

**Model TH-C1**  
**(Machine Code: B156/B220)**

**SERVICE MANUAL**

10 February 2005  
Subject of change

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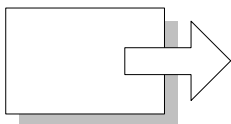
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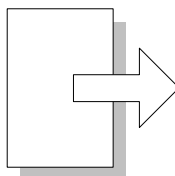
## Symbols and Abbreviations

This manual uses several symbols.

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



**Short Edge Feed (SEF)**



**Long Edge Feed (LEF)**

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# 1. INSTALLATION

## 1.1 INSTALLATION REQUIREMENTS

### 1.1.1 ENVIRONMENT

1. Temperature Range: 10°C to 32°C (50°F to 89.6°F) (humidity to be 54% at 32°C, 89.6°F)
2. Humidity Range: 15% to 80% Rh (temperature to be 27°C, 80.6°F at 80%)
3. Ambient Illumination: 2000 lux or less (keep the machine out of direct sunlight.)
4. Ventilation: Air turnover of more than 30 m<sup>3</sup>/hr/person or more
5. Ambient Dust: Less than 0.10 mg/m<sup>3</sup> (2.7 x 10<sup>-6</sup> oz/yd<sup>3</sup>)
6. Avoid exposing the machine to sudden temperature changes, which include:
  - 1) Direct cool air from an air conditioner
  - 2) Direct heat from a heater
7. Avoid installing the machine in areas that may be exposed to corrosive gas.
8. Install the machine at a location lower than 2,000 m (6,500 ft.) above sea level.
9. Install the machine on a strong, level base.
10. Avoid installing the machine in areas that may be subjected to strong vibration.

### 1.1.2 MACHINE LEVEL

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

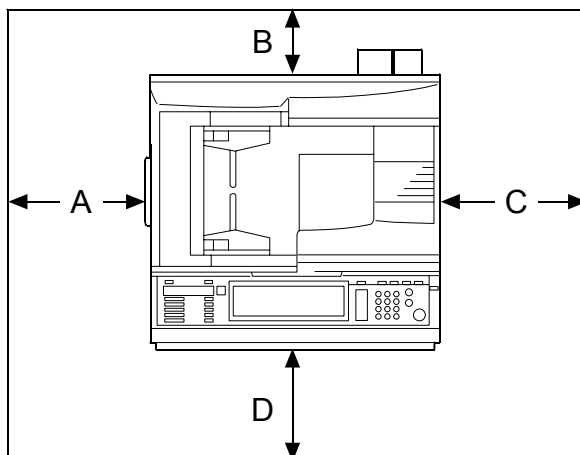
### 1.1.3 POWER REQUIREMENTS

#### **⚠ CAUTION**

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

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

### 1.1.4 SPACE REQUIREMENTS



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

B156I501.WMF

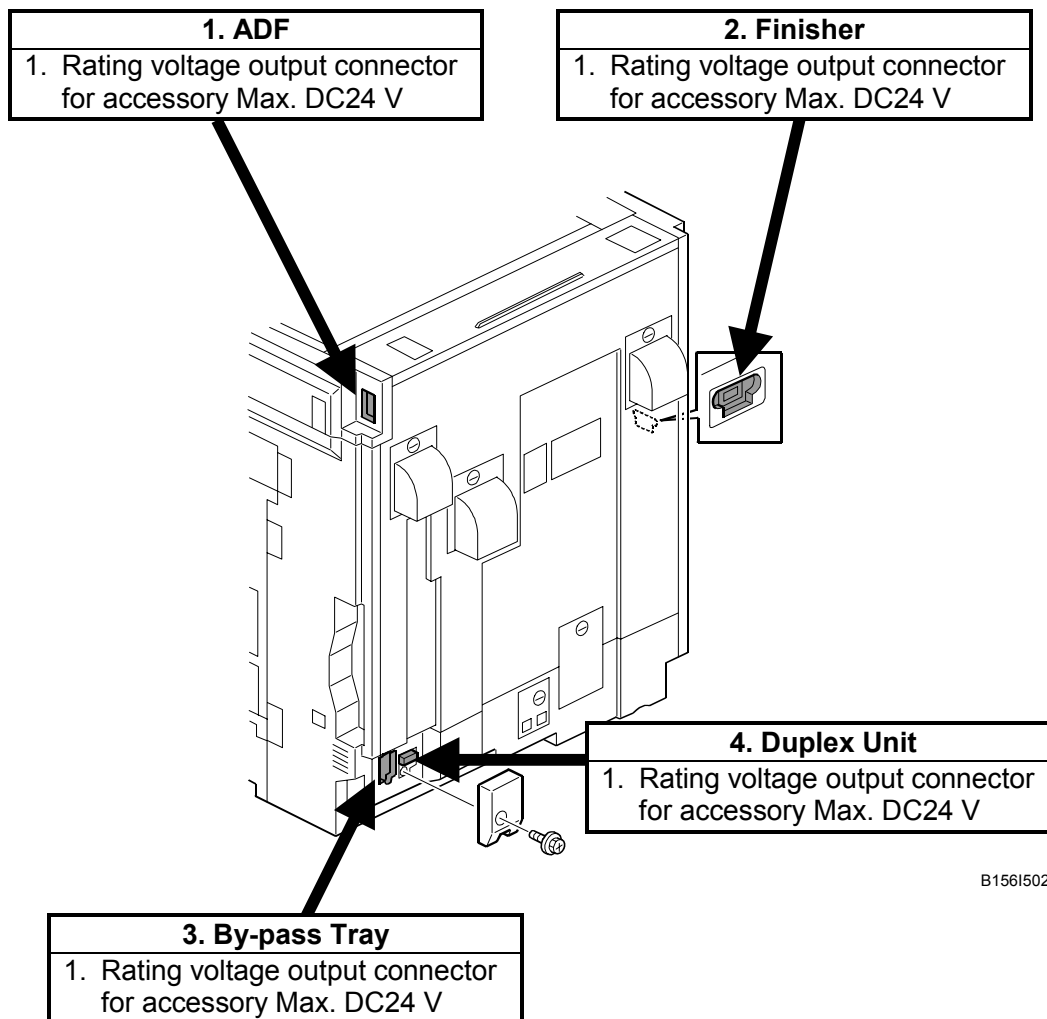
## 1.2 COPIER (B156/B220)

### 1.2.1 POWER SOCKETS FOR PERIPHERALS

#### CAUTION

Rating voltage for peripherals.

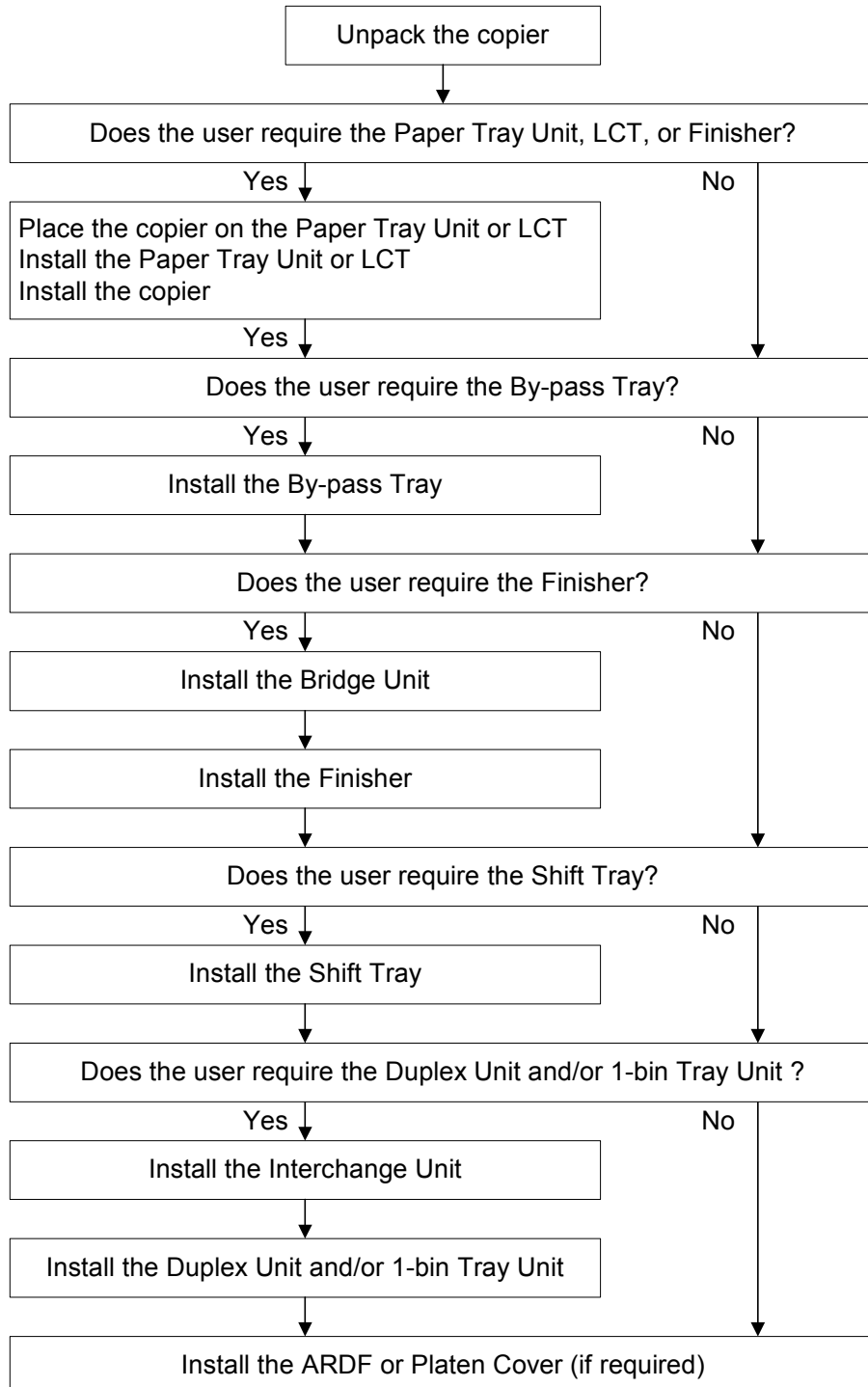
Make sure to plug the cables into the correct sockets.



B156I502.WMF

## 1.2.2 INSTALLATION FLOW CHART

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



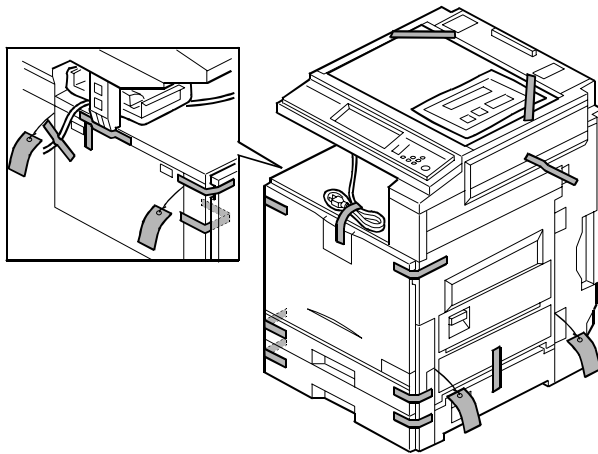
B156I503.WMF

### 1.2.3 ACCESSORY CHECK

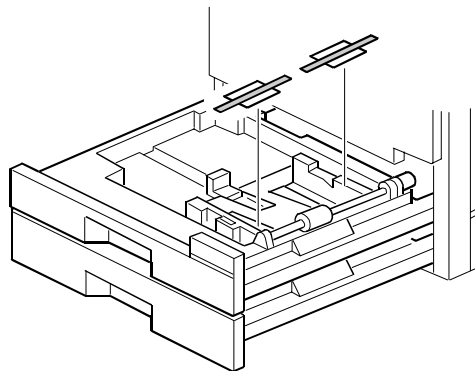
Check the quantity and condition of the accessories in the box against the following list:

No.	Description	Q'ty
1	Paper Tray Decal	1
2	Model Name Decal	1
3	NECR	1
4	Factory Data Sheet	1
5	Filter Duct	3
6	Filter	3
7	Caution Decal – Power/Paper	1
8	Decal – Copy prohibition	1
9	Manual Holder	1
10	Operating Instructions – System Setting	1
11	Operating Instructions – Copy Reference	1
12	Operating Instructions – Printer	2
13	Operating Instructions – Security	1
14	Instruction Procedure Sheet	1
15	Sheet – Notes for User	1
16	Screw for Manual Holder	2
17	Stamp	1
18	Cloth (ADF Standard version only)	1
19	Cloth Holder (ADF Standard version only)	1

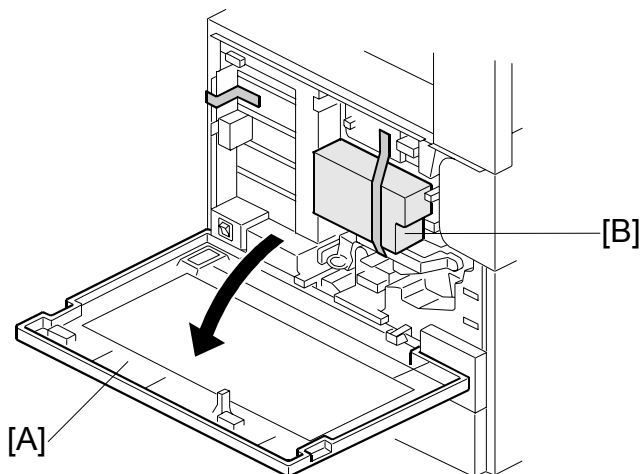
## 1.2.4 INSTALLATION PROCEDURE



B156I504.WMF



B156I505.WMF



B156I506.WMF

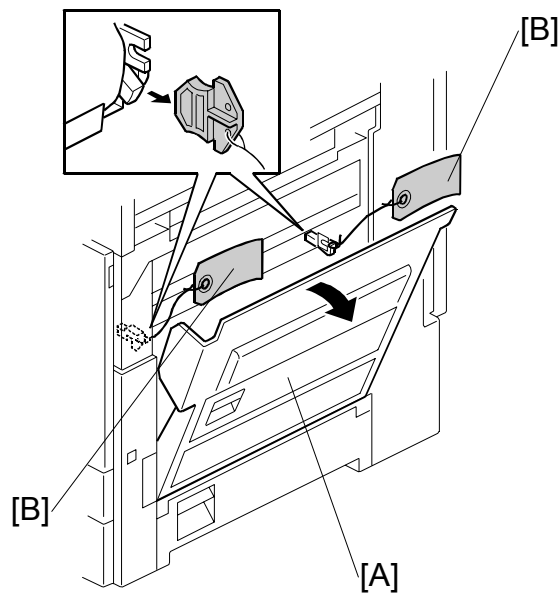
### **⚠ CAUTION**

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

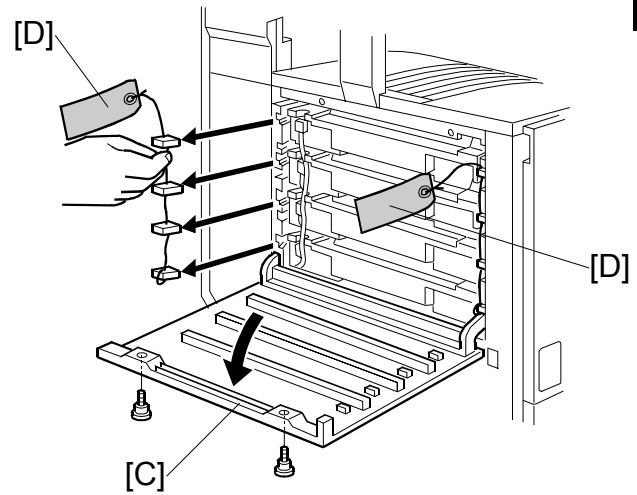
If the optional paper tray or the optional LCT will be installed at the same time, place the copier on the paper tray unit or the LCT first, then install the copier and the other options.

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

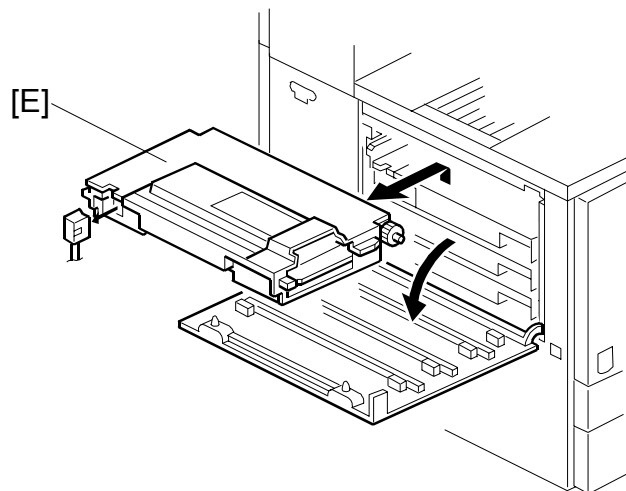
1. Remove the tapes.
2. Open the front cover [A] and remove the shipping retainer [B].



B156I507.WMF



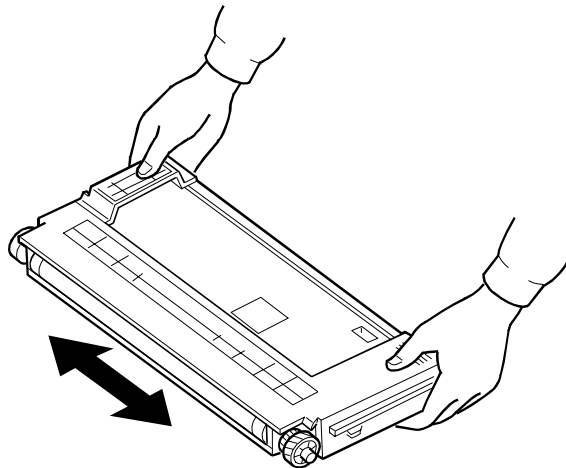
B156I508.WMF



B156I509.WMF



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

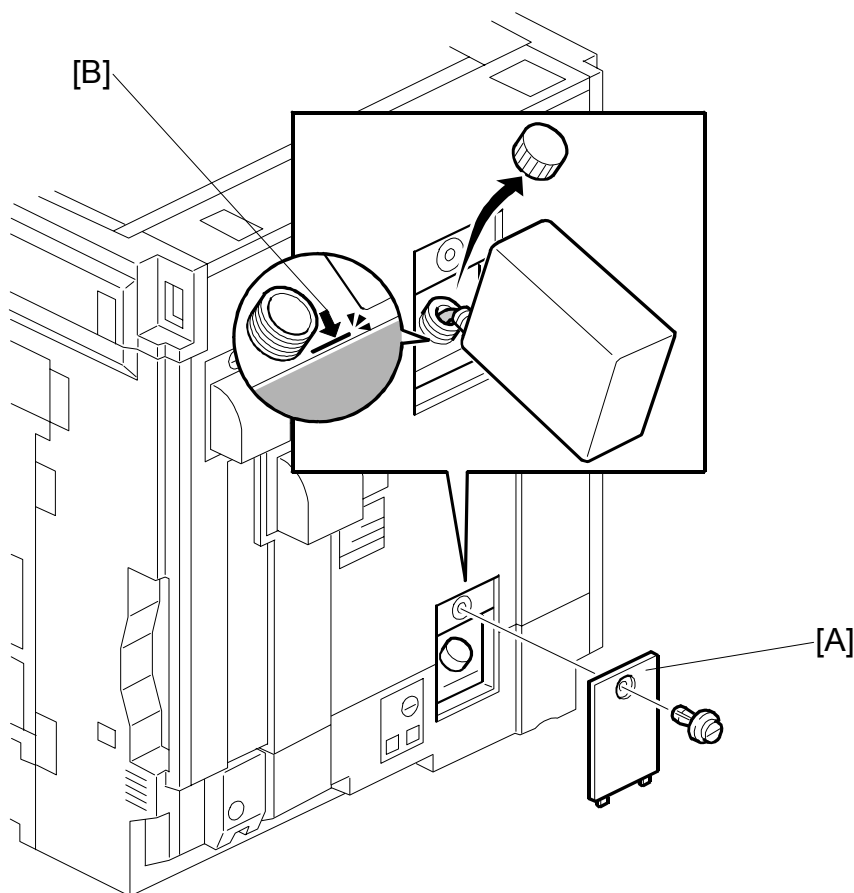


B156I511.WMF

6. Keep the development unit level and shake the development unit about 10 times from side to side.

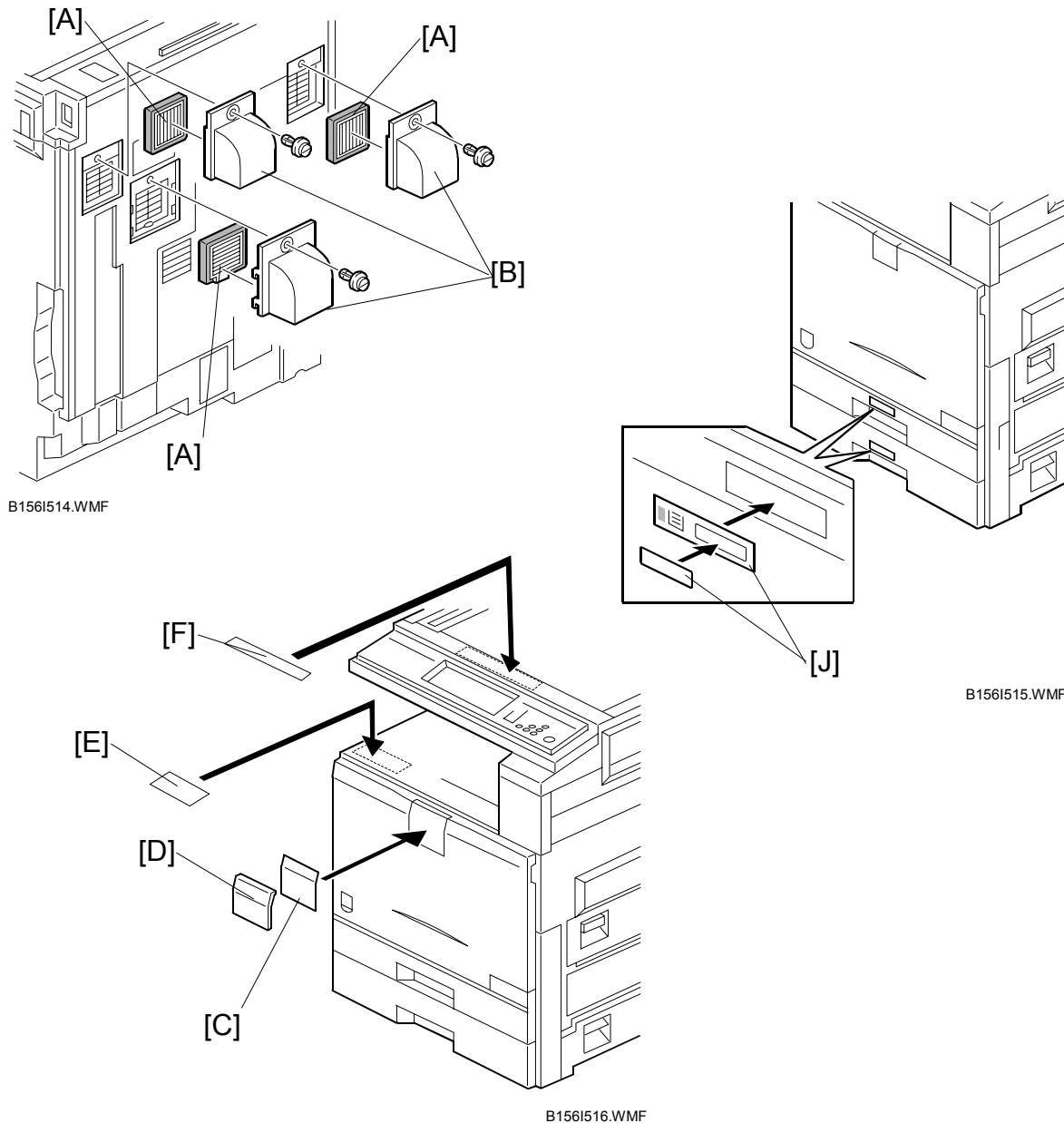
**NOTE:** 1) Do not touch the development roller or the development roller gear.  
2) Use caution not to drop the cartridge or to damage it.  
3) If the cartridge has not been shaken well, the machine takes a longer time to initialize the development unit, or an error message or SC350 is displayed. When either of them is displayed, turn the main switch off and on.



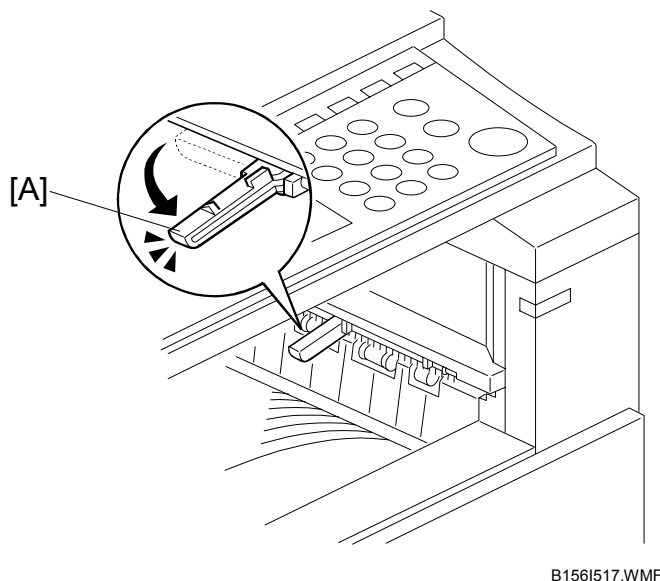


B156I513.WMF

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



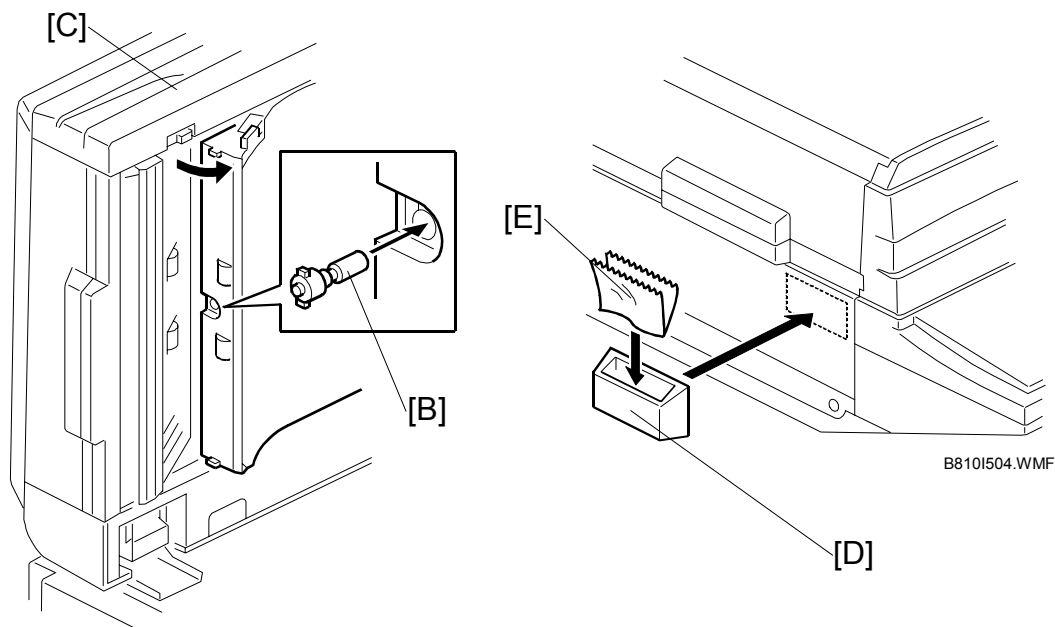
9. Install the filters [A] and ducts [B] as shown.
10. Attach the appropriate model name decal [C] with cover [D] to the front cover.
11. Attach the caution decal [E] to the tray. Attach the copy prohibition decal [F] to the top.
12. Pull the paper tray out, and adjust the side guides and end guide to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



B156I517.WMF

14. **If the optional bridge unit will not be installed:** Swing the sensor feeler [A] out.

15. Install the optional ARDF (**EU model only**) or the optional platen cover (see ARDF Installation or Platen Cover Installation).



B810I504.WMF

B502I006.WMF

16. Install the stamp cartridge [B] if the ARDF [C] was installed.

17. Attach the cloth holder [D] to the left side of the scanner as shown. Then put the cloth [E] in the cloth holder if the ARDF was installed.

18. Plug in the machine and turn the main power switch on. The machine automatically performs the initialization procedure. After this has finished, the Start button LED turns green.

19. Make copies of image samples (text, photo, and text/photo modes).

20. Perform Automatic Color Calibration (ACC).

**NOTE:** Since this machine has been subject to color adjustment using Automatic Color Calibration (ACC) at the factory, there is no need to make automatic color calibration again if the customer is satisfied with the image sample. If the customer is not satisfied, do the following.

- 1) Print the ACC test pattern (UP mode – Maintenance – ACC – Start).
- 2) Place the printout on the exposure glass.
- 3) Place 10 sheets of white paper on top of the test chart. Then, close the ADF or platen cover.
- 4) Press “Start Scanning” on the LCD panel. The machine performs the ACC.

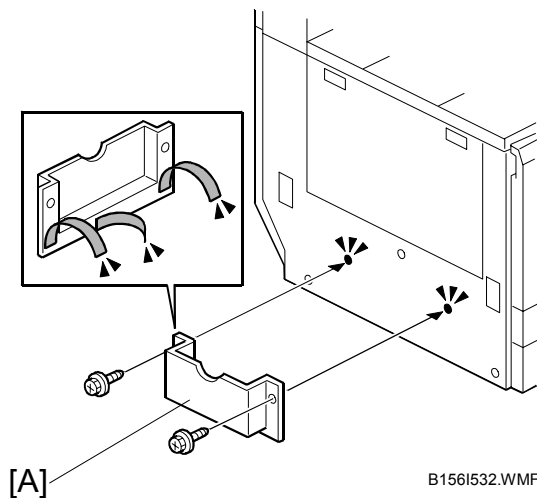
21. If you want to enable the Ethernet NIB function, set SP5-985-001 to “1: enable”. If you want to enable the USB function, set SP5-985-002 to “1: enable”.

**NOTE:** The defaults are “0: disabled”.

22. Make sure that the sample image has been copied normally.

23. Remove the double-sided tape from the manual holder. Then attach it [A] to the left side of the copier (⌀ x 2).

**NOTE:** When you install the 1,000-Sheet Finisher (B408), attach the manual holder a different location.

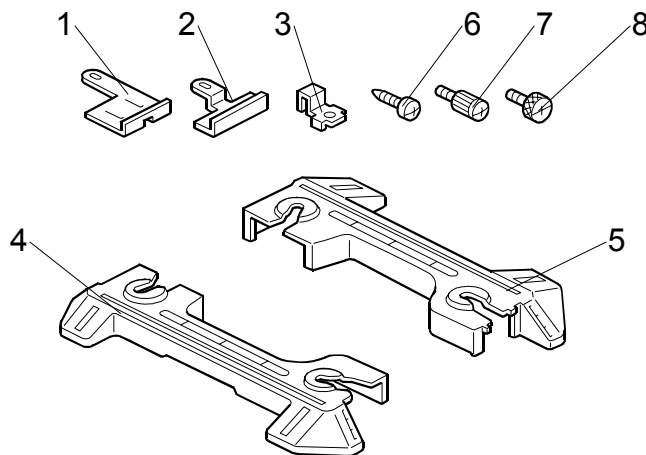


## 1.3 PAPER TRAY UNIT (B456)

### 1.3.1 ACCESSORY CHECK

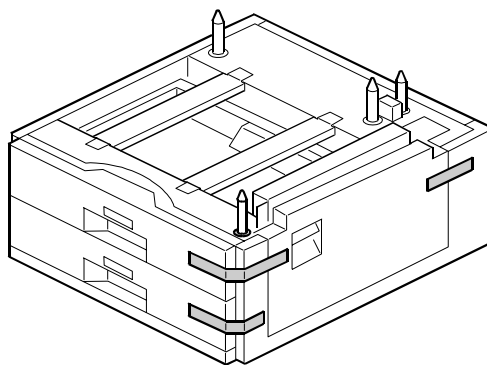
Check the quantity and condition of the accessories against the following list.

