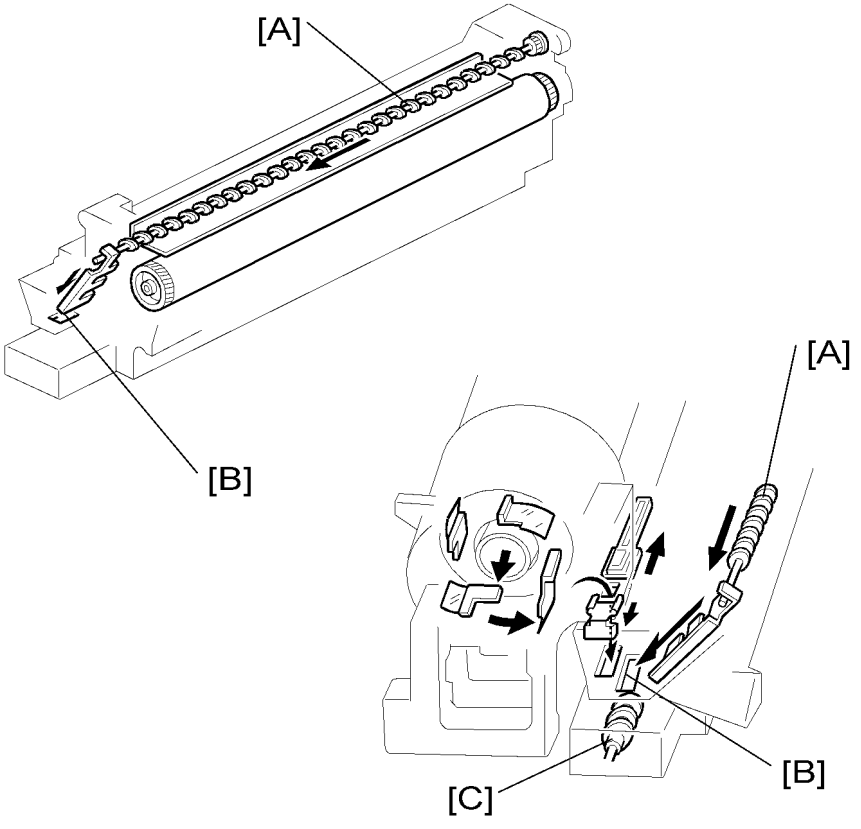


The cleaning blade [A] removes any toner remaining on the drum after the image is transferred to the paper. This model uses a counter blade system.

The cleaning blade scrapes off toner remaining on the drum. When toner builds up in the cleaning unit, toner at the top of the pile is removed by the toner collection coil [B].

To remove the toner and other particles that are accumulated at the edge of the cleaning blade, the drum turns in reverse for about 5 mm at the end of every copy job.

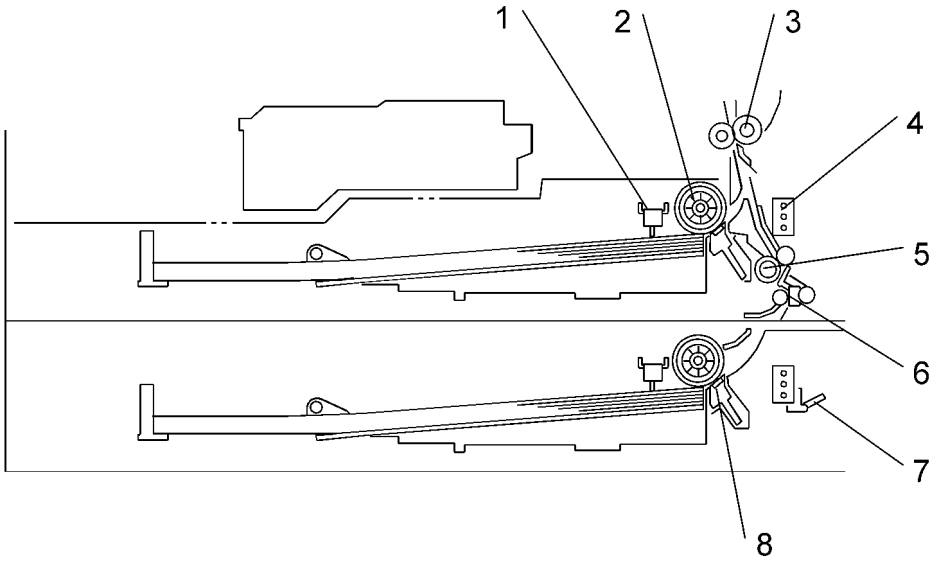
Toner Recycling



Toner picked up by the toner collection coil [A], is transported to the opening [B] in the side of the PCU. Then, this toner falls into the development unit with new toner coming from the toner bottle and it is all mixed together by mixing auger 1 [C] and used again.

Paper Feed

Overview



There are two paper trays, each of which can hold 250 sheets.

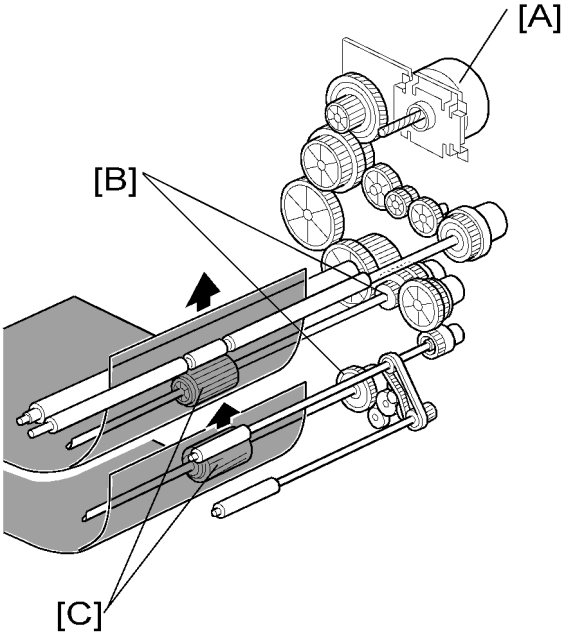
The paper tray feed stations use a friction pad system. To prevent paper from getting caught inside the machine when the tray is pulled out, the paper feed roller and shaft do not separate from the tray when the tray is pulled out.

The two relay sensors are used for paper jam detection. The lower one detects jams when paper is fed up from the optional paper feed unit.

The components of the paper feed station are as follows.

1. Paper End Sensor	5. Upper Relay Roller
2. Paper Feed Roller	6. Upper Relay Sensor
3. Registration Roller	7. Lower Relay Sensor
4. Paper Size Switch	8. Friction Pad

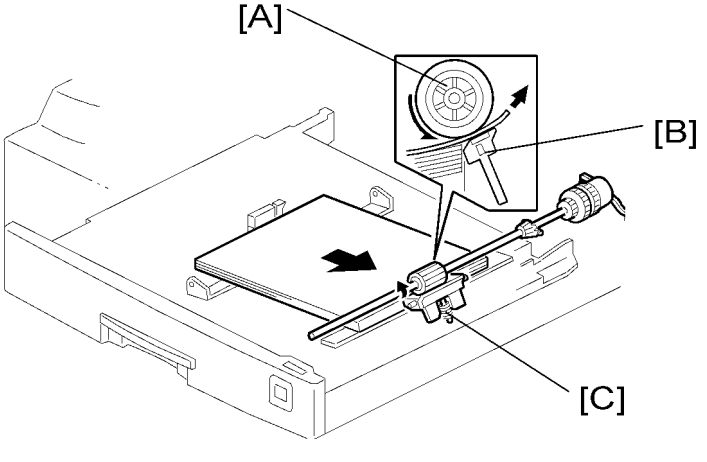
Paper Feed Drive Mechanism



The main motor [A] drives the pick-up and feed mechanism of both the first and second paper trays. The paper feed clutches [B] transfer drive from this motor to the paper feed rollers [C].

When the paper feed clutch turns on, the feed roller starts to feed the paper. The paper feed clutch stays on until shortly after the registration sensor has been activated.

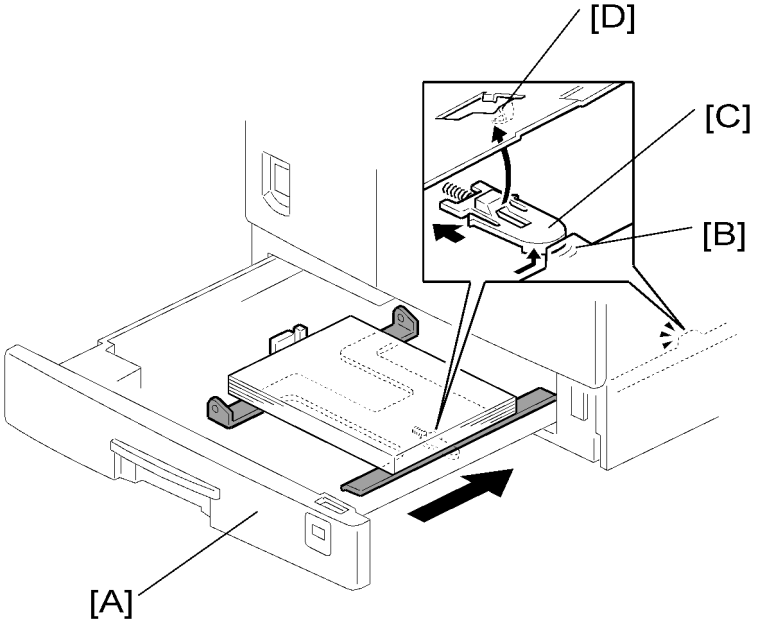
Paper Feed and Separation Mechanism



The paper feed roller [A] drives the top sheet of paper from the paper tray to the copier. The friction pad [B] allows only one sheet to feed at a time. The friction pad applies pressure to the feed roller with a spring [C].

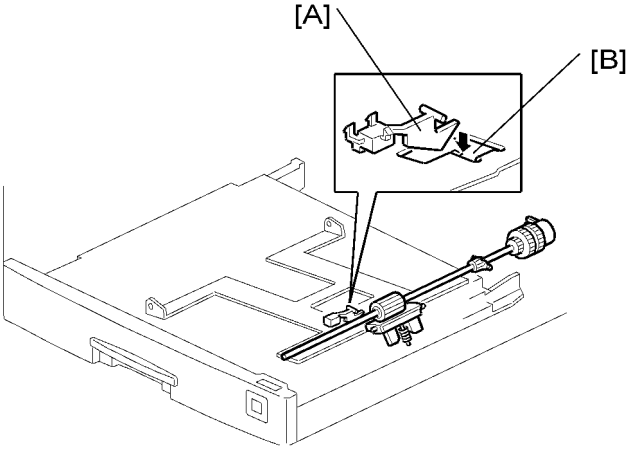
The friction pad pressure cannot be adjusted.

Paper Lift Mechanism



When the paper tray [A] is closed, projection [B] on the copier frame pushes slider [C] (on the bottom part of the paper tray) off the bottom plate hook [D]. After the release slide comes off, compressed springs lift the bottom plate.

Paper End Detection



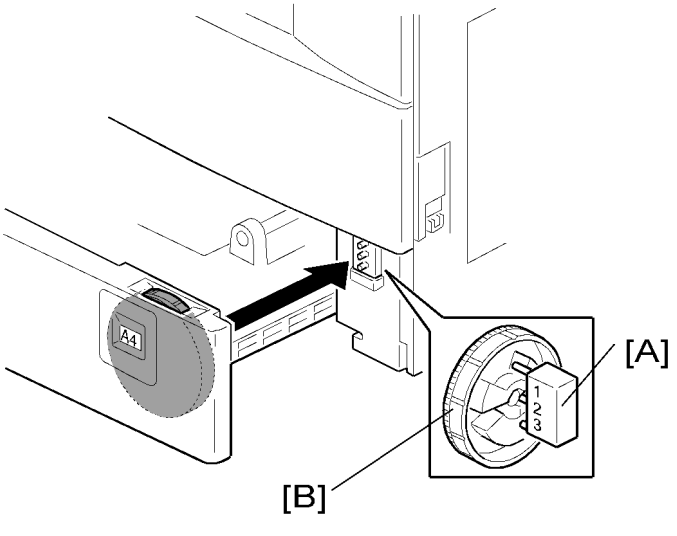
If there is any paper in the paper tray, the paper stack lifts the feeler, the paper end sensor [A] is deactivated.

When the paper tray runs out of paper, the paper end feeler drops into the cutout [B] in the tray bottom plate and the paper end sensor is activated.

When the paper tray is drawn out with no paper in the tray, the shape of the paper end feeler causes it to lift up.

Paper Size Detection

Paper Tray



SW / Size	1	2	3
A3, 11" x 17"	Off	Off	Off
A4 LEF	On	On	Off
A4 SEF, $8^1/_2$" x 11"	On	Off	Off
A5 LEF, $8^1/_2$" x 14"	Off	On	On
$8^1/_2$" x 13"	On	Off	On
11" x $8^1/_2$"	Off	On	Off
* (Asterisk)	Off	Off	On

ON=Not pushed, OFF=Pushed

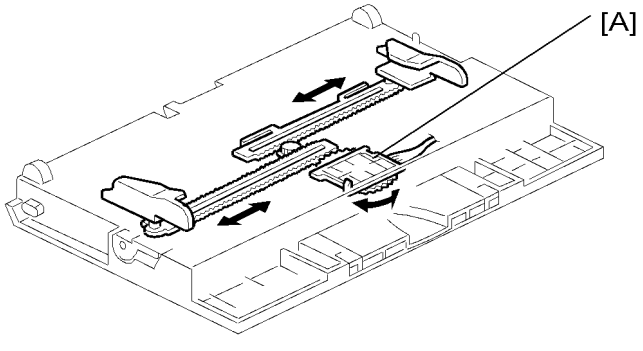
There are three paper size micro-switches [A] on the front right plate of the paper tray unit. The switches are actuated by a paper size actuator [B] behind the paper size indicator plate, which is on the front right of the tray.