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



B456I001.WMF

### 1.3.2 INSTALLATION PROCEDURE

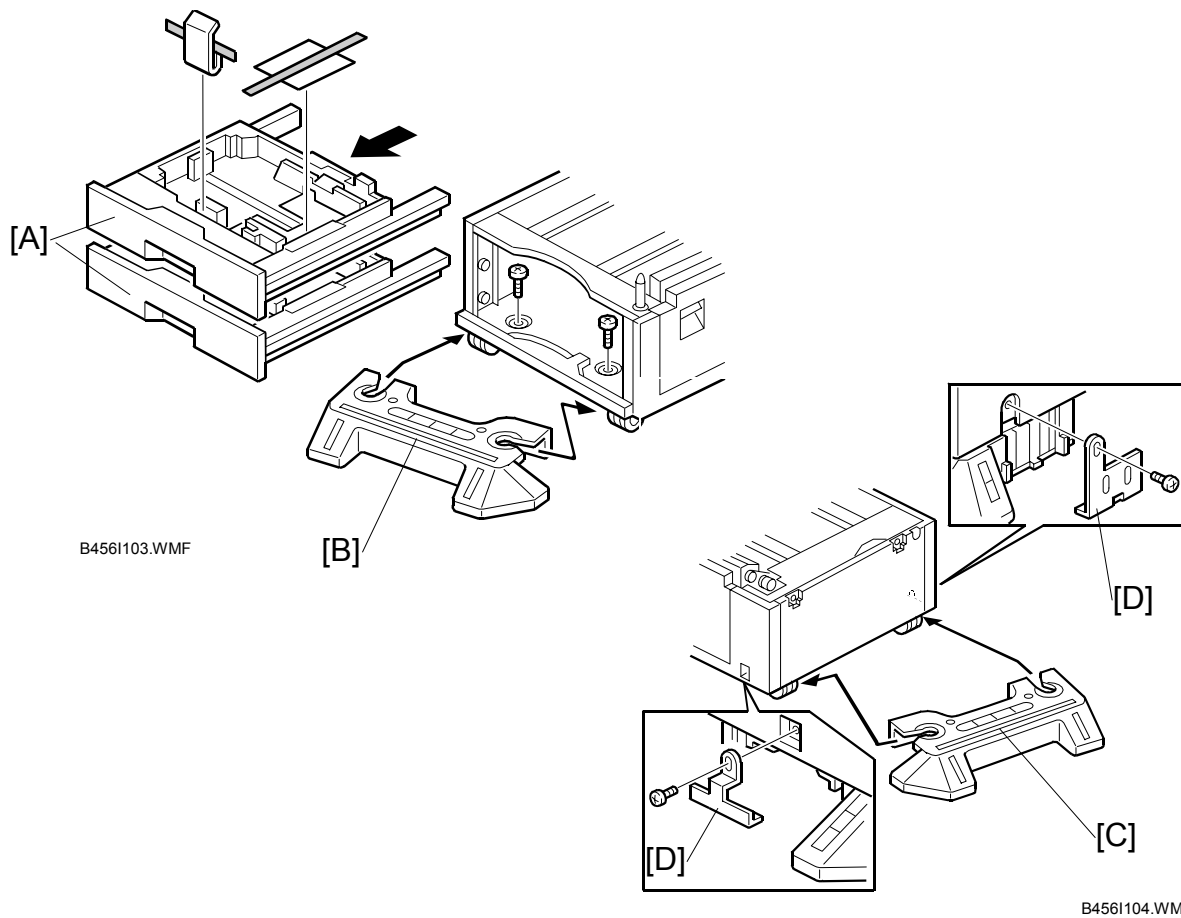


B456I002.WMF

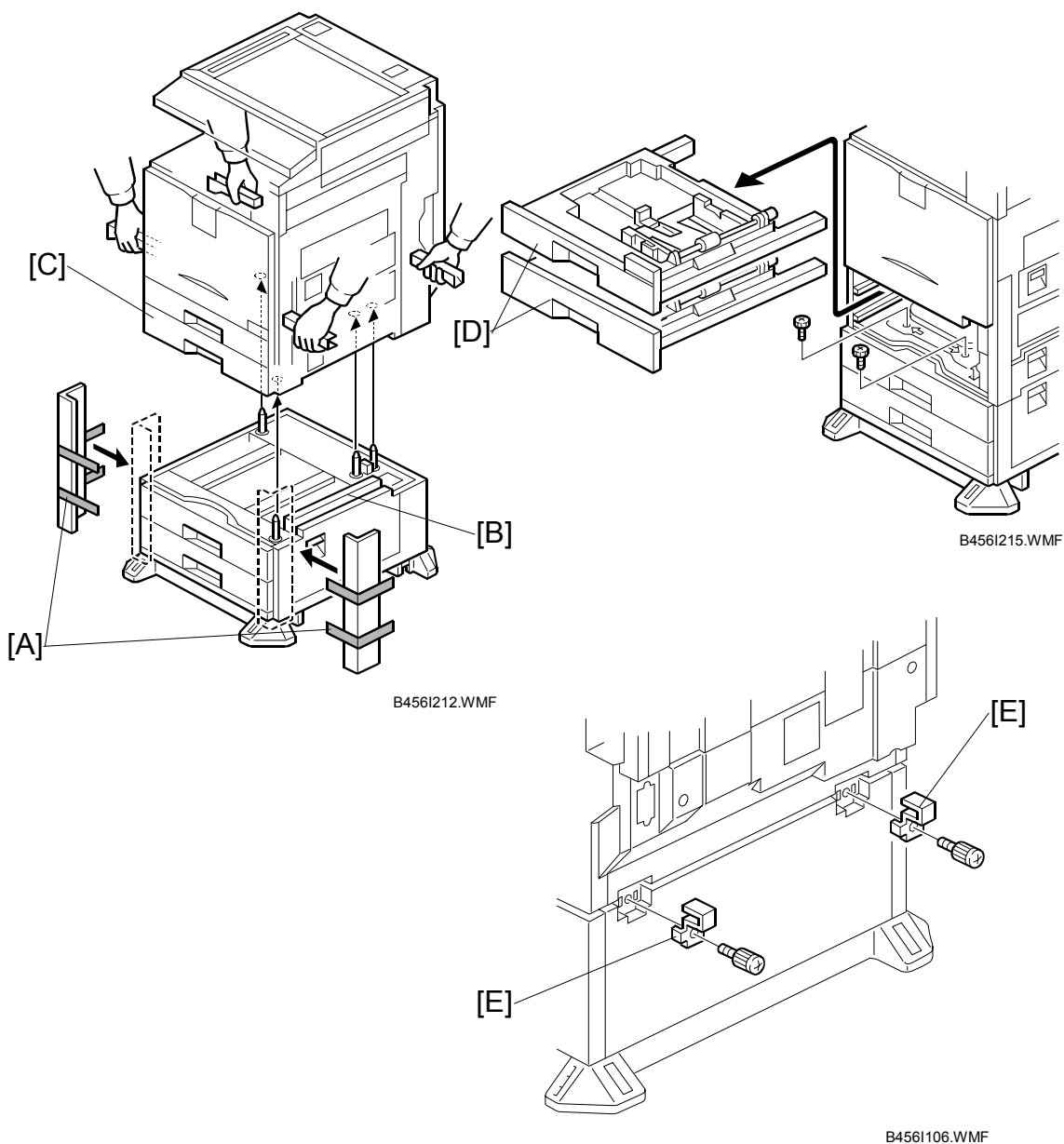
#### **⚠ CAUTION**

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

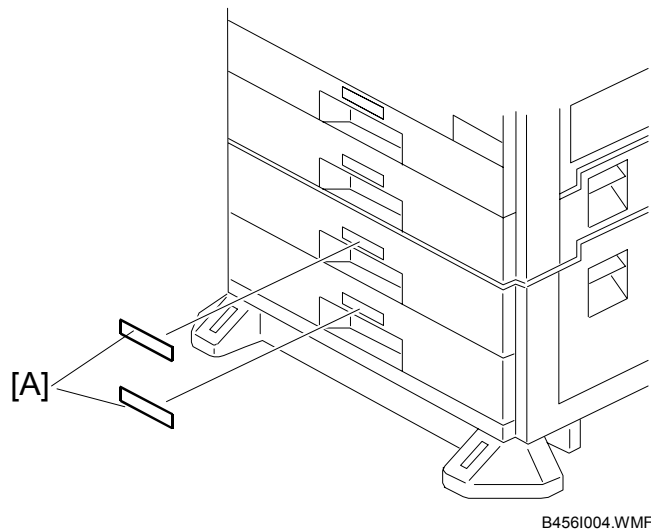
1. Remove the strips of tape.



2. Remove the paper trays [A] from the paper tray unit and remove the shipping retainers.
3. Install the front stand [B] (⚙ x2).
4. Install the rear stand [C].
5. Attach the two stand brackets [D] (⚙ x1 each).



6. Attach the cardboard guides [A] to each side of the paper tray unit [B].
7. Set the copier [C] on the paper tray unit [B]. Use the cardboard guides.
8. Remove the cardboard guides from the paper tray unit.
9. Remove the paper trays [D] from the copier and secure the paper tray unit (⚙ x2).
10. Attach a securing bracket [E] to each side of the paper tray unit, as shown (⚙ x1 each).



11. Reinstall the paper trays and attach the appropriate paper tray number decal [A] to the paper tray.

**NOTE:** The paper tray number decal is in the accessory box for the main copier.

12. Load paper into the paper trays.
13. Turn on the main switch.
14. Check the machine's operation and copy quality.

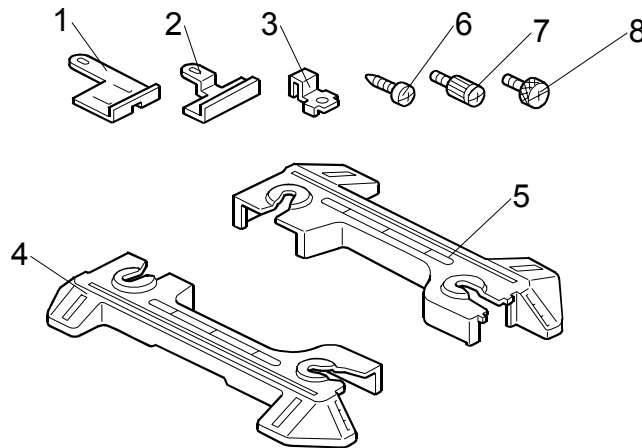


## 1.4 LCT (B457)

### 1.4.1 ACCESSORY CHECK

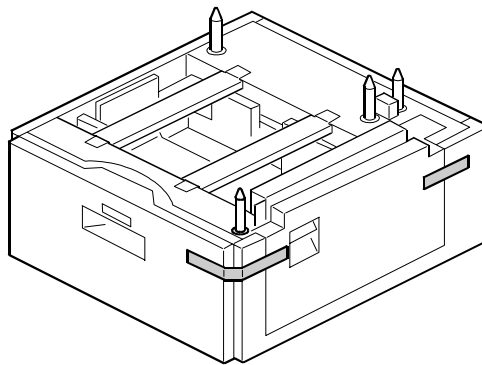
Check the quantity and condition of the accessories against the following list.

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



B457I007.WMF

### 1.4.2 INSTALLATION PROCEDURE

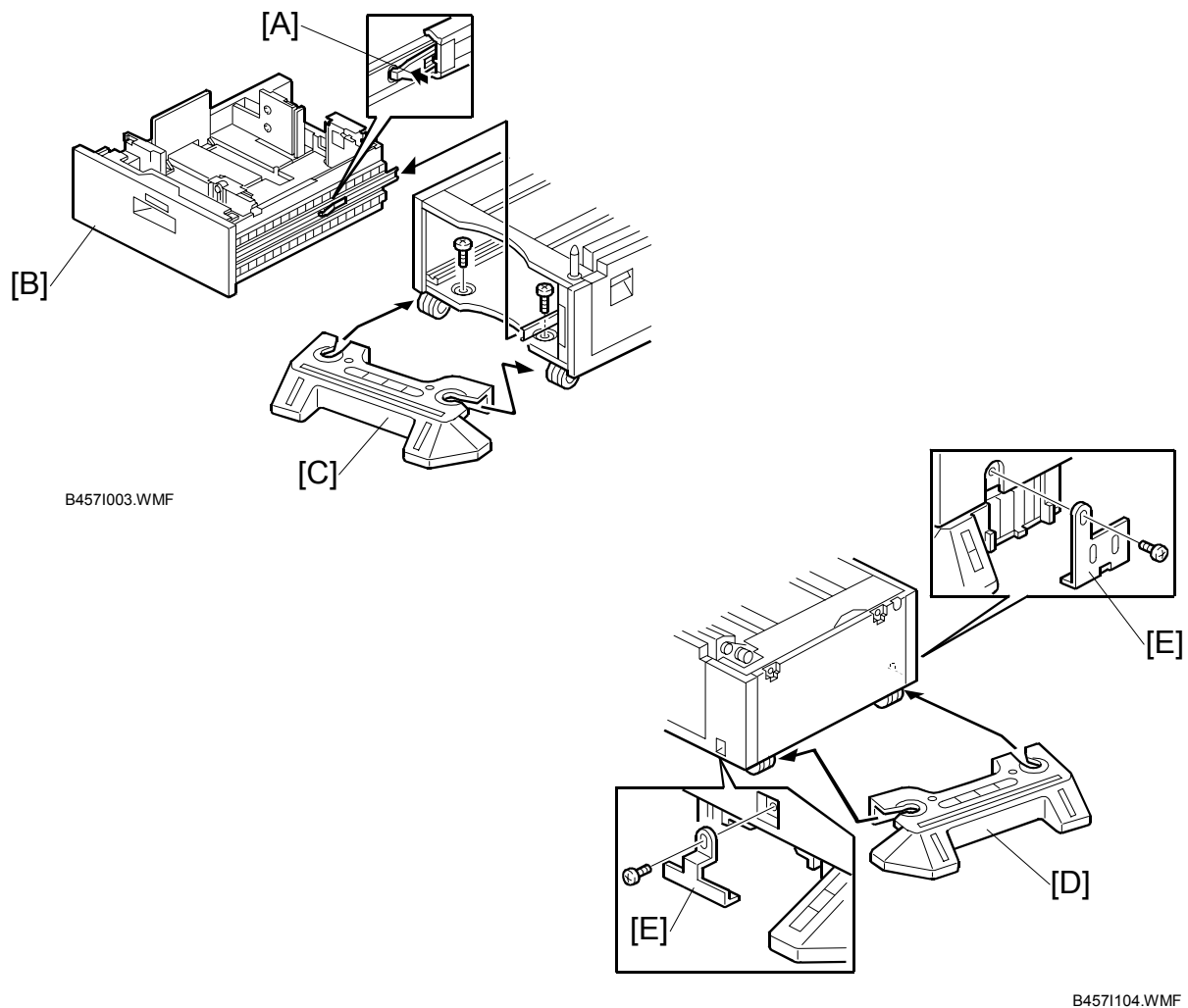


B457I001.WMF

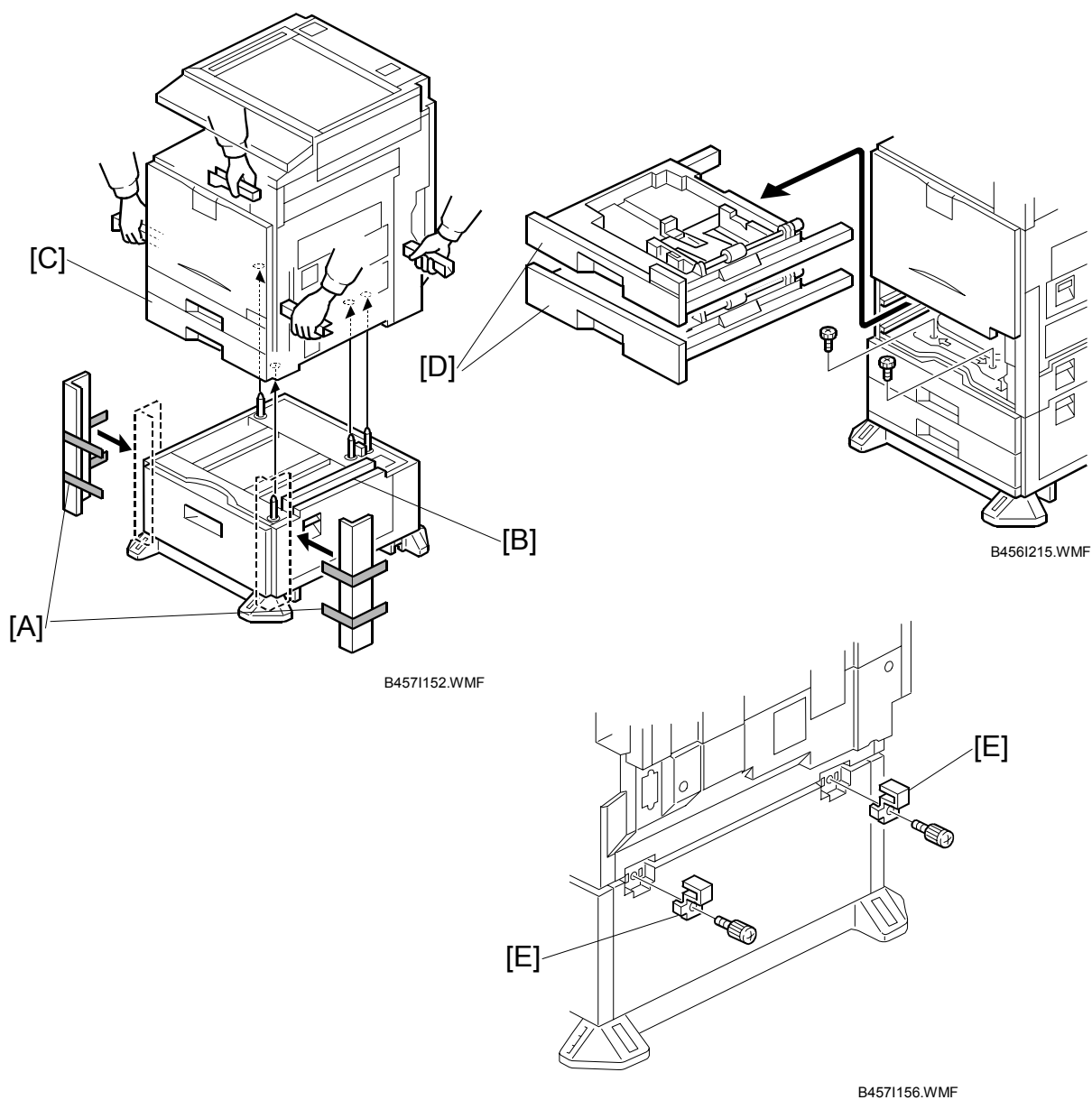
#### **⚠ CAUTION**

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

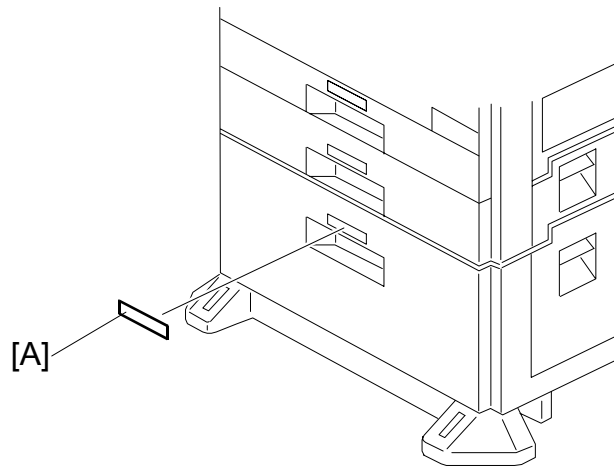
1. Remove the strips of tape.



2. While pressing the stopper [A] attached to the guide rail, pull out the large capacity tray [B].
3. Install the front stand [C] (⚙ x2).
4. Install the rear stand [D].
5. Attach the two stand brackets [E] (⚙ x1 each).



6. Attach the cardboard guides [A] to each side of the LCT [B].
7. Set the copier [C] on the LCT [B]. Use the cardboard guides.
8. Remove the cardboard guides from the LCT.
9. Remove the paper trays [D] from the copier and secure the LCT (⌘ x2).
10. Attach a securing bracket [E] to each side of the LCT, as shown (⌘ x1 each).



B457I005.WMF

11. Reinstall the paper trays and attach the appropriate paper tray number decal [A] to the LCT.

**NOTE:** The paper tray number decal is in the accessory box for the main copier.

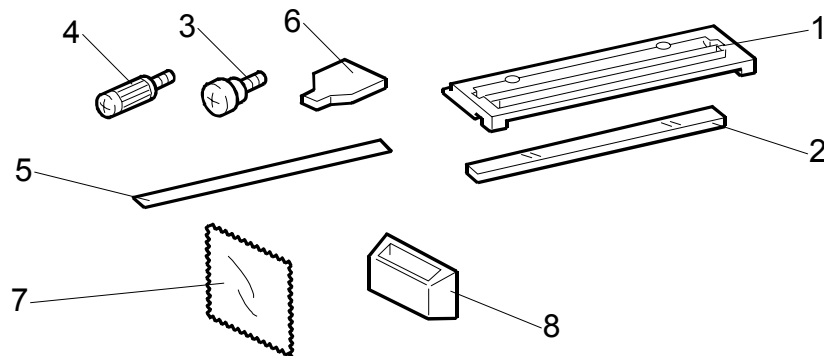
12. Load paper into the LCT.
13. Turn on the main switch.
14. Check the machine's operation and copy quality.

## 1.5 AUTO REVERSE DOCUMENT FEEDER (B810)

### 1.5.1 ACCESSORY CHECK

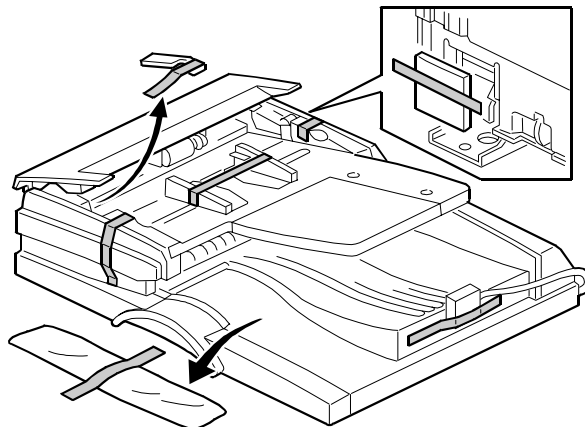
Check the quantity and condition of the accessories against the following list.

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



B3861500.WMF

### 1.5.2 INSTALLATION PROCEDURE

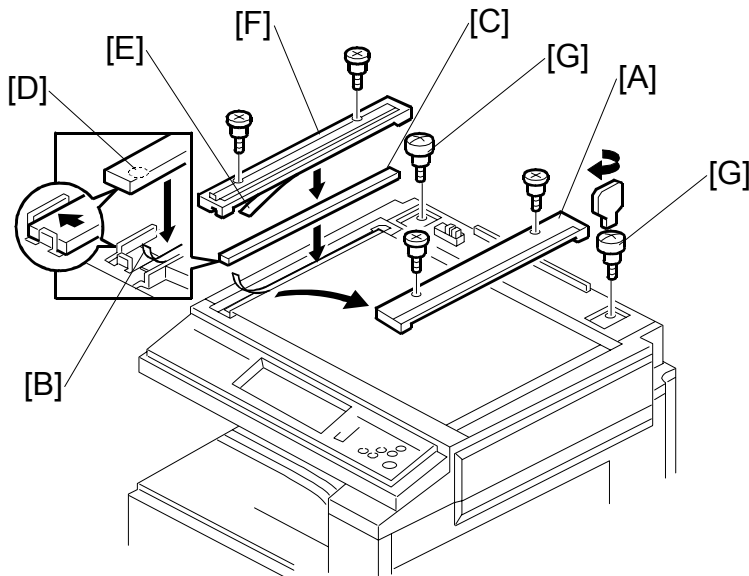


B3861101.WMF

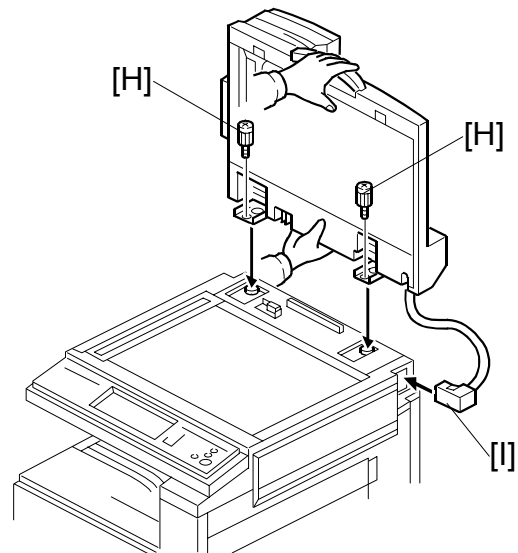
#### **⚠ CAUTION**

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

1. Remove the strips of tape.

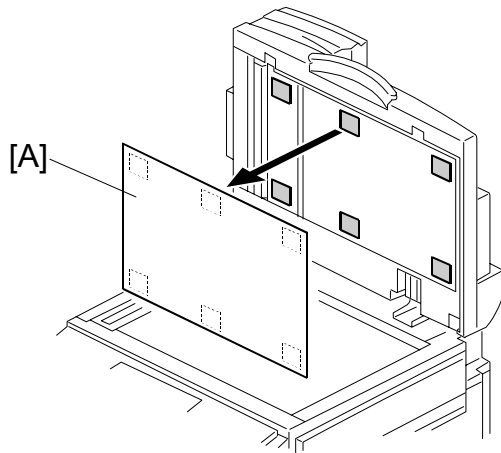


B386107.WMF

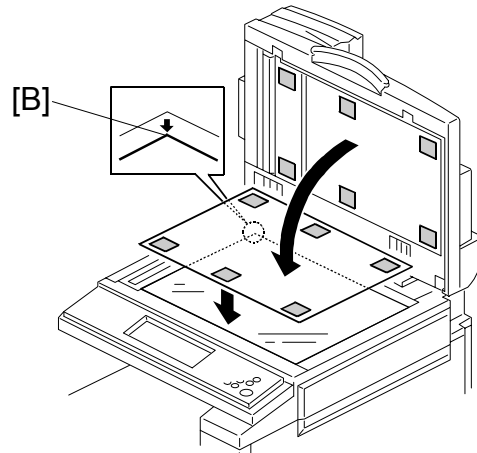


B386108.WMF

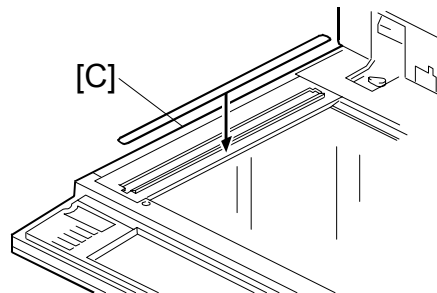
2. Remove the left scale [A] (⌀ x 2).
3. Peel off the backing [B] of the double-sided tape attached to the glass holder.
4. Place the DF exposure glass [C] on the glass holder.  
**NOTE:** When installing the DF exposure glass, make sure that the white point [D] is on the lower front side of the glass,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



B386I110.WMF



B386I111.WMF



B386I501.WMF

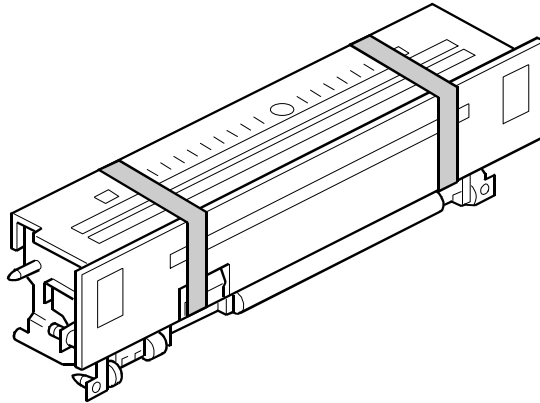
10. Peel off the platen sheet [A] and place it on the exposure glass.
11. Line up the rear left corner of the platen sheet flush against corner [B] on the exposure glass.
12. Close the ARDF.
13. Attach the appropriate scale decal [C] as shown.
14. Turn the main power switch on. Then check if the document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

## 1.6 INTERCHANGE UNIT (B481)

### 1.6.1 ACCESSORY CHECK

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

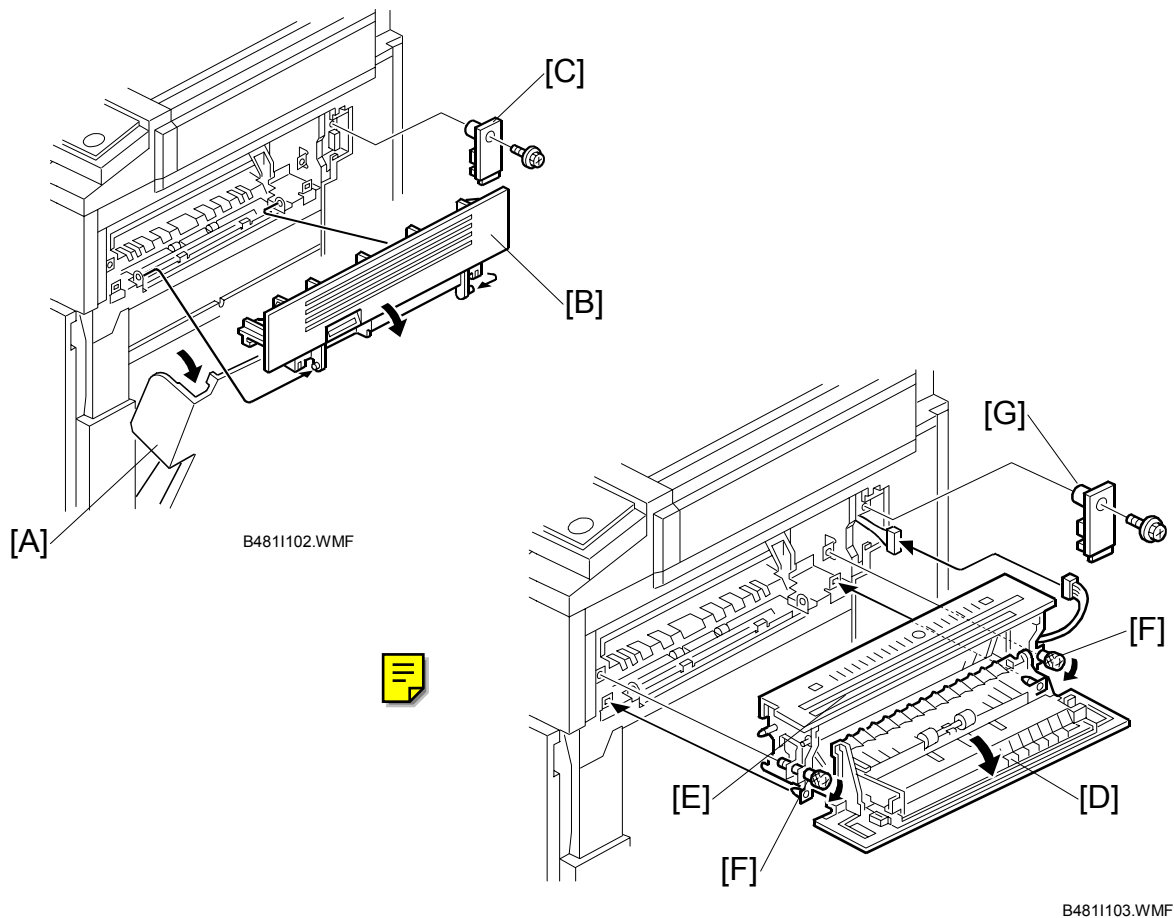
No.	Description	Q'ty
1	Interchange Unit	1



B481I101.WMF



## 1.6.2 INSTALLATION PROCEDURE



### **⚠ CAUTION**

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

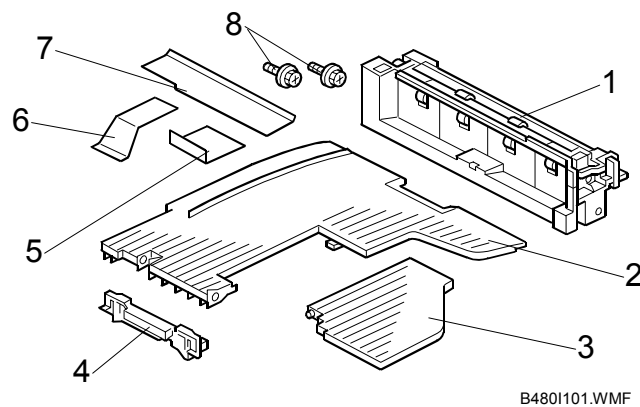
1. Remove all tapes.
2. Open the right cover [A] of the copier.
3. Open cover [B] and remove it.
4. Remove the connector cover [C] (⚙ x1).
5. Open the cover [D] of the interchange unit.
6. Install the interchange unit [E] (📄 x1).  
**NOTE:** Take care not to pinch the harness at the front side.
7. Secure the interchange unit with the knob screws [F].
8. Reinstall the connector cover [G] which was removed in step 4 (⚙ x1).

## 1.7 1 BIN TRAY UNIT (B480)

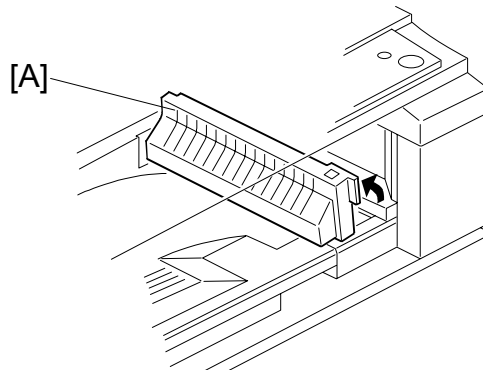
### 1.7.1 ACCESSORY CHECK

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

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



## 1.7.2 INSTALLATION PROCEDURE

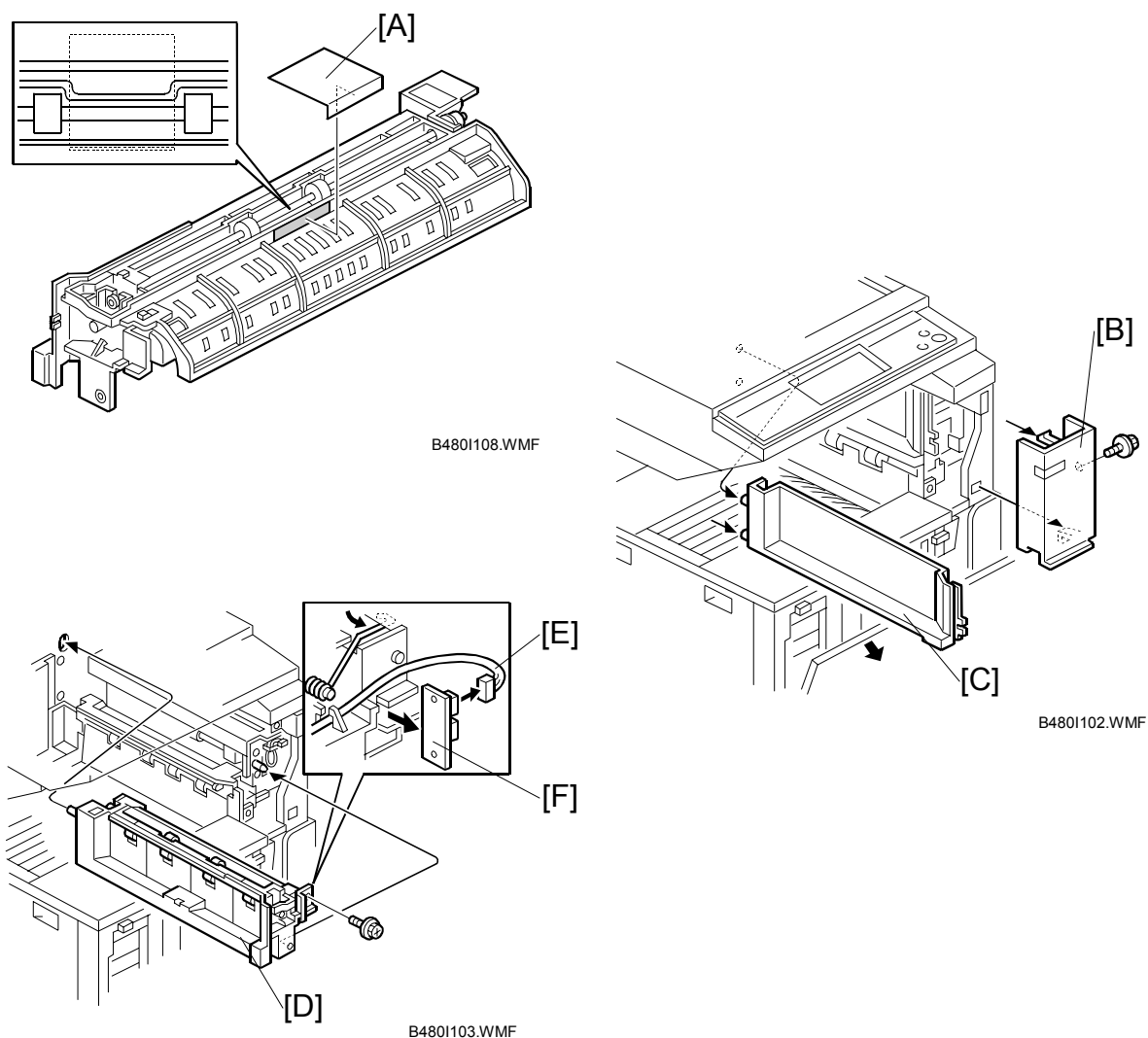


B480I107.WMF

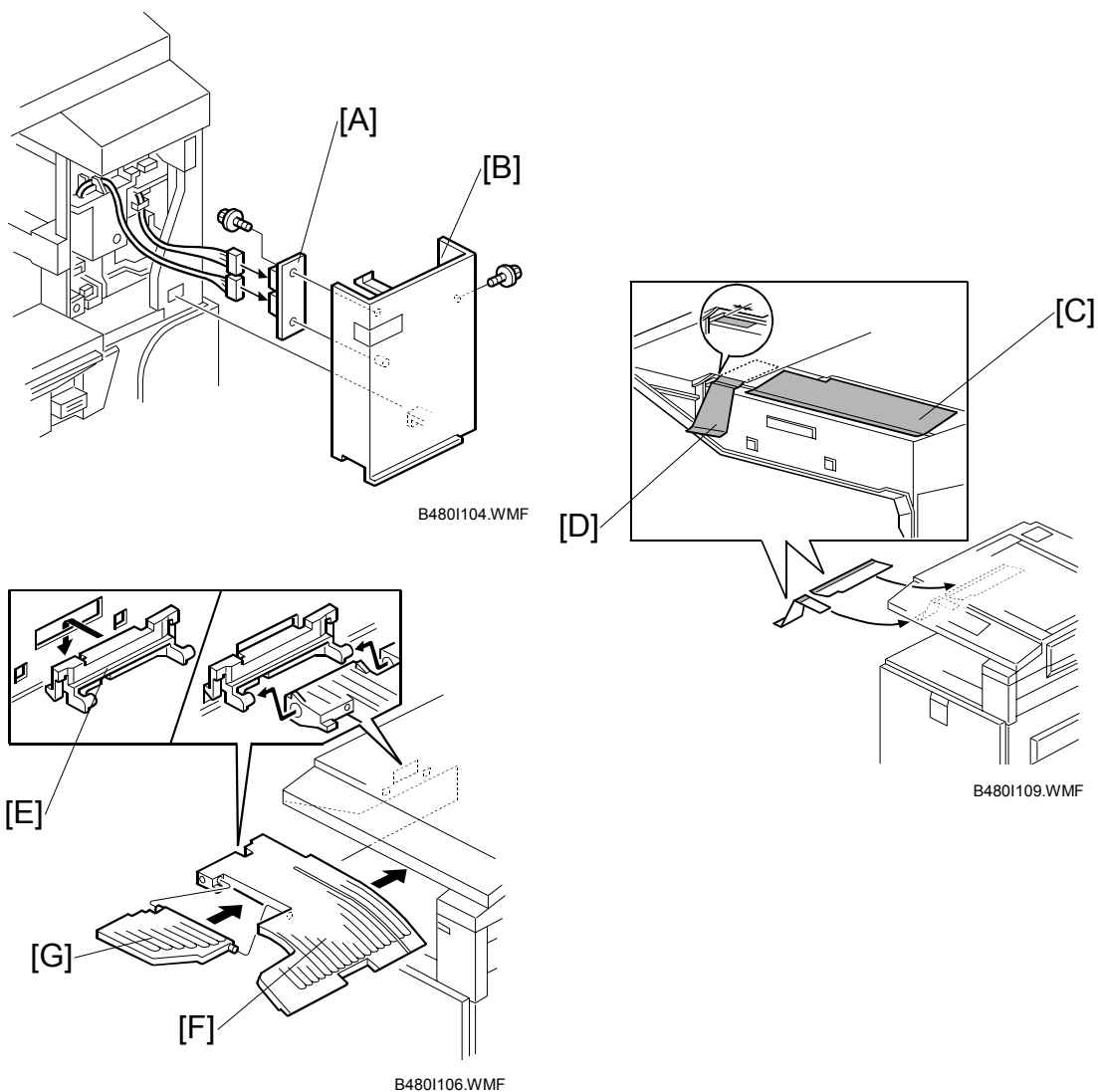
**⚠ CAUTION****Unplug the copier power cord before starting the following procedure.**

**NOTE:** Before installing this 1-bin tray unit, the optional interchange unit (B481) must be installed.

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



3. Peel off the backing of the double-sided tape attached to the shield mylar [A]. Then attach the shield mylar to the 1-bin unit, as shown.
4. If the front right cover [B] is installed, remove it (⚙ x1).
5. Remove the cover [C].
6. Install the 1-bin tray unit [D] (⚙ x1).
7. Disconnect the connector [E] and remove the LED board [F].