Each paper size has its own actuator, with a unique combination of notches. To determine which size has been installed, the CPU reads which micro-switches the actuator has switched off.

The CPU disables paper feed from a tray if the paper size cannot be detected. If the paper size actuator is broken, or if there is no tray installed, the Add Paper indicator will light.

When the paper size actuator is at the "*" mark, the paper tray can be set up to accommodate one of a wider range of paper sizes by using User Tools. If the paper size for this position is changed without changing the User Tool setting, a paper jam will result.

By-pass Tray



The by-pass feed paper size switch [A] monitors the paper width. The side fence is connected to the terminal plate gear. When the side fences move to match the paper width, the circular terminal plate rotates over the wiring patterns on the rectangular part of the paper size switch. The patterns for each paper width in the paper size switch are unique.

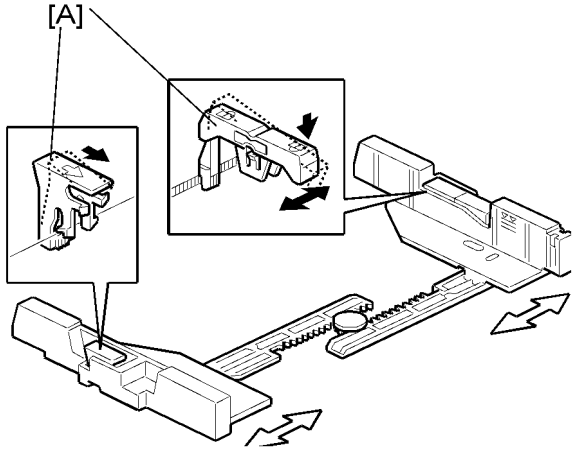
North America

CN No. (BICU)	11" x 17"	$8^1/_2$" x 14"	$5^1/_2$" x $8^1/_2$"		
CN136-1	ON/OFF	OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON	OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	OFF	OFF	ON
CN136-5	ON	ON	OFF	OFF	OFF

Europe/Asia

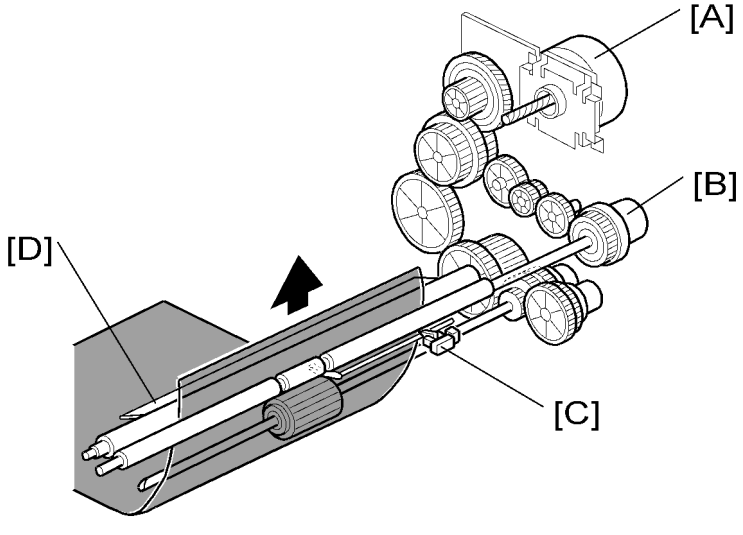
CN No. (BICU)	A3	A4 SEF	8" x 13"	A5 SEF
CN136-1	ON/OFF	OFF	OFF	OFF
CN136-2	OFF	OFF	OFF	ON/OFF
CN136-3 (GND)	OFF	OFF	OFF	OFF
CN136-4	OFF	ON	ON	OFF
CN136-5	ON	ON	OFF	OFF

Side Fences



If the tray is full of paper and it is pushed in strongly, the fences may deform or bend. This may cause the paper to skew or the side-to-side registration to be incorrect. To correct this, each side fence has a stopper [A] attached to it. Each side fence can be secured with a screw, for customers who do not want to change the paper size.

Paper Registration



The drive from the main motor [A] is transmitted to the registration roller through the registration clutch gear [B].

The registration sensor [C] is used for correcting paper skew and for detecting paper misfeeds.

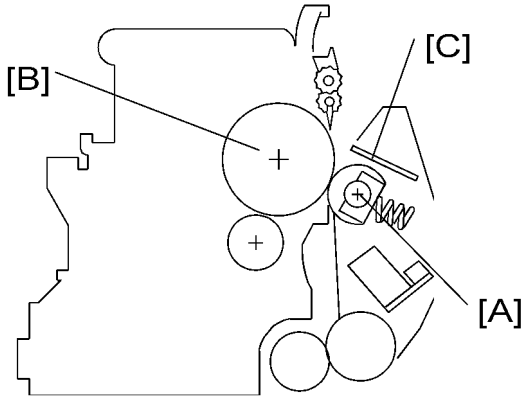
The cleaning mylar [D] contacts the registration roller. It removes paper dust from the registration roller so that this dust will not transfer into the development unit through the drum-cleaning unit.

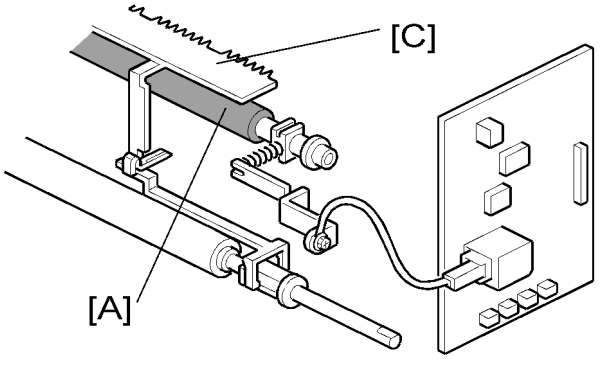
The amount of paper buckle at the registration roller to correct skew can be adjusted with SP 1003.

If jams frequently occur after registration, SP 1903 can be used to activate the relay clutch so that the relay roller assists the registration roller in feeding the paper along. When feeding from the by-pass tray, the by-pass feed clutch is activated, turning the by-pass feed roller. This feature may be needed when feeding thick paper, and cannot be used for the first paper feed tray.

Image Transfer and Paper Separation

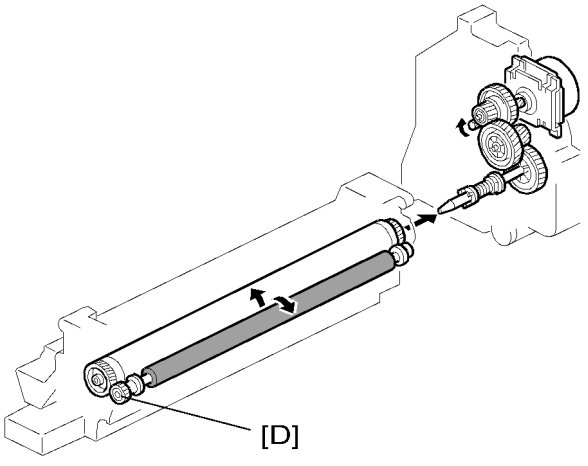
Overview





The transfer roller [A] touches the surface of the drum [B]. The high voltage supply board supplies a positive current to the transfer roller, which attracts the toner from the drum onto the paper. The current depends on the paper width, paper type, and paper feed tray.

The curvature of the drum and the discharge plate [C] help the paper to separate from the drum. The discharge plate is grounded.



Drive from the drum through a gear [D] turns the transfer roller.

Image Transfer Current Timing

There are two transfer current levels: low and high. The image transfer procedure is as follows:

1. When the CPU receives the image writing start signal, the CPU instructs the high voltage supply board to supply +10 microamperes (low transfer current level) to the roller. This prevents any positively charged toner on the drum surface from transferring to the transfer roller.
2. At a certain time after the low transfer current has been supplied to the roller, high transfer current is applied to the roller to transfer the toner to the paper (see the table below).
3. After the trailing edge of the paper has passed through the roller, transfer current turns off. In multiple copy mode, the transfer current shifts again to the low transfer current.

The high transfer current levels (default) are as shown in the following table. With SP2-301, the high transfer current level used for the paper feed trays, duplex tray, by-pass tray, and cleaning an be adjusted.

	By-pass Tray (Thick/OHP)	Paper Tray/ By-pass Tray (Normal)	By-pass Tray (Special/ Envelope)	Duplex (2nd Side)	Duplex (2nd Side)
A3/A4 LEF	11 µA	12 µA	13 µA	12 µA	17 µA
DLT	12 µA	18 µA	15 µA	18 µA	17 µA
B4 SEF	12 µA	12 µA	15 µA	12 µA	18 µA
LT SEF	17 µA	17 µA	15 µA	17 µA	24 µA
A4 SEF	21 µA	15 µA	28 µA	15 µA	24 µA

	By-pass Tray (Thick/OHP)	Paper Tray/ By-pass Tray (Normal)	By-pass Tray (Special/ Envelope)	Duplex (2nd Side)	Duplex (2nd Side)
B5 SEF	22 µA	19 µA	28 µA	19 µA	22 µA
A5 SEF	22 µA	19 µA	28 µA	19 µA	28 µA
HLT SEF	22 µA	19 µA	28 µA	—	—
B6 SEF	22 µA	19 µA	28 µA	—	—
A6 SEF	22 µA	19 µA	34 µA	—	—
Post card/ Envelope	22 µA	19 µA	34 µA	—	—

Be careful when increasing the transfer current. This may cause a ghosting effect, in which part of the image at the top of the page is repeated lower down the page at a lower density. In the worst case, it may also damage the OPC drum.

Transfer Roller Cleaning

If the paper size is smaller than the image, or if a paper jam occurs during printing, toner may be transferred to the roller surface. To prevent the toner from transferring to the back side of the printouts, the transfer roller requires cleaning before the next printing run.

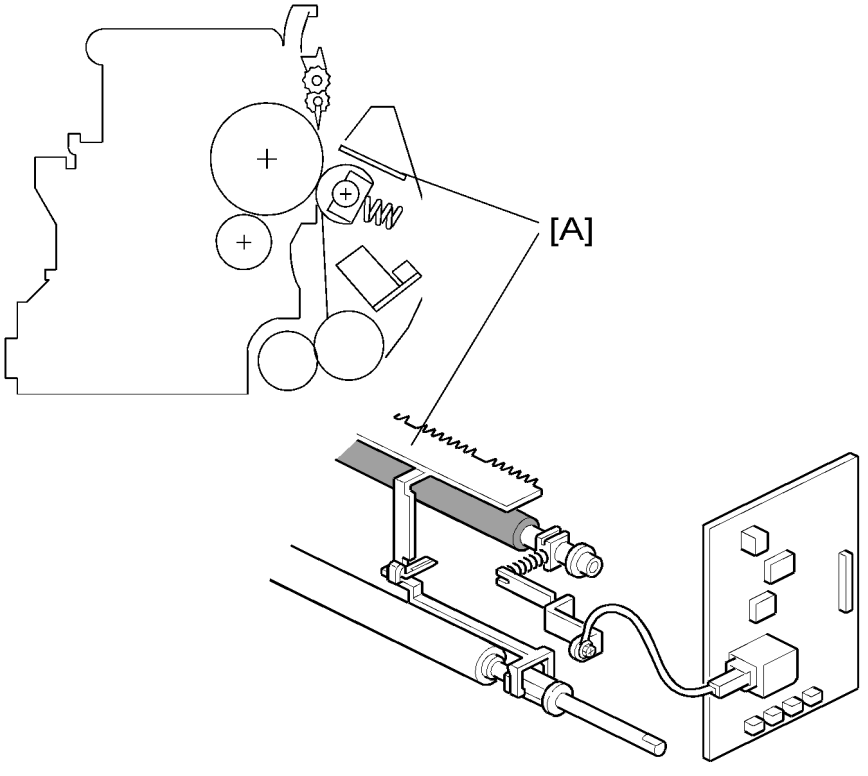
During transfer roller cleaning, the high voltage supply unit supplies a negative cleaning voltage (about –1 kV) to the transfer roller. Any negatively charged toner on the transfer roller is then transferred back to the drum. Then a positive cleaning current (+10 microamperes) is applied to the transfer roller to push back to the drum any positively charged toner on the transfer roller.

The machine goes through the cleaning mode in the following conditions:

- Before starting the printing job (only if enabled with SP 2996; note that the default setting is off).
- Just after the power is switched on.
- After a copy jam has been cleared.
- After 10 or more sheets of paper have been copied and the copy job has finished.

Also, the transfer roller cleaning current can be adjusted using SP 2301 4.

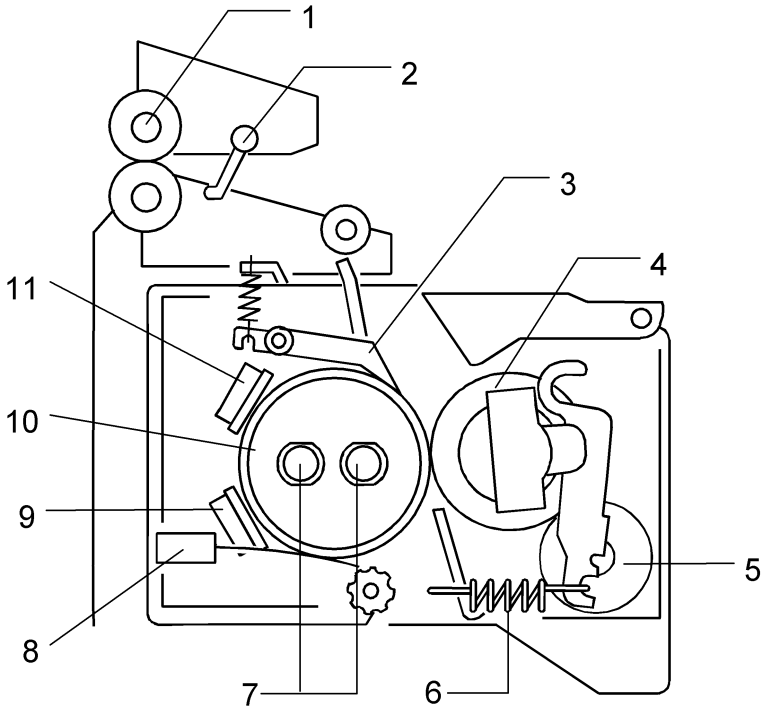
Paper Separation Mechanism



The discharge plate [A] and the drum curvature of the drum help the paper to separate away from the drum. The discharge plate is grounded.