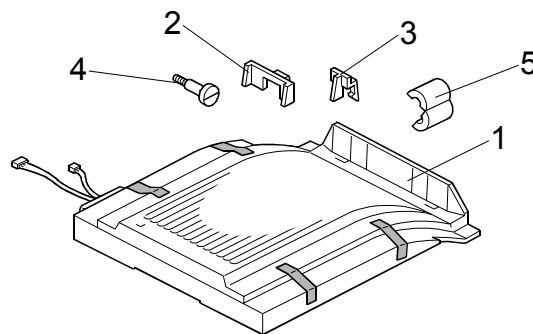
8. Install the LED board [A] on the front right cover (⚙ x1).
9. Reinstall the front right cover [B] (🔩 x2, ⚙ x1).
10. Peel off the backing of the double-sided tape attached to the paper guide [C]. Then attach the paper guide to the underside of the scanner unit as shown.
11. Peel off the backing of the double-sided tape attached to the sub paper guide [D]. Then attach the sub paper guide to the underside of the scanner unit as shown.
12. Install the tray guide [E].
13. Install the tray [F].
14. Install the sub-tray [G].
15. Turn on the main power switch and check the 1-bin tray unit operation.

## 1.8 SHIFT TRAY (B510)

### 1.8.1 ACCESSORY CHECK

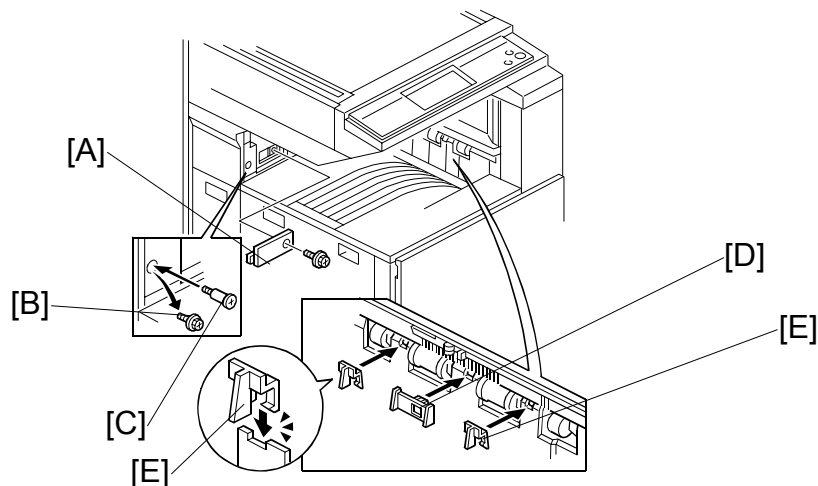
Check the quantity and condition of the components against the following list.

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



B510I111.WMF

### 1.8.2 INSTALLATION PROCEDURE

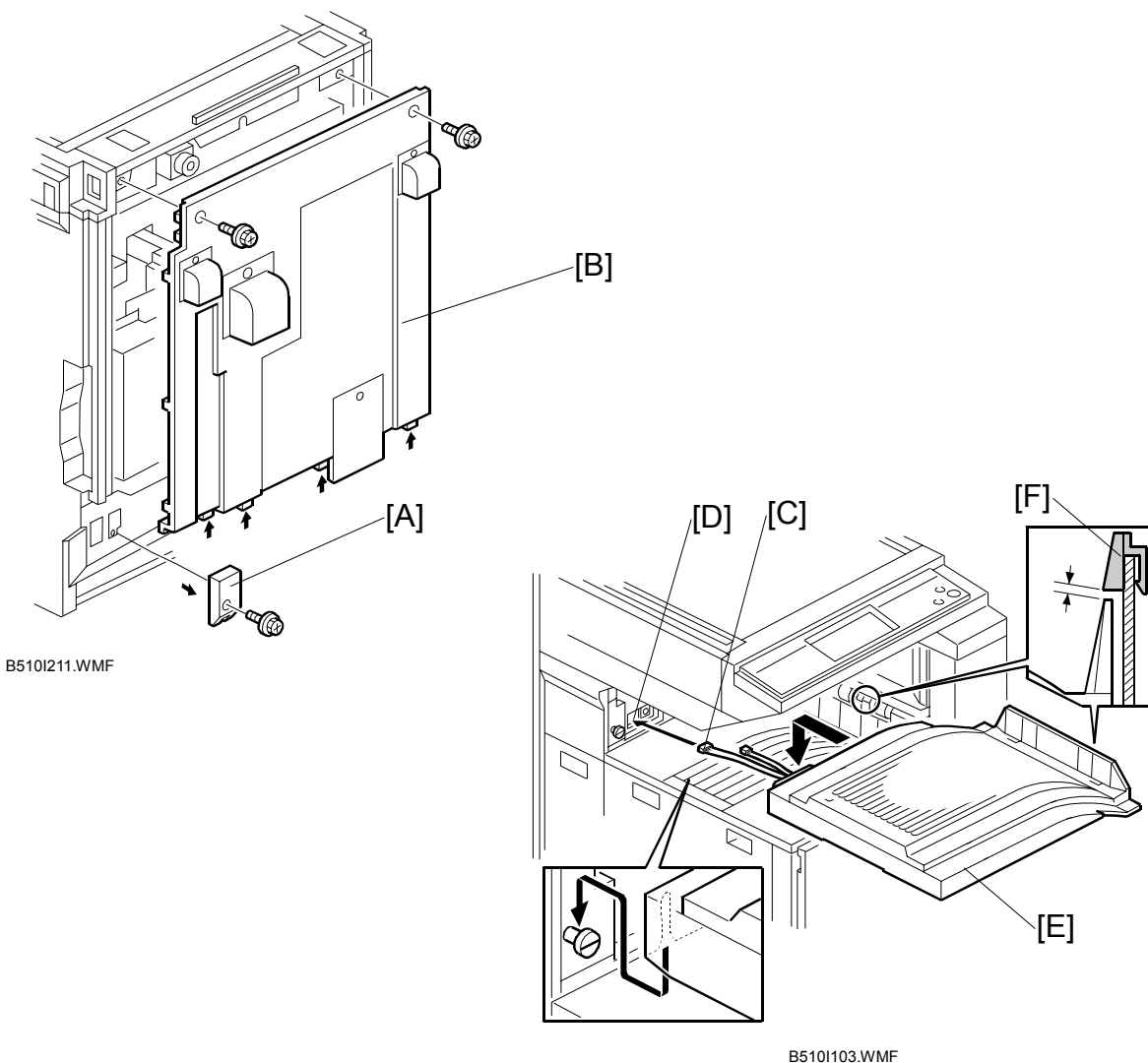


B510I102.WMF

#### **⚠ CAUTION**

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

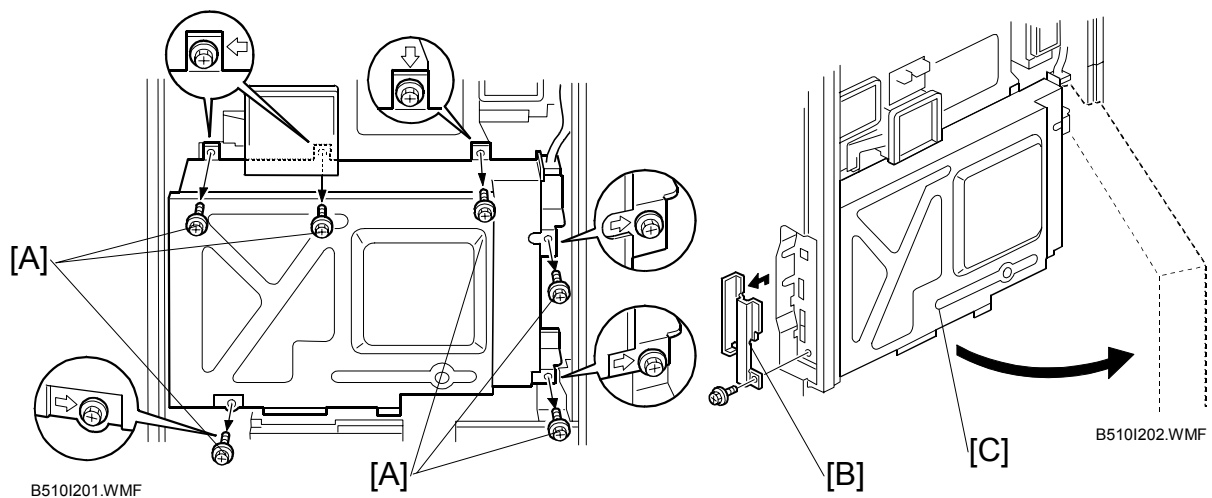
1. Remove all tapes (see the diagram at the top of the page).
2. Remove the covers [A] (⚙ x1).
3. Replace screw [B] with a stepped screw [C].
4. Install the large paper guide [D] and two small paper guides [E], as shown.



5. Remove the connector cover [A] (⌀ x 1).
6. Remove the rear cover [B] (⌀ x2).
7. Pass the harnesses [C] through the opening [D], and install the shift tray unit [E], as shown.



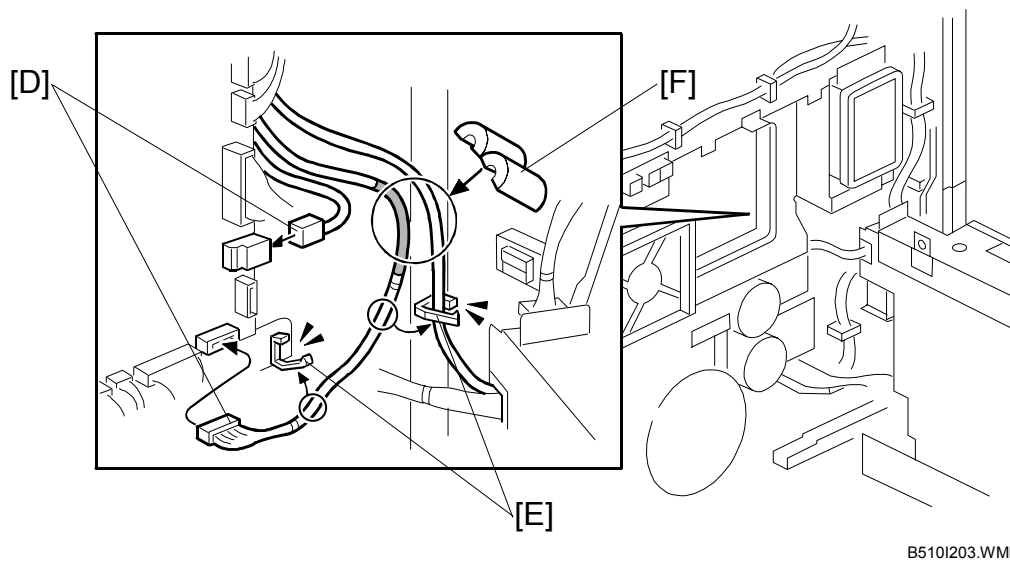
**NOTE:** 1) Set the shift tray on the stepped screw.  
2) The shift tray must be installed under the paper guides [F] installed in step 4.



8. Remove the screws [A]. (⌀ x 6)

9. Remove the SD-card slot cover [B]. (⌀ x 1)

10. Open the controller box [C].



11. Connect the harness [D], as shown.

12. Attach the harnesses with clamps [E]. Then attach the core [F].

**NOTE:** Make sure that the core [F] does not cause damage to the harnesses.

13. Assemble the machine.

14. Turn on the main power switch.

15. Check the shift tray operation.

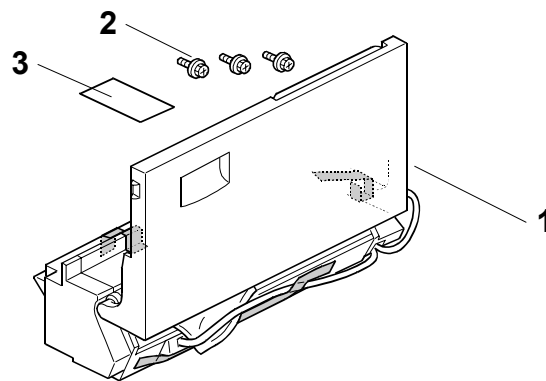


## 1.9 BY-PASS FEED UNIT (B490)

### 1.9.1 ACCESSORY CHECK

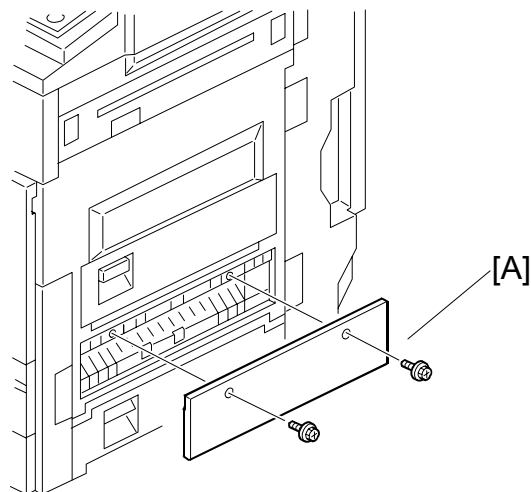
Check the quantity and condition of the components against the following list.

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



B490I001.WMF

### 1.9.2 INSTALLATION PROCEDURE

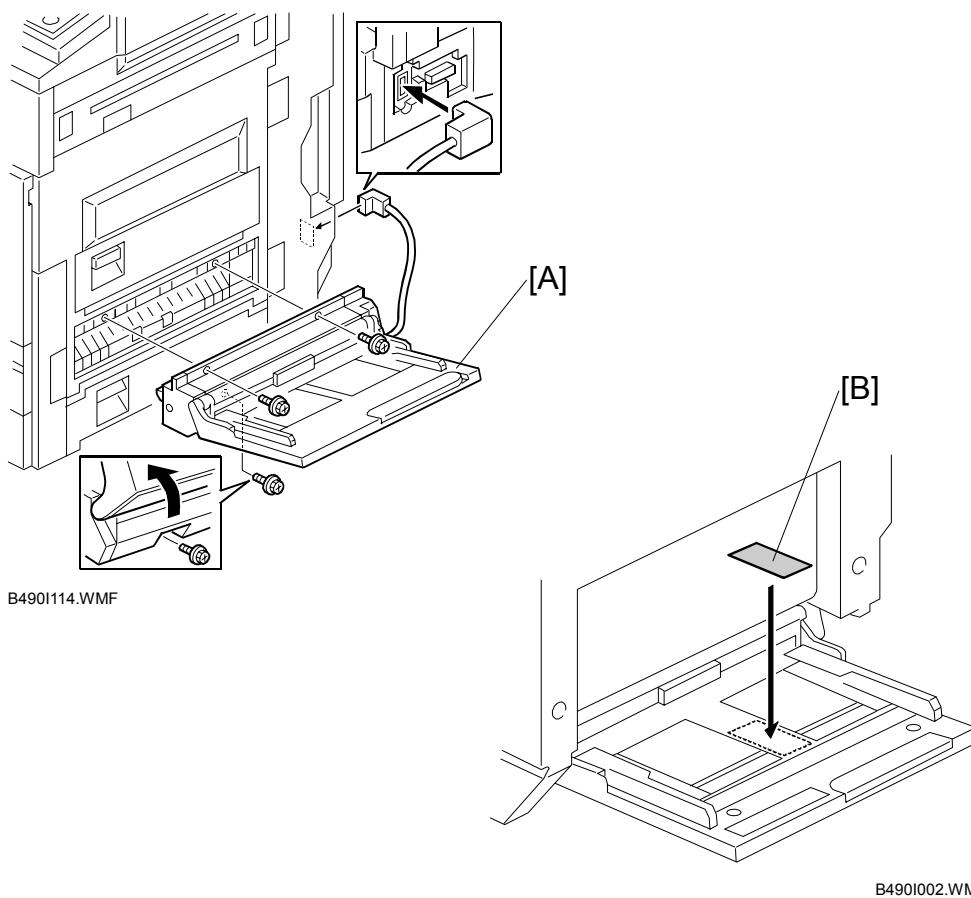


B490I113.WMF

#### **⚠ CAUTION**

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

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



3. Install the by-pass tray unit [A] (⚙ x3, 📄 x1).
4. Attach the decal [B] as shown.
5. Turn the main power switch on and check the by-pass tray function.
6. Go into the SP mode. Change these SP settings.

SP1003	Default (No By-pass tray)	By-pass tray installed
001	0	2
002	-2	0
003	-2	0
004	0	2

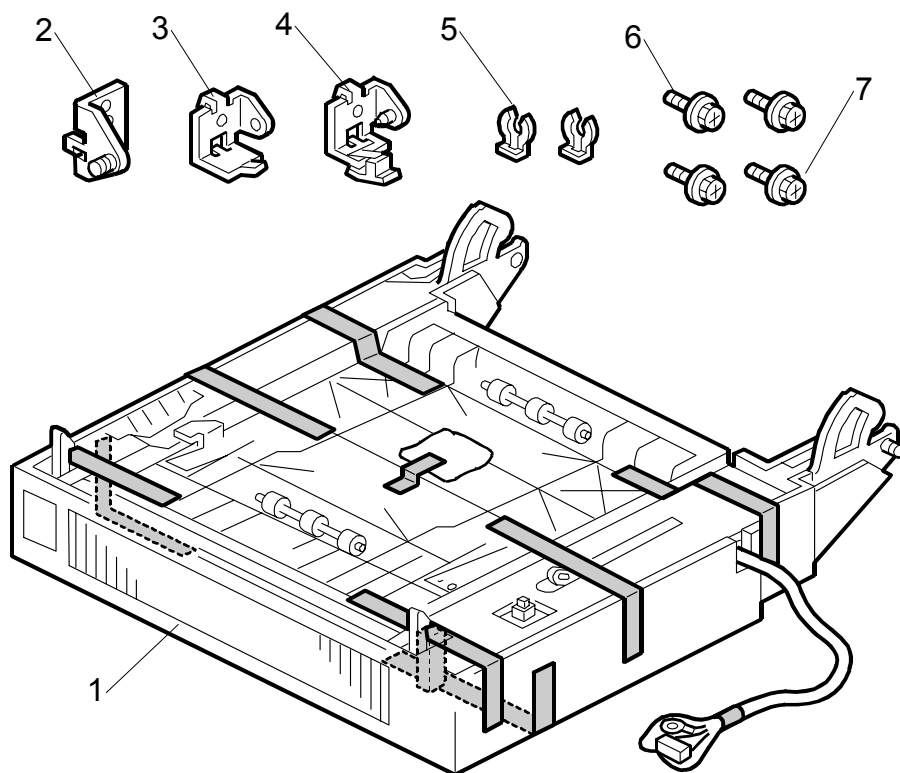
Make a copy from the by-pass tray. Then check the registration.

## 1.10 DUPLEX UNIT (B509)

### 1.10.1 ACCESSORY CHECK

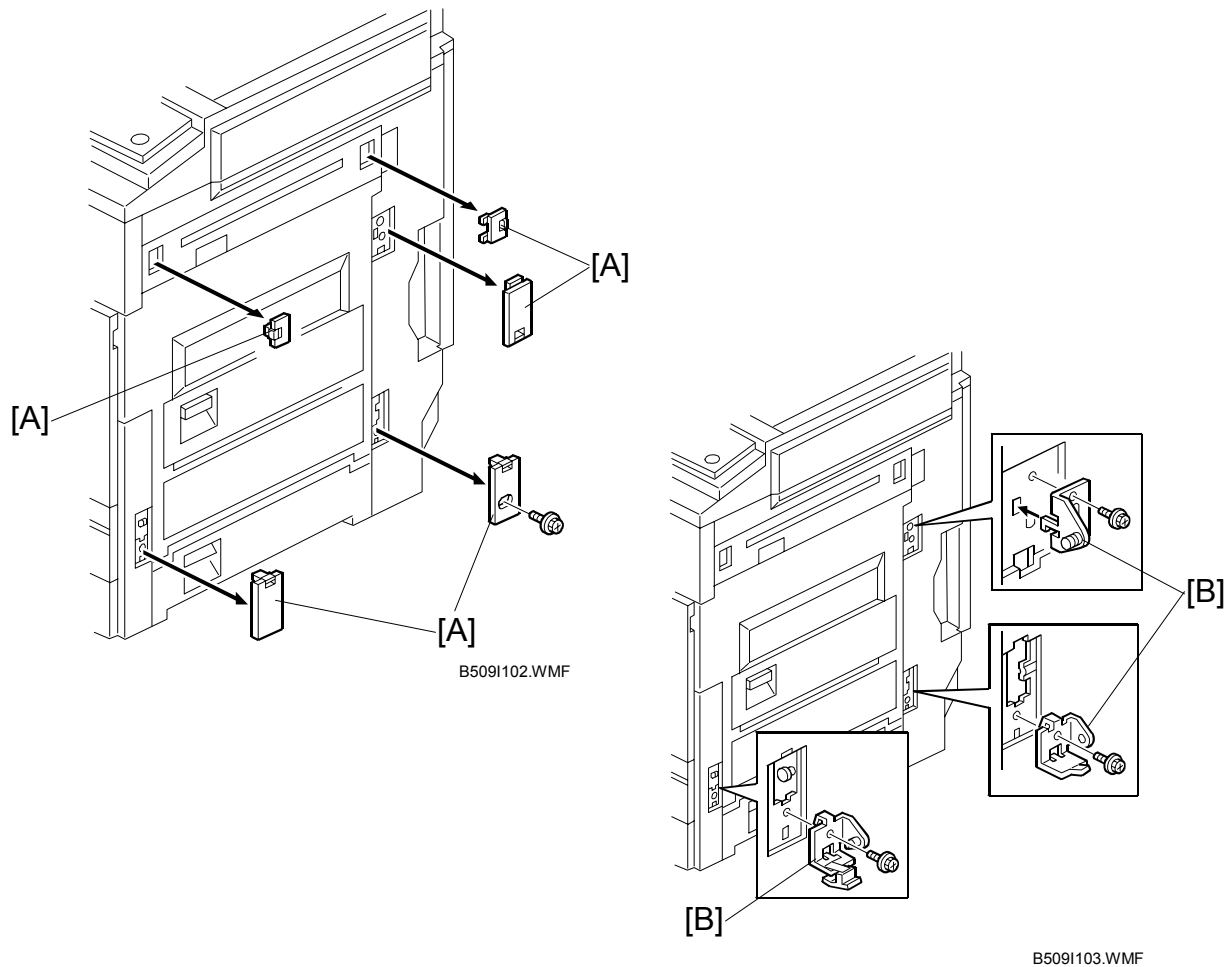
Check the quantity and condition of the accessories against the following list.

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



B509I101.WMF

## 1.10.2 INSTALLATION PROCEDURE

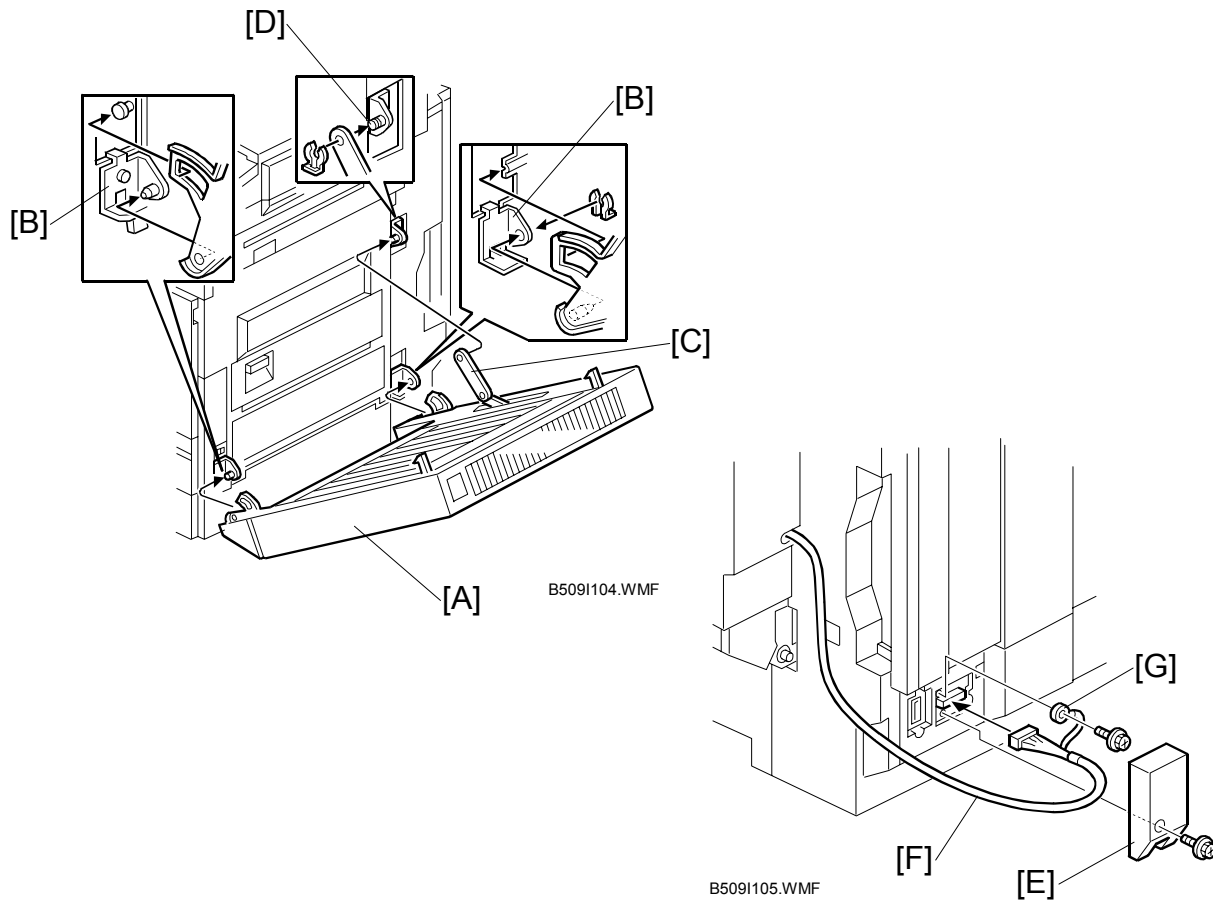


### **⚠ CAUTION**

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

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

1. Remove all tapes (see the previous page).
2. Remove five covers [A] (⚙ x1).
3. Install three brackets [B] (⚙ x1 each – M4x6).



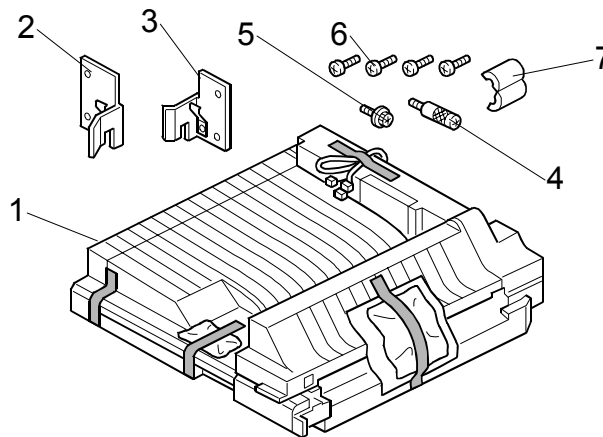
4. Set the duplex unit [A] on the brackets [B] (1 clip).
5. Attach the link [C] to the shaft [D] and secure it with the clip.
6. Remove the connector cover [E] (⚙ x1).
7. Connect the cable [F] and secure the grounding wire [G] (⚙ x1).
8. Install the connector cover.
9. Turn on the main power switch and check the duplex unit function.

## 1.11 BRIDGE UNIT (B482)

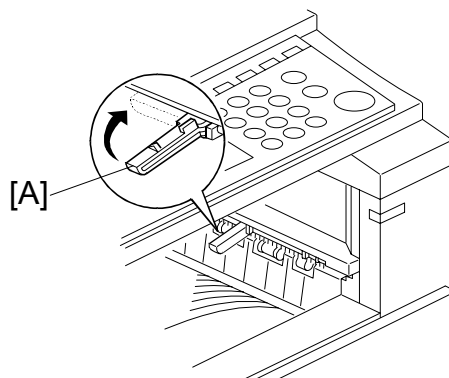
### 1.11.1 ACCESSORY CHECK

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

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



B482I151.WMF



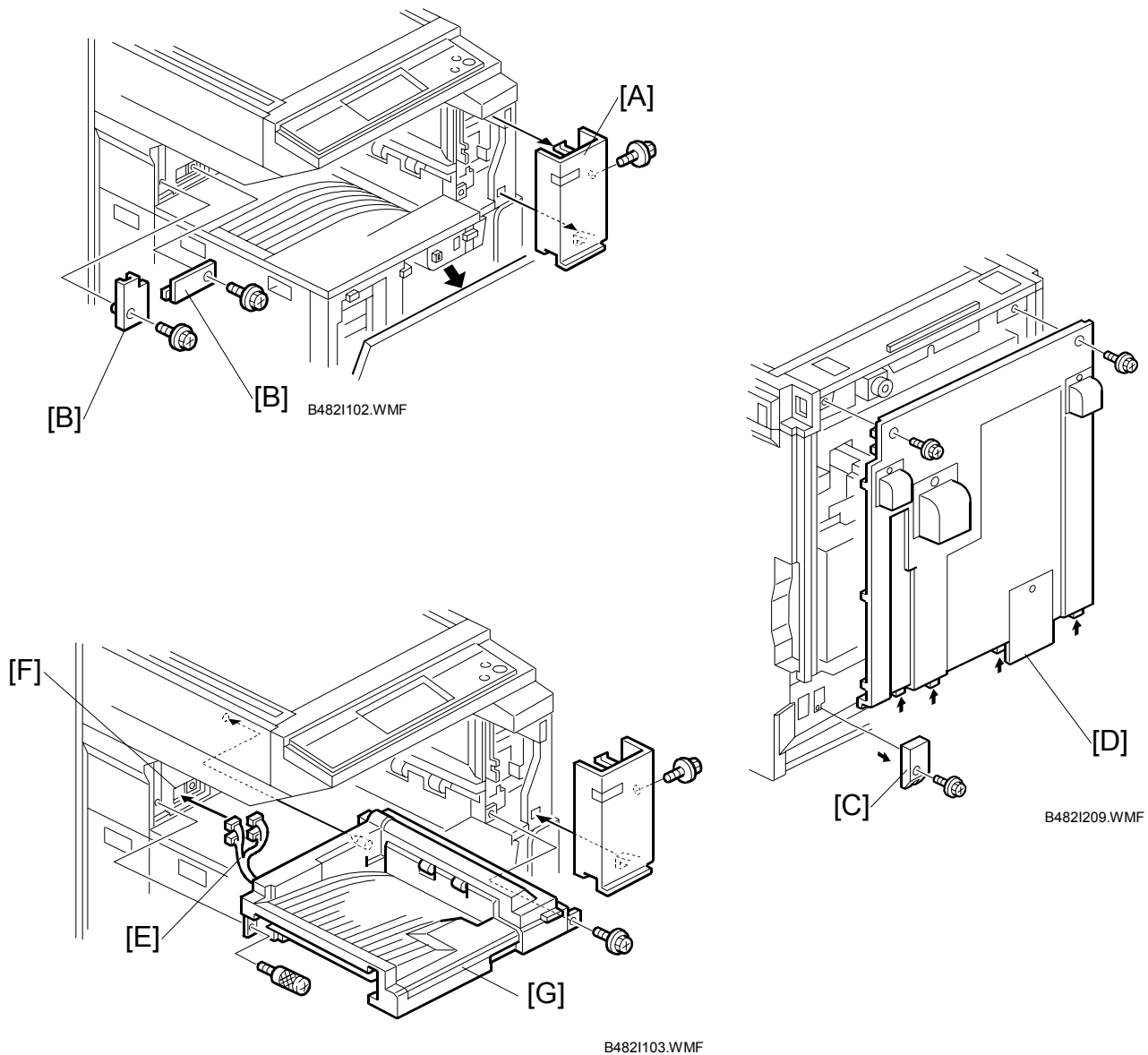
B482I500.WMF

### 1.11.2 INSTALLATION PROCEDURE

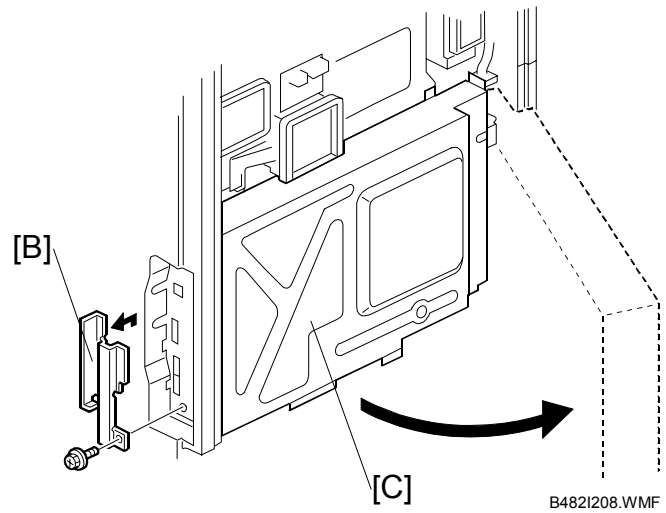
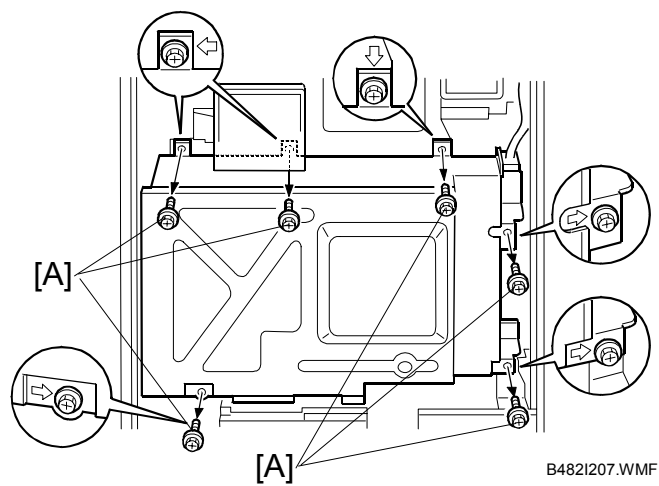
#### ⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

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

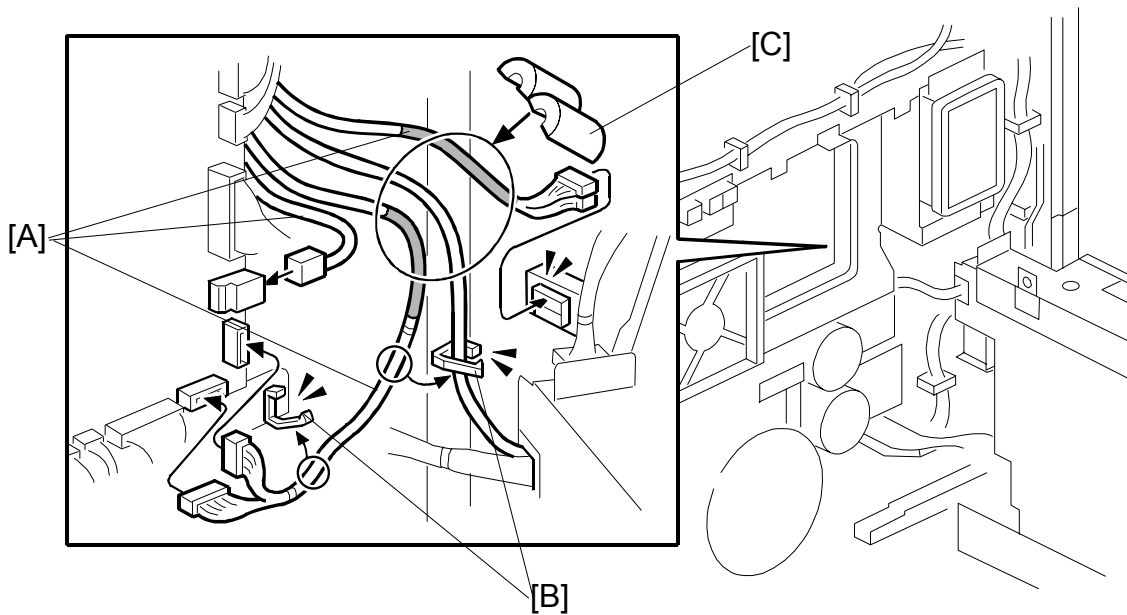


3. Remove the front right cover [A] (⚙ x1).
4. Remove two covers [B] (⚙ x1 each).
5. Remove the connector cover [C] (⚙ x 1).
6. Remove the rear cover [D] (⚙ x2).
7. Pass the harnesses [E] through the opening [F], and install the bridge unit [G] (⚙ x2).
8. Reinstall the front right cover.