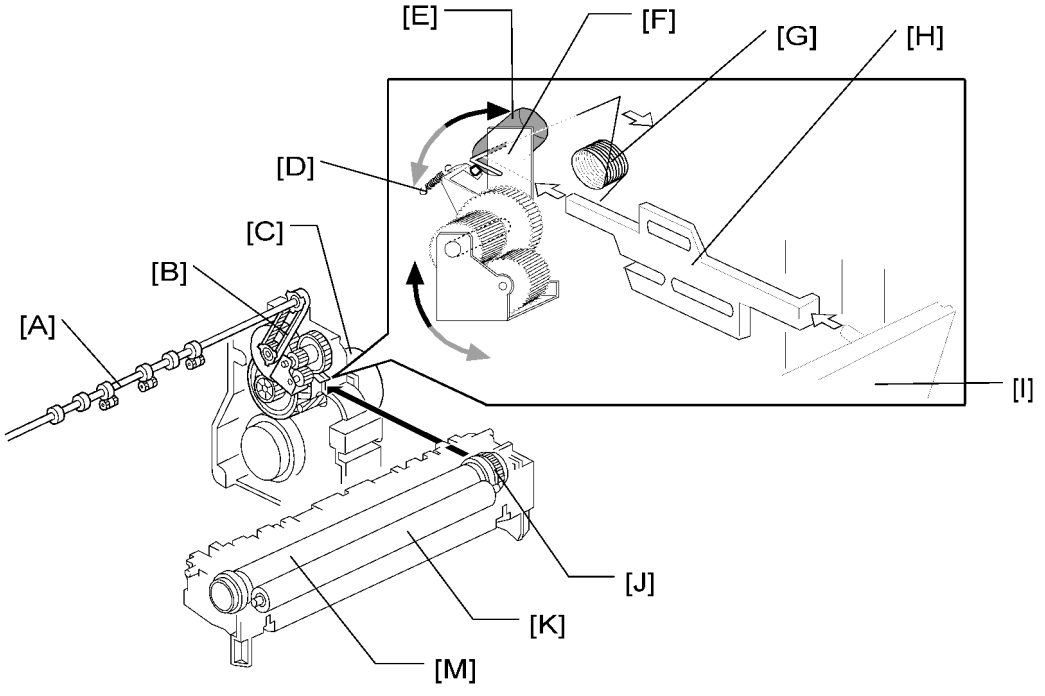
Image Fusing and Paper Exit

Overview



1. Paper exit roller	7. Fusing lamps
2. Exit sensor	8. Thermistor
3. Hot roller strippers	9. Thermostat
4. Pressure roller	10. Hot roller
5. Cleaning roller	11. Thermostat
6. Pressure spring	

Fusing Unit Drive and Release Mechanism



Fusing Unit Drive

The main motor [C] drives the fusing unit through a gear train, and drives the paper exit rollers [A] through the timing belt [B].

Drive Release Mechanism

When the right door [I] is open, the spring [G] pushes the top end of the gear holder [F] to the right. The drive gear is released from the fusing-unit drive gear [J]. When you close the right door, the mechanical link [H] pushes the spring [G]. The gear holder turns counterclockwise by the force of another spring [D], and engages with the fusing-unit drive gear.

Contact/Release Control

The drive power is not transmitted to the fusing unit ( ) during warming up when the fusing temperature (at the start) is 18°C or higher. The drive power is transmitted when the fusing temperature is less than 18°C. This contact/release control is based on the following conditions.

Fusing Temp.	Contact/Release
18°C or higher	Release
Less than 18°C	Contact

The hot roller [L] takes a shorter time to become hot enough if it is not turning during warming up. When, however, the fusing temperature (at the start) is low, the temperature of the hot-roller surface may become uneven.

You can disable this control (☛ SP 1103 1).

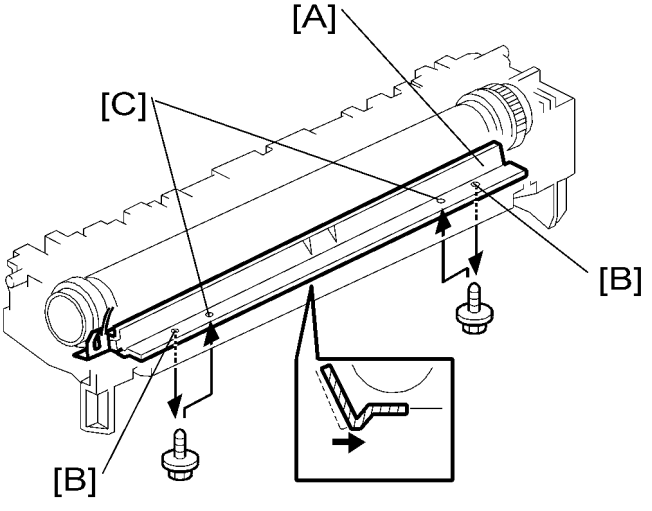
Drive Release Solenoid

Solenoid	Drive gear
Off	Engaged
On	Released

The fusing drive release solenoid [E] is on the rear end of the gear holder. When the solenoid is off, the spring [D] pulls the gear holder, and the drive gear engages with the fusing unit drive gear. When the solenoid is on, it pulls the top end of the gear holder to the right, and the gear holder turns clockwise. As a result, the drive gear is released from the fusing unit drive gear.

The release solenoid comes on when you turn on the main switch if the fusing temperature is 18°C or higher (☛ Contact/Release Control). The solenoid releases the drive gear from the fusing unit drive gear. The fusing lamps heat the hot roller [L] more effectively since the heat is not conducted to the pressure roller [K]. When the hot roller becomes hot enough, the release solenoid turns off, letting the drive gear engage with the fusing unit drive gear.

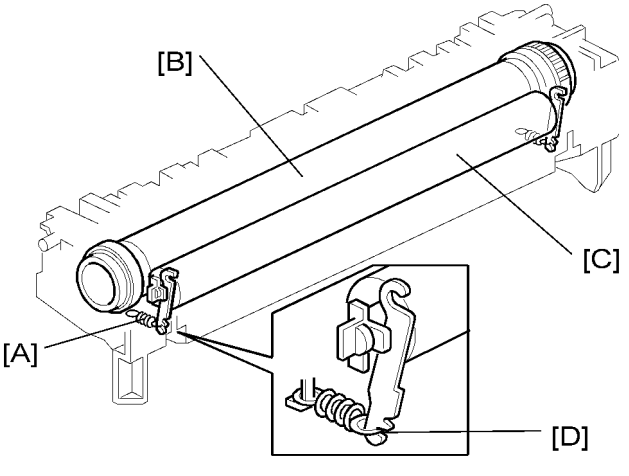
Fusing Entrance Guide Shift



The entrance guide [A] is adjustable for paper thickness to prevent creasing. The outer screw holes [B] on each side are used as the default setting.

If creasing occurs frequently in the fusing unit, adjust the entrance guide to the right, by securing it with the inner holes [C]. This allows more direct access to the gap between the hot roller and the pressure roller.

Pressure Roller

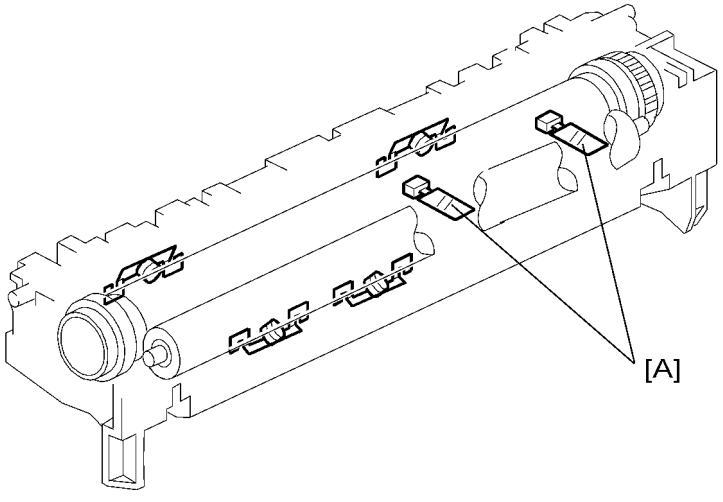


The pressure springs [A] constantly apply pressure between the hot roller [B] and the pressure roller [C].

Applied pressure can be changed by adjusting the position of the pressure springs. The spring is positioned at the end [D] as the default setting.

Fusing Temperature Control

Overview



There are two fusing lamps (not identical), two thermistors, and four thermostats.

The fusing temperature is controlled using the thermistors [A].

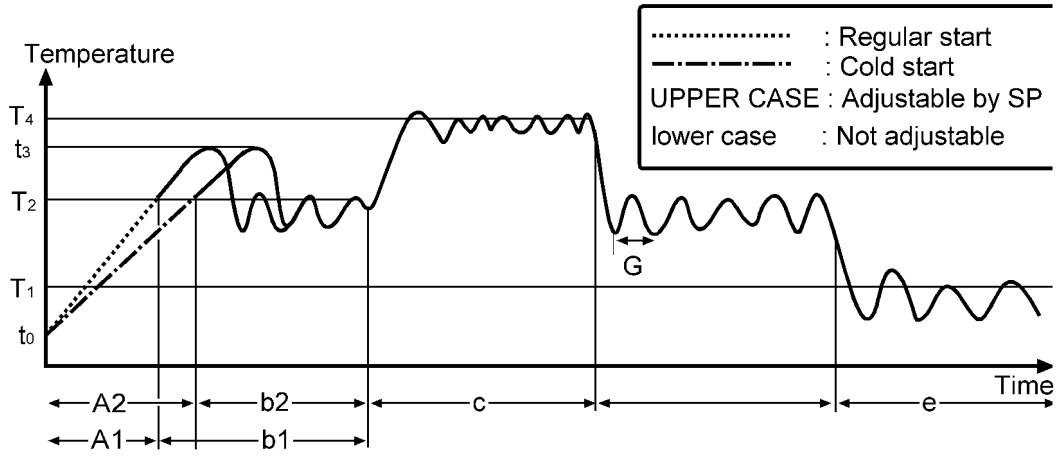
The CPU checks the output from the fusing thermistor once every 1.5 seconds. The CPU decides how long the lamps must be switched on during the next 1.5 seconds by comparing the following temperatures:

- The center thermistor temperature and the target center temperature
- The end thermistor temperature and the target end temperature

The fusing lamp works to maintain a target fusing temperature of 160°C during copying.

Temperature Control

According to the operation mode, the fusing temperature is controlled. The diagram illustrates the transition of fusing temperature. After you turn the main switch on, the fusing temperature rises from the room temperature (t0) to one of the specified temperatures. You can adjust some of the temperatures.



A1: Regular Start Mode/A2: Cold Start Mode (SP 1107 1-2)

Turning the fusing lamp on and off may affect the voltage of the power source in the room, causing the fluorescent lights in the room to flicker. To lighten this problem, you can reduce the checking repetition to 20 times.

6

When machine initialization ends, the fusing temperature is set to one of the following temperatures:

- The Standby Temperature (T2: SP 1105 3-4) when there is no print job.
- The First Print Temperature when the copier has received a print request during machine initialization.

You cannot directly adjust the First Print Temperature. This temperature is 10°C higher (up to 185°C) than the Copying Temperature (☛ Copying Mode).

C: Copying Mode

When the copier is making copies, the fusing temperature is set to one of the following temperatures:

- The Warm Up Temperature (SP 1105 1-2) to output the first print after the Low Power Mode (☛ Low Power Mode)
- The Copying Temperature (T4: SP 1105 5-6) to output the second print (and after the second)

You can raise the Warm Up Temperature to make better the fusing quality of the first print. While the copier is adjusting the fusing temperature to the Warm Up Temperature, the message "Copy starts after warm up" is displayed.

c : Thick Paper Mode

When the machine is making copies on thick paper, the fusing temperature is set to the Thick Paper Temperature (SP 1105 9-10). When thick paper reaches the registration sensor, the copier checks the fusing temperature, and executes one of the following processing:

- Stops feeding the thick paper (and keeps it at the registration sensor) and waits for the fusing temperature to reach the predefined temperature–the temperature 5°C lower than the Thick Paper Temperature. (The fusing temperature keeps rising until it reaches the Thick Paper Temperature while the thick paper travels from the registration sensor to the fusing unit.)

- Continues feeding paper and executes the print job if the fusing temperature is high enough.

b1/b2: Standby Mode

When the copier is not making copies, the fusing temperature is set to the Standby Temperature (T2: SP 1105 3-4). You can adjust this temperature. However, if you have raised this temperature, the BICU may be unable to generate a SC code in the event of fusing lamp error.

While in the Standby Mode, the copier checks the fusing temperature every 1.5 seconds (G: SP 1108 1). Turning on and off the fusing lamp may affect the voltage of the power source (in the room), causing the fluorescent lights (in the room) to flicker. To lighten such trouble, you can adjust the control period. However, if you elongate this period (to two seconds or longer), the BICU may be unable to generate a SC code in the event of a fusing lamp error.

e: Low Power Mode

When the Energy Saver Timer (> System Settings > Timer Settings > Energy Saver Timer) expires, the fusing temperature is set to the Low Power Temperature (T1: SP 1105 7-8).

Overheat Protection

This machine protects its hardware from overheat by three features. Normally, the first feature can fully protect the hardware. The second feature works as the fail-safe feature for the first one. The third feature works as the fail-safe feature for the second one.

First Feature:

If the fusing temperature reaches 230°C (or higher) and stays so for one second, the controller turns the fusing lamp off. In a case like this, SC543 or SC553 is displayed.

Second Feature:

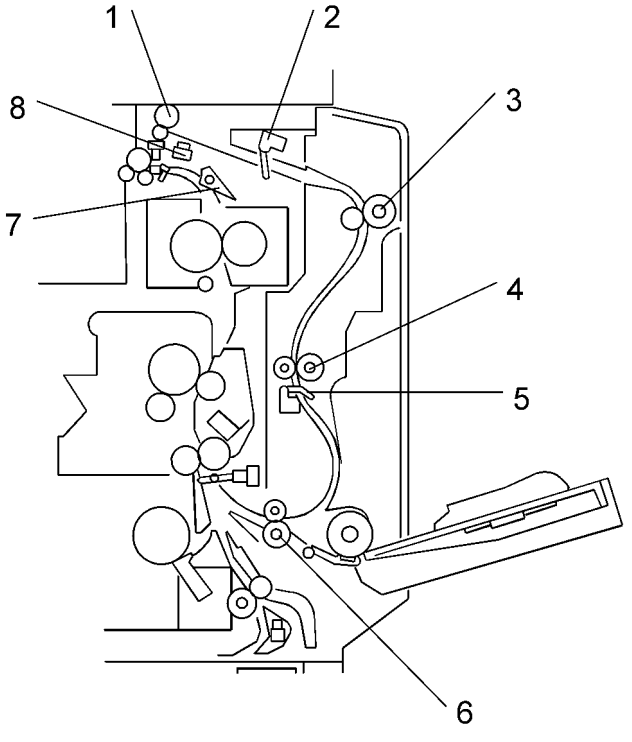
If the fusing feature reaches 250°C, the controller cuts off the 24V line. (The fusing lamps are on the 24V line.)

Third Feature:

Two thermostats are attached on each line of the two fusing lamps. (four thermostats in total). One of the two thermostats cuts the power supply to the fusing lamp at 179°C, and the other cuts the power supply at 180°C. (Note that the thermostat temperature is somewhat lower than the fusing temperature.)

Duplex Unit

Overall

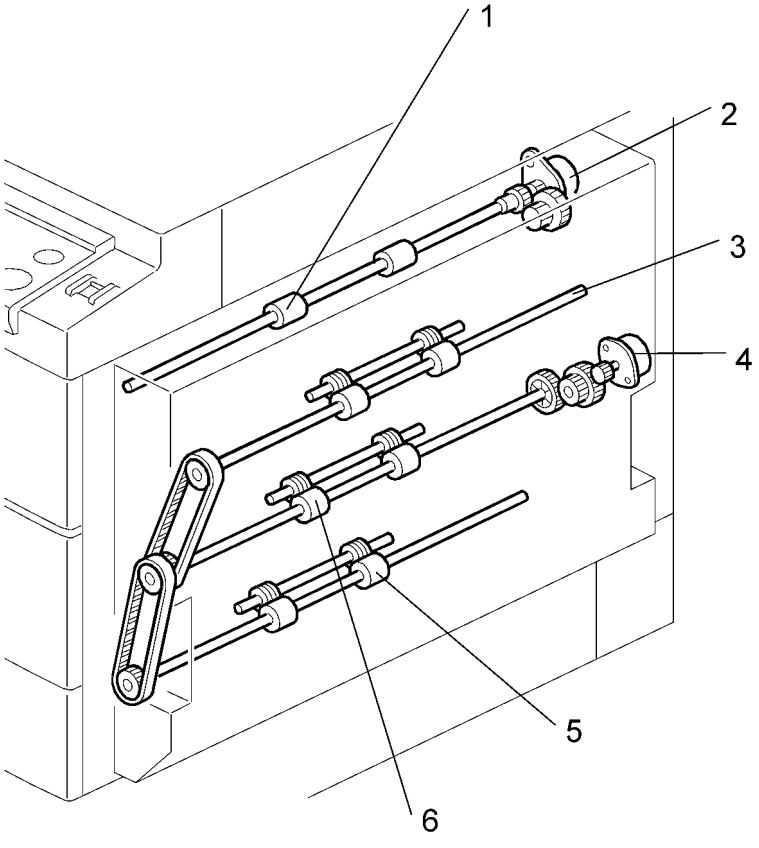


The printed page from the fusing unit goes straight through to the exit tray, or upward to the inverter section, depending on the position of the junction gate.

If the user selects duplex mode, the page is directed to the inverter tray, then reversed through the duplex unit, and back into the machine for printing the second side.

1. Duplex Inverter Roller	5. Duplex Exit Sensor
2. Duplex Entrance Sensor	6. Lower Transport Roller
3. Upper Transport Roller	7. Junction Gate
4. Middle Transport Roller	8. Duplex Inverter Sensor

Drive Mechanism



1. Duplex Inverter Roller	4. Duplex Transport Motor
2. Duplex Inverter Motor	5. Lower Transport Roller
3. Upper Transport Roller	6. Middle Transport Roller

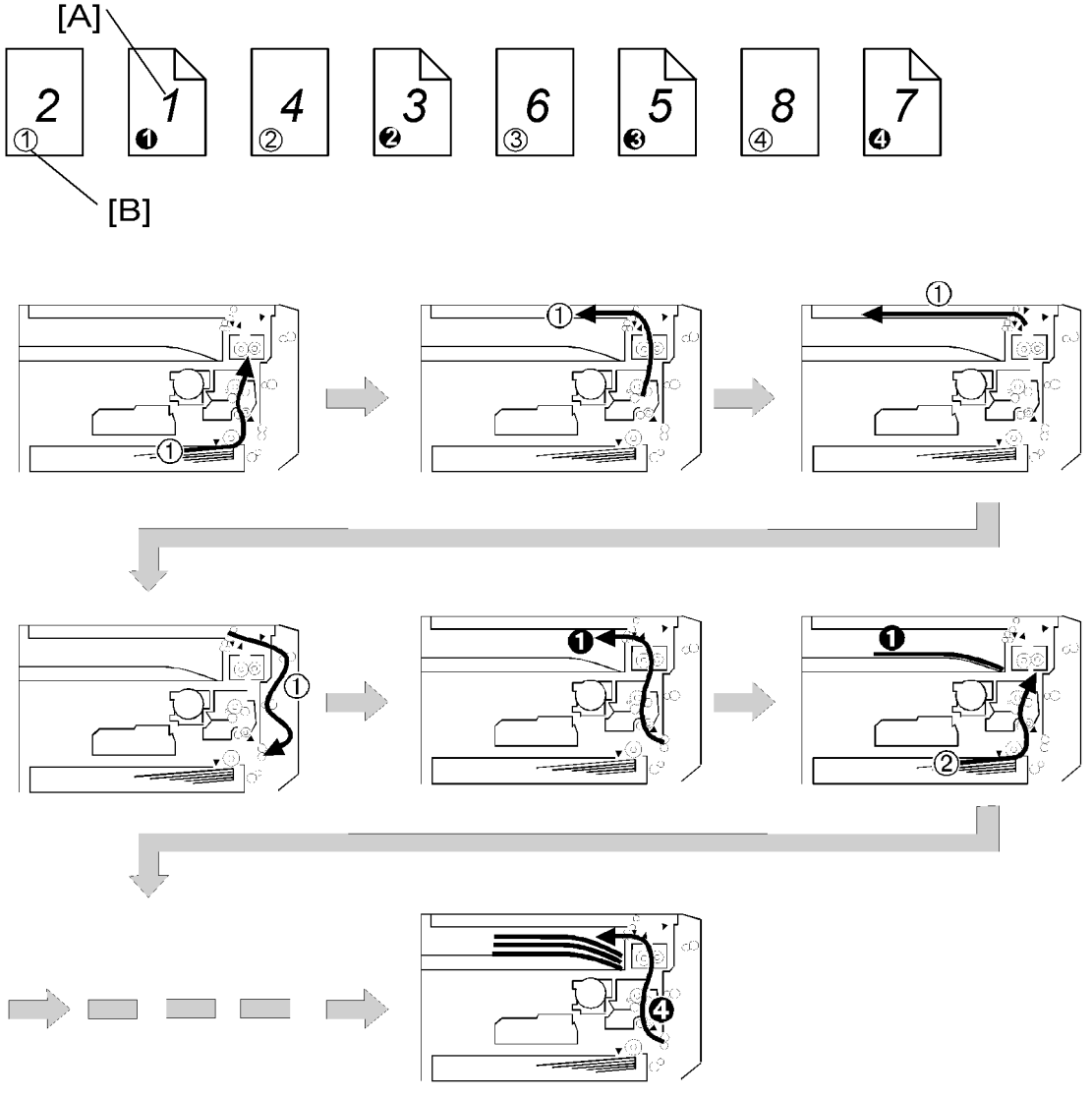
Basic operation

To increase the productivity of the duplex unit, copies are printed as follows.

- Larger than A4 Short-edge/LT Short-edge -

The paper feed path can hold only one sheet of copy paper at a time.

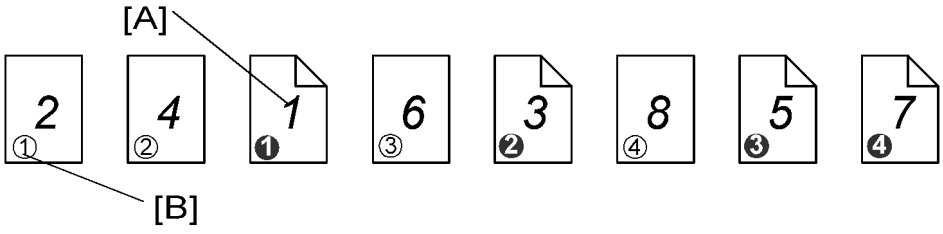
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).

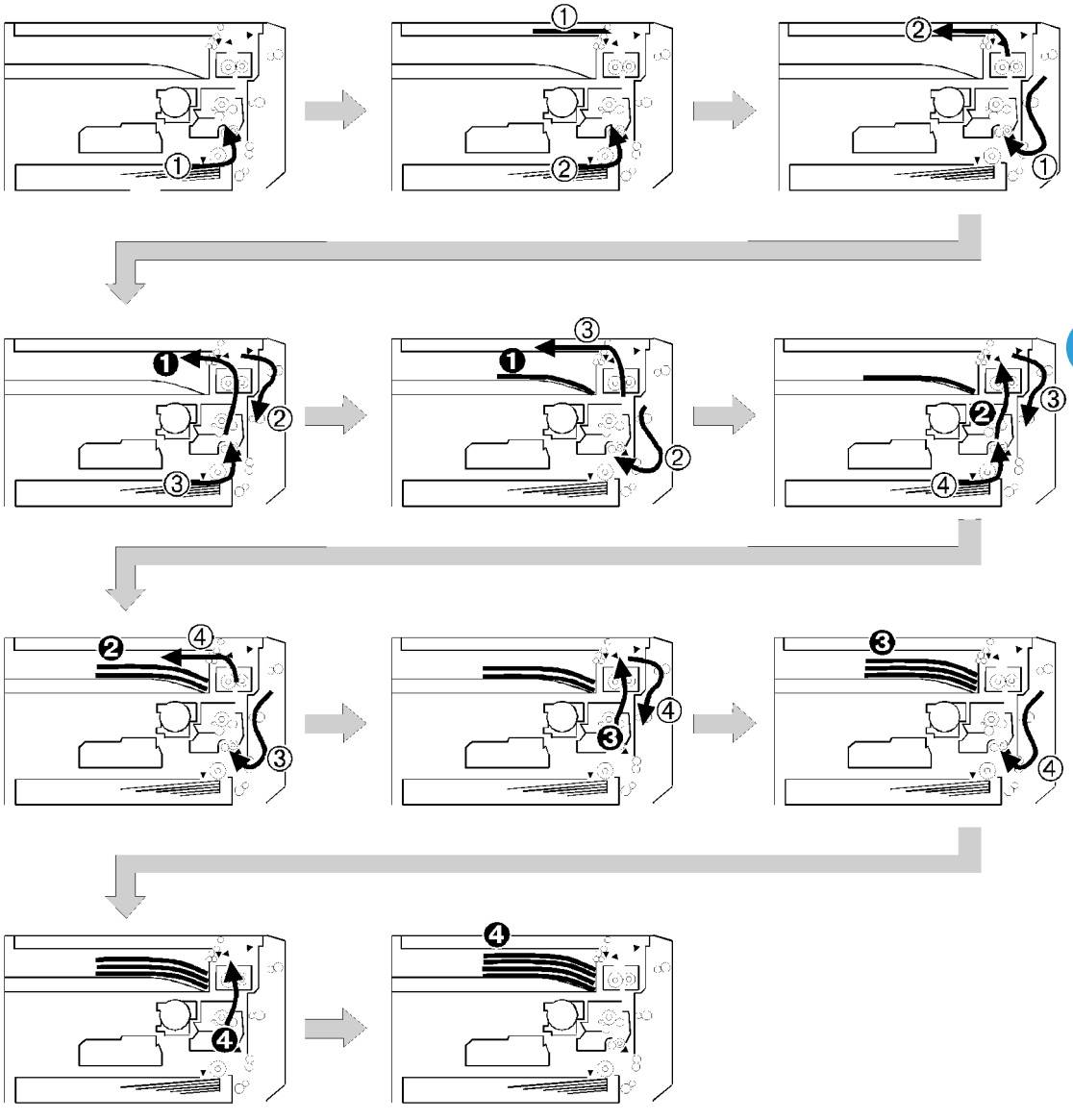


- Up to A4 Short-edge/LT Short-edge -

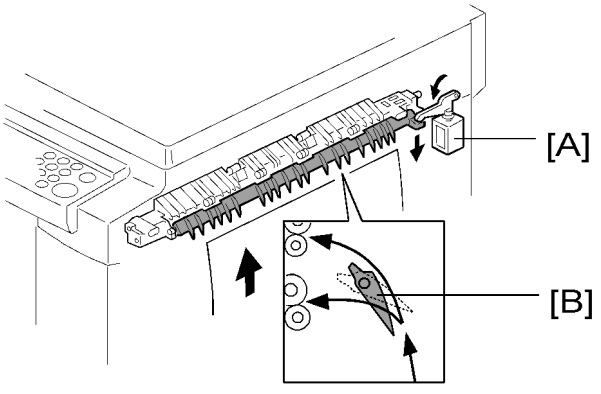
The paper feed path can hold two sheets of copy paper.