9. Remove the screws [A] ( $\phi$  x 6).
10. Remove the SD-card slot cover [B] ( $\phi$  x 1).
11. Open the controller box [C].





B4821206.WMF

12. Connect the harnesses [A], as shown.

13. Attach the harnesses with clamps [B].

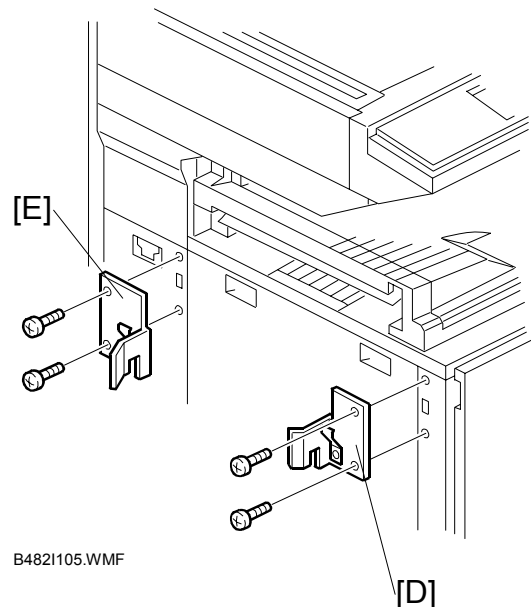
14. Attach the core [C].

**NOTE:** Make sure that the core does not cause damage to the harnesses.

15. Reinstall the rear cover.

16. **When the finisher (Machine code: B408) will be installed**, attach the front joint bracket [D] and rear joint bracket [E] (⌀ x2 each).

17. Install the optional finisher (refer to the finisher installation procedure).

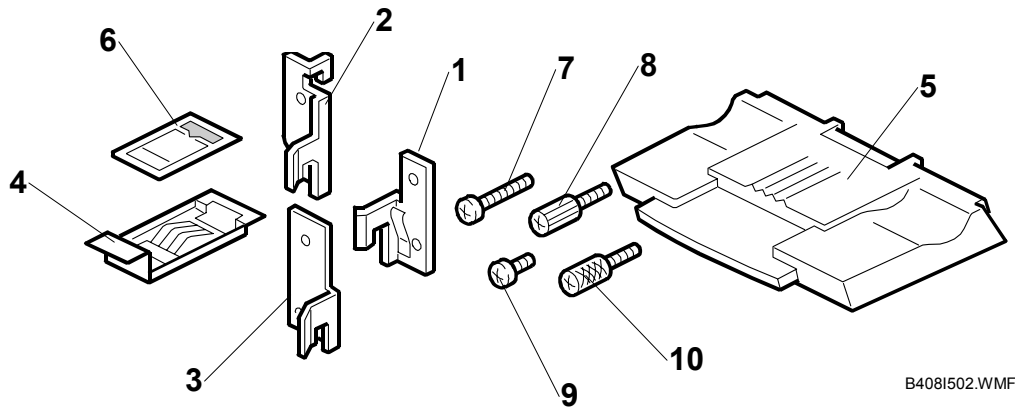


B4821105.WMF

## 1.12 1000-SHEET FINISHER (B408)

### 1.12.1 ACCESSORY CHECK

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

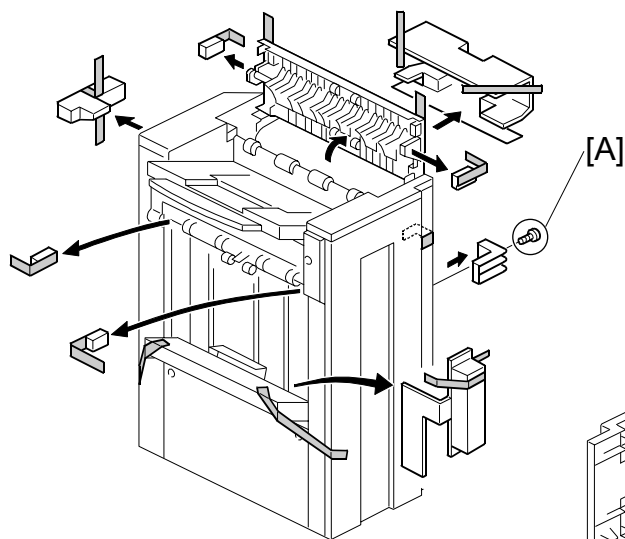


B408I502.WMF

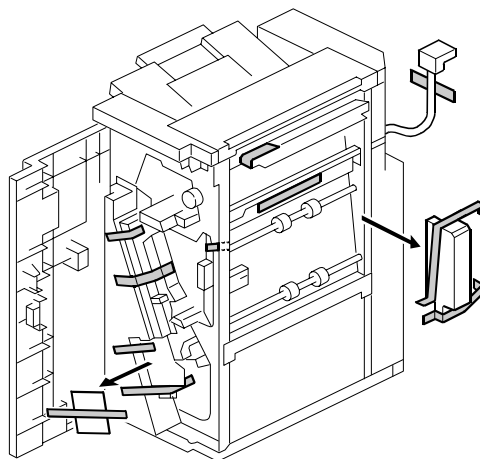
No.	Description	Q'ty	For B022/B027/B031/ B089/B093/B097	For B051/B052/ B156/B220	For B079/B082/ B135/B138
1	Front Joint Bracket	1	✓	---	✓
2	Rear Joint Bracket	1	✓	---	---
3	Rear Joint Bracket	1	---	---	✓
4	Grounding Plate	1	✓	---	✓
5	Copy Tray	1	✓	✓	✓
6	Staple Position Decal	1	✓	✓	✓
7	Screw - M4 x 14	4	✓ (Use 3)	---	✓ (Use 4)
8	Knob Screw - M4 x 10	1	✓	✓	✓
9	Screw - M3 x 8	1	✓	---	✓
10	Knob Screw - M3 x 8	1	✓	✓	✓

✓ = Necessary, --- = Not necessary

## 1.12.2 INSTALLATION PROCEDURE



B4081102.WMF



B4081103.WMF

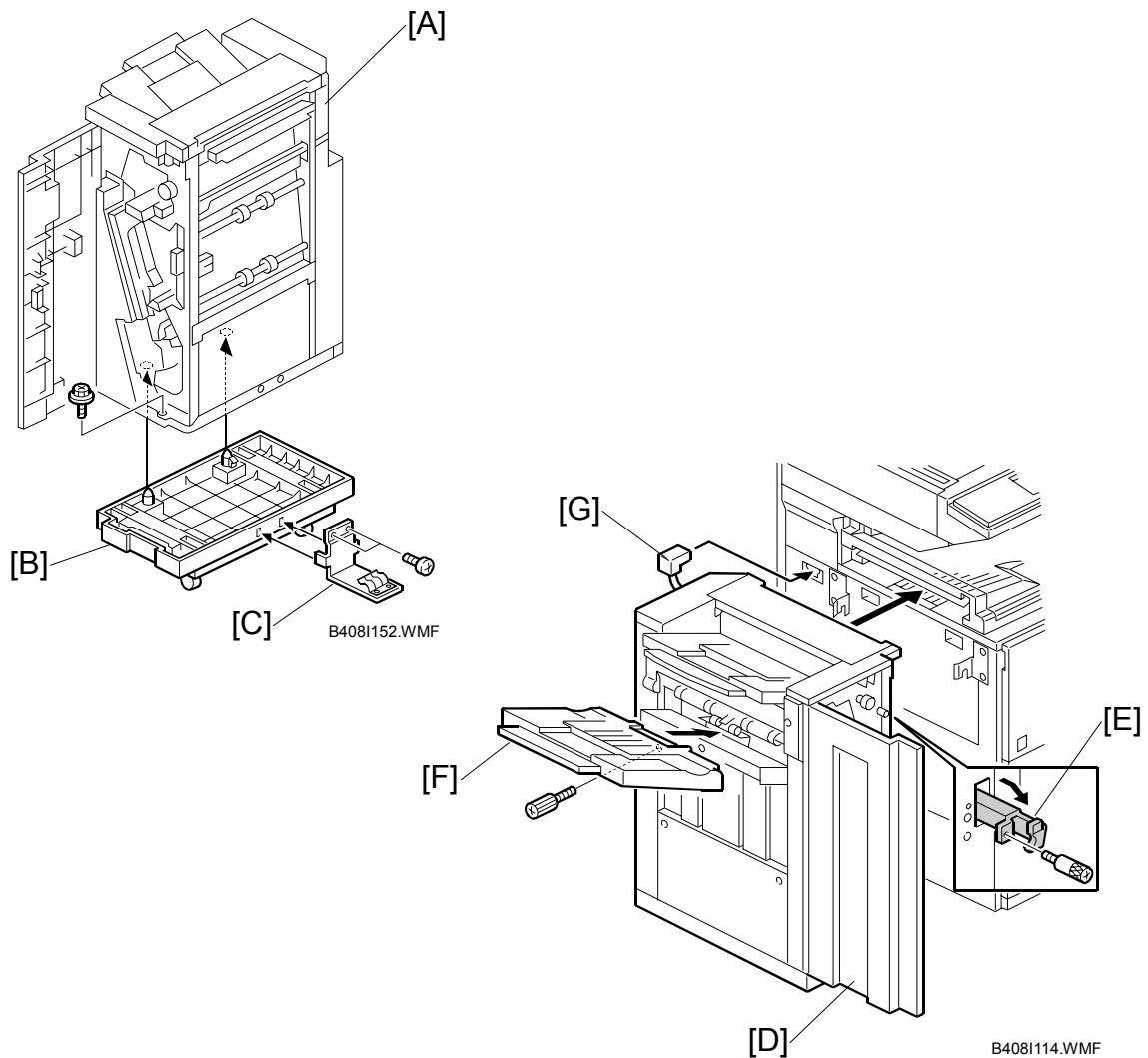
### **⚠ CAUTION**

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

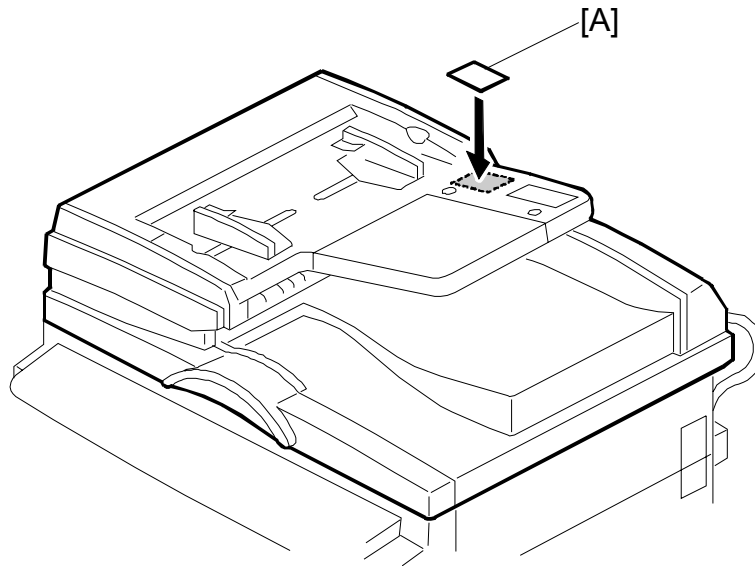
**NOTE:** The following options must be installed before installing this finisher.

- Bridge Unit (B482)
  - Paper Tray Unit (B456) or LCT (B457)
- Also, the optional adjustment table (B488) is required.

1. Unpack the finisher and remove the tapes.



2. Unpack the adjustment table (B488).
3. Set the finisher [A] on the adjustment table [B] and secure the finisher (⌘ x 1).
4. Install the grounding plate [C] which is in the accessory box for the adjustment table (⌘ x 2).
5. Open the front door [D], then pull the locking lever [E].
6. Align the finisher on the joint brackets, and lock it in place by pushing the locking lever.
7. Secure the locking lever (1 knob screw - M3 x 8) and close the front door.
8. Install the copy tray [F] (1 knob screw - M4 x 10).
9. Connect the finisher cable [G] to the main machine.



B408I501.WMF

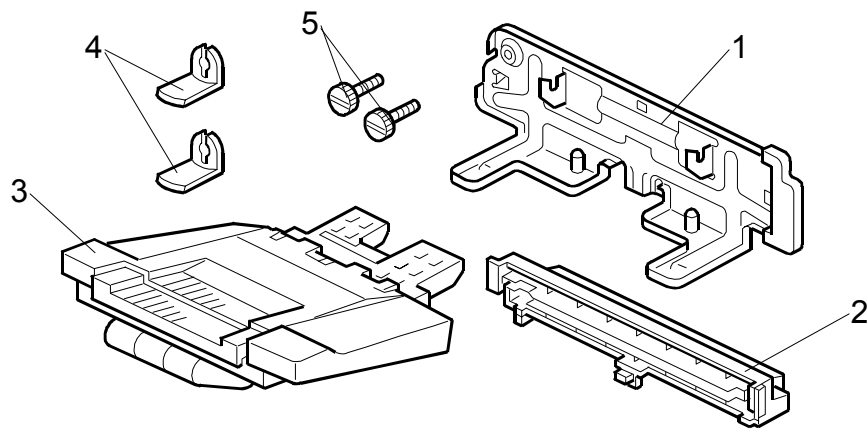
10. Attach the staple position decal [A] to the ARDF as shown.
11. Turn on the main power switch and check the finisher operation.

## 1.13 500-SHEET FINISHER (B458)

### 1.13.1 ACCESSORY CHECK

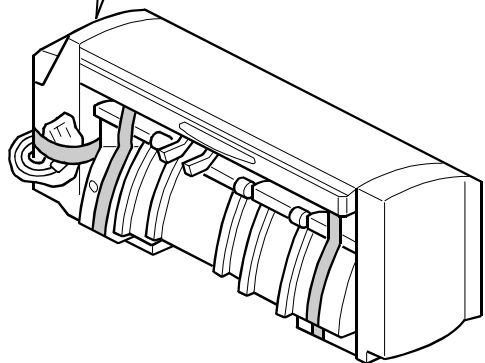
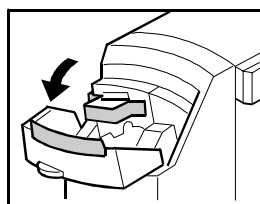
Check the quantity and condition of the accessories against the following list.

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

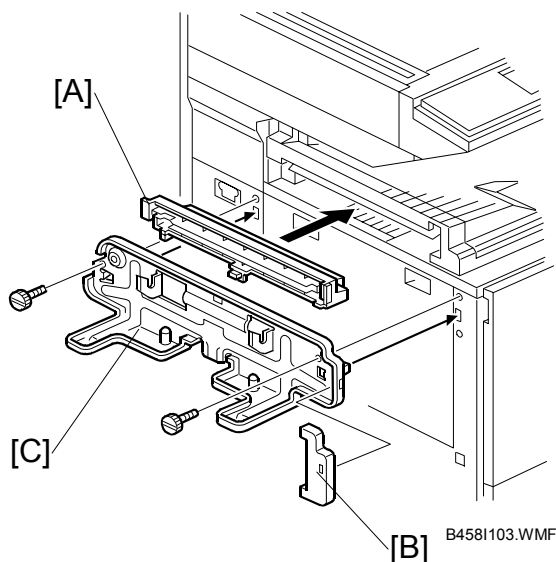


B4581102.WMF

### 1.13.2 INSTALLATION PROCEDURE



B4581101.WMF



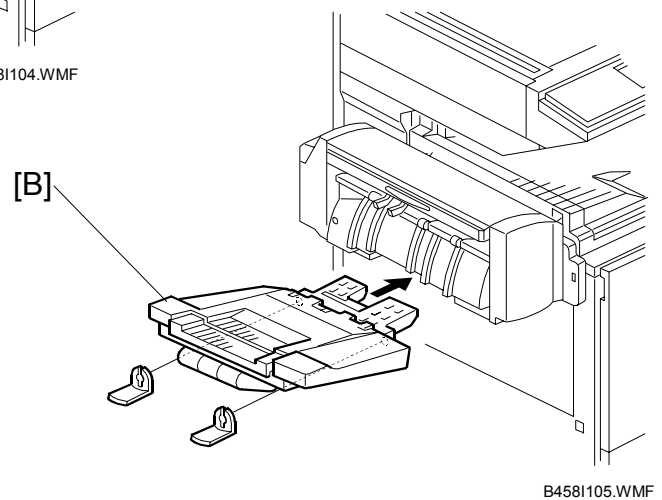
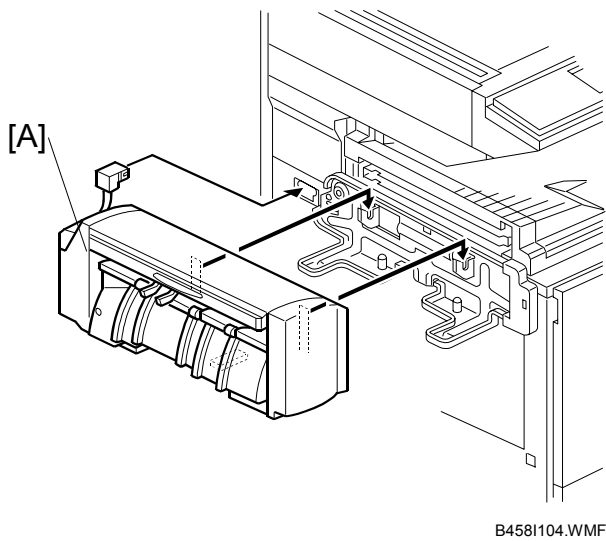
B4581103.WMF

**⚠ CAUTION**

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

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

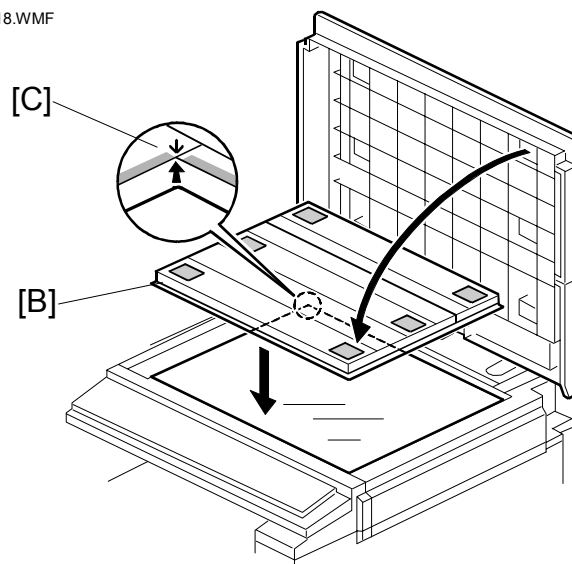
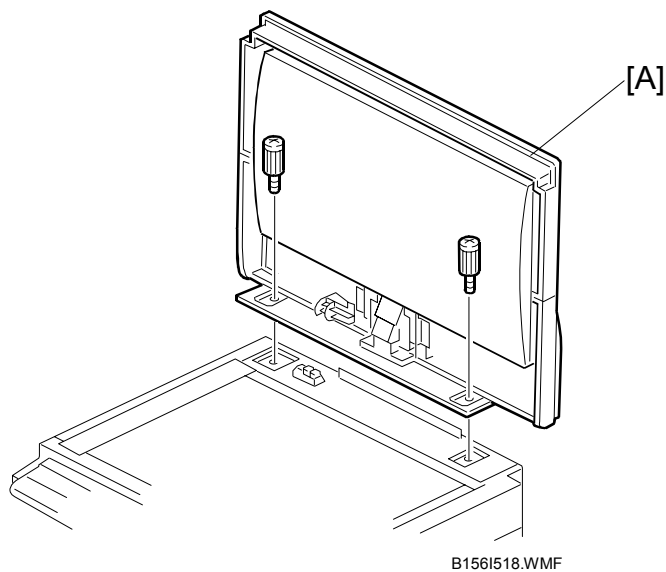
1. Unpack the finisher and remove the tapes.
2. Install the entrance guide [A].
3. Remove the holder cover [B]. Then install the unit holder [C] (2 screws).
4. Re-install the holder cover [B].



5. Install the 500-sheet finisher [A] (☞ x1).
6. Install the output tray [B] as shown (2 snap rings).
7. Turn on the main power switch and check the finisher operation.



## 1.14 PLATEN COVER INSTALLATION



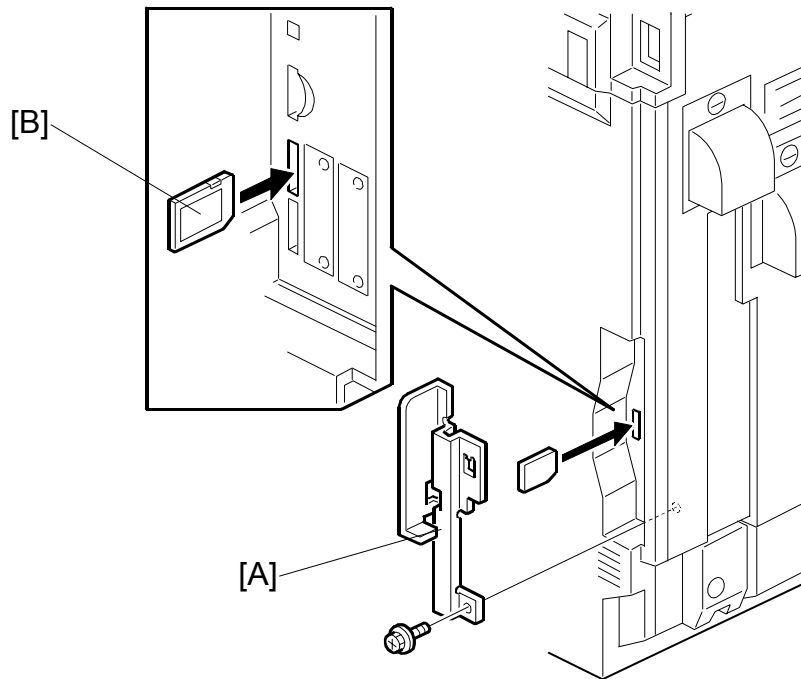
1. Install the platen cover [A] (2 x).
2. Peel off the platen sheet [B] and place it on the exposure glass.
3. Line up the rear left corner of the platen sheet flush against corner [C] on the exposure glass.
4. Gently close the platen cover.

## 1.15 PRINTER OPTIONS

### 1.15.1 POSTSCRIPT 3 (B769)

#### **⚠ CAUTION**

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



B769I001.WMF

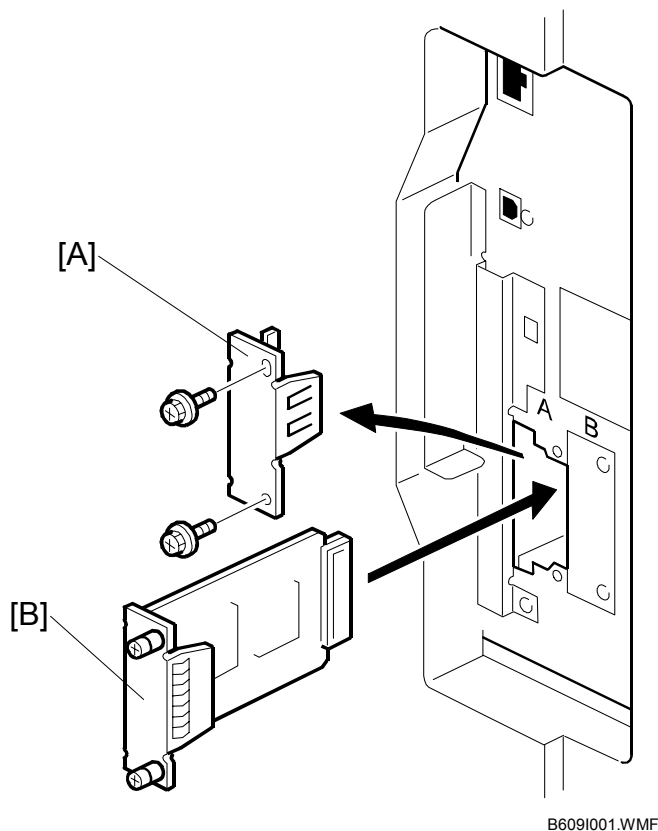
1. Remove the SD-card cover [A] from the machine (⌘ x 1).
2. Make sure that the printed face [B] of the SD card points to the rear of the machine. Then push it slowly into SD-card slot 2 until you hear a click.
3. Attach the slot cover (⌘ x 1).
4. Attach the “Adobe PostScript 3” decal to the front cover.

### 1.15.2 FILE FORMAT CONVERTER (B609)

**⚠ CAUTION**

Disconnect the main machine's power cord before you start this procedure.

Installation



1. Remove the slot cover [A] from I/F Card Slot A (⌘ x 2).
2. Install the file-format-converter board [B] (Knob-screw x 2).

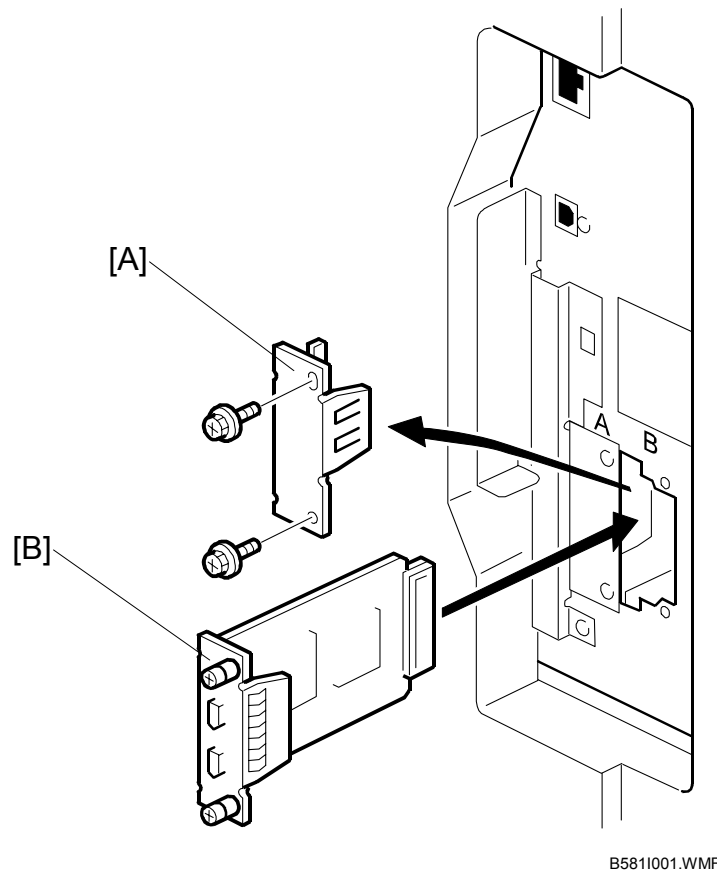
**NOTE:** Use a screwdriver when you tighten the knob-screws. Do not tighten them manually. It can cause this board to disconnect from the machine.

### 1.15.3 IEEE1394 INTERFACE (B581)

#### **⚠ CAUTION**

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

**NOTE:** You can only install one of these network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), or Bluetooth.



1. Remove the slot cover [A] from I/F Card Slot B (⚙ x 2).
2. Install the FireWire board [B] (Knob-screw x 2).

**NOTE:** Use a screwdriver when you tighten the knob-screws. Do not tighten them manually. It can cause this board to disconnect from the machine.

**UP Mode Settings for IEEE 1394**

Enter the UP mode. Then do the procedure below to perform the initial interface settings for IEEE 1394. These settings take effect every time the machine is powered on.

1. Press the "User Tools/Counter" key.
2. On the touch panel, press "System Settings".
3. Press "Interface Settings".
4. Press "IEEE1394".
5. Press the following soft keys on the touch panel. Then select the following settings:
  - "IP Address"  
Select the "AUTO-Obtain (DHCP)" or "Specify". When you select "Specify", you can set the IP Address and Subnet Mask manually.
  - "IP over 1394"  
Enable or disable this setting as required. This setting enables IP over 1394 as the default setting for the printing method.
  - "SCSI Print"  
Enable or disable this setting as required. This setting enables SCSI Print as the default setting for the printing method.
  - "Bi-directional SCSI Print"  
Switch bi-directional printing on or off for SCSI print.

**SP Mode Settings for IEEE 1394**

The following SP commands can be set for IEEE 1394.

SP No.	Name	Function
5839 004	Host Name	Sets the name of the device used on the network. Example: RNPXXXXXXXXXX
5839 007	Cycle Master	Enables or disables cycle master function of the IEEE 1394 standard bus.
5839 008	BCR Mode	Sets the BCR (Broadcast Channel Register) setting for the Auto Node operation for the standard IEEE1394 bus for when IRM is not in use. The following three settings are available: "Standard," "IRM Color Copy," and "Always Effective."
5839 009	IRM 1394a Check	Determines whether an IRM check for IEEE 1394a is conducted for the Auto Node when IRM is not used.
5839 010	Unique ID	Enables the "Node_Unique_Id" setting for enumeration on the standard IEEE 1394 bus.
5839 011	Logout	Determines how successive initiator login requests are handled during login in for SBP-2.
5839 012	Login	Enables or disables exclusive login for SBP-2.
5839 013	Login MAX	Sets the limit for the number of logins for SBP-2. Range: 1 ~ 62.

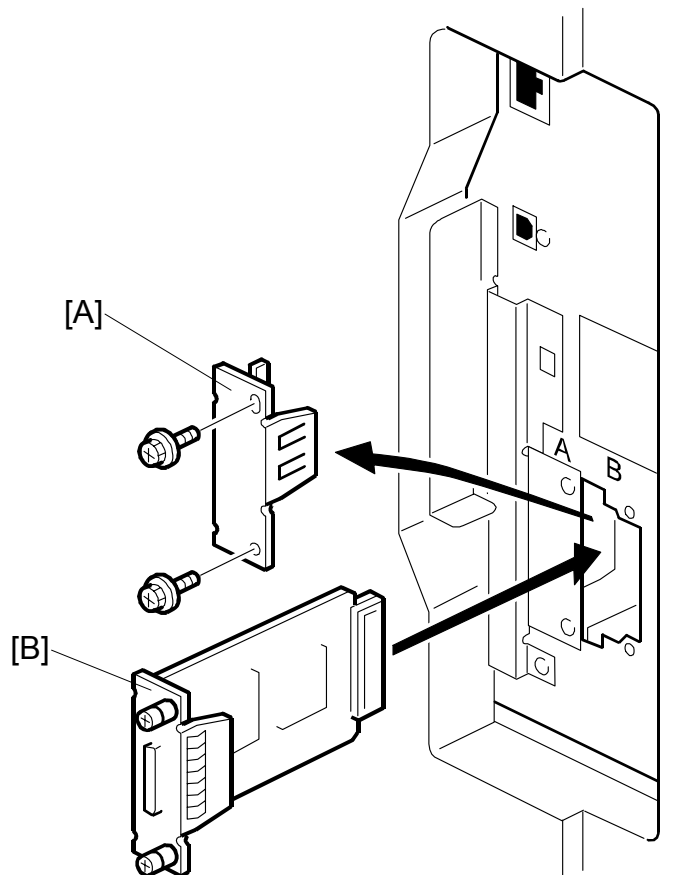
### 1.15.4 IEEE 1284 (B679)

#### *Installation Procedure*

#### **⚠ CAUTION**

**Disconnect the main machine's power cord before you start this procedure.**

**NOTE:** You can only install one of these network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.



B679I001.WMF

1. Remove the slot cover [A] from I/F Card Slot B (⚙ x 2).
2. Install the interface board [B] (Knob-screw x 2).

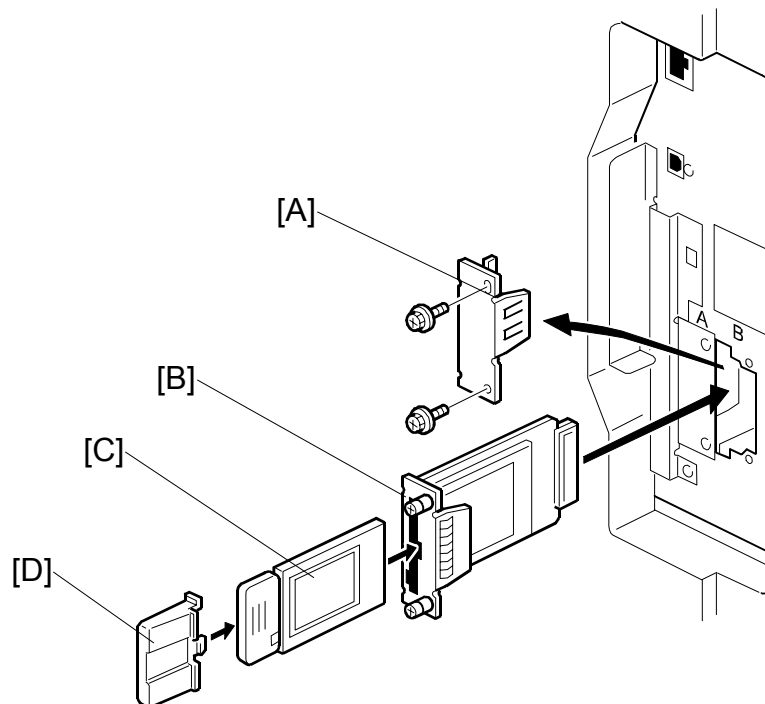
**NOTE:** Use a screwdriver when you tighten the knob-screws. Do not tighten them manually. It can cause this board to disconnect from the machine.

### 1.15.5 IEEE802.11B (G813)

**⚠ CAUTION**

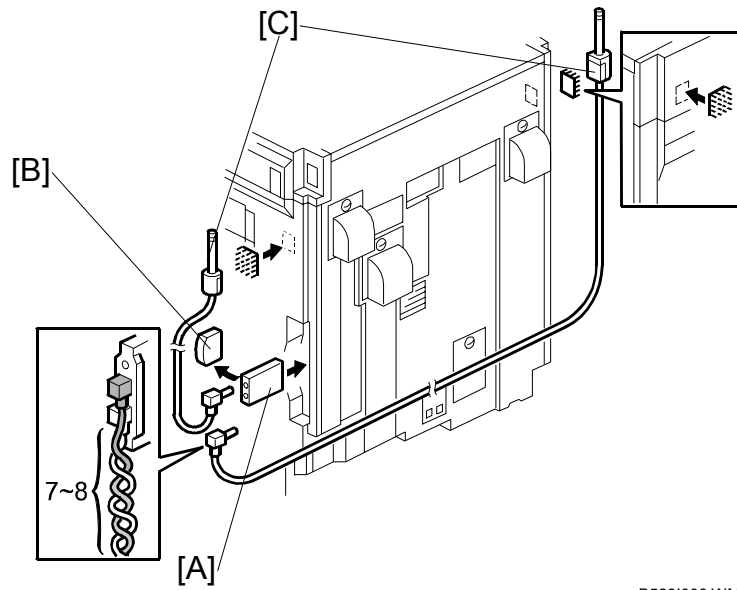
Unplug the main machine power cord before starting the following procedure.