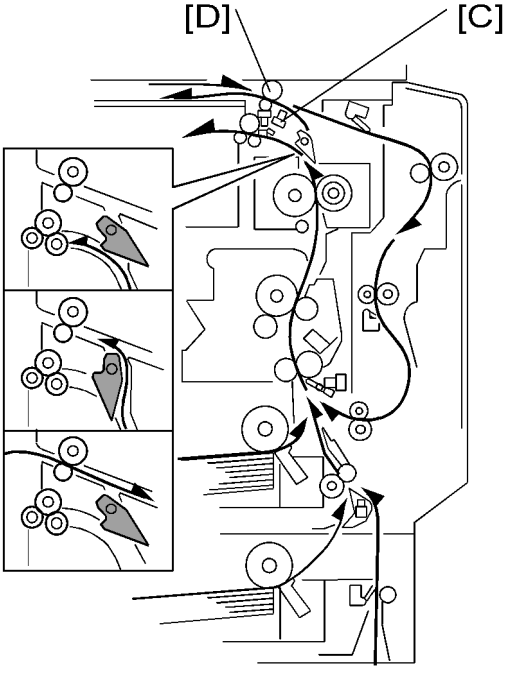
Example: 8 pages. The number [A] in the illustration shows the order of pages. The number [B] in the illustration shows the order of sheets of copy paper (if black, this indicates the second side).


[A]
2
4
1
6
3
8
5
7
[B]



Feed In and Exit Mechanism





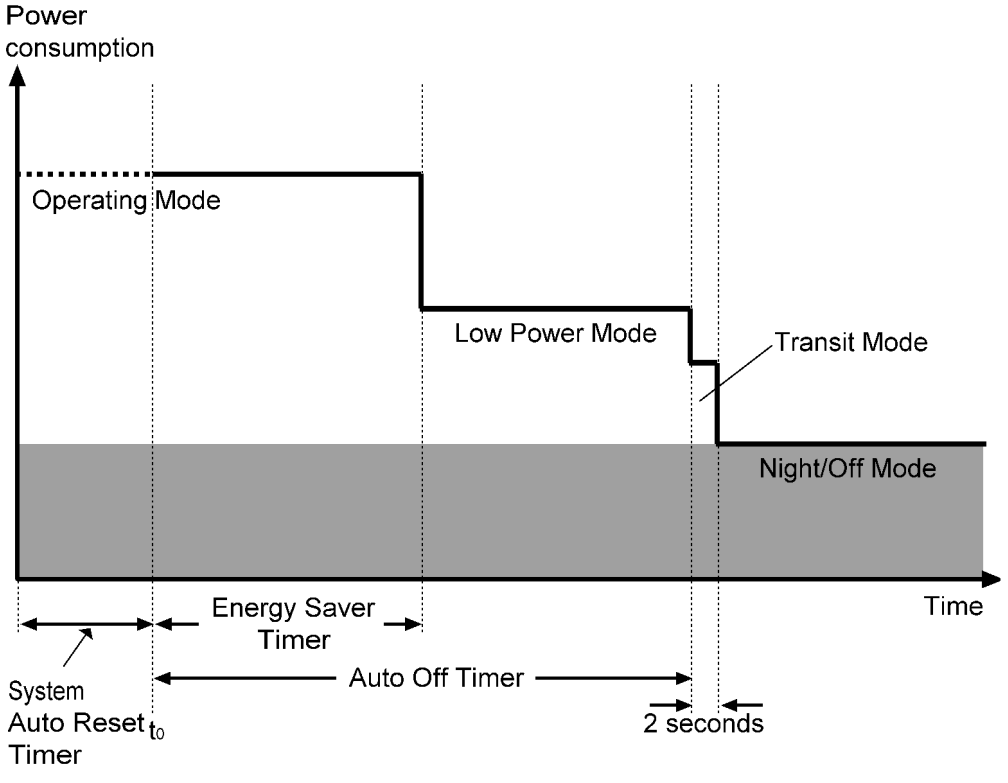
During duplex copying, the inverter gate solenoid [A] switches on and the junction gate [B] switches over to direct the paper to the inverter. When the paper trailing edge reaches the duplex inverter sensor [C], the inverter roller [D] reverses its rotation direction and the paper goes to the duplex unit. The paper is then sent to the mainframe registration rollers to print the reverse side.

If there are two or more copies being made with A4/8 $^{1}/_{2}$" x 11" SEF (or smaller), the next sheet waits at the registration sensor for the current sheet to exit the inverter.

Energy Saver Modes

This section illustrates the energy saver modes.

Overview



The machine has three energy-saver modes: the Low Power Mode, the Transit Mode, and the Night/Off Mode. The Transit Mode continues for about two seconds (probably, the user does not recognize this mode when it occurs). The table lists the status of several components. For the fusing temperature, see the section of "Fusing Temperature Control".

	Operation panel	Engine	Exhaust fan
Operating Mode*	On	On	On
Low Power Mode	Off	On	Off
Transit Mode	Off	On	Off
Night/Off Mode	Off	Off**	Off

* The "Operating Mode" here refers to all the modes (or status) other than the Low Power Mode and Night/Off Mode. Actual power consumption (during the Operating Mode) depends on job status and environmental conditions.

** The SRAM is alive and backs up the engine controller.

AOF

When AOF is off, the engine controller is unable to start the Night/Off Mode. The user should keep AOF on (> System Settings > Key Operator Tools > AOF).

Timers

The engine controller references the Energy Saver Timer to start the Low Power Mode, and references the Auto Off Timer to start the Night/Off Mode. The user can set these timers (> System Settings > Timer Settings).

The Energy Saver Timer and the Auto Off Timer start at the same time (t_0) when the machine ends all jobs or when the user ends all manual operations. Note that the Auto Off Timer does not wait for the Energy Saver Timer. Therefore, if the user specifies a smaller value in the Energy Saver Timer, the Auto Off Timer expires earlier than the Energy Saver Timer. In a case like this, the Low Power Mode is not activated. Instead, the engine controller starts the Night/Off Mode when the Auto Off Timer expires.

Specified value	Low Power Mode	Night/Off Mode
Energy Saver Timer > Auto Off Timer	Can start	Can start
Energy Saver Timer = Auto Off Timer	Cannot start	Can start
Energy Saver Timer < Auto Off Timer	Cannot start	Can start

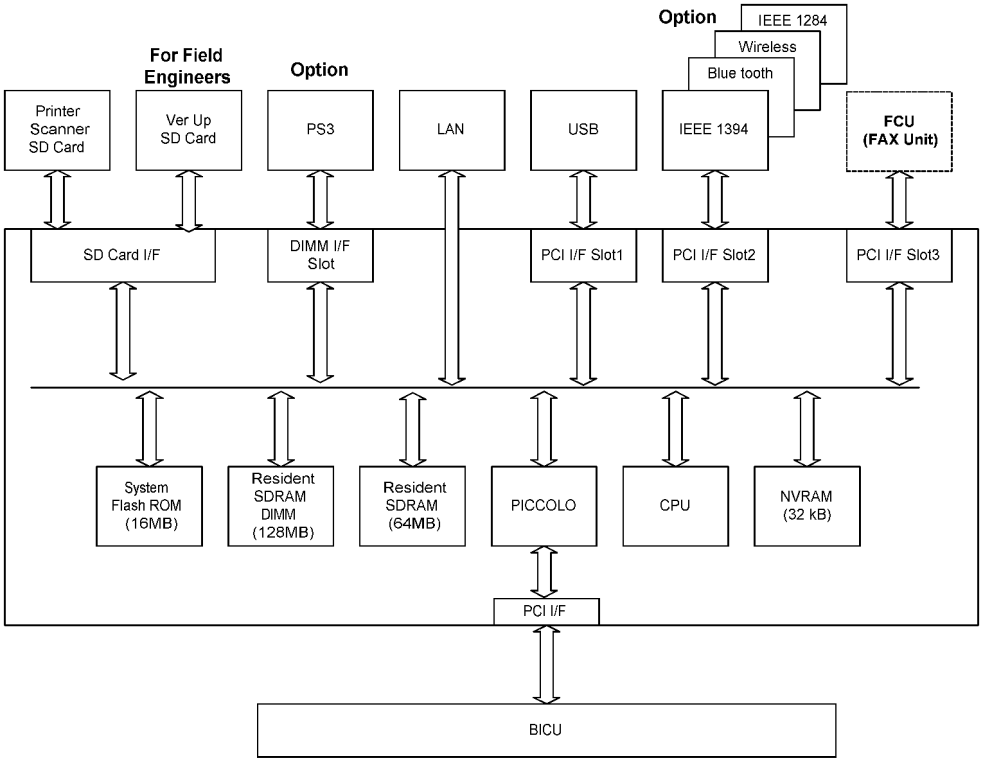
Recovery

Any of the following operations brings the machine back to the Operating Mode:

- The power switch is pressed.
- Originals are set on the document feeder.
- The platen cover (or document feeder) is opened.
- The controller receives a job over the network or the telephone line.
- An SC code is generated.

Printer Functions

Overview



This machine uses the GW architecture. To enable the printer features, install the printer option SD Card on the controller.

Main components:

- CPU: TOSHIBA TMPR4955BFG-300
- PICCOLO: GW architecture ASIC. It controls all the functions of the controller board.
- Flash ROM: 16 MB Flash ROM for the system program
- SDRAM: On board 64 MB, DIMM 128 MB (resident)
- NVRAM: Stores the controller settings
- LAN interface
- USB 2.0 interface
- SD Card: Printer/Scanner program

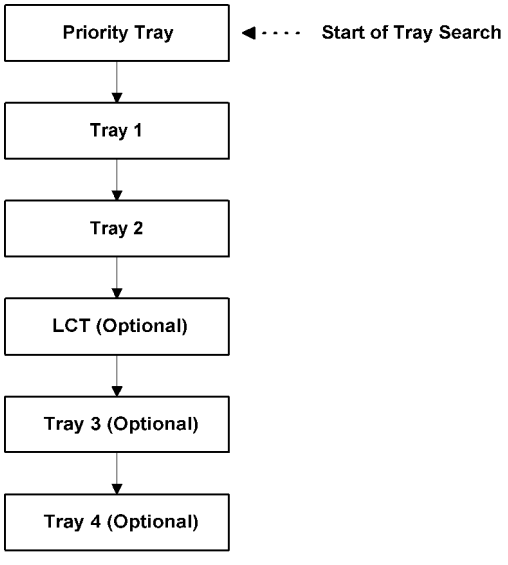
Optional components:

- PostScript3 DIMM
- IEEE1394 interface
- Bluetooth interface
- Wireless LAN interface
- IEEE1284 interface

Controller Functions

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)

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)

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.

Auto Continue

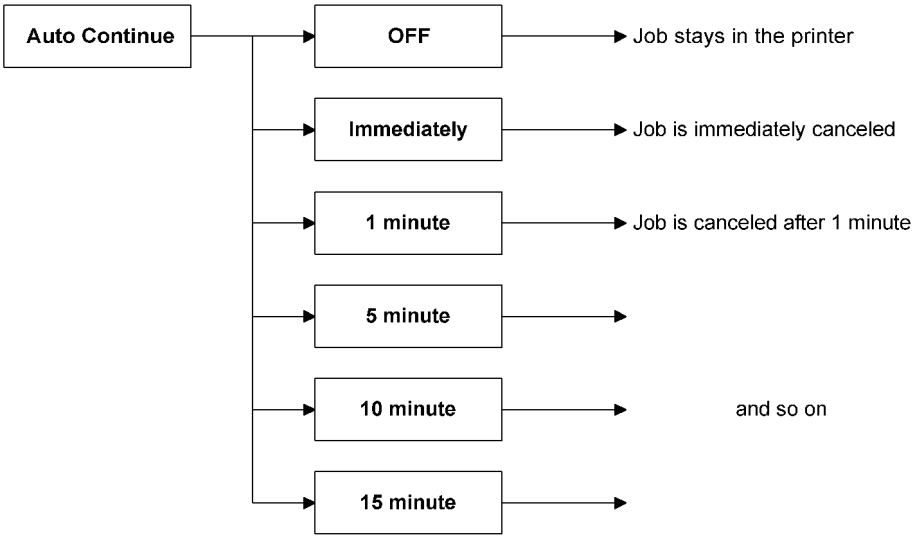
When this function is enabled, the machine stops printing and cancels the print job if there is no paper tray which matches the paper size and paper type specified by the driver.

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:



The default setting for Auto Continue is "Off."

Paper Output Tray

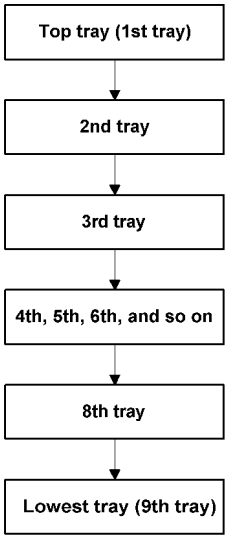
The default paper output tray for each application (copy/fax/printer) can be selected using the System Settings menu in the user tools. (User Tools/ System Settings/ General Features)

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.

Sequential Stacking



When the nine-tray mailbox is selected as the output tray and "Printer Default" is specified as the output tray in the driver, the machine automatically sends the output to the top tray (1st tray). When that tray fills up, the machine sends the output to the next tray.

This feature is called "Sequential Stacking."

- If a tray becomes full and paper is detected in the next tray, the machine displays an error and stops printing.
- When paper in the next tray is removed, the machine automatically resumes printing to the next tray.
- If all trays become full (overflow detected in all trays), the machine displays an error and stops printing. This time, all paper in all trays must be removed.

Duplex Printing

Duplex printing is available with all output bin options but not 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.

Scanner Functions

Image Processing For Scanner Mode

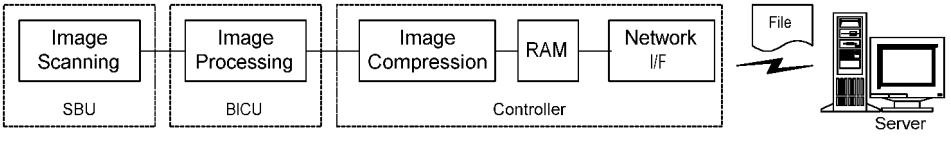
The image processing for scanner mode is done in the IPU chip on the BICU board. The IPU chip chooses the most suitable image processing methods (gamma tables, dither patterns, etc) depending on the settings made in the driver.

The image compression method can be selected with SP mode (MR/MH/MMR for binary picture processing).

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



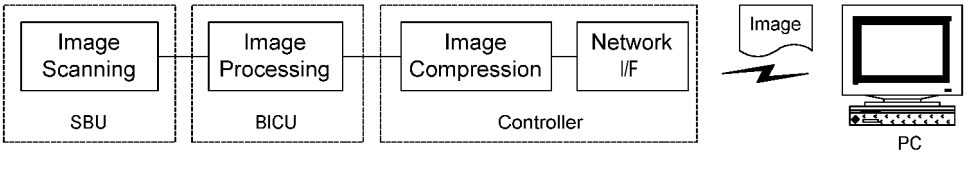
The user can select the following modes from the LCD.

1.) Delivery only

After image processing and image compression, all image data for the job are stored in the printer controller RAM using TIFF file or PDF file format (binary picture processing). The type of TIFF or PDF 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

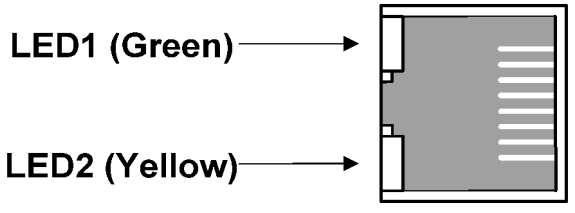


After image processing and image compression, the data (TIFF or PDF) is sent to the scanner Twain driver directory on the computer.

Network Interface

Led Indicators

The LED is on the optional controller box.



Description	On	Off
LED1 (Green): Link status	Link success	Link failure
LED2 (Yellow): Data rate	100 Mbps	10 Mbps

IEEE1394 Interface

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

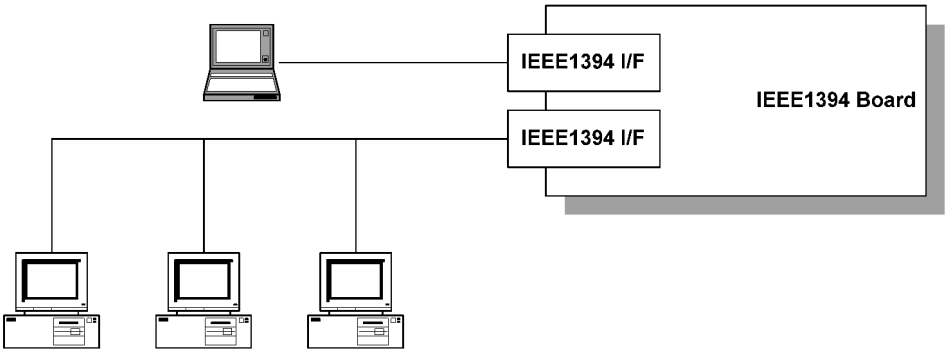
Cable length	4.5m (15ft)

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:

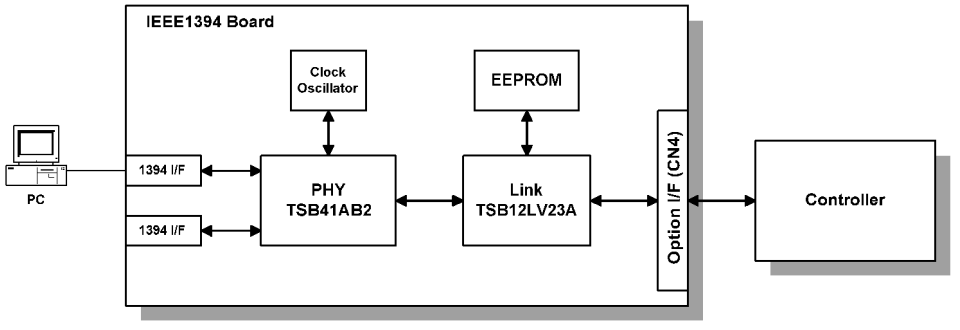
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- Peer-to-peer networking (no hub required)
- No terminator or device ID is required, unlike SCSI
- Automatic configuration of devices upon start-up, or "plug and play."
- Real-time data transfer 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.

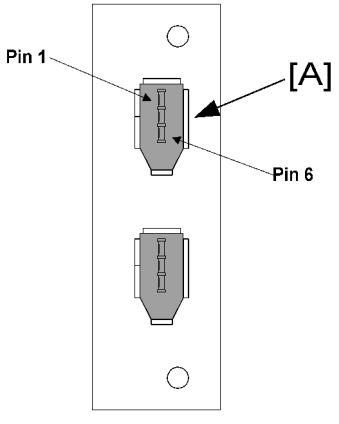
IEEE1394 cables can be either 4-pin (data only) or 6-pin (data and power). IEEE1394 allows either 6-pin or 4-pin connectors. However, this machine only uses the 6-pin connectors. The machine has two 6-pin ports.

Block Diagram



- PHY: Physical layer control device
- Link: Link layer control device
- EEPROM: 256-byte ROM

Pin Assignment



[A]: Pin assignment	
Pin 1	Pin 4
Pin 2	Pin 3
Pin 5	Pin 6

Pin No.	Signal Description
1	Cable Power

2	GND
3	Receive strobe
4	Transmit data
5	Receive data
6	Transmit strobe

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.

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 'Off-line').

IEEE 802.11b (Wireless Lan)

Specifications

The IEEE 802.11b wireless LAN interface card is available as an option for this machine.

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 transmission rates	**Speed**	**Distance**
	11 Mbps	140 m (153 yd.)
	5.5 Mbps	200 m (219 yd.)
	2 Mbps	270 m (295 yd.)
	1 Mbps	400 m (437 yd.)
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 active at the same time as the Ethernet LAN. The following user tool setting determines which LAN is active: System Settings – Interface Settings – Network - LAN Type.

LED Indicators

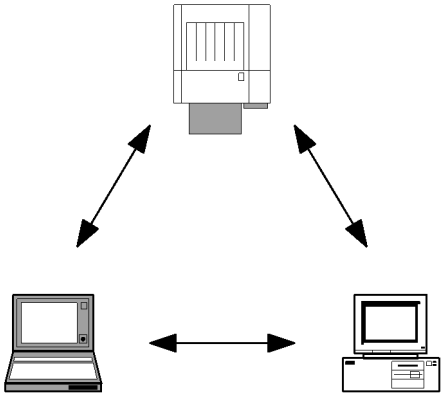
LED	Description	ON	OFF
LED 1 (Green)	Link Status	Linked	No Link

LED	Description	ON	OFF
LED 2 (Orange)	Power Distribution	Power On	Power Off

Transmission Modes

Wireless communication has two modes: 1) ad hoc mode, and 2) infrastructure mode.

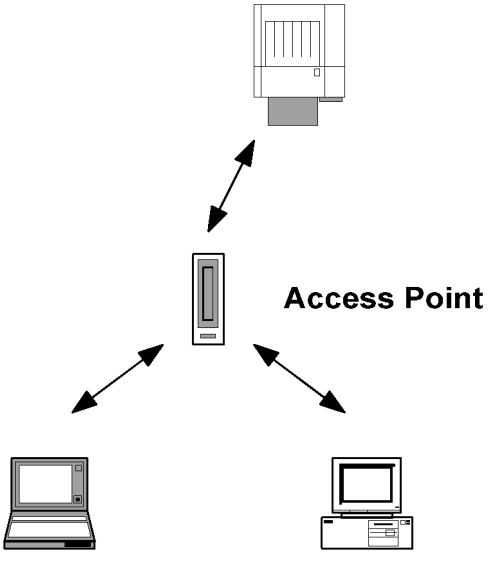
Ad Hoc Mode



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 printer 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.

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

- If the SSID is not set, clients connect to the nearest access point.
- 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.

SSID in ad hoc mode is sometimes called "Network Name."

Some devices automatically change from ad hoc mode to infrastructure mode when the same SSID is used in ad hoc mode and infrastructure mode. In such a case, to use the device in ad hoc mode, use a specified SSID in infrastructure mode and use "ASSID" in the ad hoc mode.

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 are 64 bit and 128 bit WEP keys. However, this machine supports only 64 bit WEP.

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.

Wireless LAN 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 to 100
Fair	41 to 75
Poor	21 to 40
Unavailable	0 to 20

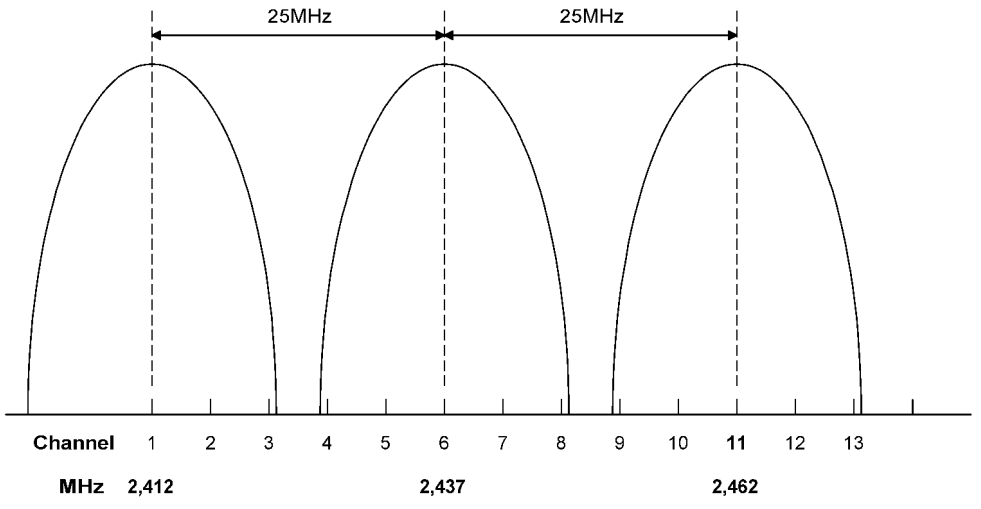
Note

- 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 Procedure

1. If there are problems using the wireless LAN, check the following.
2. Check the LED indicator on the wireless LAN card.
3. Check if "IEEE802.11b" is selected in the following user tool: Host Interface menu - Network Setup - LAN Type.
4. Check if the channel settings are correct.
5. 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.

Bluetooth

Specifications

Bluetooth wireless provides radio links between mobile computers, mobile phones and other portable handheld devices.

Bluetooth contains the following features.

- Cheaper compared to the IEEE802.11b wireless LAN.
- Many protocols for infrared transmission (IrDA) can be used with Bluetooth.

- A Bluetooth device can connect to other Bluetooth devices without any settings.

Standard applied	Bluetooth 1.1 (Bluetooth Special Interest Group)
Data transmission rates	1 Mbps
Bandwidth	2.4GHz Frequency Hopping Spread Spectrum (FHSS)

Piconet:

Bluetooth devices communicate with each other device in the ad hoc mode. This network is called a "Piconet". A Piconet may contain a maximum of 8 Bluetooth devices.

There is one master device and seven slave devices in a Piconet. The master device controls the hopping frequency and timing, as well as storing the ID codes of the slave devices. The master and slave devices can be swapped. Once the master device leaves the Piconet, a slave device becomes the new master.

Machines with the Bluetooth option become potential slave devices to connect to the PC.

FHSS (Frequency Hopping Spread Spectrum):

The Bluetooth device divides 2402 to 2480 MHz into 79 channels of 1 MHz width, and changes the channel 1600 times per second. If other devices in the LAN are using the same radio band, Bluetooth can avoid interference from the other devices.

Bluetooth Profiles

A Bluetooth device will not operate if it is located to close another Bluetooth device. However, the Bluetooth device should support the protocols to communicate with each other. There are many types of Bluetooth and service protocols. These are listed below.

Here are 14 profiles for Bluetooth as follows.

- Generic Access Profile
- Service Discovery Profile
- Cordless Telephony Profile
- Intercom Profile
- Serial Port Profile
- Headset Profile
- Dial-up Networking Profile
- Fax Profile
- LAN Access Profile
- Generic Object Exchange Profile
- Object Push Profile
- File Transfer Profile

- Synchronization Profile
- Hardcopy Cable Replacement Profile

Serial Port Profile (SPP) and Hardcopy Cable Replacement Profile (HCRP) are used for the printer products.

SPP is used is place of the serial port, while HCRP is used in place of the parallel port.

Bluetooth Security Features

Public and Private Mode:

The PC can browse Bluetooth devices. The machine's default is public mode. The PC cannot browse the machine if it has been changed to private mode.

PIN Code (Personal Identification Number):

When the PIN code is used, the PC connects to the device that sent the PIN code. The PIN code is a 4 digit number. This machine uses the last four digits of the machine's serial number. It cannot be changed.

USB

Specifications

USB connectivity is provided as an option for this machine.

Interface	USB 1.1, USB 2.0
Data rates	480 Mbps (high speed), 12 Mbps (full speed), 1.5 Mbps (low speed) High speed mode is only supported by USB 2.0.

USB 1.1/2.0

USB (Universal Serial Bus) offers simple connectivity for computers, printers, keyboards, and other peripherals. In a USB environment, terminators, device IDs (like SCSI), and DIP switch settings are not necessary.