**NOTE:** You can only install one of the following network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.



G813I001.WMF

1. Remove the slot cover [A] from I/F Card Slot B (⚙ x 2).
2. Attach the wireless LAN board [B] to the controller board (Knob-screw x 2).  
**NOTE:** Use a screwdriver when you tighten the knob-screws. Do not tighten them manually. It can cause this board to disconnect from the machine.
3. Install the wireless LAN card [C]. The printed side must point to the front of the machine.
4. Attach the antenna cap [D].



B529I008.WMF

If wireless LAN reception is not very good, install the extended antenna.

5. Remove the wireless LAN card [A] from the machine.
6. Remove the standard antenna [B] from the wireless LAN card.
7. Install the extended antenna [C] on the LAN card, as shown.  
**NOTE:** The antenna jack must be at the bottom end.
8. Twine the extended-antenna wires seven or eight times.
9. Peel off the backing of the double-sided tape attached to the antenna, and stick the antenna on the machine.



**UP Mode Settings for Wireless LAN**

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

**NOTE:** You cannot use the wireless LAN if you use Ethernet.

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) → "Network I/F Setting"
4. Press "IEEE 802.11b". Only the wireless LAN options show.
5. **Communication Mode.** Select either "802.11 Ad hoc", "Ad hoc" or "Infrastructure".
6. **SSID Setting.** Enter the SSID setting. (The setting is case sensitive.)
7. **Channel.** You need this setting when Ad Hoc Mode is selected.  
 Range: 1 ~ 14 (default: 11)  
**NOTE:** The allowed range for the channel settings may vary for different countries.
8. **WEP (Encryption) Setting.** The WEP (Wired Equivalent Privacy) setting is designed to protect wireless data transmission. The same WEP key is required on the receiving side in order to unlock encoded data. There are 64 bit and 128 bit WEP keys.

WEP:

Selects "Active" or "Inactive". ("Inactive" is default.)

Range of Allowed Settings:

64 bit	10 characters
128 bit	26 characters

9. **Transmission Speed.** Press the Next button to show 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. This depends on which mode is selected.  
**NOTE:** For the Ad Hoc Mode, this is the distance between the machine and the closest PC in the network. For the Infrastructure Mode, this is the distance between the machine and the closest access point.

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

10. Press "Return to Default" to initialize the wireless LAN settings.

Press "Yes" 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 and UP modes can be set for IEEE 802.11b

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

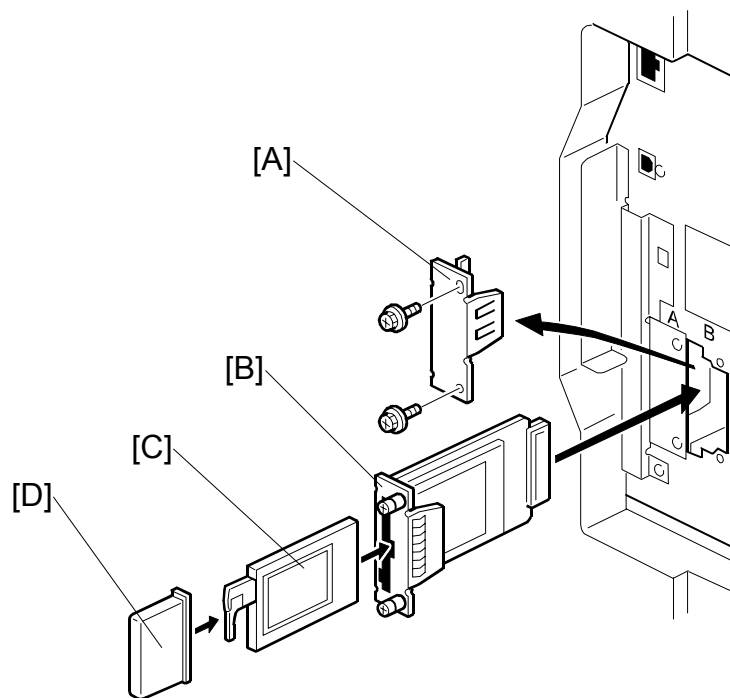
### 1.15.6 BLUETOOTH (B736)

**⚠ CAUTION**

**Disconnect the main machine's power cord before you start this procedure.**

Installation

**NOTE:** You can only install one of these network interfaces at the same time: IEEE 802.11b (Wireless LAN), IEEE1284 (Parallel/Centronics), IEEE1394 (FireWire), Bluetooth.



B736I001.WMF

1. Remove the slot cover [A] from I/F Card Slot B (⚙ x 2).
2. Install the Bluetooth board [B] (Knob-screw x 2).  
**NOTE:** Use a screwdriver when you tighten the knob-screws. Do not tighten them manually. It can cause this board to disconnect from the machine.
3. Install the Bluetooth card [C] in the slot of the Bluetooth board.
4. Attach the antenna cap [D].

### **1.15.7 CHECKING THE CONNECTIONS**

1. Plug in the power cord and turn on the main switch.
2. Enter the printer user mode and print the configuration page.  
(User Tools/ Printer Settings/ List Test Print/ Config. Page)  
The same data can also be printed using the printer service mode.  
("Print Summary": SP1-004)

All installed options are listed in the "System Reference" column.

## 1.16 DATA OVERWRITE SECURITY UNIT (B735)

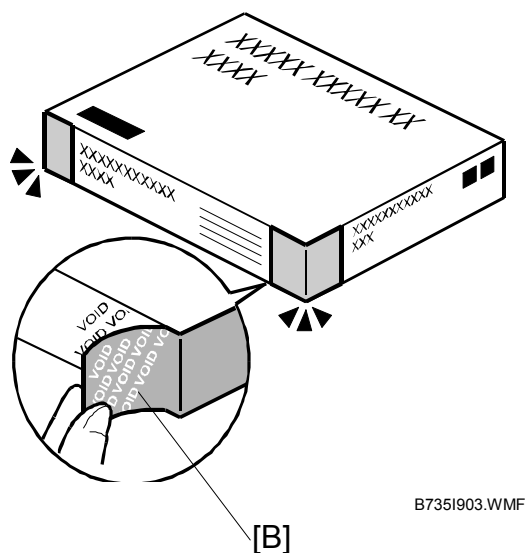
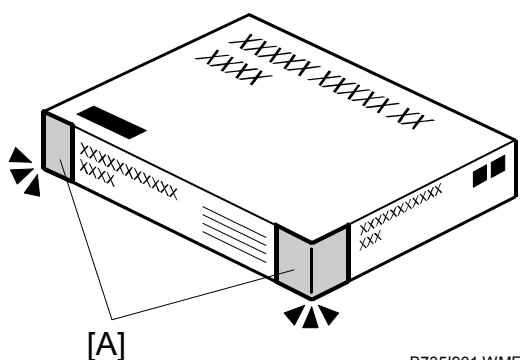
### ACCESSORY CHECK

Check the quantity and condition of these accessories.

Description	Q'ty
1. SD Card.....	1
2. Operation Instructions (CD-ROM) .....	1



### Seal Check and Removal



#### **⚠ CAUTION**

**Before you start the installation, you must check the box seals to make sure that they were not removed after the items were sealed in the box at the factory.**

- Check the box seals [A] on each corner of the box.
  - Make sure that a tape is attached to each corner.
  - The surfaces of the tapes must be blank. If you see "VOID" on the tapes, do not install the components in the box.
- If the surfaces of the tapes do not show "VOID", remove them from the corners of the box.
- When you remove each seal, the "VOID" marks [B] can be seen. In this condition, they cannot be attached to the box again.

**Installation Procedure****⚠ CAUTION**

**The machine must always be turned off and its power cord disconnected before you do this procedure.**

**NOTE:** You must install the data overwrite protection unit in SD Card slot 2. But, the postscript option for this machine is also installed in SD Card slot 2. Because of this, you must do the SD Card Appli move procedure first (☛ 5.9) if the postscript option is installed and you want to install the Data Overwrite Security unit. Move the Data Overwrite Security application (slot 3) to the SD Card that contains the Printer/Scanner application (slot 1).

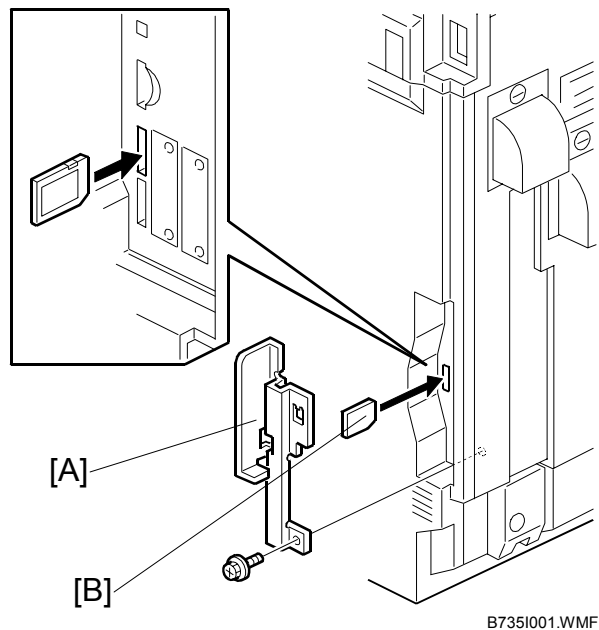
1. If the machine is on, turn off the main power switch.
2. Disconnect the network cable.
3. Turn the main power switch on.
4. Do the "Copy SPs" in the table below.

SP No.	SP Name	Set To:
5871-001	HDD Function Disable	1 (On)
5967-001	Copy Server Set Function	1 (Off)
5846-090	USC Settings - Plain Data Forbidden	1 (Check)
5836-001	Capture Setting – Capture Function	1 (On)

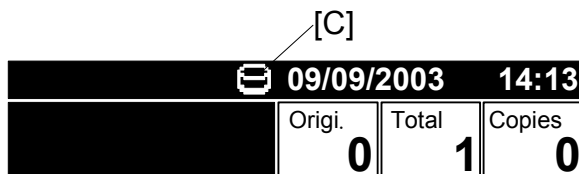
5. Do the "Printer SP" in the table below.

SP No.	SP Name	Set To:
1006-001	Sample/Locked Print	1 (On)

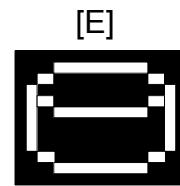
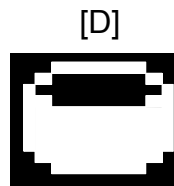
6. Turn the operation switch and main power switch off.
7. Remove the slot cover [A] (⌀ x 1).
8. Turn the SD-card face [B] to the rear of the machine. Then push it slowly into slot 2 until you hear a click.
9. Connect the network cable, if the NIB option is installed.
10. Turn the main power switch on.
11. Go into the SP mode. Do SP5-878 and push 'EXECUTE'.
12. Go out of the SP mode, turn the operation switch off, then turn the main power switch off.
13. Turn the machine power on.
14. Go into the User Tools mode, and select System Settings> Administrator Tools> Auto Erase Memory Setting> On.
15. Go out of the User Tools mode.



Installation



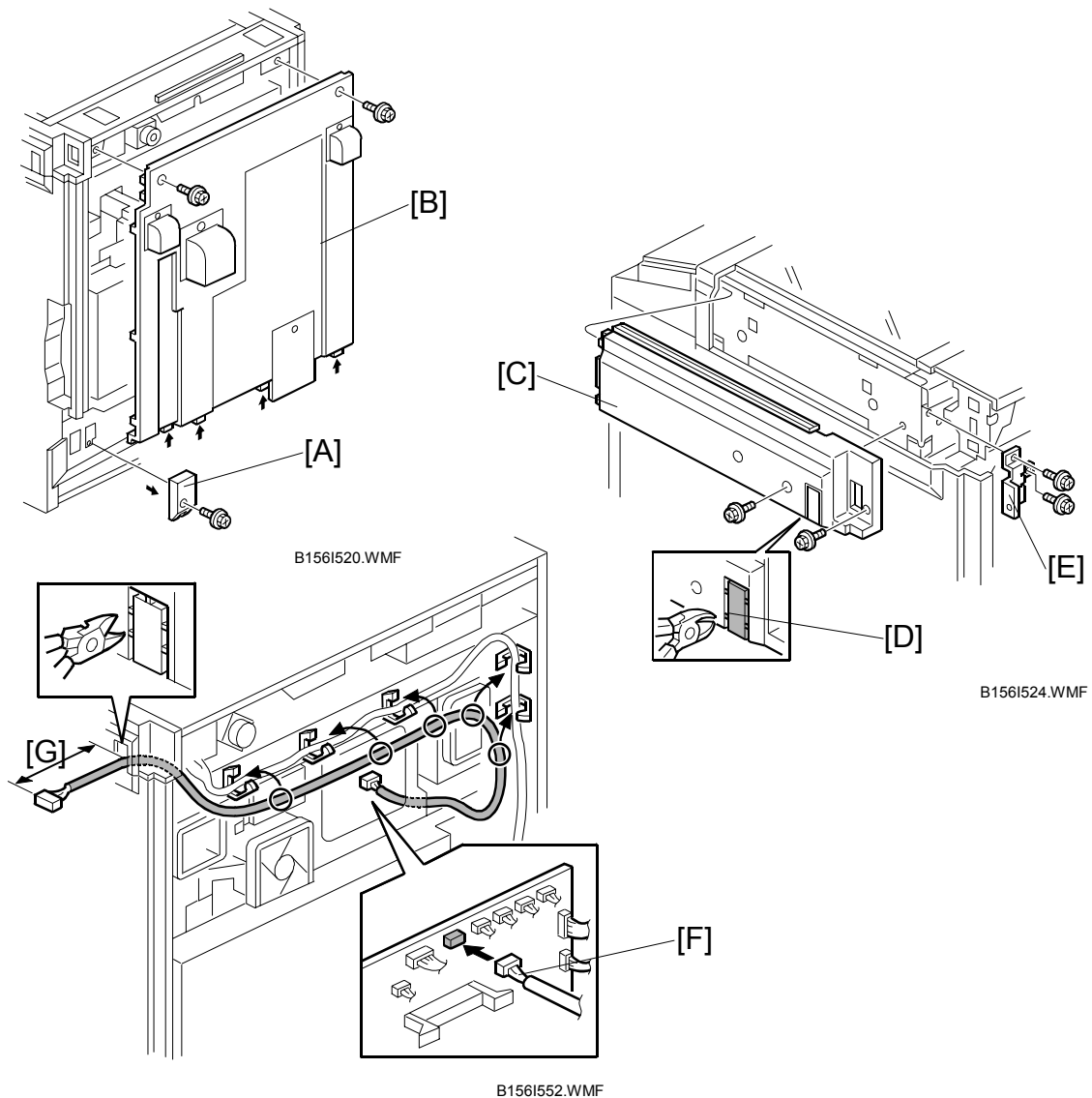
B735I904.WMF



B735I905.WMF

16. Check the display and make sure that the overwrite erase icon [A] is displayed.
17. Make a Sample Copy.
18. Check the overwrite erase icon.
  - The icon [C] changes to [D] when job data is stored in the hard disk.
  - The icon goes back to its usual shape [E] after this function has completed a data overwrite operation to the hard disk.
19. Remove the Document Server and Scanner key-tops, and replace them with the blank key-tops that are supplied with the kit.

## 1.17 KEY COUNTER INSTALLATION

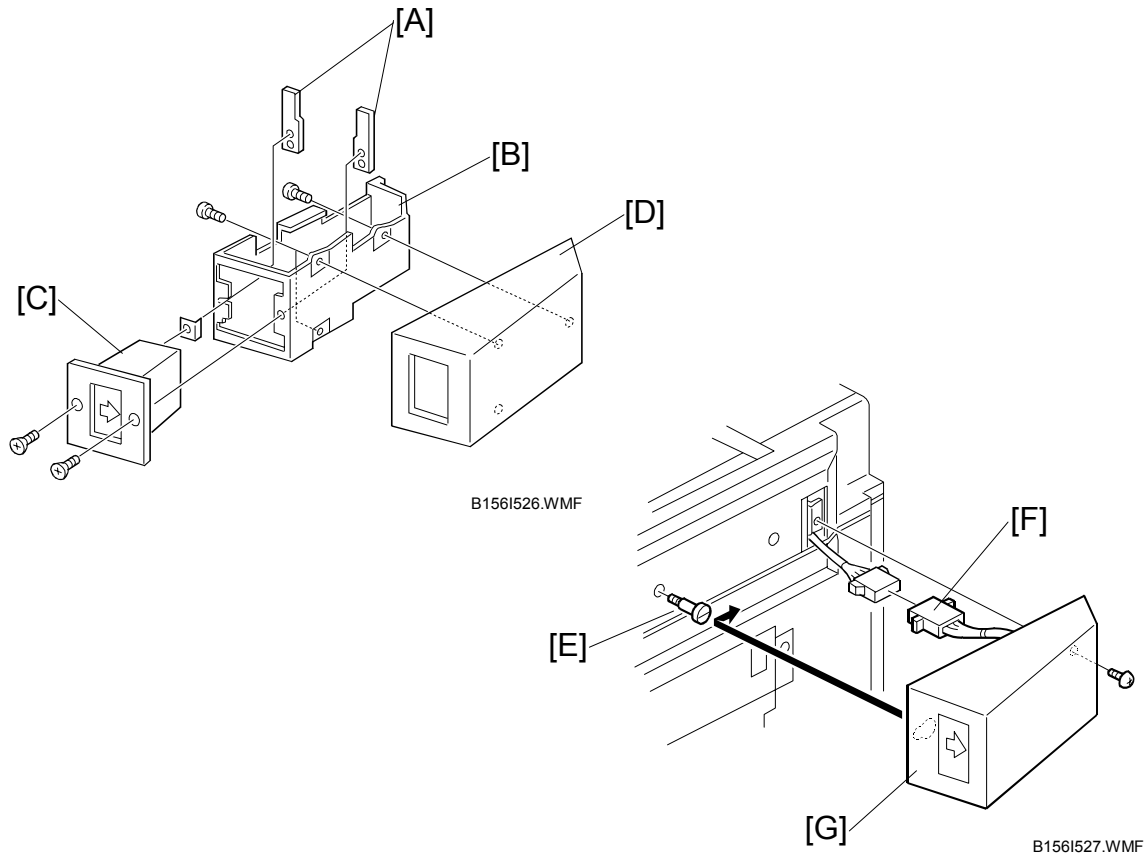


### ⚠ CAUTION

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

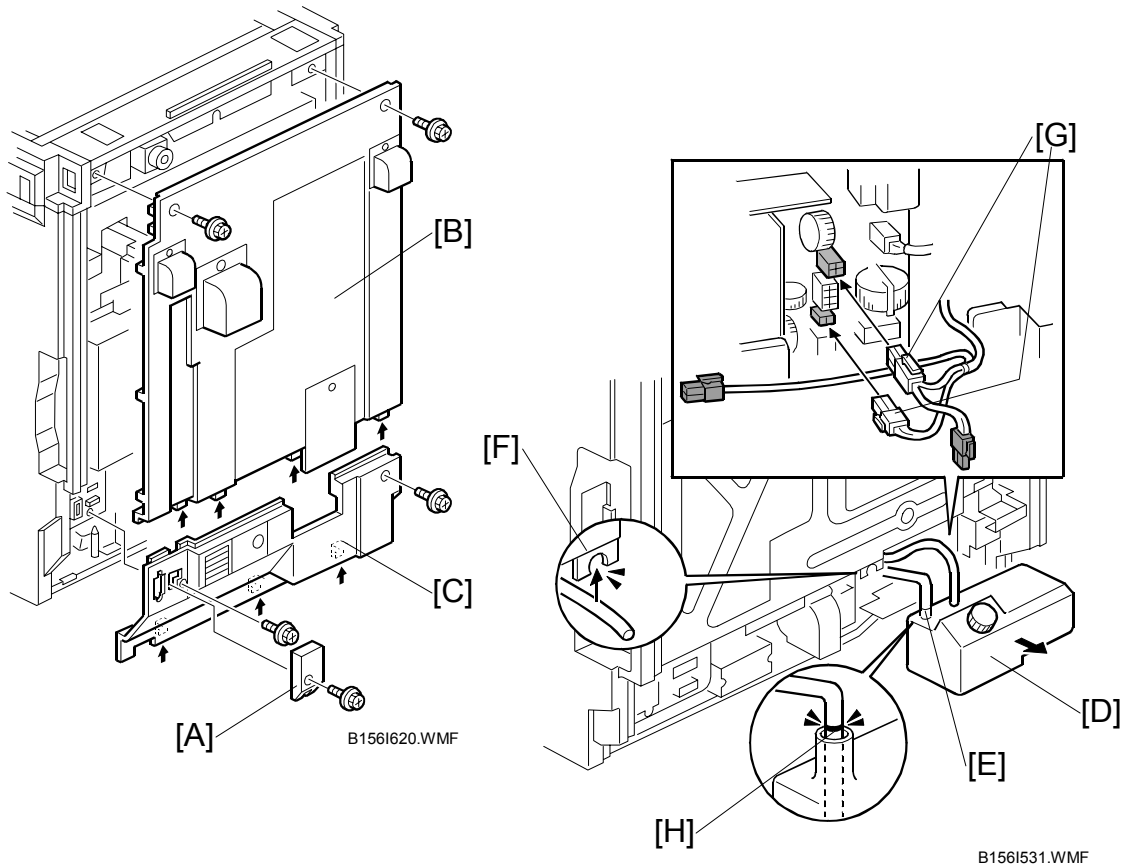
1. Remove the connector cover [A] (⚙ x 1).
2. Remove the rear cover [B] (⚙ x 2).
3. Remove the upper right cover [C] (⚙ x 2).
4. Remove the cap [D].
5. Install the bracket [E] (⚙ x 2).
6. Connect the cable [F] to the I/O board and route it as shown.  
**NOTE:** If the cable is installed correctly, the length [G] is about 140 mm.





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

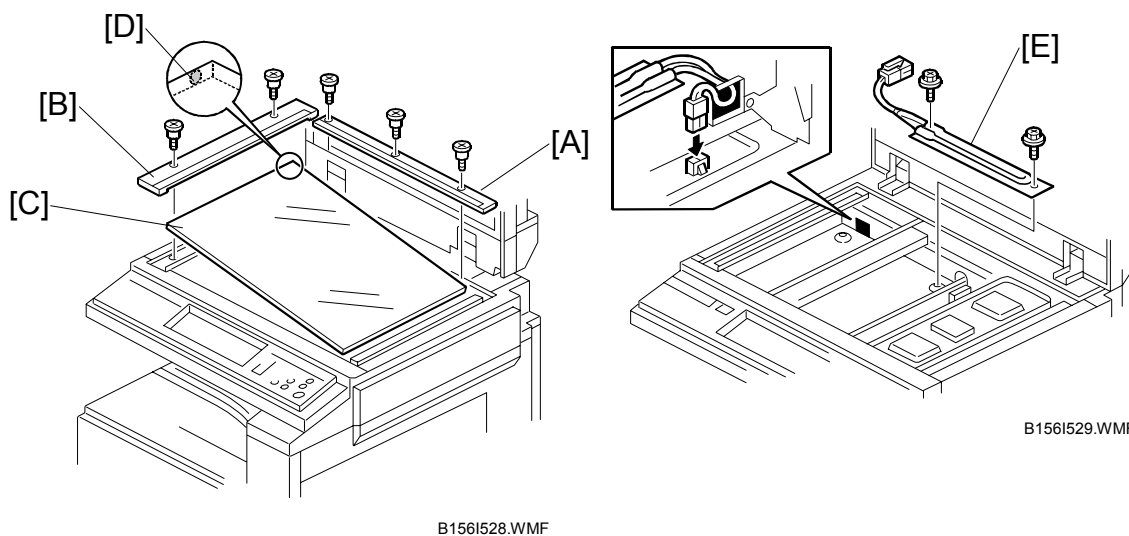
## 1.18 ANTI-CONDENSATION HEATER



### ⚠ CAUTION

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

1. Remove the connector cover [A] (⚙ x 1).
2. Remove the rear cover [B] (⚙ x 2).
3. Remove the lower rear cover [C] (⚙ x 2).
4. Remove the oil tank [D].  
**NOTE:** Hang the left oil pipe [E] in the notch [F] in the controller box. Then, oil does not fall from the pipe to the floor.
5. Connect the two connectors [G].
6. Install the oil tank at its initial position.  
**NOTE:** When you install the oil tank, make sure that the position of the mark [H] on the oil pipe is as shown in the diagram above. If you do not do this, the oil is not correctly supplied to the fusing unit.

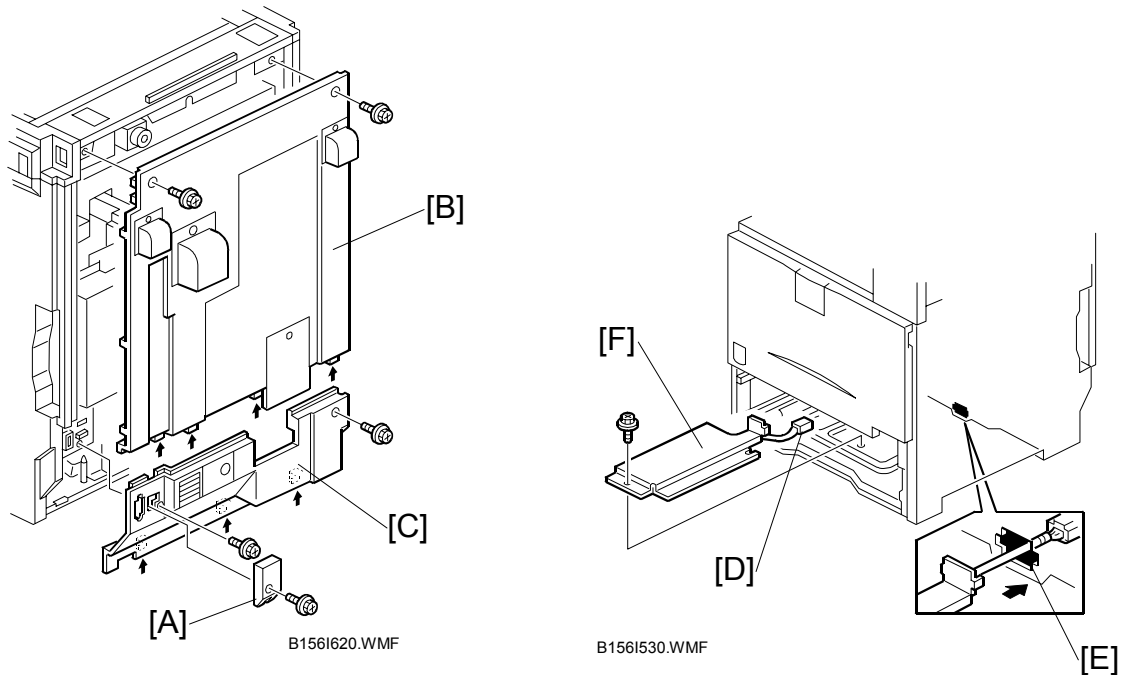


7. Remove the rear scale [A] (⚙ x 3), left scale [B] (⚙ x 2), and exposure glass [C].

**NOTE:** When installing the exposure glass, make sure that the mark [D] is positioned at the rear left corner, as shown.

8. Install the anti-condensation heater [E] (⚙ x 2, 🔌 x 1).
9. Reinstall the exposure glass and the scales.

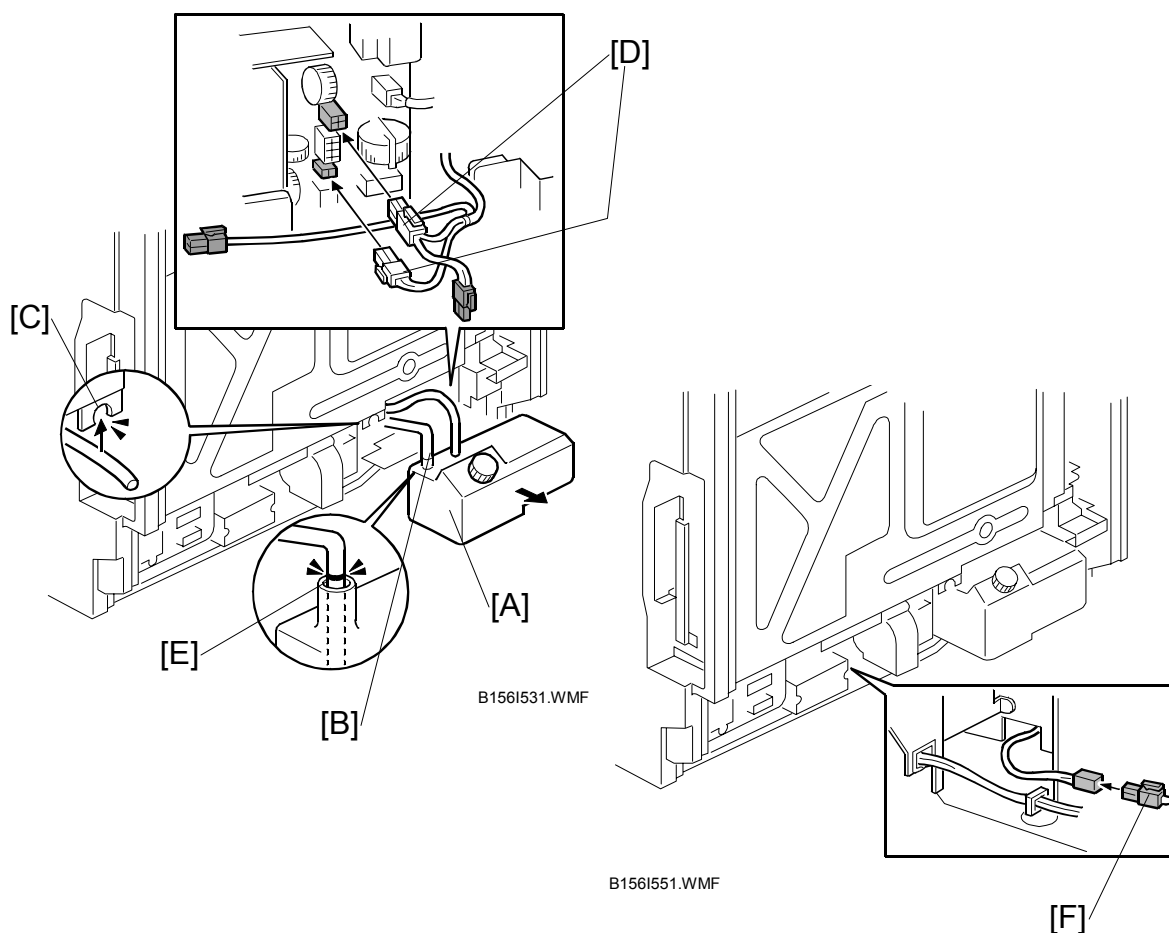
## 1.19 TRAY HEATER



### **⚠ CAUTION**

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

1. Remove the connector cover [A] (⚙ x 1).
2. Remove the rear cover [B] (⚙ x 2).
3. Remove the lower rear cover [C] (⚙ x 2).
4. Slide out the 1st and 2nd paper trays.
5. Pass the connector [D] through the opening [E].
6. Install the tray heater assembly [F](⚙ x 1).



7. Remove the oil tank [A].

**NOTE:** Hang the left oil pipe [B] in the notch [C] in the controller box. Then, oil does not fall from the pipe to the floor.

8. Connect the two connectors [D].

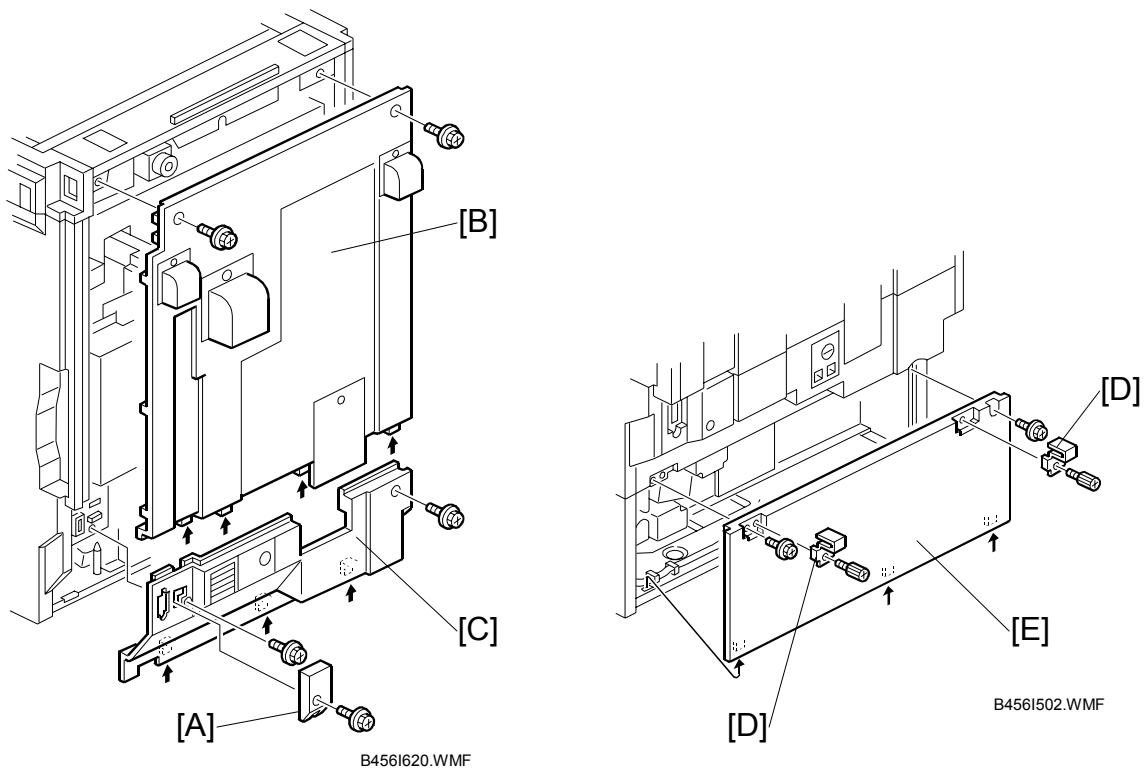
9. Install the oil tank at its initial position.

**NOTE:** When you install the oil tank, make sure that the position of the mark [E] on the oil pipe is as shown in the diagram above. If you do not do this, the oil is not correctly supplied to the fusing unit.