USB 1.1 provides the following features:

- Plug & Play. As soon as a new device is connected via USB, the operating system recognizes it, and the appropriate driver is installed for it automatically if the driver is available. If the driver is not available, a message prompts the user for the driver disk for immediate installation.
- Hot swapping (cables can be connected and disconnected while the computer and other devices are switched on)
- No terminator or device ID required

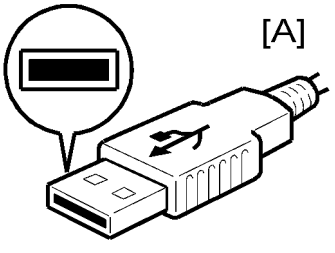
- Data rates of 12 Mbps (full speed), and 1.5 Mbps (low speed)
- Common connectors for different devices
- Bi-directional data communication between device and host computer via a 4-byte header and DEVICE ID.

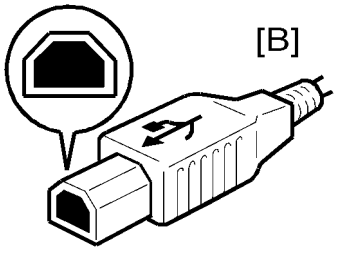
USB 2.0 is an evolution of the USB 1.1 specification. It uses the same cables, connectors, and software interfaces so the user will see no change. It provides an easy-to-use connection to a wide range of products with a maximum data rate of 480 Mbps (high speed).

Up to 127 devices can be connected and 6 cascade connections are allowed. Power is supplied from the computer and the maximum cable length is 5 m.

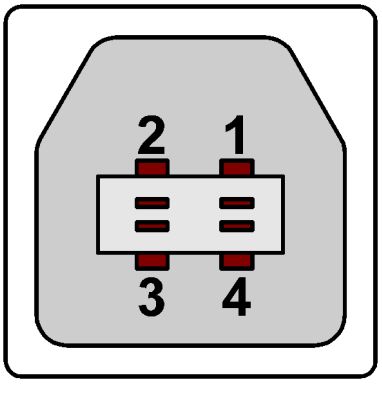
USB Connectors

USB is a serial protocol and a physical link, which transmits all data on a single pair of wires. Another pair provides power to downstream peripherals. The USB standard specifies two types of connectors, type "A" connectors for upstream connection to the host system, and type "B" connectors for downstream connection to the USB device.





Pin Assignment



The controller has a type "B" receptacle.

Pin No.	Signal Description	Wiring Assignment
1	Power	Red
2	Data –	White
3	Data +	Green
4	Power GND	White

Remarks about USB

- The machine does not print reports specifically for USB.
- Only one host computer is allowed for the USB connection.
- After starting a job using USB, do not switch the printer off until the job has been completed. When a user cancels a print job, if data transmitted to the printer has not been printed at the time of cancellation, the job will continue to print up to the page where the print job was cancelled
- When the controller board is replaced, the host computer will recognize the machine as a different device.

Related SP Mode

"USB Settings" in the printer engine service mode. Data rates can be adjusted to full speed fixed (12 Mbps). This switch may be used for troubleshooting if there is a data transfer error using the high speed mode (480 Mbps).

Data rates can also be adjusted using the UP mode "USB Setting" in the Host Interface in the System menu. This mode can be accessed only when the "Enter", "Escape", then "Menu" keys are pressed to enter the UP mode.

7. Specifications

General Specifications

Copier

Configuration:	Desktop		
Copy Process:	Dry electrostatic transfer system		
Originals:	Sheet/Book/Object		
Original Size:	Maximum A3/11" x 17"		
Copy Paper Size:	Maximum:	A3/11" x 17"	
	Minimum:	A5 LEF/$8\frac{1}{2}$" x $5\frac{1}{2}$" (Paper tray), A6 SEF/$5\frac{1}{2}$" x $8\frac{1}{2}$" (Bypass)	
	Custom sizes in the bypass tray:	Width: 90 – 297 mm (3.55" – 11.69"), Length: 148 – 600 mm (5.83" – 23.62")	
	NOTE: Physically, the by-pass tray can handle the following size (but this size is not recognized by the application software): Width: 305 mm Length: 1,260 mm		
Copy Paper Weight:	Paper Tray: 60 – 90 g/m^2, 16 – 24 lb. Bypass: 52 – 162 g/m^2, 14 – 43 lb.		
Reproduction Ratios:	3 enlargement and 4 reduction		
		A4/A3 Version	LT/DLT Version
	Enlargement	200% 141% 122%	155% 129% 121%
	Full Size	100%	100%
	Reduction	93% 82% 71%	93% 78% 65%

		50%	50%
Zoom:	50% to 200%, in 1% steps		
Power Source:	Taiwan:	110 V, 60 Hz, 12 A	
	Korea:	220 V, 60 Hz, 7 A	
	North and South America:	120 V, 60 Hz, 12 A	
	Europe, Asia:	220 – 240 V, 50/60 Hz, 7 A	
Power Consumption:	Full System:	Not above 1.28 kW	
	Energy Saver:	Not above 10 W	
	Off Mode:	Not above 1 W	
	Note • Full system - Maximum possible power consumption (any combination of mainframe and options), excluding optional heaters, key counter and fax unit.		
Noise Emission:	Standby (Mainframe/Full system):	Not above 40 dB(A)	
	Operating (Mainframe only):	Not above 62 dB(A)	
	Operating (Full System):	Not above 66 dB(A)	
	Note • The above measurements were made in accordance with ISO 7779. Measurements were taken from the normal position of the operator.		
Dimensions (W x D x H):	B260: 550 x 568 x 558 mm (21.7" x 22.4" x 23.0") B261: 587 x 568 x 558 mm (23.1" x 22.4" x 23.0") **Measurement Conditions** 1. With bypass feed table closed 2. Without the A(R)DF		
Weight:	B260: 43 kg (95 lb.) B261: 47 kg (103 lb.) (Excluding A(R)DF, platen cover, toner, and developer)		

Copying Speed in Multicopy Mode (copies/minute):

Mode			B260	B261
1-sided ↓ 1-sided	Memory copy	A3 SEF/11" × 17"	10	10
		A4 LEF/11" x 8 1/2"	18	18
	DF 1-to-1	A3 SEF/11" × 17"	9	9
		A4 LEF/11" x 8 1/2"	15	15
1-sided ↓ 2-sided	Memory copy	A3 SEF/11" × 17"	—	4
		A4 LEF/11" x 8 1/2"	—	18

Note

- Measurement Conditions:
  - Figures are for one-sided original to one-sided copy except where stated otherwise
  - Not APS mode
  - 100% size

Warm-up Time:	Less than 35 seconds (at 20°C [68°F])
First Copy Time:	Not more than 6.5 seconds **Measurement Conditions** 1. From the ready state, with the polygonal mirror motor operating. 2. A4/LT copying 3. Not APS mode 4. 100%size 5. Paper feed from the upper tray
Copy Number Input:	Numeric keypad, 1 to 99 (increment, decrement)
Manual Image Density:	5 steps
Automatic Reset:	Default is 60 seconds. Can be set from 10 to 999 seconds with user tools.
Automatic Shut-off:	Default is 1 minute. Can be set from 1 to 240 minutes with user tools.
Copy Paper Capacity:	Paper Tray: • 250 sheets x 2 Optional Paper Tray Unit:

	• 500 sheets x 1, or 500 sheets x 2 Bypass Tray: • 100 sheets (sheets up to 432 mm [17"]) • 40 postcards • 10 envelopes Copy weight: 80 g/m^2 (20 lb.)
Toner Replenishment:	Cartridge replacement (260 g/cartridge)
Optional Equipment:	• Platen cover • Auto document feeder • Auto-reverse document feeder • Paper tray unit (1 tray) • Paper tray unit (2 trays) • 1-bin tray • Tray heater • Optics anti-condensation heater • Fax unit • Handset • IEEE 1394 • IEEE 1284 • Wireless LAN • Bluetooth • PostScript 3 • NRS (CSS) kit
Toner Yield:	9k copies (A4 LEF, 6% full black, 1 to 2 copying, normal text mode)
Copy-Tray Capacity	250 sheets
Memory	64 MB + 128 MB DIMM
Duplex Unit (B261 only)	
Copy Paper Size:	Maximum ¬ A3/11" x 17" Minimum ¬ A5/8$^1/_2$" x 11"
Copy Paper Weight:	64 – 90 g/m^2 (20 – 24 lb.)

Printer

Printing Speed:	Maximum 18 ppm (A4/LT LEF): B260/B261 model
Printer Languages:	PCL6/PCL5e PostScript 3 (option) RPCS (Refined Printing Command Stream) - an original Ricoh PDL)
Resolution:	600 dpi (PCL 6/PCL5e/PS3/RPCS) 300 dpi (PCL6 PCL5e/PS3) 200 dpi (RPCS)
Resident Fonts:	PCL: 35 Intellifonts 10 True Type fonts PS3: 136 fonts (24 Type 2 fonts, 112 Type 14 fonts)
Host Interfaces:	Ethernet (100 Base-TX/10 Base-T) (standard) Bi-directional IEEE1284 parallel x 1 (option) IEEE1394 (option)
Network Protocols:	TCP/IP
Memory:	128 MB

Scanner

Standard Scanner Resolution:	Main scan/Sub scan 600 dpi
Available scanning Resolution Range:	Twain Mode: 100 to 600 dpi E-mail/Network Delivery Scanner: 100 dpi, 200 dpi, 300 dpi, 400 dpi, 600 dpi
Scanning Throughput:	25 spm for TWAIN 43 spm for Delivery mode (A4L, ADF mode)
Interface:	Ethernet (100 Base-TX/10 Base-T for TCP/IP), IEEE 1394, IEEE 802.11b (Wireless LAN)
Compression Method:	Binary: TIFF (MH, MR, MMR)

Supported Paper Sizes

Original Size Detection

North America, Europe, Asia, Taiwan

Paper	Size (W x L)	North America		Europe/Asia/Taiwan	
		Platen	ADF	Platen	ADF
A3 SEF	297 x 420 mm	O	O	X	X
B4 SEF	257 x 364 mm	O	O	X	X
A4 SEF	210 x 297 mm	A4/LT	A4/LT	X	X
A4 LEF	297 x 210 mm	A4/LT	A4/LT	X	X
B5 SEF	182 x 257 mm	O	O	O	X
B5 LEF	257 x 182 mm	O	O	X	X
A5 SEF	148 x 210 mm	O	O	O	X
A5 LEF	210 x 148 mm	O	O	S a	X
B6 SEF	128 x 182 mm	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O
8K SEF	267 x 390 mm	O	O	O	O
16K SEF	195 x 267 mm	O	O	O	O
16K LEF	267 x 195 mm	O	O	O	O
DLT SEF	11" x 17"	X	X	O	O
SEF	11" x 15"	O	O	O	O
LG SEF	$8^1/_2$" x 14"	X	X	O	O
LT SEF	$8^1/_2$" x 11"	X	X	A4/LT	A4/LT
LT LEF	11" x $8^1/_2$"	X	X	A4/LT	A4/LT
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	X	O	O

Paper	Size (W x L)	North America		Europe/Asia/Taiwan	
		Platen	ADF	Platen	ADF
HLT LEF	$8^1/_2$" x $5^1/_2$"	S	X	O	O
F/GL (F4) SEF	8" x 13"	F	O	F	F
Foolscap SEF	$8^1/_2$" x 13"	F	O	F	F
Folio SEF	$8^1/_4$" x 13"	F	O	F	F
USB4 SEF	10" x 14"	O	O	O	O
Eng Quarto SEF	8" x 10"	O	O	O	O
Eng Quarto LEF	10" x 8"	O	O	O	O

Key:

X:	Detected
O:	Not detected
F:	Detected as F ($8^1/_2$" x 13")
S:	Detected as specified
A4/LT:	Detected as A4 or LT as specified

Note

- When the settings of SP 4305 1 is "1: A4/LT," the settings of SP 4303 is invalidated (A5 LEF is not detected).

China, Korea

Paper	Size (W x L)	China/Korea		China/Korea (localized)	
		Platen	ADF	Platen b	ADF c
A3 SEF	297 x 420 mm	X	X	X	O
B4 SEF	257 x 364 mm	X	X	O	O
A4 SEF	210 x 297 mm	X	X	X	O

Paper	Size (W x L)	China/Korea		China/Korea (localized)	
		Platen	ADF	Platen b	ADF c
A4 LEF	297 x 210 mm	X	X	X	O
B5 SEF	182 x 257 mm	X	X	O	O
B5 LEF	257 x 182 mm	X	X	O	O
A5 SEF	148 x 210 mm	O	X	O	X
A5 LEF	210 x 148 mm	S	X	S	X
B6 SEF	128 x 182 mm	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O
8K SEF	267 x 390 mm	O	O	X	X
16K SEF	195 x 267 mm	O	O	X	X
16K LEF	267 x 195 mm	O	O	X	X
DLT SEF	11" x 17"	O	O	O	O
SEF	11" x 15"	O	O	O	O
LG SEF	$8^1/_2$" x 14"	O	O	O	O
LT SEF	$8^1/_2$" x 11"	A4/LT	A4/LT	O	O
LT LEF	11" x $8^1/_2$"	A4/LT	A4/LT	O	O
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	O	O	O
HLT LEF	$8^1/_2$" x $5^1/_2$"	O	O	O	O
F/GL (F4) SEF	8" x 13"	O	F	O	F
Foolscap SEF	$8^1/_2$" x 13"	O	F	O	F
Folio SEF	$8^1/_4$" x 13"	O	F	O	F
USB4 SEF	10" x 14"	O	O	O	O
Eng Quarto SEF	8" x 10"	O	O	O	O
Eng Quarto LEF	10" x 8"	O	O	O	O

Key:

X:	Detected
O:	Not detected
F:	Detected as F ($8^1/_2$" x 13")
S:	Detected as specified
A4/LT:	Detected as A4 or LT as specified

Note

- Change the settings of SP 4305 1. Adjust the positions of the APS sensors.
- Change the settings of SP 4305 1.