10. Connect the heater cable to the ac cable [F].

11. Reassemble the machine.

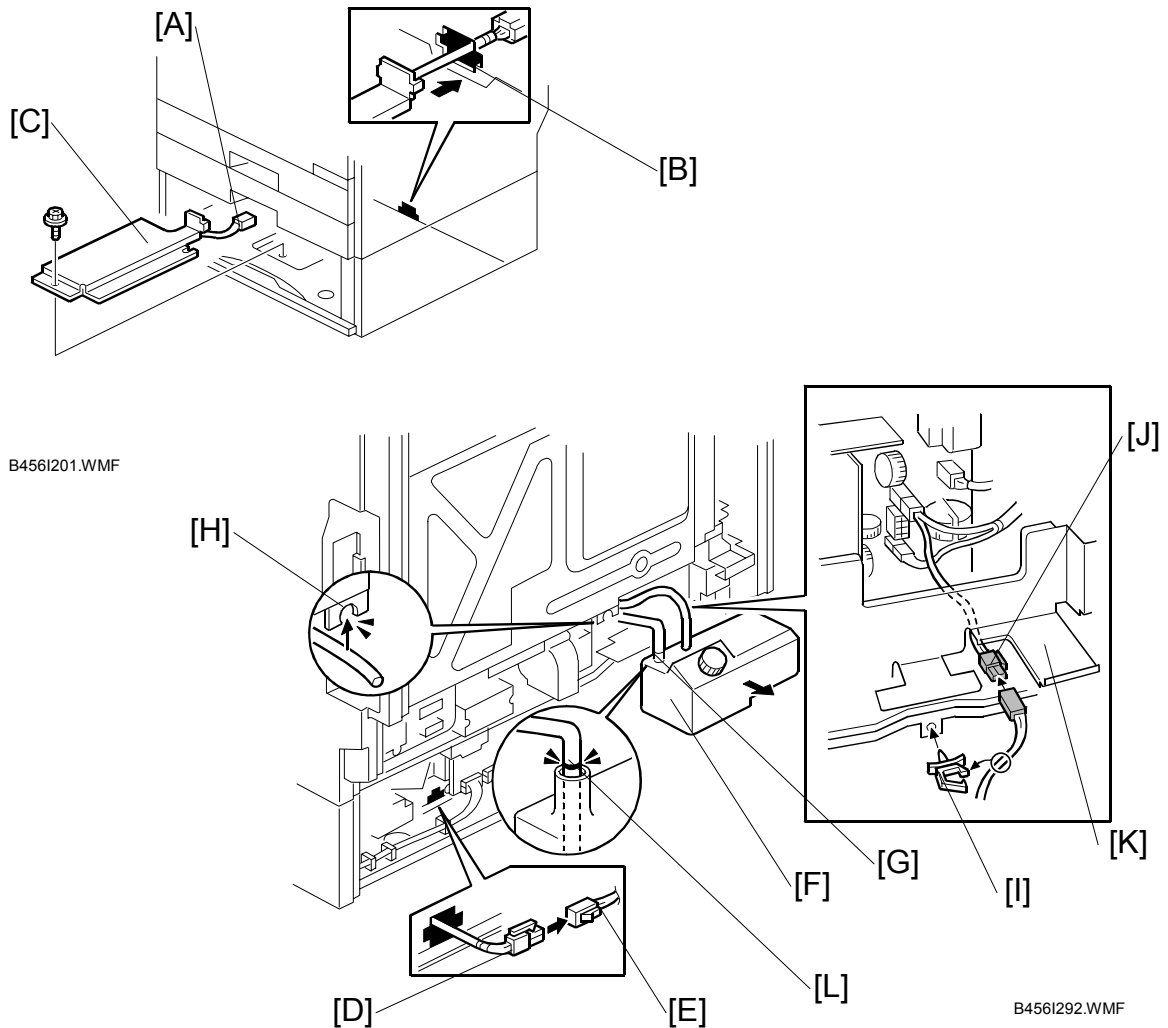
## 1.20 TRAY HEATER (OPTIONAL PAPER TRAY UNIT)



### **⚠ CAUTION**

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

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



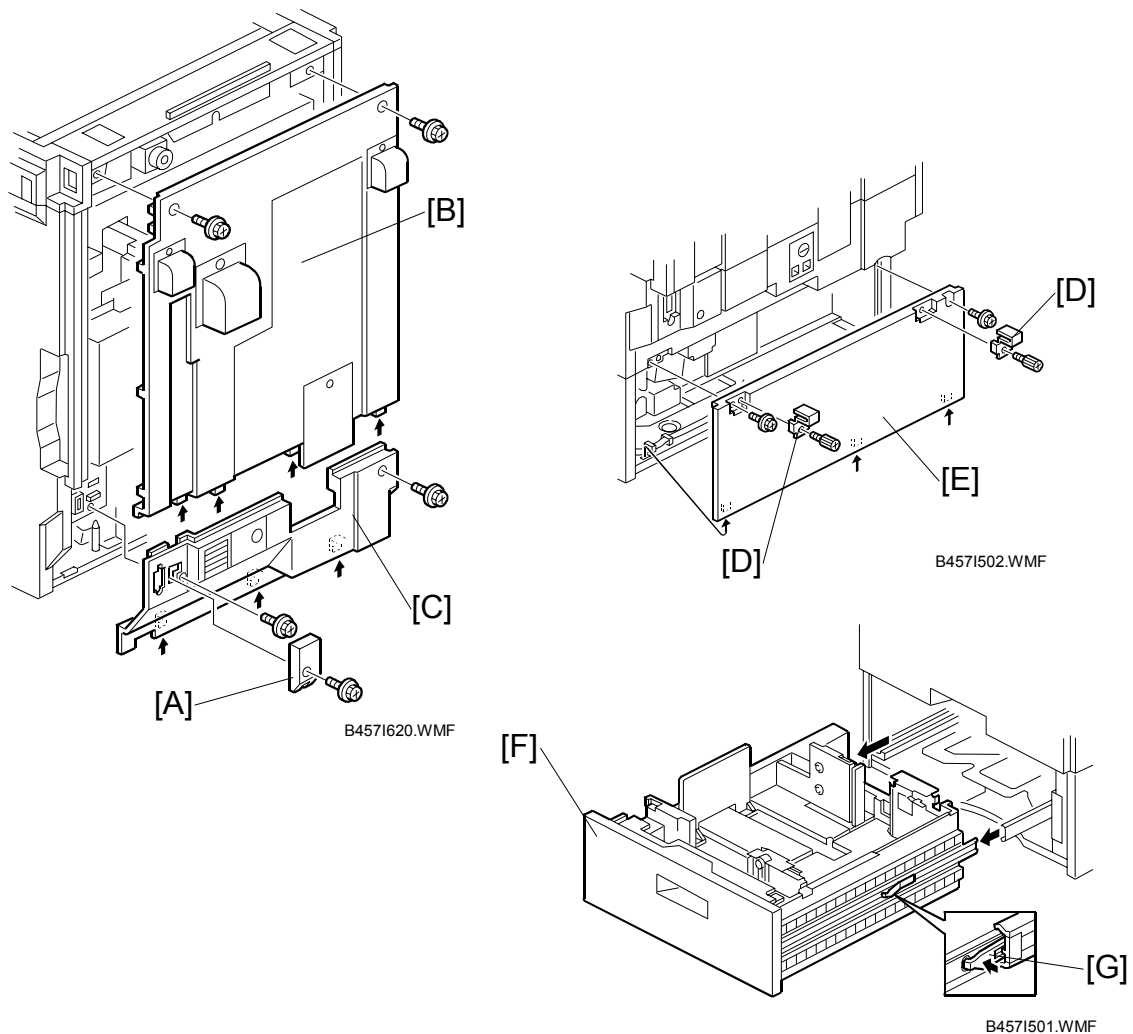
7. Pass the connector [A] through the opening [B].
8. Install the tray heater [C] (⌀ x 1).
9. Connect the heater connector [D] to the cable [E].
10. Remove the oil tank [F].
 

**NOTE:** Hang the left oil pipe [G] in the notch [H] in the controller box. Then, oil does not fall from the pipe to the floor.
11. Install the clamp [I].
 

**NOTE:** Make sure that the ac cable [J] from the main machine goes behind the bracket [K].
12. Connect the cable to the ac cable [J]. Then attach the cable with the clamp.
13. Install the oil tank and the rear covers.
 

**NOTE:** When you install the oil tank, make sure that the position of the mark [L] on the oil pipe is as shown in the diagram above. If you do not do this, the oil is not correctly supplied to the fusing unit.

## 1.21 TRAY HEATER (OPTIONAL LCT)

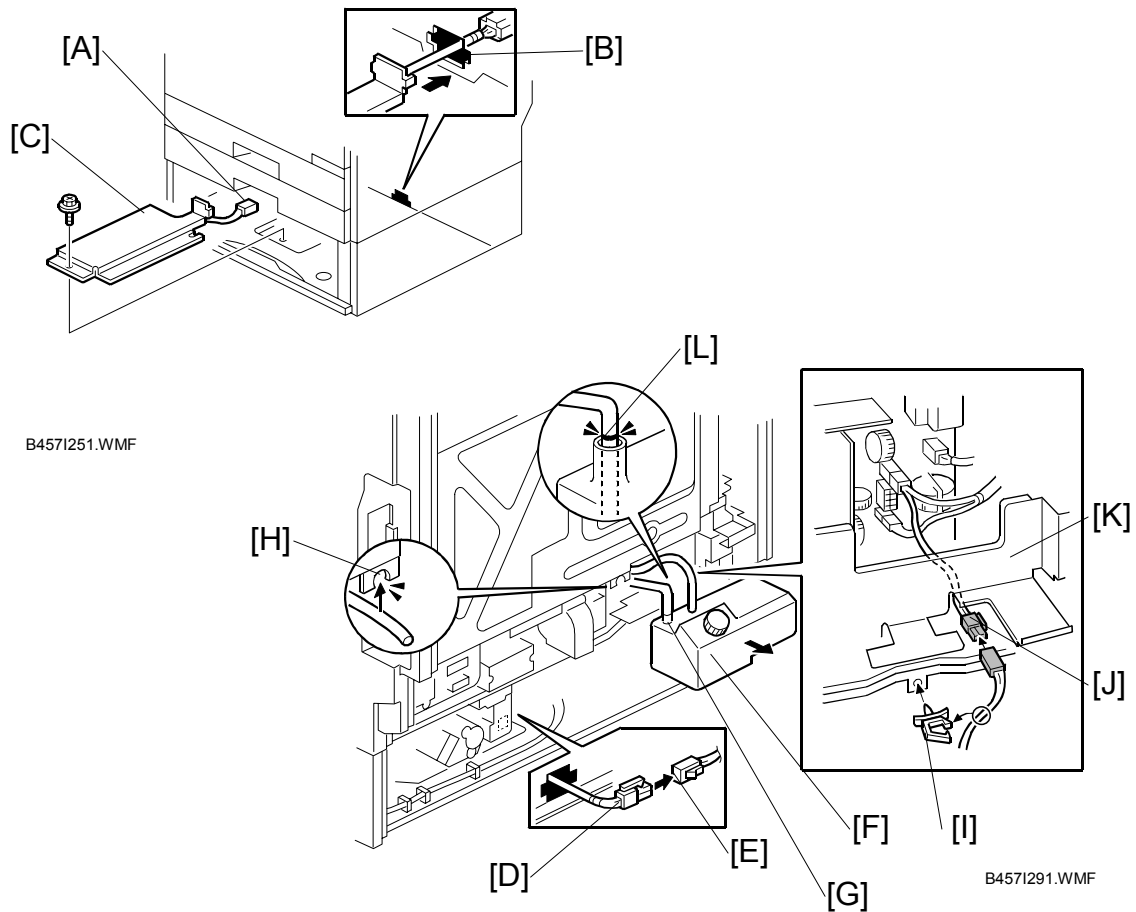


### **⚠ CAUTION**

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

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



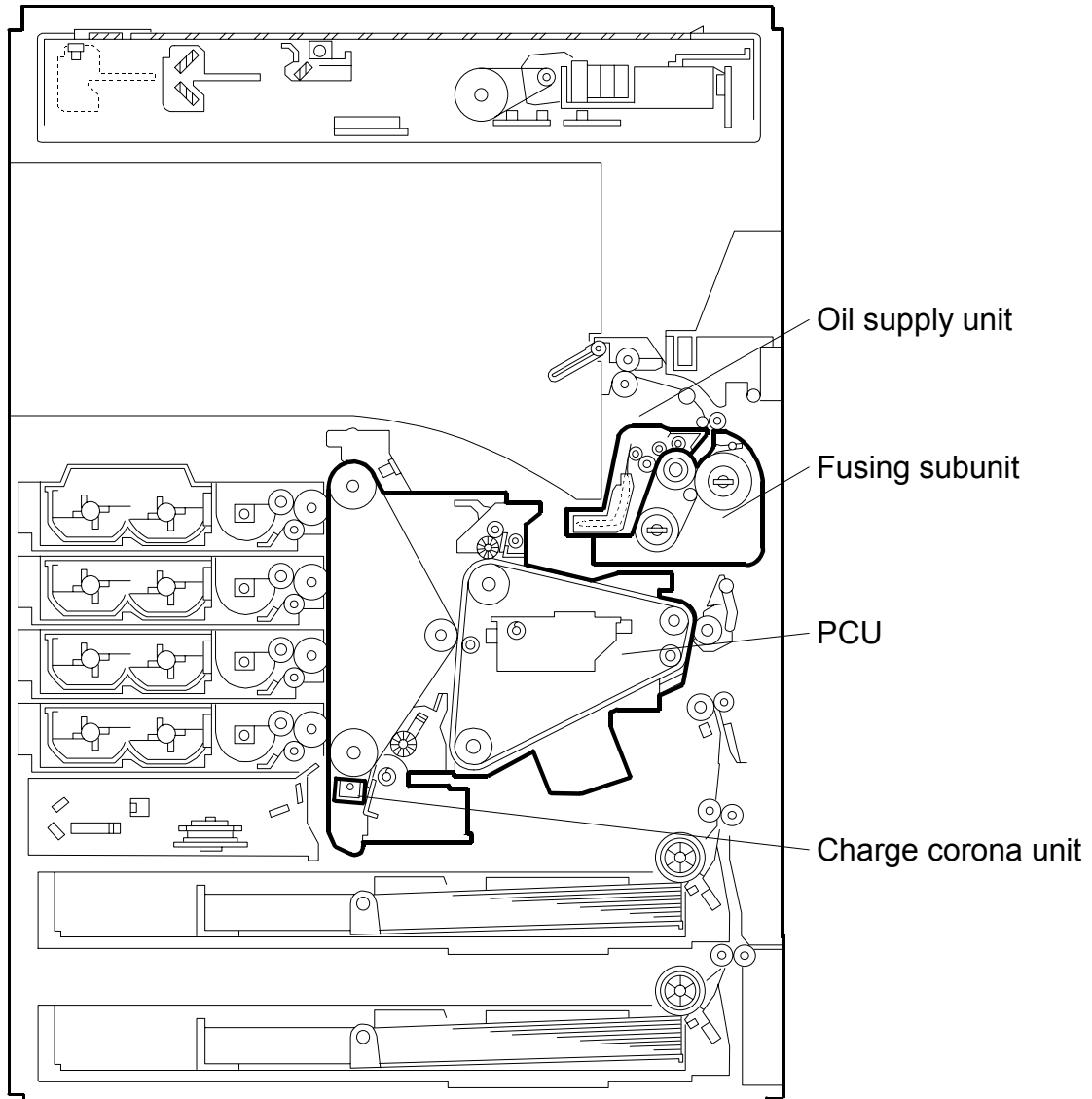


8. Pass the connector [A] through the opening [B].
9. Install the tray heater [C] (⌀ x 1).
10. Connect the heater connector [D] to the cable [E].
11. Remove the oil tank [F].  
**NOTE:** Hang the left oil pipe [G] in the notch [H] in the controller box. Then, oil does not fall from the pipe to the floor.
12. Install the clamp [I].  
**NOTE:** Make sure that the ac cable [J] from the main machine goes behind the oil bracket [K].
13. Connect the cable to the ac cable [J]. Then attach the cable with the clamp.
14. Install the oil tank and the rear covers.  
**NOTE:** When you install the oil tank, make sure that the position of the mark [L] on the oil pipe is as shown in the diagram above. If you do not do this, the oil is not correctly supplied to the fusing unit.

## 2. PREVENTIVE MAINTENANCE

### 2.1 MAIN UNIT

#### 2.1.1 OVERVIEW

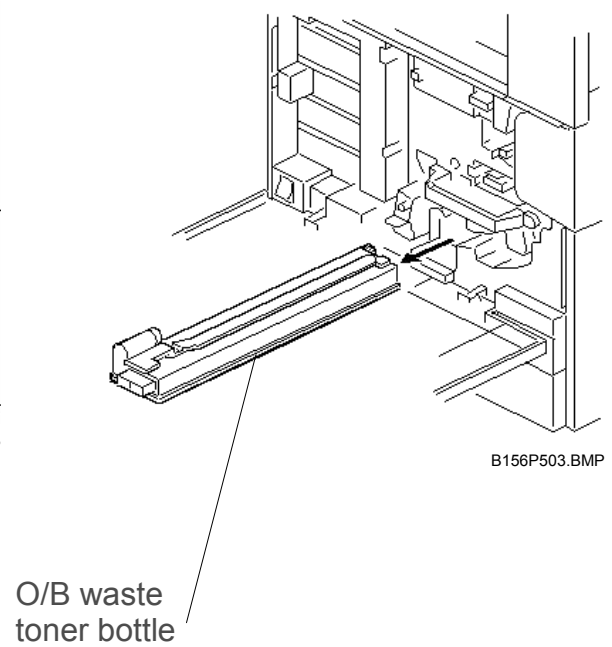
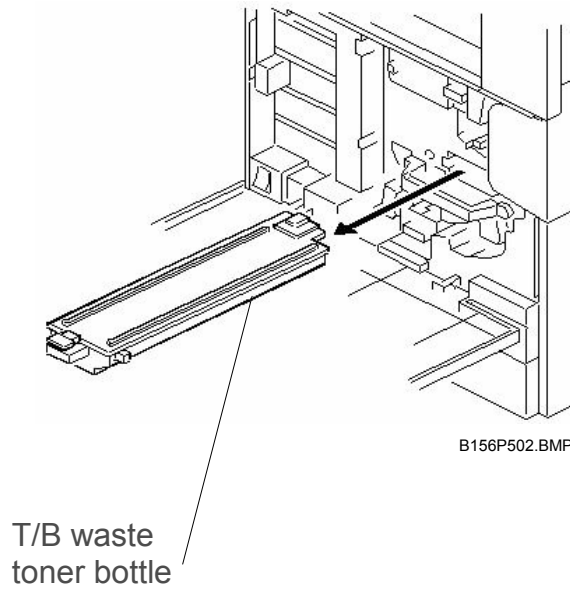


Preventive  
Maintenance

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## 2.1.2 WASTE TONER BOTTLES

**IMPORTANT:** You must remove toner from the waste toner bottles during each service call.





### 2.1.3 PM TABLE

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

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

#### *Optical System*

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

Preventive Maintenance

#### *Around the PCU*

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

#### **Components Parts of the Charge Corona Unit**

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

#### *Development Unit*

	Prints			Developments			EM	Remarks
	70K	80K	120K	60K	120K	240K		
Development unit-C				R				Refer to the PM counter for each unit. Do SP 3-929 after you replace a development unit (see section 3.5 for details). (Not reclaimed at the reclamation center)
Development unit-M				R				
Development unit-Y				R				
Development unit-K					R			

***Paper Feed System***

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

***Fusing Unit***

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

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

	Prints			Developments			EM	Remarks
	60K	80K	120K	75K	120K	240K		
Oil supply pad	R						I, C	See Note 1
Sponge roller			R				I, C	See Note 1
Fusing cleaning roller			R					
Rear oil absorber			R					
Front oil absorber			R					
Front oil tank absorber			R					
Long oil tank absorber			R					
Rear oil tank absorber			R					
Fusing cover absorber			R					
Oil supply roller			R				I, C	See Note 1
Oiling roller			R				I, C	See Note 1
Pressure cleaning roller			R					
Fusing belt unit			R				I, C	See Note 1
Pressure roller			R					
Pressure roller strippers			R					
Idle gear – 28Z/35Z			R					
Gear – 47Z			R					
Front spring plate			R					
Rear spring plate			R					

Note 1: Carefully remove paper dust and toner (for example, with a dry cloth).

***Filters***

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

***Others***

	Prints			Developments			EM	Remarks
	70K	80K	120K	75K	120K	240K		
Breaker								Check the function once a year. See section 3.16.

***By-pass Tray Unit***

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

Preventive  
Maintenance

## 2.2 OPTIONAL UNIT PM TABLE

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

### *Duplex Unit*

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

### *Auto-reverse Document Feeder*

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

### *Paper Tray Unit*

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

### *Large Capacity Tray*

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

### 3. REPLACEMENT AND ADJUSTMENT

#### ⚠ CAUTION

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

**NOTE:** This manual uses the following symbols.

☞ : See or Refer to    🔩 : Screws    📡 : Connector    🌀 : Clip ring  
 Ⓢ : E-ring

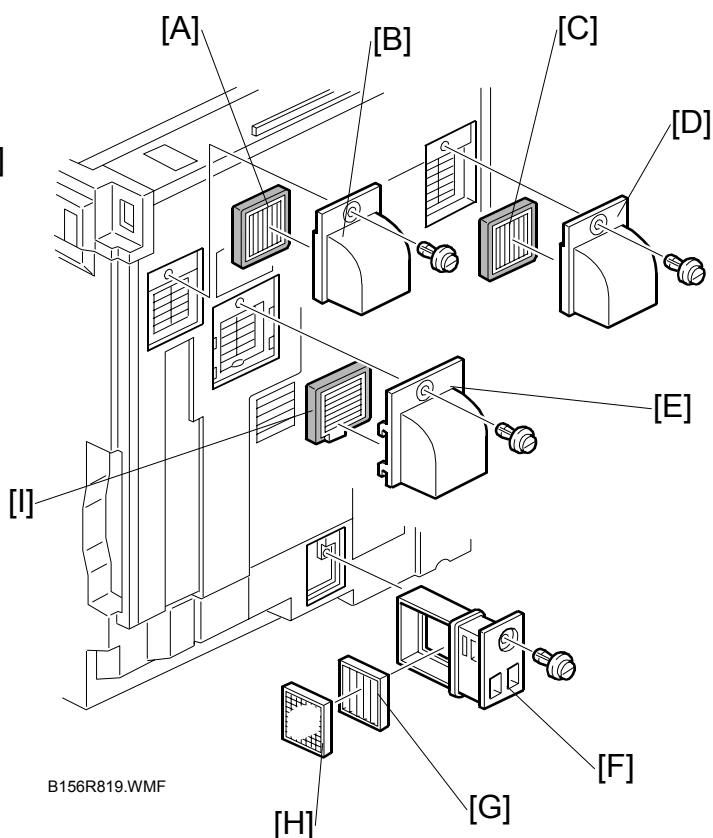
#### 3.1 SPECIAL TOOLS

Part Number	Description	Q'ty
A0069104	Scanner Positioning Pin (4 pcs/set)	1
B6456700	SD Card	1
B6456800	USB SD Card Adapter	1
A0929503	C4 Color Test Chart (3 pcs/set)	1
C4019503	20X Magnification Scope	1

Replacement  
Adjustment

#### 3.2 FILTERS

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



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### 3.3 SCANNER UNIT

#### 3.3.1 EXPOSURE GLASS

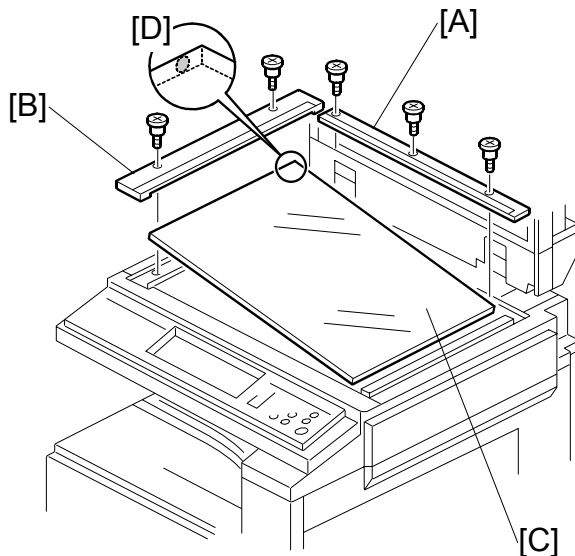
1. Rear scale [A] (⚙ x 3)

2. Left scale [B] (⚙ x 2)

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

3. Exposure glass [C]

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



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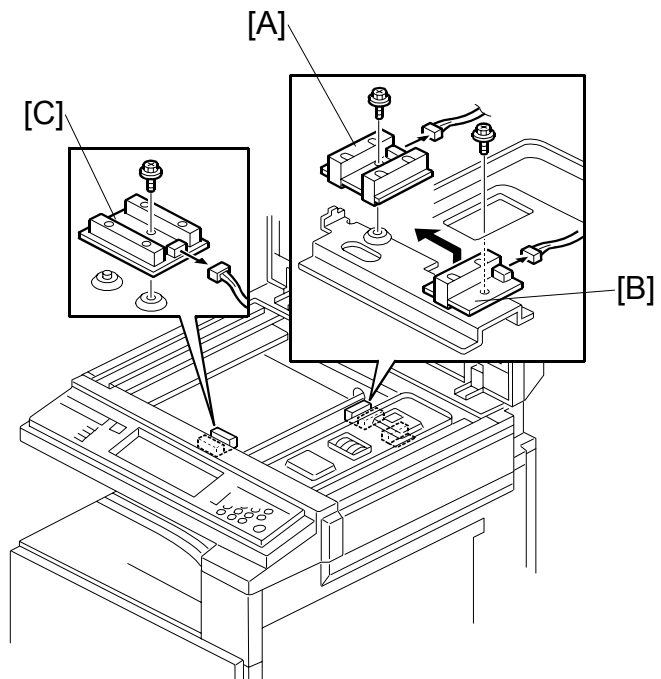
#### 3.3.2 APS SENSORS

1. Exposure glass (☞ 3.3.1)

2. Original length sensor 1 [A] (⚙ x 1, ☞ x 1)

3. Original length sensor 2 [B] (⚙ x 1, ☞ x 1)

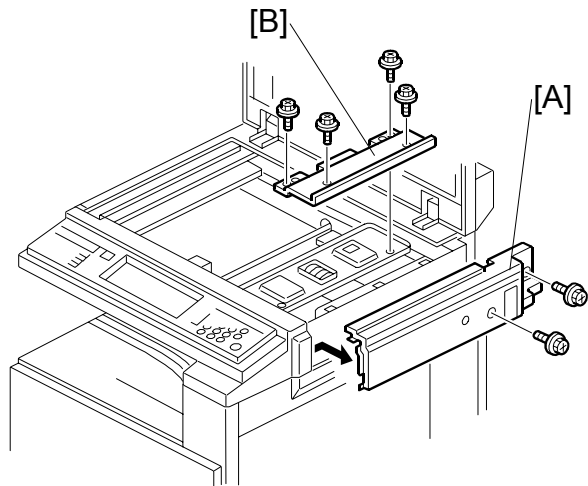
4. Original width sensor [C] (⚙ x 1, ☞ x1)



B156R223.WMF

### 3.3.3 LENS BLOCK ASSEMBLY

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

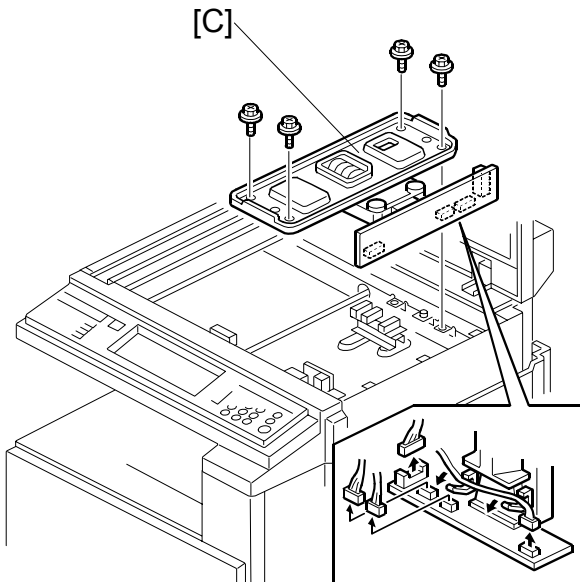


B156R004.WMF

5. Lens block assembly [C]  
(⚙ x 4, ④ x 4)  
**NOTE:** Do not remove the paint-locked screws.



6. After reassembling, input the data in accordance with the data sheet included in the spare SBU unit (☞ SP4-540).

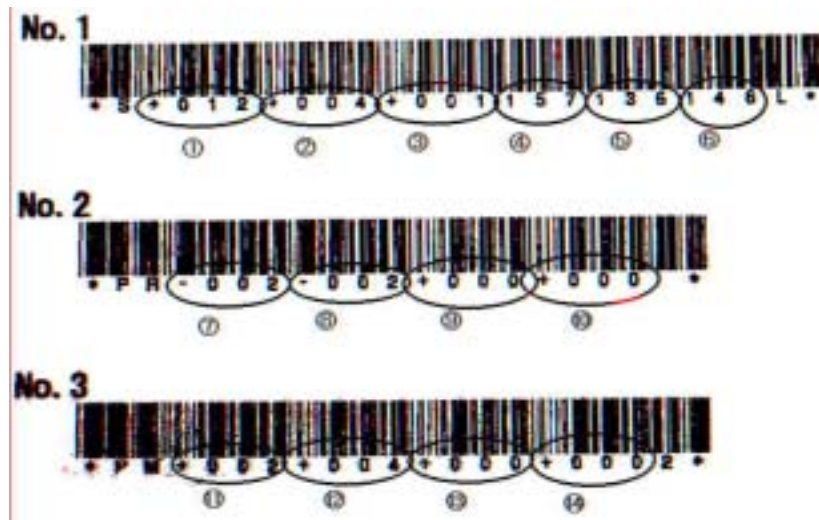


B156R224.WMF

Refer to the diagram on the next page.

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

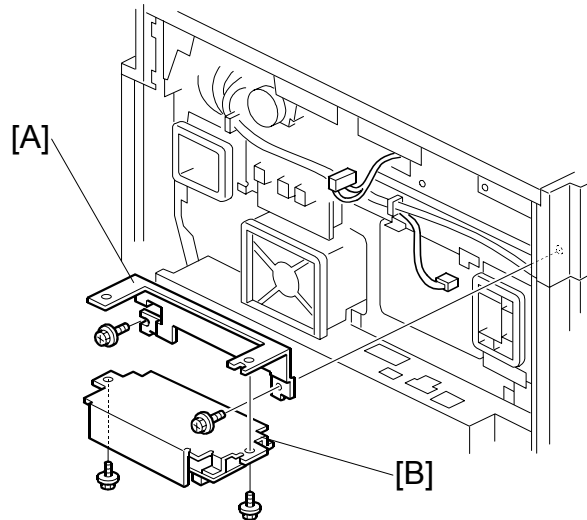
**NOTE:** After replacing the left scale, adjust the scanner white level (☞ 3.14).



B156R999.JPG

### 3.3.4 EXPOSURE LAMP STABILIZER

1. Rear cover (☞ 3.4.2)
2. Exposure lamp stabilizer bracket [A]  
(⚙ x 2, 📐 x 2)
3. Exposure lamp stabilizer [B] (⚙ x 2)

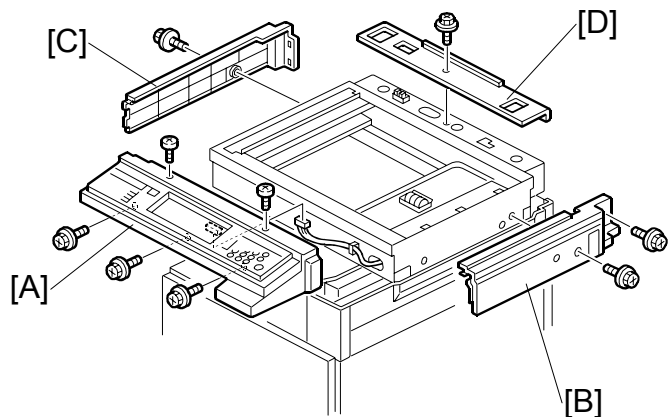


B156R007.WMF

Replacement  
Adjustment

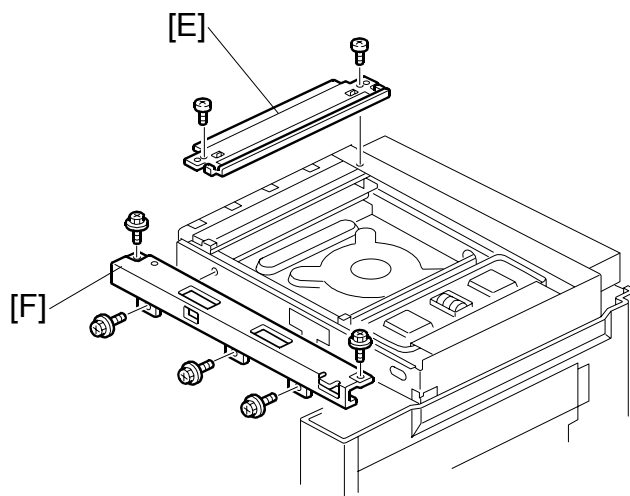
### 3.3.5 SCANNER LAMP

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



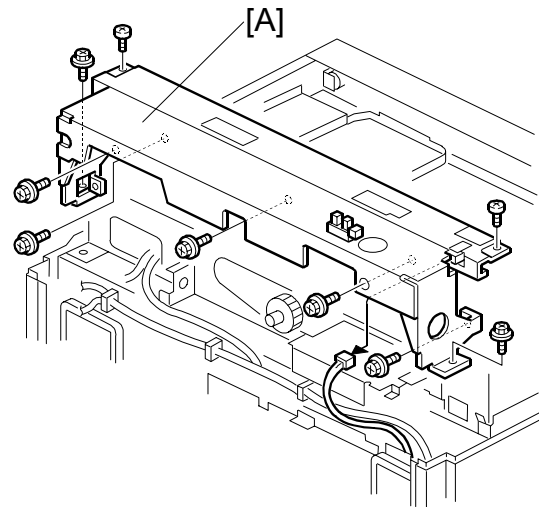
B156R002.WMF

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

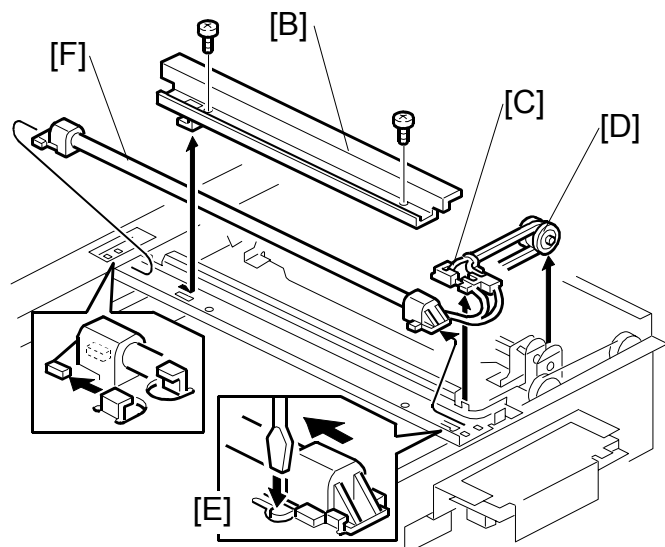


B156R225.WMF

9. Scanner I/O board (☛ 3.3.6)
10. Rear frame with the rear rail frame [A]  
(☛ x 8, ☛ x 1)



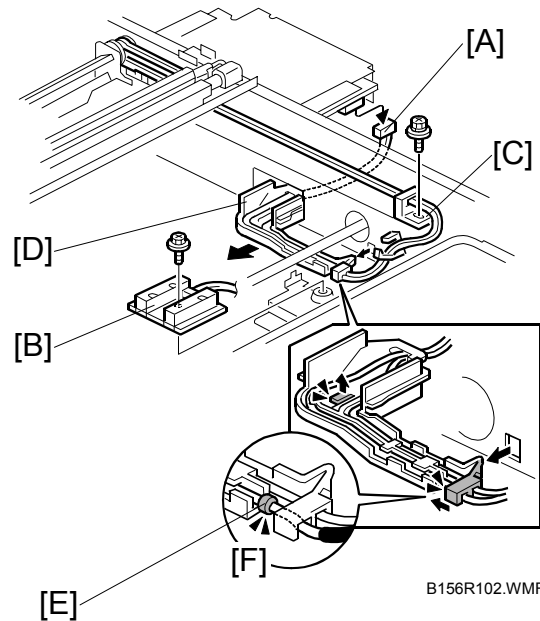
11. Lamp guard [B] (☛ x 2)
12. Release the cable holder [C].
13. Pulley [D]  
**NOTE:** Use caution not to bend the pulley guides.
14. Push down the part [E]
15. Slide out the scanner lamp [F]  
**NOTE:** After replacing the scanner lamp, adjust the scanner white level (☛ 3.14).



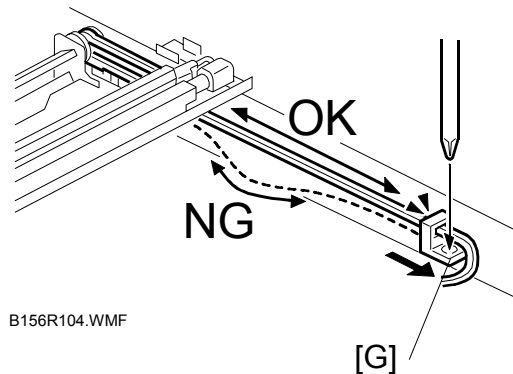
16. Disconnect the connector [A].
17. Remove the paper length sensor [B] (⚙ x 1).
18. Remove the scanner lamp cable (🔌 [C] with a screw).
19. Remove the cable guide [D].

### Reassembling

- When you install the scanner lamp, make sure that the binding [E] is set as shown. Also, make sure that the cable that has a black tube is installed on the cable guide as shown [F].
- The cable must not be loose. Move the clamp [G] to adjust the tension in the cable.