Paper Feed and Exit

Main Frame, Duplex

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
A3 SEF	297 x 420 mm	X	M	X	X	X
A3 LEF	420 x 297 mm	O	O	O	O	O
B4 SEF	257 x 364 mm	X	M	M	M	X
B4 LEF	364 x 257 mm	O	O	O	O	O
A4 SEF	210 x 297 mm	X	M	X	X	X
A4 LEF	297 x 210 mm	X	X	X	X	X
B5 SEF	182 x 257 mm	M	M	M	M	X
B5 LEF	257 x 182 mm	X	M	M	M	X
A5 SEF	148 x 210 mm	O	O	O	O	X
A5 LEF	210 x 148 mm	X	M	X	X	X

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
B6 SEF	128 x 182 mm	O	O	O	O	O
B6 LEF	182 x 128 mm	O	O	O	O	O
A6 SEF	105 x 148 mm	O	O	O	O	O
A6 LEF	148 x 105 mm	O	O	O	O	O
DLT SEF	11" x 17"	M	X	M	M	X
DLT LEF	17" x 11"	O	O	O	O	O
LG SEF	$8^1/_2$" x 14"	M	X	M	M	X
LG LEF	14" x $8^1/_2$"	O	O	O	O	O
Gov. LG SEF	$8^1/_4$" x 14"	M	M	M	M	X
Gov. LG LEF	14" x $8^1/_4$"	O	O	O	O	O
LT SEF	$8^1/_2$" x 11"	M	X	M	M	X
LT LEF	11" x $8^1/_2$"	M	X	X	X	X
HLT SEF	$5^1/_2$" x $8^1/_2$"	O	O	O	O	O
HLT LEF	$8^1/_2$" x $5^1/_2$"	M	M	M	M	O
Executive SEF	$7^1/_4$" x $10^1/_2$"	M	M	M	M	X
Executive LEF	$10^1/_2$" x 71/4"	M	M	M	M	X
F SEF	8" x 13"	M	M	M	M	X
F LEF	13" x 8"	O	O	O	O	O
Foolscap SEF	$8^1/_2$" x 13"	M	X	X	X	X
Foolscap LEF	13" x $8^1/_2$"	O	O	O	O	O
Folio SEF	$8^1/_4$" x 13"	M	M	M	M	X
Folio LEF	13" x $8^1/_4$"	O	O	O	O	O
8K SEF	267 x 390 mm	M	M	M	M	X

Paper	Size (W x L)	Main frame tray				Duplex
		China/ Korea	North America	Europe	Asia/ Taiwan	
8K LEF	390 x 267 mm	O	O	O	O	O
16K SEF	195 x 267 mm	M	M	M	M	X
16K LEF	267 x 195 mm	M	M	M	M	X
C5 Env. SEF	162 x 229 mm	O	O	O	O	O
C6 Env. SEF	114 x 162 mm	O	O	O	O	O
DL Env. SEF	110 x 220 mm	O	O	O	O	O
Com10 SEF	$4^{1}/_{8}$" x $9^{1}/_{2}$"	O	O	O	O	O
Monarch SEF	$3^{7}/_{8}$" x $7^{1}/_{2}$"	O	O	O	O	O
Custom		O	O	O	O	O

Key:

X:	Detected (Main frame tray)/Processed (Duplex)
O:	Not detected (Main frame tray)/Not processed (Duplex)
M:	Selected manually
K:	Specified from the key pad

Note

- Custom W: 90 to 297 mm, L: 148 to 600 mm

Software Accessories

The printer drivers and utility software are provided on one CD-ROM. An auto-run installer allows you to select which components to install.

Printer

Printer Drivers

Printer Language	Windows 95/98/ME	Windows NT4.0	Windows 2000	Macintosh
PCL 6	Yes	Yes	Yes	No
PCL 5e	Yes	Yes	Yes	No
PS3	Yes	Yes	Yes	Yes
RPCS	Yes	Yes	Yes	No

Note

- 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.
- The PS3 drivers are all genuine AdobePS drivers, except for Windows 2000, which uses Microsoft PS. A PPD file for each operating system is provided with the driver.

Utility Software

Software	Description
Agfa Font Manager (Win 95/98/ME, NT4, 2000)	A font management utility with screen fonts for the printer.
SmartNetMonitor for Admin (Win 95/98/ME, NT4, 2000)	A printer management utility for network administrators. NIB setup utilities are also available.
SmartNetMonitor for Client (Win 95/98/ME, NT4, 2000)	A printer management utility for client users. Peer-to-peer printing utility and parallel/recovery printing functions are included.
1394 Utility (Win 2000)	A utility for removal IEEE 1394 printers.

DeskTopBinder V2 Lite (Win 95/98/ME, NT4, 2000)	A utility for document management
LAN-Fax M1 (Win 95/98/ME, NT4, 2000)	PC LAN FAX driver
Address Book (Win 95/98/ME, NT4, 2000)	A utility for PC LAN FAX.
Printer Utility for Mac	This software provides several convenient functions for printing from Macintosh clients.

Scanner

The scanner driver and utility software are provided on one CD-ROM.

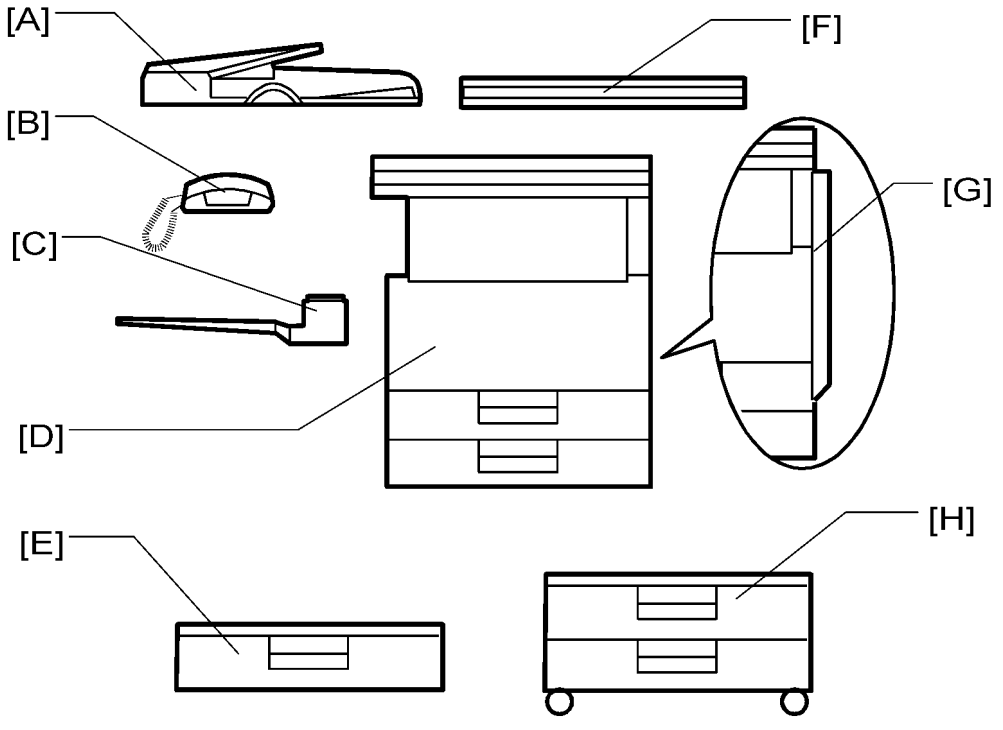
Scanner Driver

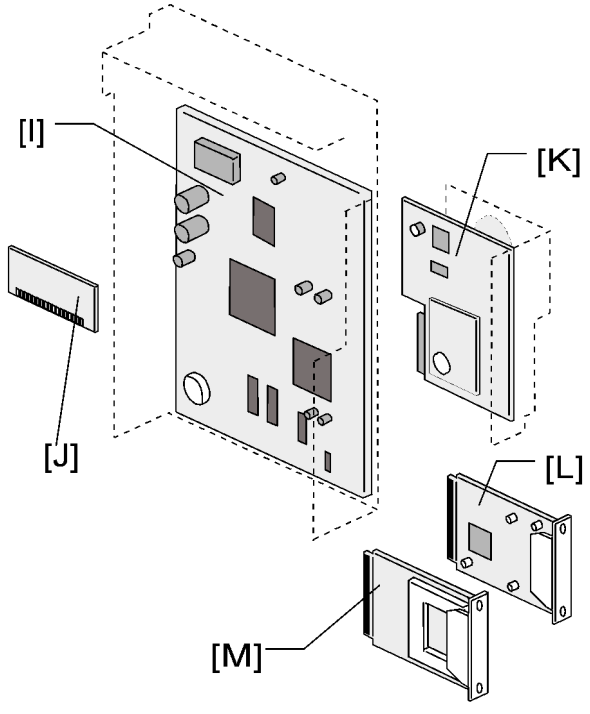
Network Twain Driver for Win95/98/ME/NT3.51/NT4.0/2000

Scanner Utilities

- Scan Router V2 Lite (Cherry-Lite) for Win95/98/ME/NT4.0/2000
- Desk Top Binder V2 Lite (Plumeria-Lite) for Win95/98/ME/NT4.0/2000

Machine Configuration





Unit/Component		Machine Code	Diagram
Copier	Copier (Non-duplex model)	B260	[D]
	Copier (With duplex)	B261	[G]
	Platen cover (optional)	B406	[F]
	ADF (optional)	B616	[A]
	ARDF (optional)	B617	[A]
	Paper tray unit–1 tray (optional)	B385	[E]
	Paper tray unit–2 trays (optional)	B384	[H]
	1-bin tray (optional)	B621	[C]
	Tray heater (optional)	—	—
	Optics anti-condensation heater (optional)	—	—
GW	GW controller	B658	[I]
Fax	Fax controller (optional)	B620	[K]

Unit/Component		Machine Code	Diagram
	Handset (optional)	B433	[B]
Printer/ scanner	Printer scanner controller	B622	[L]
	PostScript 3 (optional)	B681	[J]
Network	IEEE 1394	B581	[M]
	IEEE 1284	B679	[M]
	Wireless LAN	B682	[M]
	Bluetooth	G377	[M]

Optional Equipment

ARDF

Original Size:	Standard sizes • Single-sided mode: A3 to A5, 11" x 17" to $5^1/_2$" x $8^1/_2$" • Double-sided mode: A3 to A5, 11" x 17" to $5^1/_2$" x $8^1/_2$" Non-standard sizes (Single-sided mode only) • Max. width 297 mm • Min. width 105 mm • Max. length 1260 mm • Min. length 128 mm
Original Weight:	Single-sided mode: 40 – 128 g/m^2,10 – 34 lb. Double-sided mode: 52 – 105 g/m^2,14 – 28 lb.
Table Capacity:	50 sheets (80 g/m^2, 70 kg)
Original Standard Position:	Center
Separation:	FRR
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	50 to 200% (Sub scan direction only)
Power Source:	24 and 5 Vdc from the copier
Power Consumption:	50 W
Dimensions (W x D x H):	550 x 470 x 130 mm
Weight:	10 kg

ADF

Original Size:	Standard sizes (Single-sided mode only):

	• A3 to A5, 11" x 17" to $5^1/_2$" x $8^1/_2$" 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:	52 – 105 g/m^2 (14 – 28 lb.)
Table Capacity:	30 sheets (80 g/m^2, 22 lb.)
Original Standard Position:	Center
Separation:	FRR
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	50 – 200%
Power Source:	24 and 5 Vdc (from the main frame)
Power Consumption:	25 W
Dimensions (W x D x H):	550 mm x 470 mm x 90 mm
Weight:	Not above 7 kg

One-Tray Paper Tray Unit

Paper Size:	A5 to A3, $5^1/_2$" x $8^1/_2$" SEF to 11" x 17"
Paper Weight:	60 – 105 g/m2, 16 – 28 lb.
Tray Capacity:	500 sheets (80 g/m^2, 20 lb.) x 1 tray
Paper Feed System:	Feed roller and friction pad
Paper Height Detection:	4 steps (100%, 70%, 30%, Near end)
Power Source:	• 24 Vdc and 5Vdc (from the copier/printer): • 120 Vac (120 V version) from the copier/printer when the optional tray heater is installed

	• 220 – 240 Vac (230 V version) from the copier/printer when the optional tray heater is installed	
Power Consumption:	Max:	20 W (Copying/printing) 23 W (Optional Tray Heater On)
	Average:	13 W (Copying/printing) 15 W (Optional Tray Heater On)
Weight:	12 kg (26.4 lb.)	
Size (W x D x H):	550 mm x 520 mm x 134 mm	

Two-Tray Paper Tray Unit

Paper Size:	A5 to A3, $5^1/_2$" x $8^1/_2$" SEF to 11" x 17"	
Paper Weight:	60 – 105 g/m^2, 16 – 28 lb.	
Tray Capacity:	500 sheets (80 g/m^2, 20 lb.) x 2 trays	
Paper Feed System:	Feed roller and friction pad	
Paper Height Detection:	4 steps (100%, 70%, 30%, Near end)	
Power Source:	• 24 Vdc and 5Vdc (from the copier/printer): • 120 Vac (120 V version) from the copier/printer when the optional tray heater is installed • 220 – 240 Vac (230 V version) from the copier/printer when the optional tray heater is installed	
Power Consumption:	Max:	30 W (Copying/printing) 23 W (Optional Tray Heater On)
	Average:	17 W (Copying/printing) 15 W (Optional Tray Heater On)
Weight:	25 kg (55 lb)	
Size (W x D x H):	550 mm x 520 mm x 271 mm	

One-Bin Tray

Paper Size:	Width: 140 ~ 297 mm Length: 140 ~ 432 mm
Output Standard Position:	Center
Paper Weight:	60 ~ 105 g/m², 16 ~ 28 lbs.
Tray Capacity:	100 sheets (A4 LEF 80 g/m^2, 20 lb)
Power Source:	5 VDC, 24 VDC (from the copier)
Power Consumption:	Max. 20 W
Weight:	1.55 kg (Base unit: 1.1 kg, Tray: 0.45 kg)
Size (W x D x H):	461 mm x 478 mm x 104 mm (508 mm x 478 mm x 104 mm when tray extended)