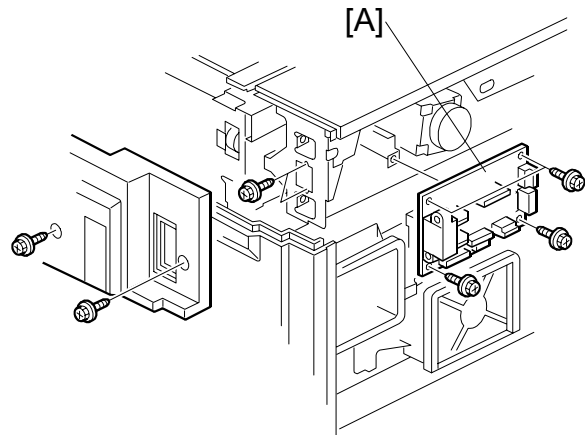


Replacement  
Adjustment



### 3.3.6 SCANNER I/O BOARD

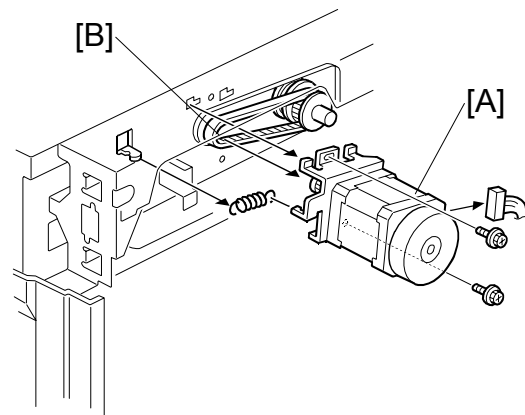
1. Scanner right cover and scanner rear cover (☛ 3.3.5)
2. Scanner I/O board [A]  
(⚙ x 6, 📏 x 7)



B156R006.WMF

### 3.3.7 SCANNER MOTOR

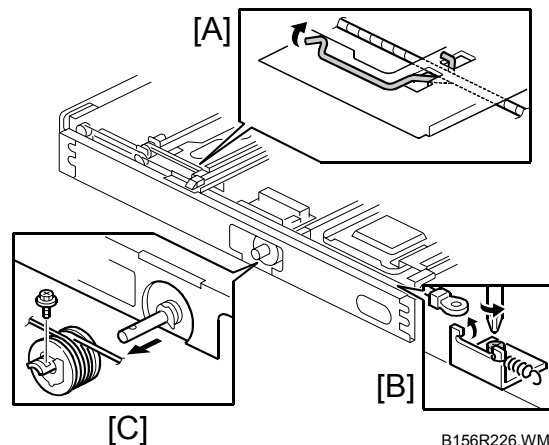
1. Scanner I/O board (☛ 3.3.6)
2. Scanner motor [A] (⚙ x 2, Spring x 1)
3. Timing belt [B]



B156R008.WMF

### 3.3.8 FRONT SCANNER WIRE

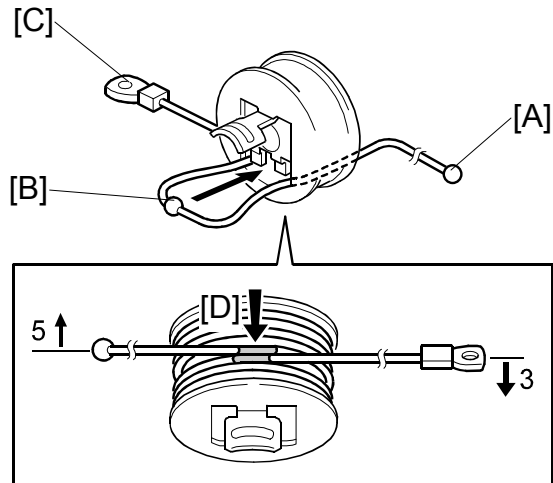
1. Front frame (☛ 3.3.5)
2. To make reassembly easy, slide the first scanner to the right (☛ Reassembling the Front Scanner Wire).
3. Front scanner wire clamp [A]
4. Front scanner wire bracket [B]  
(⚙ x 1)
5. Front scanner wire and scanner drive pulley [C] (⚙ x 1)



B156R226.WMF

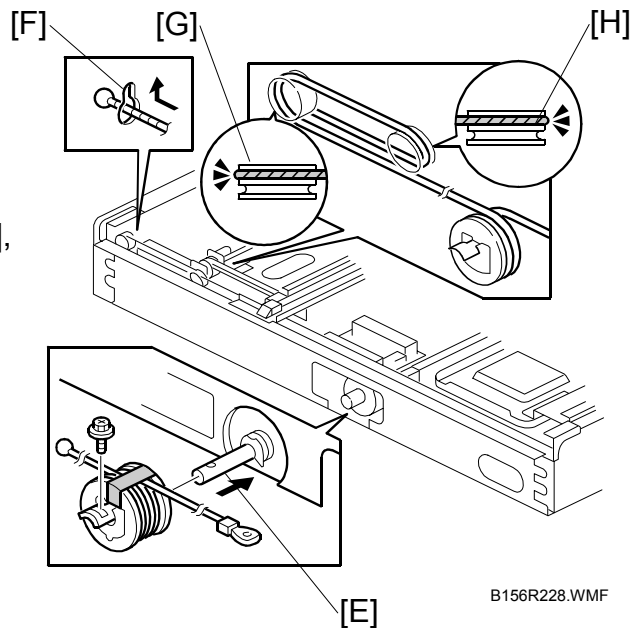
***Reassembling the Front Scanner Wire***

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



B156R227.WMF

5. Stick the wire to the pulley with tape, so you can easily handle the pulley and wire during installation.
6. Install the drive pulley on the shaft [E].  
**NOTE:** Do not screw the pulley onto the shaft yet.
7. Insert the ball end into the slit [F], with the end going via the rear track of the left pulley [G] and the rear track of the movable pulley [H].



B156R228.WMF

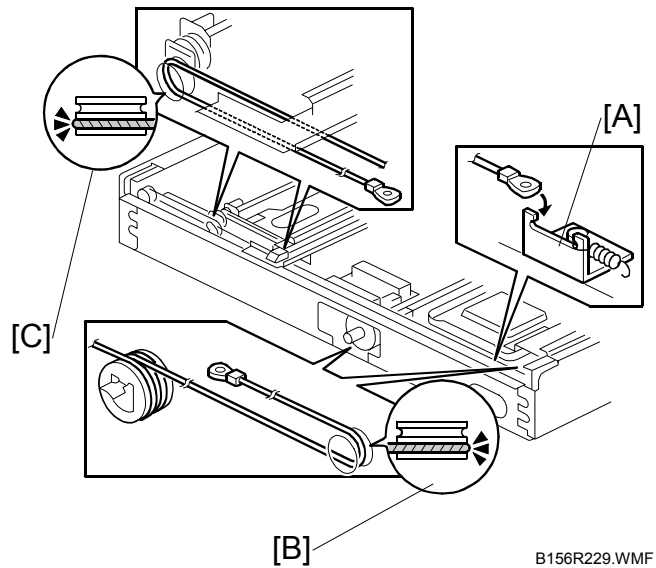
 Replacement  
Adjustment



8. Hook the ring end onto the front scanner wire bracket [A], with the end going via the front track of the right pulley [B] and the front track of the movable pulley [C].

**NOTE:** Do not screw the scanner wire bracket in place yet.

9. Remove the tape from the drive pulley.



B156R229.WMF

10. Insert a scanner positioning pin [D] through the 2nd carriage hole [E] and the left holes [F] in the front rail. Insert another scanner positioning pin [G] through the 1st carriage hole [H] and the right holes in the front rail [I].

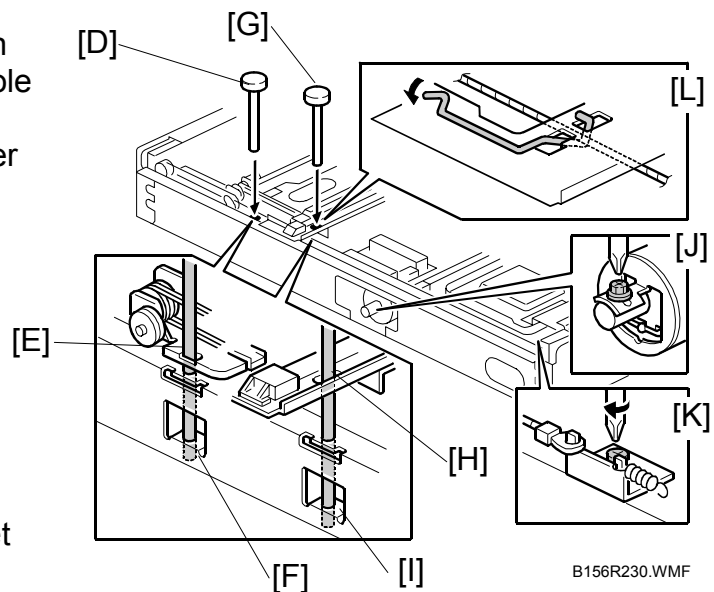
11. Insert two more scanner positioning pins through the holes in the rear rail.

12. Screw the drive pulley to the shaft [J].

13. Screw the scanner wire bracket to the front rail [K].

14. Install the scanner wire clamp [L].

15. Pull out the positioning pins.

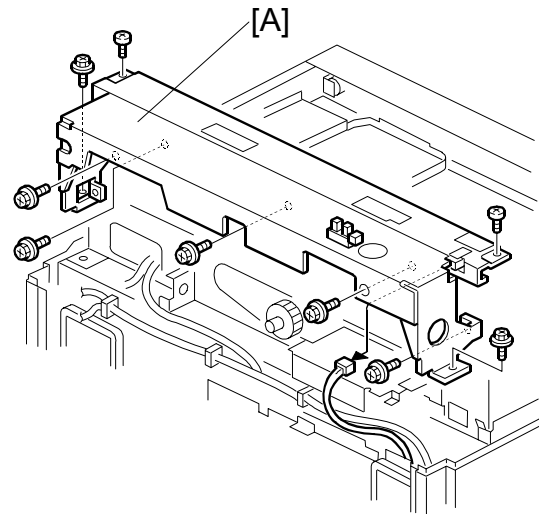


B156R230.WMF

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

### 3.3.9 REAR SCANNER WIRE

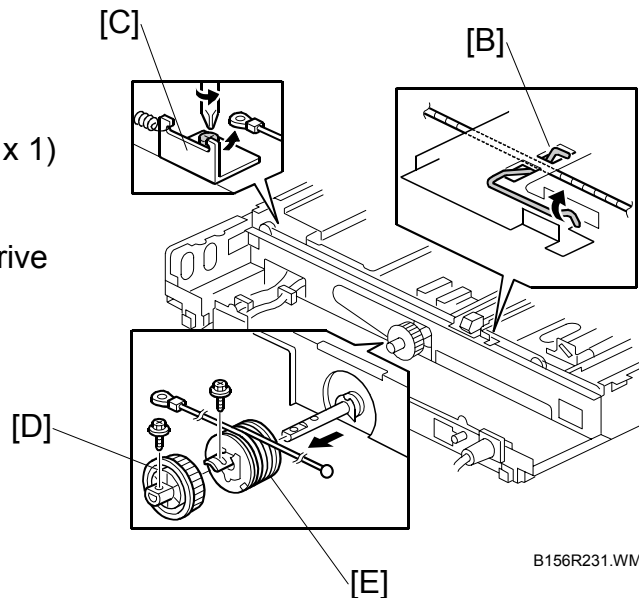
1. Exposure glass (☞ 3.3.1)
2. Scanner motor (☞ 3.3.7)
3. Left frame (☞ 3.3.5)
4. Scanner I/O board (☞ 3.3.6)
5. Rear frame [A] with the rear rail frame  
(⚙ x 8, 📏 x 1)
6. To make reassembly easy, slide to the right (☞ Reassembling the Rear Scanner Wire).



B156R103.WMF

Replacement  
Adjustment

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

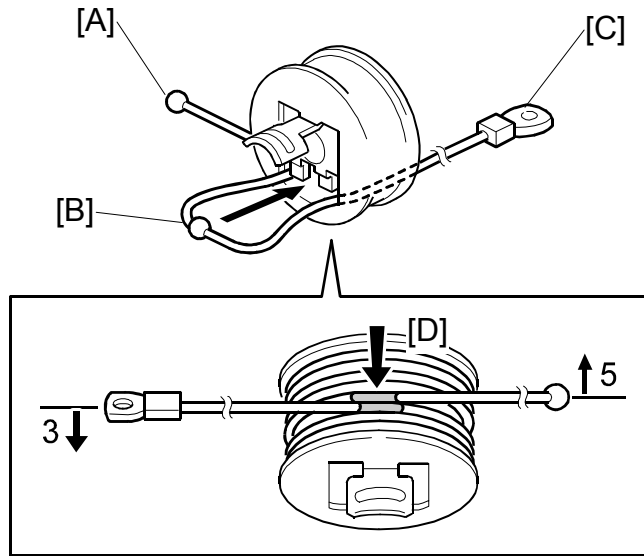


B156R231.WMF

***Reassembling the Rear Scanner Wire***

1. Pass the end with the ball [A] through the right square hole from the front.
2. Position the center ball [B] in the middle of the notch, as shown by the arrow.
3. Pass the ball end [A] through the drive pulley notch.
4. Wind the end with the ring [C] counterclockwise three times; wind the ball end [A] clockwise five times.

**NOTE:** The two red marks [D] should meet when you have done this.



B156R232.WMF

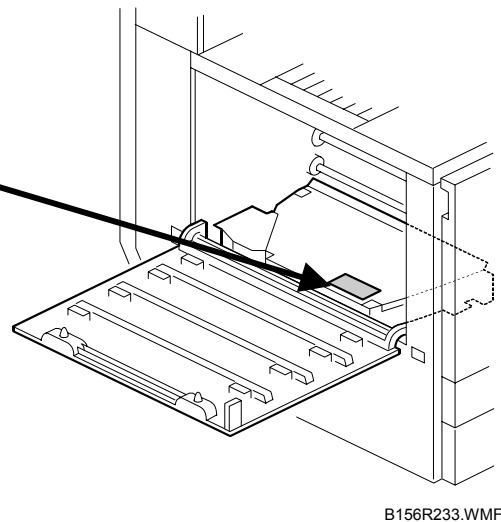
5. Stick the wire to the pulley with tape, so you can easily handle the pulley and wire during installation.
6. Install the drive pulley on the shaft.  
**NOTE:** Do not screw the pulley onto the shaft yet.
7. Install the wire.  
**NOTE:** The winding pattern is a mirror image of that of the front scanner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

## 3.4 LASER UNIT

### WARNING

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

### 3.4.1 CAUTION DECAL LOCATION

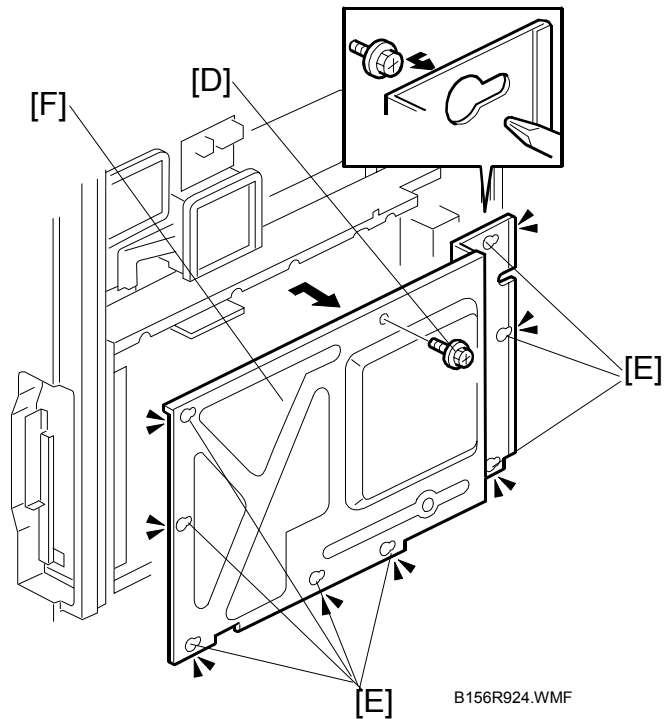
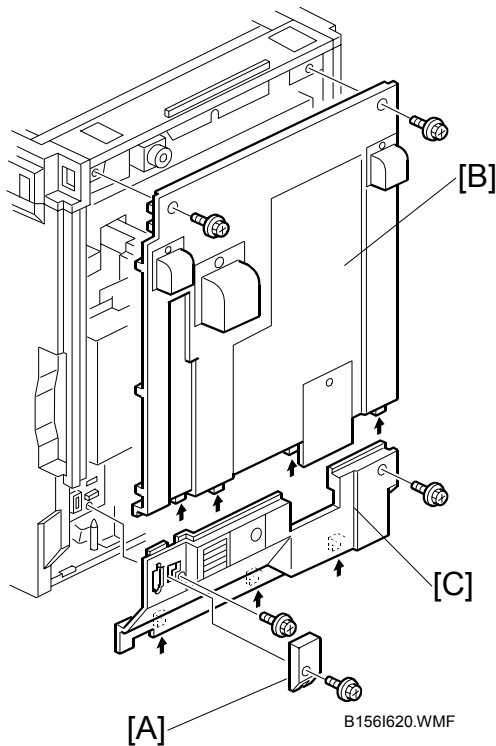


Replacement  
Adjustment

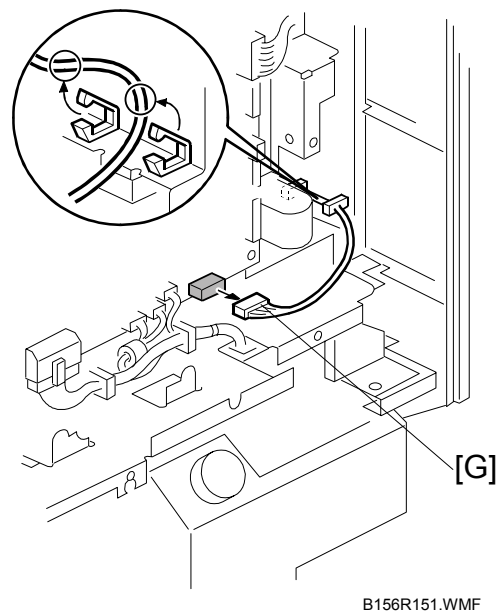
### DANGER

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

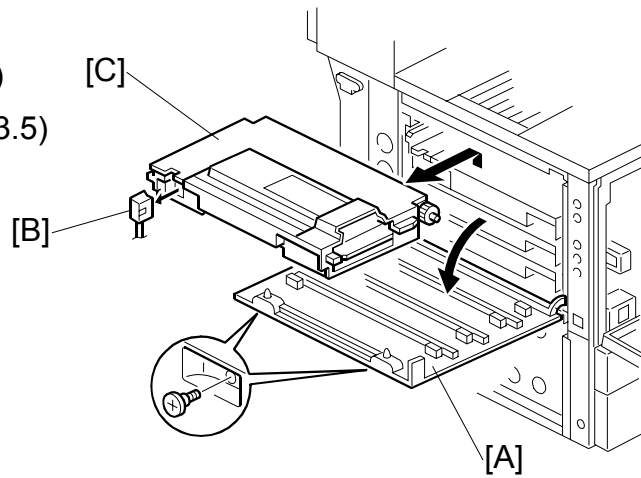
### 3.4.2 LASER UNIT



1. Connector cover [A] (⌀ x 1)
2. Rear cover [B] (⌀ x 2)
3. Lower rear cover [C] (⌀ x 2)
4. Remove the screw [D]. Then loosen the eight screws [E].
5. Move the controller box cover [F] to the right, and then remove it.
6. LD unit cable [G] (⌀ x 1)



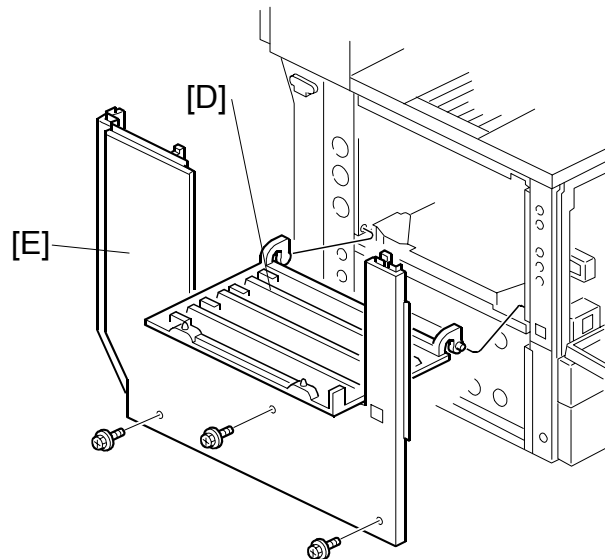
7. Open the left cover [A] (⚙ x 2).
8. ID chip connectors [B] (⚙ x 4)
9. Development units [C] x 4 (⚙ 3.5)



B156R234.WMF

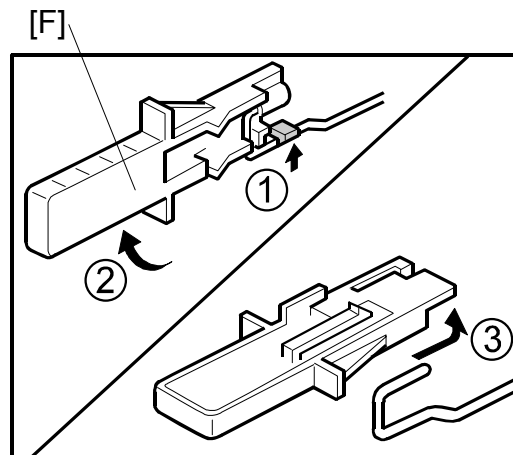
 Replacement  
Adjustment

10. Left cover [D]
11. Open the front cover.
12. Lower left cover [E] (⚙ x 3)



B156R235.WMF

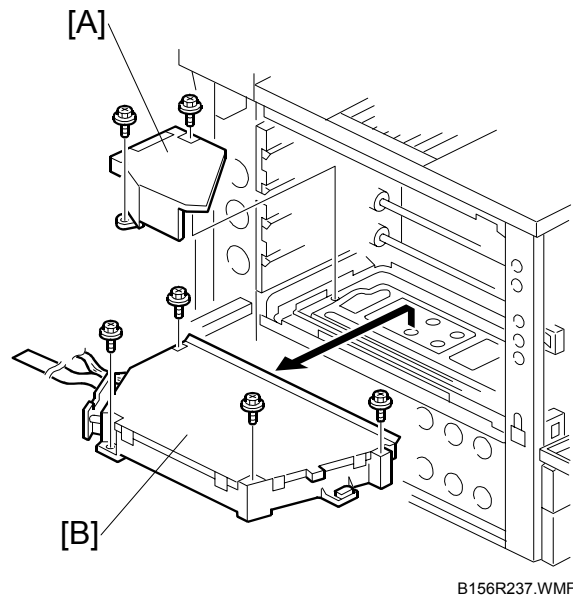
13. Dust shield glass cleaner lever [F]
- NOTE:** The dust shield glass cleaner lever is the blue lever at the left side of the charge corona unit (⚙ 3.6.3).



B156R236.WMF

14. LD cover [A] (⌘ x 2)
15. Laser unit [B] (⌘ x 4, Flat cable x 1)

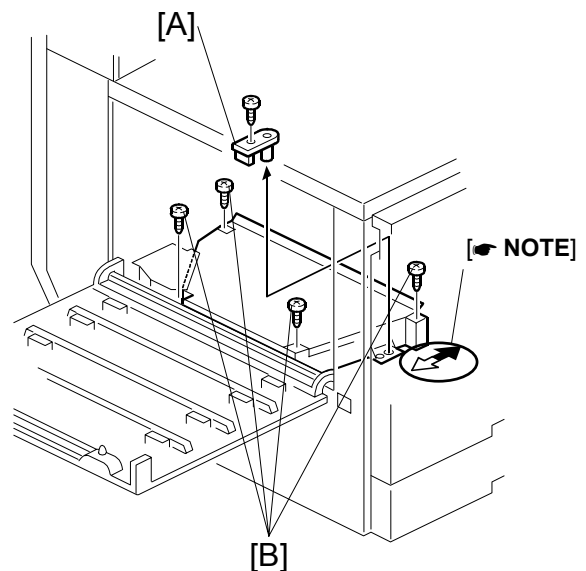
**NOTE:** When reassembling, connect the flat cable with the blue side down.



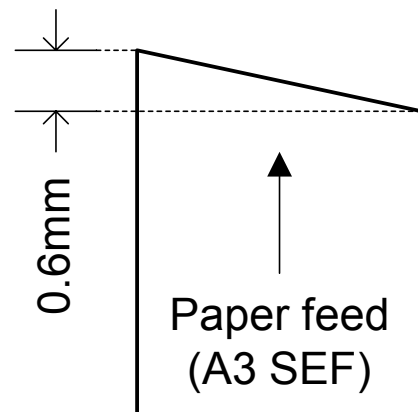
### **Adjusting for Image Skew**

1. Positioning pin [A] (⌘ x 1)
2. Loosen ⌘ (x 4) [B].
3. Adjust the position of the laser unit
4. Fasten ⌘ (x 4) [B].

**NOTE:** After changing the position of the laser unit, do not reinstall the positioning pin. Keep the pin in a safe place.



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

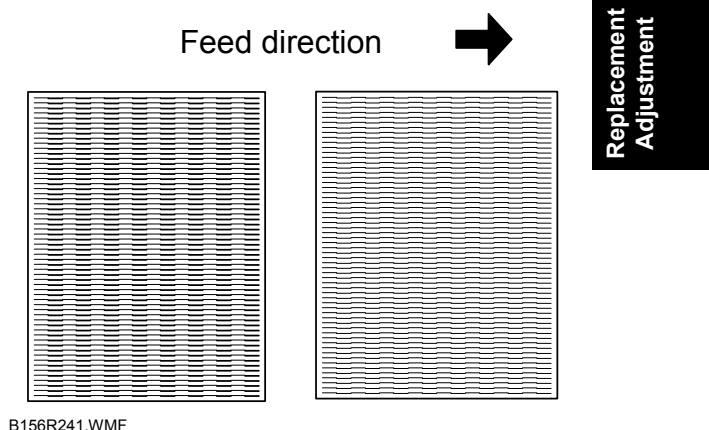


### D-Phase Adjustment

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

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

1. Print out the test pattern with SP5-955-1 and select pattern 50 (5.1.3).
2. Check if horizontal black stripes can be seen.
  - a) If stripes cannot be seen (Figure 2), the D-phase adjustment is not required.
  - b) If stripes can be seen (Figure 1), the D-phase adjustment is required. Go on to the next step.



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

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

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

5. Print out the test pattern with SP5-955-1 and select pattern 50.
6. Check if vertical black stripes can be seen.
7. After you complete the test prints, set SP 5-955-1 to 0.

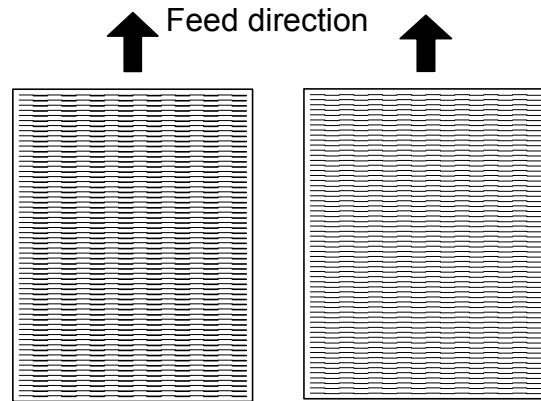
Mag. Shift Error: LD1-2	Adjustment	
	SP2-951-1	SP2-951-2
-11.8 ~ -10.4	8	0
-10.3 ~ -9.0	7	0
-8.9 ~ -7.6	6	0
-7.5 ~ -6.2	5	0
-6.1 ~ -4.8	4	0
-4.7 ~ -3.4	3	0
-3.3 ~ -2.0	2	0
-1.9 ~ -1.0	1	0
-0.9 ~ 1.0	0	0
1.1 ~ 2.0	0	1
2.1 ~ 3.4	0	2
3.5 ~ 4.8	0	3
4.9 ~ 6.2	0	4
6.3 ~ 7.6	0	5
7.7 ~ 9.0	0	6
9.1 ~ 10.4	0	7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

**Table 1**



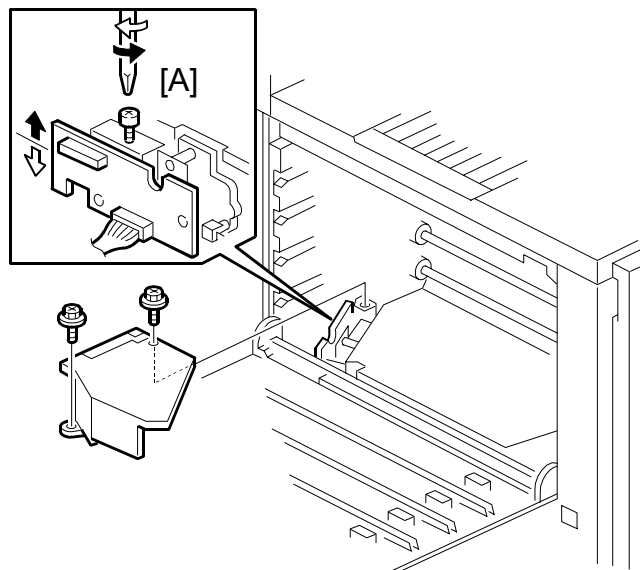
***Laser Beam Pitch Adjustment***

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



B156R240.WMF

3. To adjust the laser beam pitch, tighten or loosen the screw [A] on the LD unit holder.
4. Print out the test pattern with SP5-955-1 and select pattern 15.
5. Repeat steps 2 through 4 until the black stripes disappear (Figure 2).
6. After you complete the test prints, set SP 5-955-1 to 0.



B156R242.WMF

### 3.4.3 POLYGONAL MIRROR MOTOR AND LSD

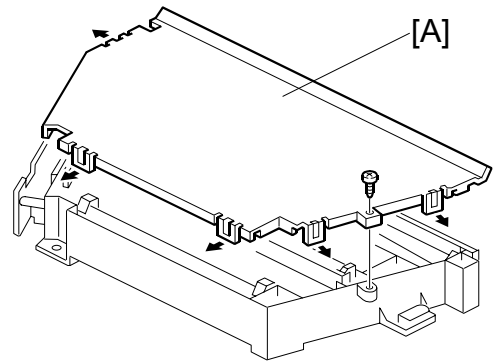
#### **⚠ WARNING**

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

1. Development units x 4 (☞ 3.5), LD cover (☞ 3.4.2)

2. Cover [A] (🔩 x 1)

**NOTE:** Before removing the cover, clean the cover to prevent toner from entering into the unit.



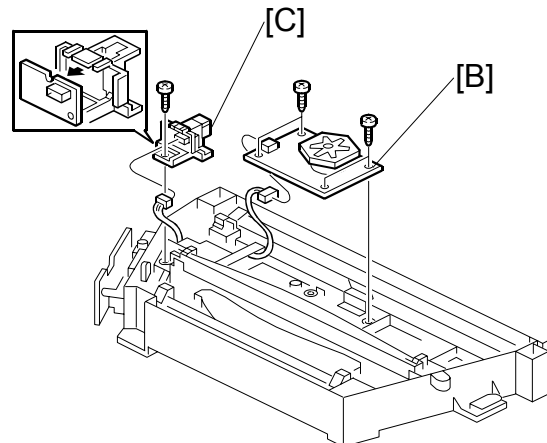
B156R243.WMF

Replacement  
Adjustment

3. Polygonal mirror motor [B]  
(🔩 x 1, 🌀 x 4)

**NOTE:** Do not touch the mirror surface.

4. Synch. detection board (LSD) [C]  
(🔩 x 1, 🌀 x 1)



### 3.5 DEVELOPMENT UNIT

#### ⚠ CAUTION

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

#### ⚠ WARNING

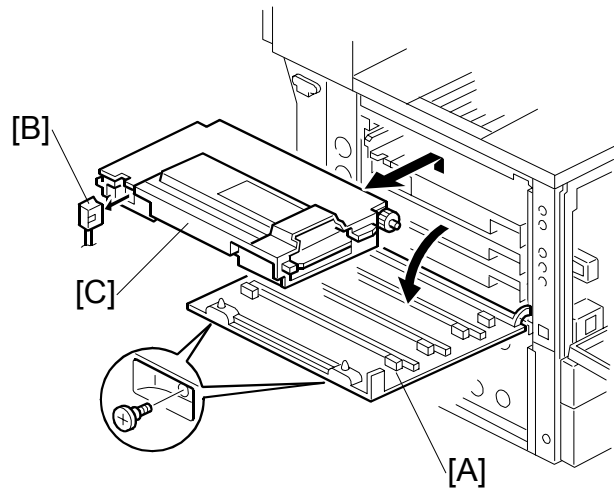
Turn off the main switch before you start the procedures in this section.

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

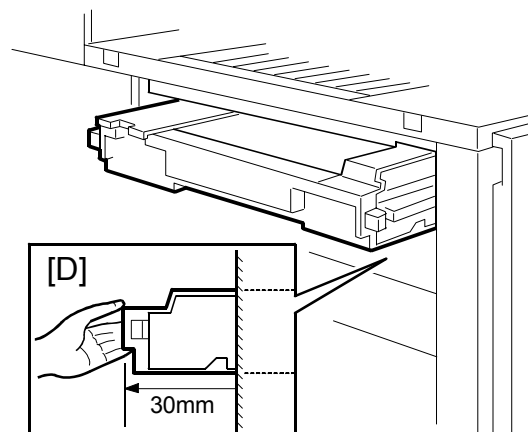
**NOTE:** Remove the units in the order K, C, Y, M. For example, before removing the M unit, remove the K, C, and Y units first.

4. Remove the dummy toner cartridge from the new development unit.
5. Remove the toner cartridge from the old development unit, and put it in the new development unit.
6. Put the new development unit in the machine.
7. Turn on the main switch and start SP3-929 (Development Unit Replace).
  - 1) Select the colors for the development units that you replaced.
  - 2) Select "1.execute" for the colors that you selected. Then, push "OK".
  - 3) Repeat 1) and 2) until all the colors of the replaced development units are selected.
  - 4) Go out from the SP mode. Then, open and close the front cover. The machine does the development unit set-up procedure.

**NOTE:** A white line or band may appear on one end of the paper if a development unit is incorrectly installed. To correct this, pull out the development unit partially (about 30 mm) [D] and slowly reinstall it.



B156R234.WMF

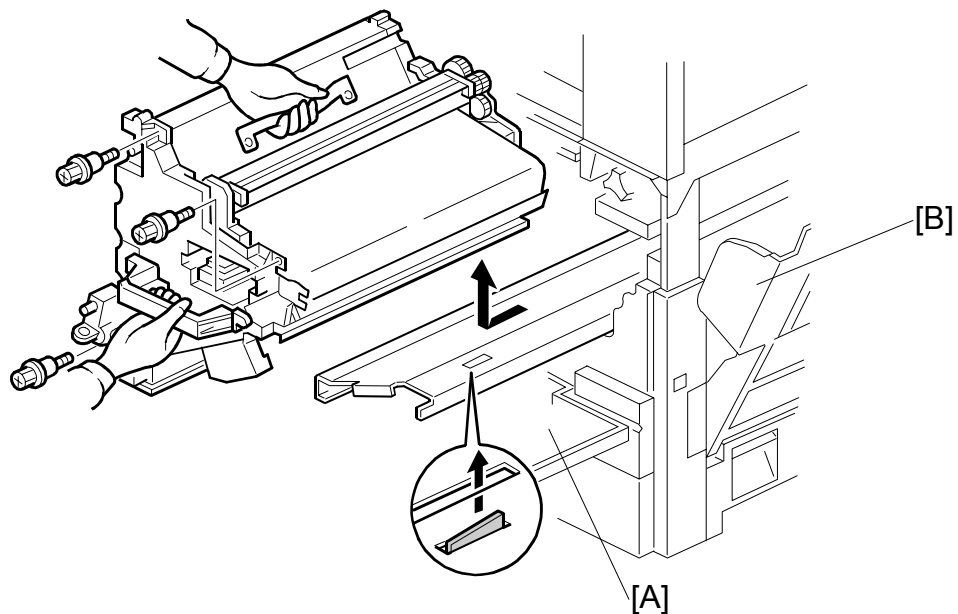


B156R246.WMF

## 3.6 PHOTOCONDUCTOR UNIT (PCU)

### 3.6.1 PCU ASSEMBLY

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

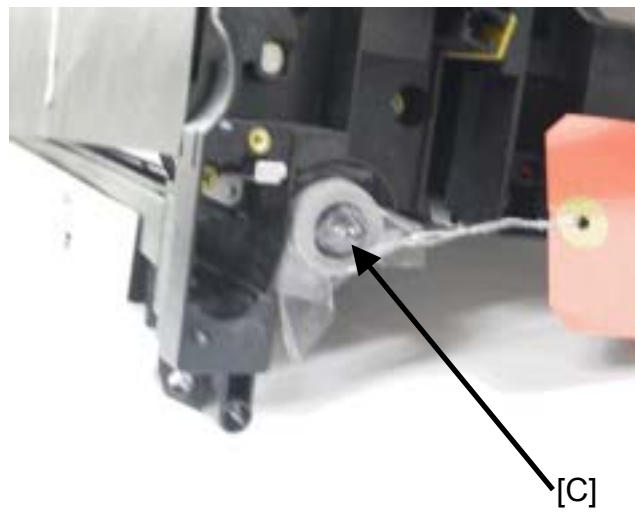


B156R247.WMF

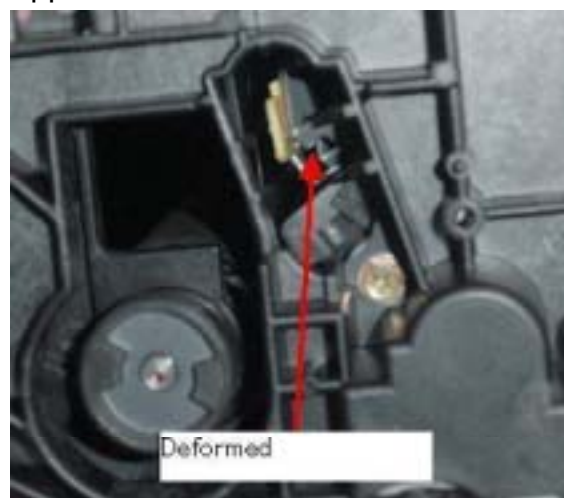
1. Open the front cover [A].
2. Open the right cover [B].
3. Pull the unit out of the machine (⚙ x 3).
4. Grasp the brown and metal grips.
5. Lift the unit and remove it.

Replacement  
Adjustment

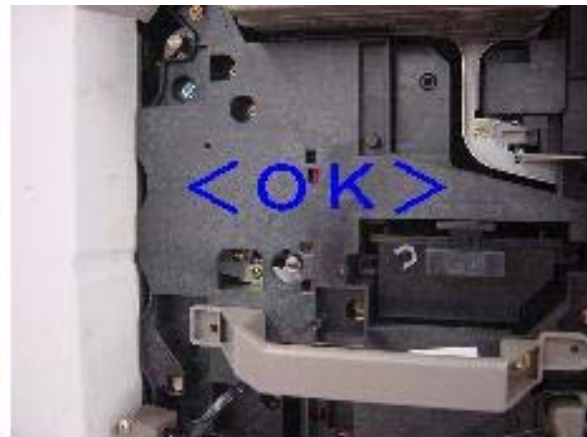
6. Before you install the new PCU, remove the cap [C].



Install the new PCU carefully. If you install it too quickly, this will cause damage to the quenching lamp support.



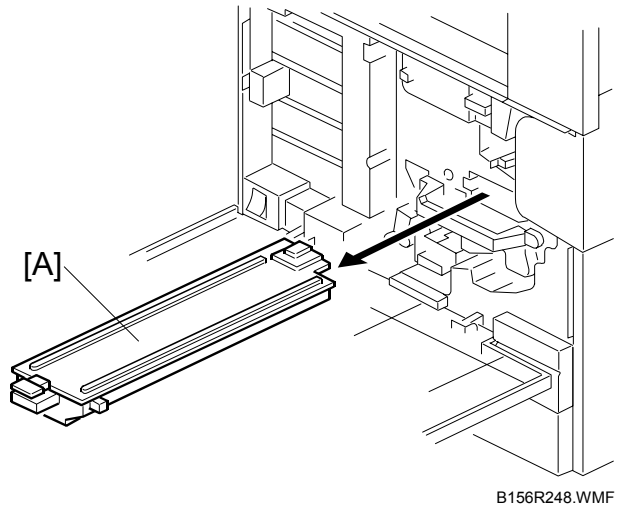
If you removed or installed the left inner cover, make sure that the projections shown here are below the cover (they must not be seen).



Replacement  
Adjustment

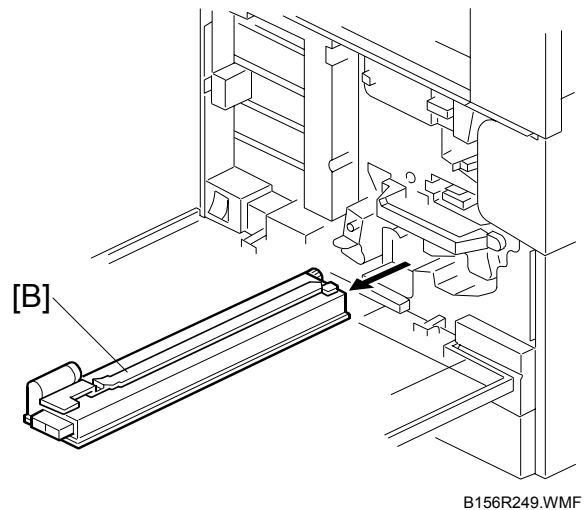
### 3.6.2 WASTE TONER BOTTLES

1. T/B waste toner bottle [A]



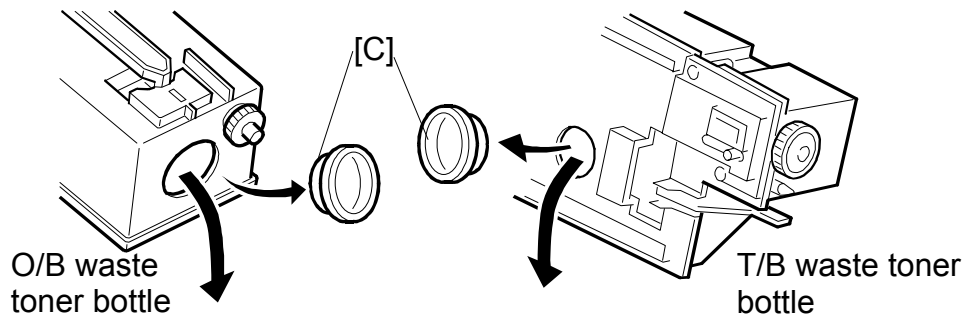
2. O/B waste toner bottle [B]

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



#### *Toner Disposal*

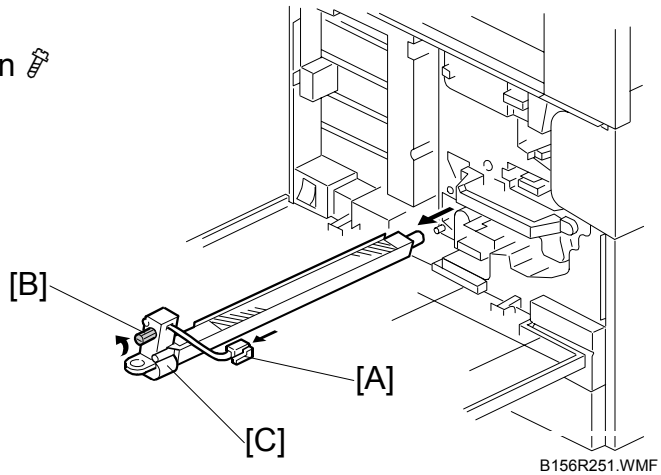
- 1) Remove the cap [C].
- 2) Dispose of the toner according to local regulations.





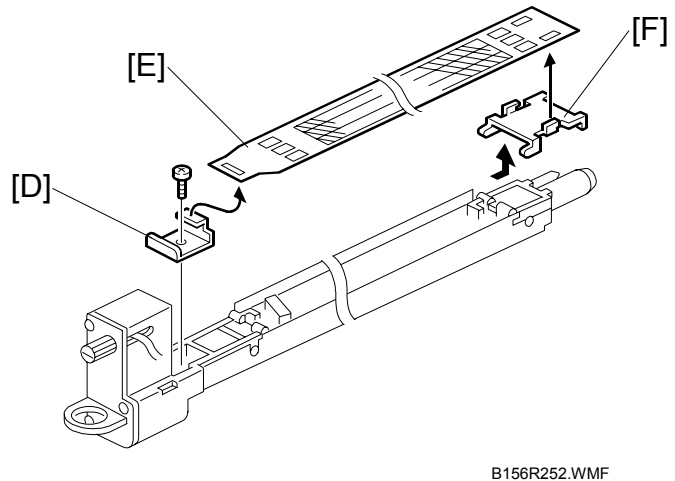
### 3.6.3 CHARGE CORONA UNIT, GRID, WIRE, AND CLEANER

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

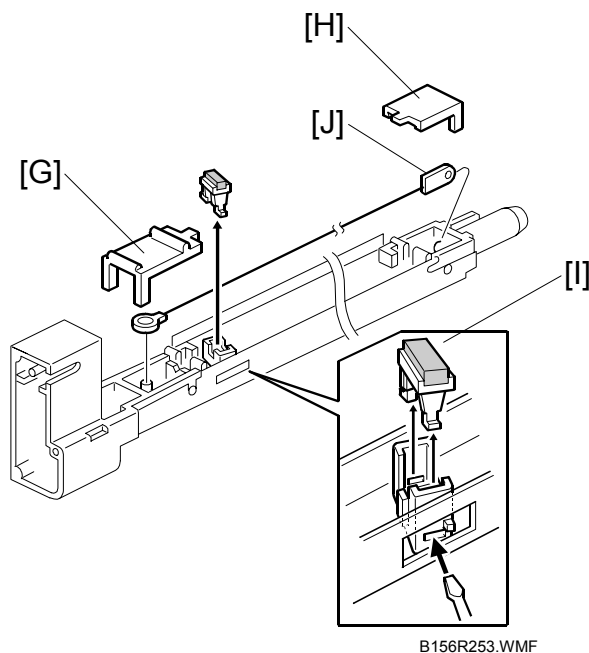


Replacement  
Adjustment

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

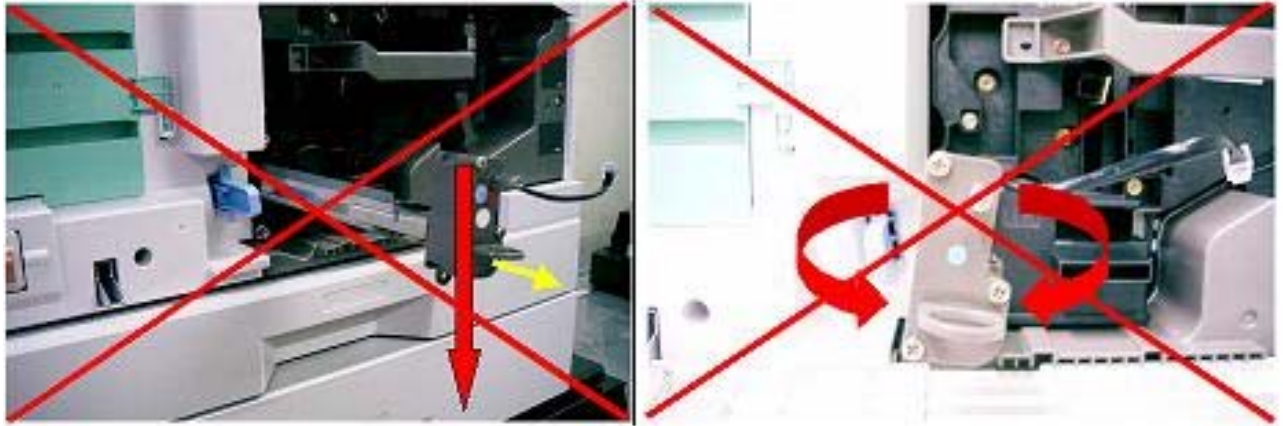


6. Front wire cover [G]
7. Rear wire cover [H]
8. Wire cleaner [I]
9. Unhook the corona wire [J].



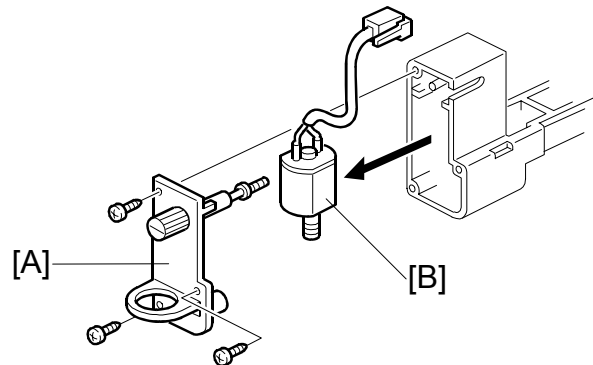


When you remove the charge corona unit, keep the unit level while you pull it out carefully. Do not lower or turn the unit.



### 3.6.4 CHARGE CORONA WIRE CLEANER MOTOR

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



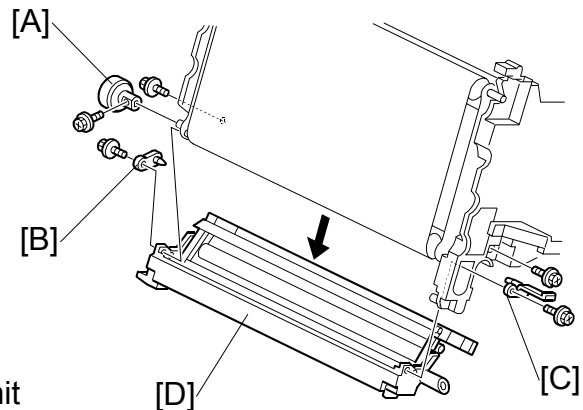
B156R254.WMF

 Replacement  
Adjustment

### 3.6.5 OPC BELT CLEANING UNIT

1. O/B waste toner bottle (☛ 3.6.2)
2. Photoconductor unit (☛ 3.6.1)
3. Charge corona unit (☛ 3.6.3)
4. Drive gear [A] (⚙ x 1)
5. Rear brace [B] (⚙ x 1)
6. Front brace [C] (⚙ x 1)
7. OPC belt cleaning unit [D] (⚙ x 2)

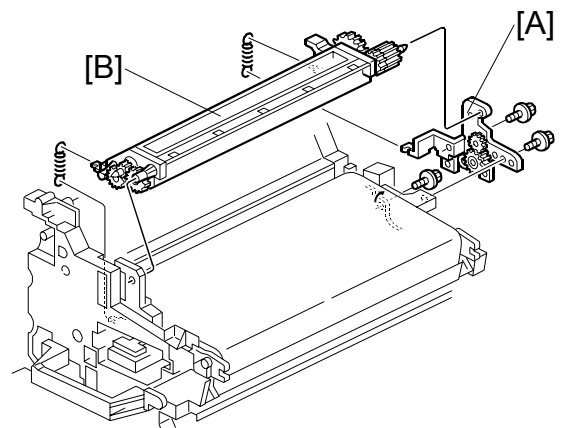
**NOTE:** Hold up the photoconductor unit while removing the OPC belt cleaning unit.



B156R255.WMF

### 3.6.6 IMAGE TRANSFER BELT CLEANING UNIT

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

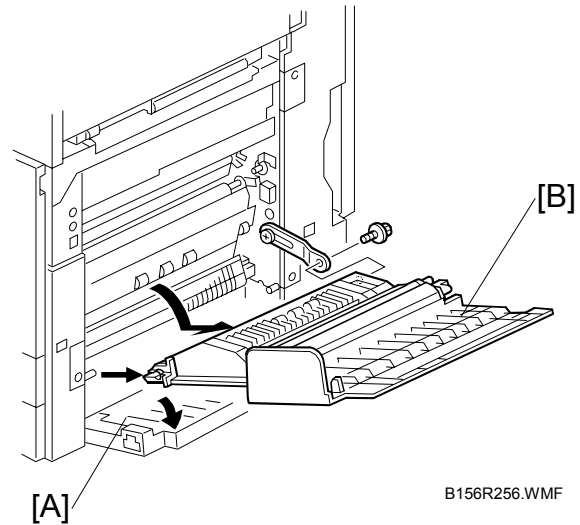


B156R919.WMF

## 3.7 PAPER TRANSFER UNIT

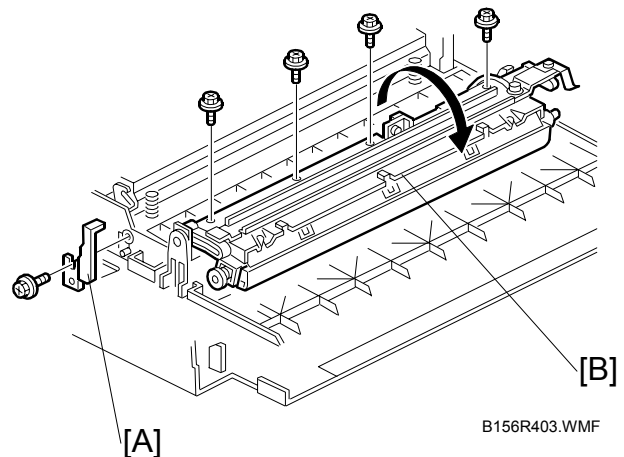
### 3.7.1 VERTICAL TRANSPORT UNIT

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

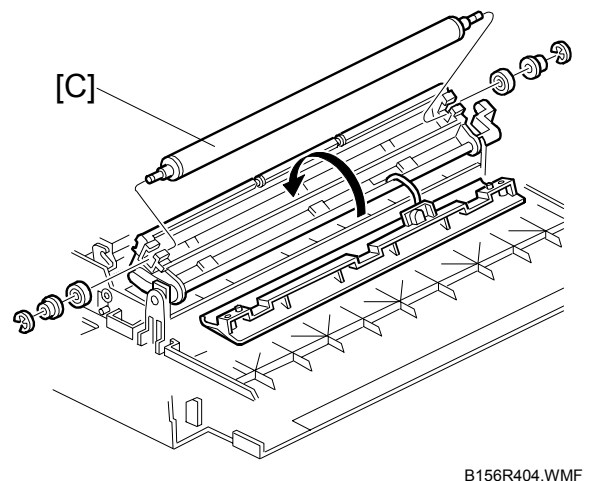


### 3.7.2 TRANSFER ROLLER

1. Brace [A] (⌘ x 1)
2. Remove the screws (⌘ x 4) for the discharge unit.  
**NOTE:** To remove the screws, turn the roller unit [B] on its pivot.



3. Transfer roller [C]  
 (⌘ x 2, Bushing x 2, Bearing x 2)



## 3.8 FUSING/PAPER EXIT

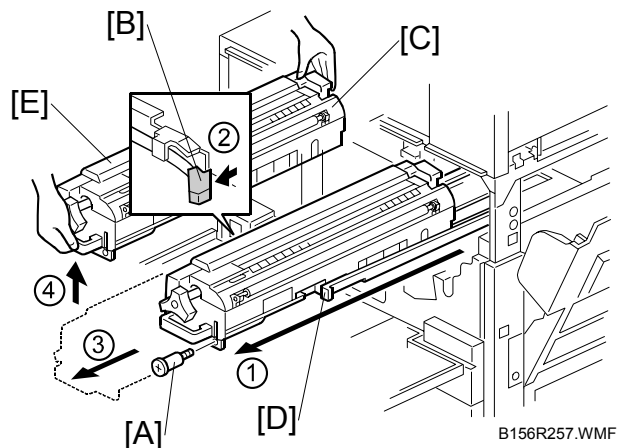
### ⚠ CAUTION

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

### 3.8.1 FUSING UNIT

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

1. Remove the screw [A], and pull out the unit out of the machine.
2. Unhook the bottom stopper [B], and grasp the rear end [C] of the unit.
3. Slide the unit to the end of the base plate [D].
4. Release the unit [E].
5. After you install a new fusing unit, reset the PM counter with SP 7-804-7.



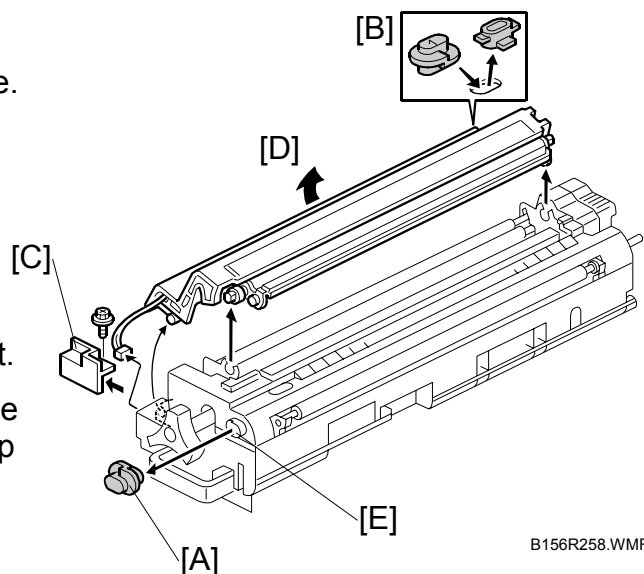
B156R257.WMF

Replacement  
Adjustment

### 3.8.2 OIL SUPPLY UNIT

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

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



B156R258.WMF

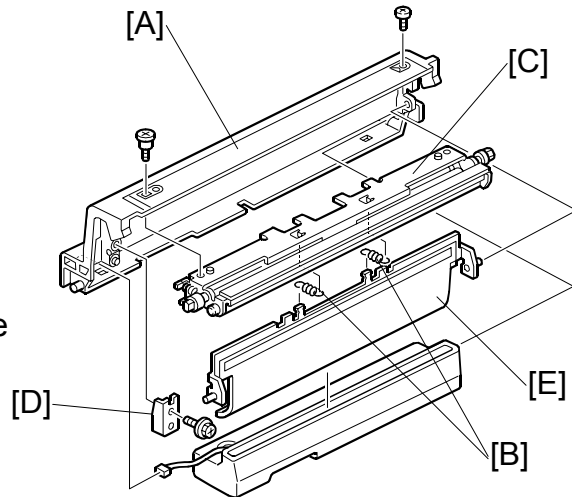


### 3.8.3 OIL SUPPLY PAD

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

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

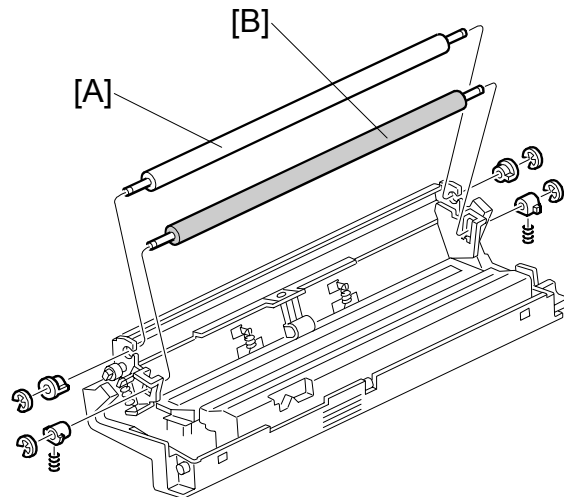
**NOTE:** If you cannot put the springs in the places, remove the cleaning roller (☛ 3.8.4).



B156R259.WMF

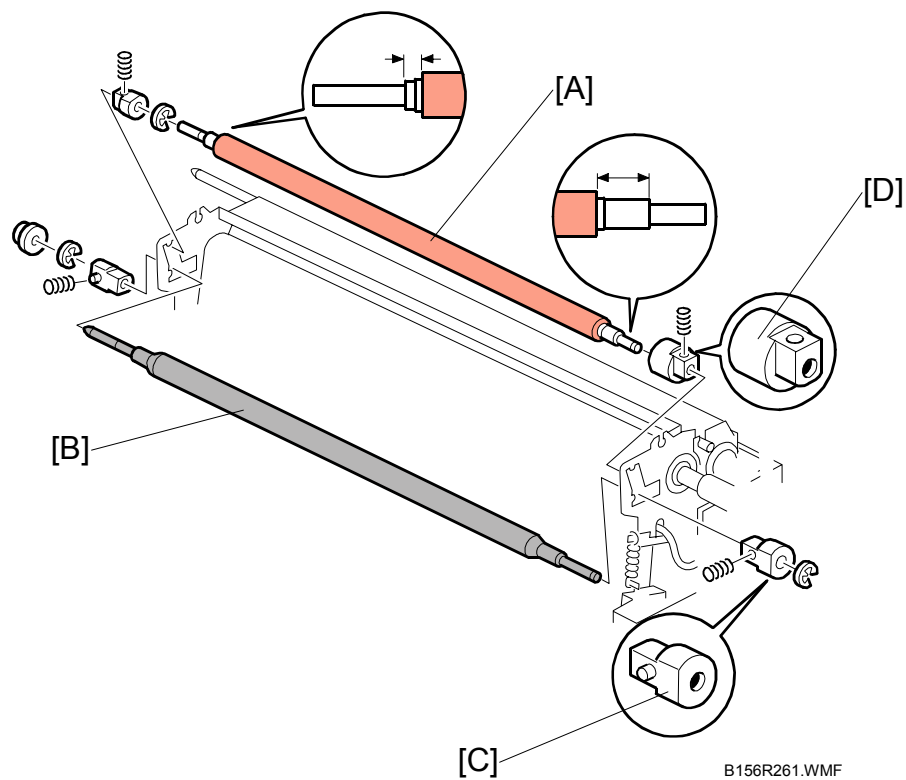
### 3.8.4 CLEANING ROLLER AND FUSING SPONGE ROLLER

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



B156R260.WMF

### 3.8.5 OILING ROLLER AND OIL SUPPLY ROLLER



Replacement  
Adjustment

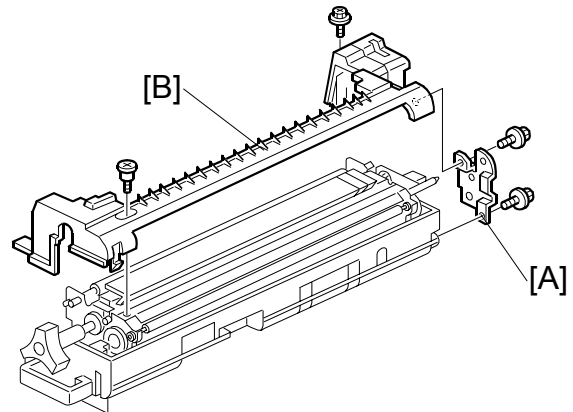
1. Oil supply unit (☛ 3.8.2)
2. Upper cover (☛ 3.8.6)
3. Oil supply roller [A] (Spring x 2, Bushing x 1, one-way clutch x 1)

**NOTE:** Make sure that the one-way clutch [D] is at the front side of the machine.

4. Oiling roller [B] (Spring x 2, Bushing x 2)

### 3.8.6 FUSING LAMPS

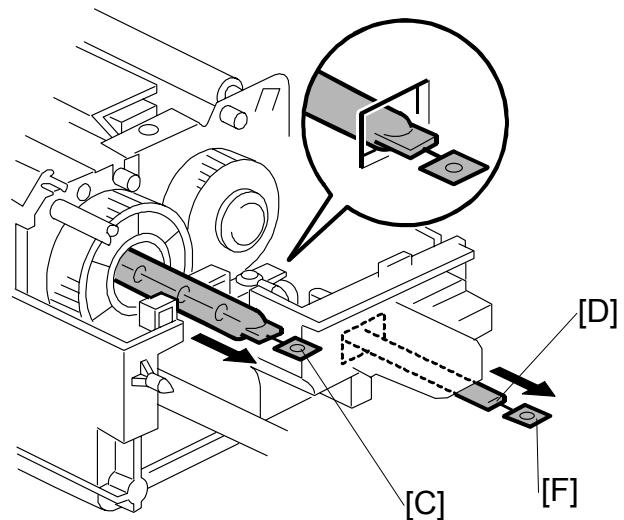
1. Oil supply unit (☛ 3.8.2)
2. Gear bracket [A] (☛ x 2)
3. Upper cover [B]  
(☛ x 1, shoulder screw x 1)



B156R262.WMF

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

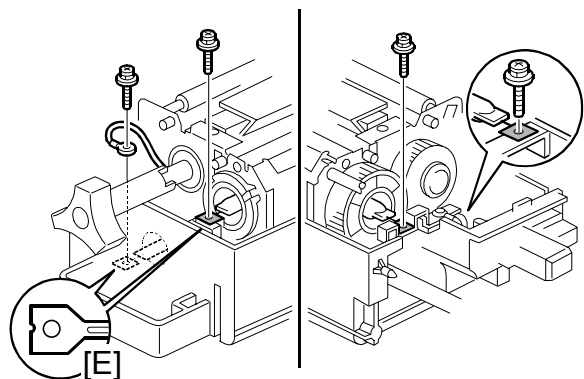
**NOTE:** “350W” and “770W” are printed on the respective terminals.



B156R263.WMF

#### ***When installing the fusing lamps***

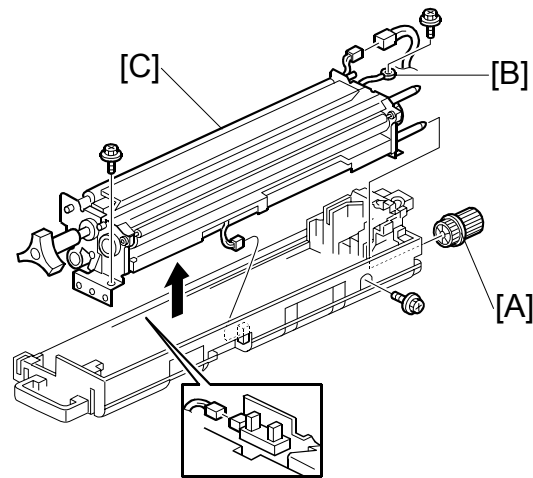
Make sure that you install the lamp in the correct orientation. The beveled terminals [E] must be at the front of the machine as shown, and the square terminals [F] must be at the rear. If not, paper creasing and/or unsatisfactory fusing can occur.



B156R264.WMF

### 3.8.7 FUSING INNER UNIT

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

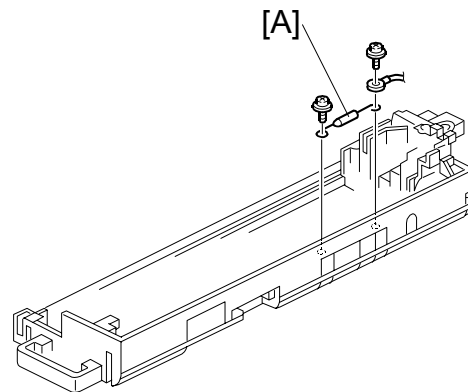


B156R265.WMF

Replacement  
Adjustment

### 3.8.8 PRESSURE ROLLER THERMOFUSE

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



B156R266.WMF

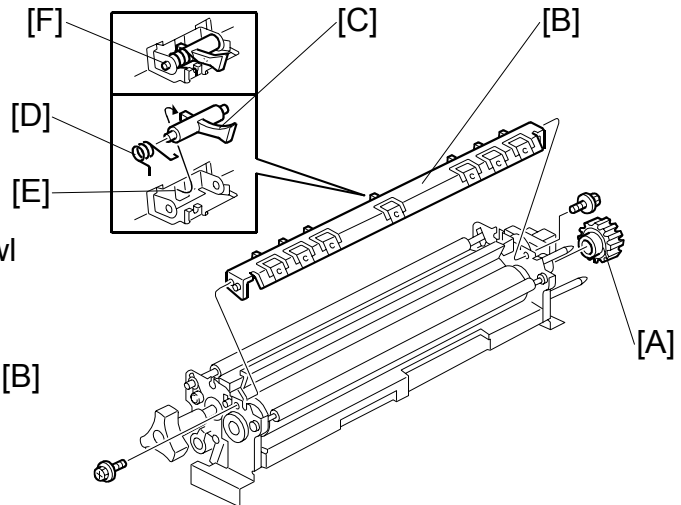


### 3.8.9 HOT ROLLER STRIPPERS

1. Oil supply unit (☛ 3.8.2)
2. Fusing lamps (☛ 3.8.6)
3. Fusing inner unit (☛ 3.8.7)
4. Gear [A]

**NOTE:** Remove the gear before removing the stripper pawl assembly; otherwise, the gear may be damaged.

5. Hot roller stripper pawl assembly [B]  
(Spring x 1, ⚙ x 2)
6. Hot roller stripper pawl [C]



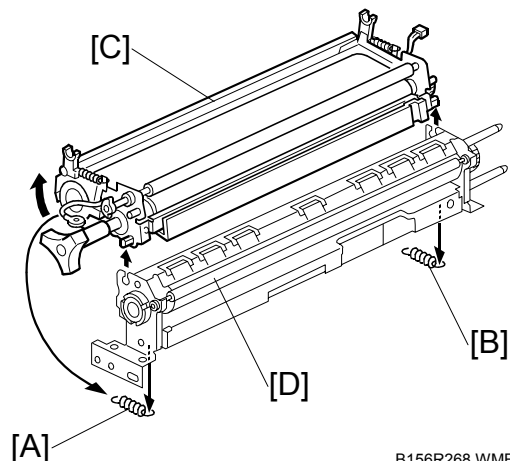
B156R267.WMF

#### *Reassembling*

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

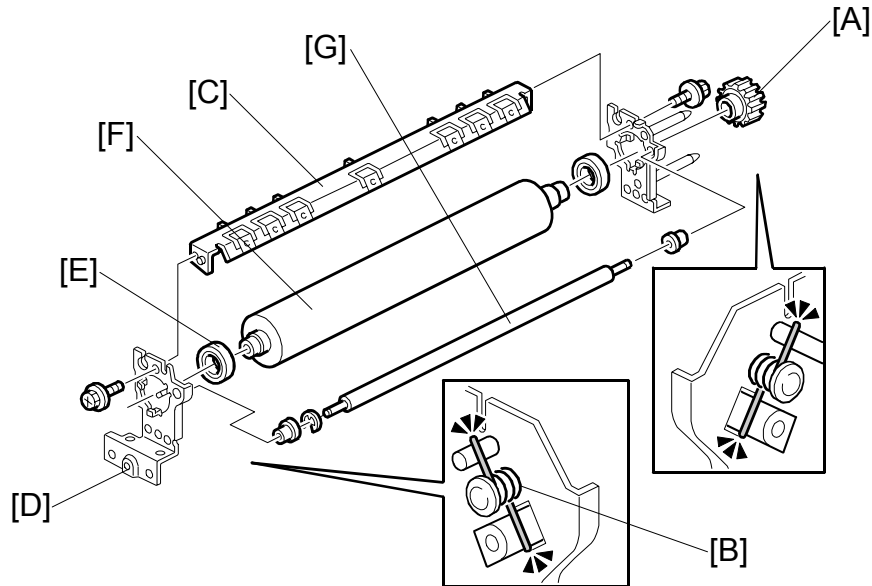
### 3.8.10 FUSING BELT UNIT AND PRESSURE ROLLER UNIT

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



B156R268.WMF

### 3.8.11 PRESSURE ROLLER, PRESSURE ROLLER GEAR, AND CLEANING ROLLER

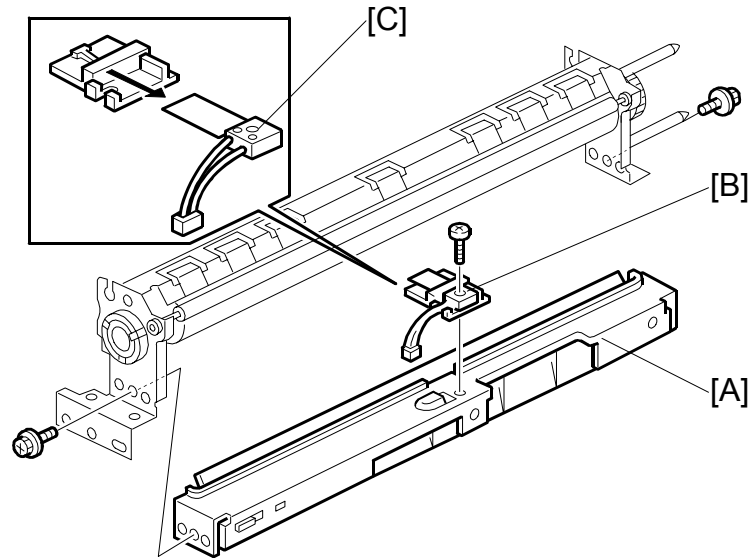


B156R269.WMF

Replacement  
Adjustment

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

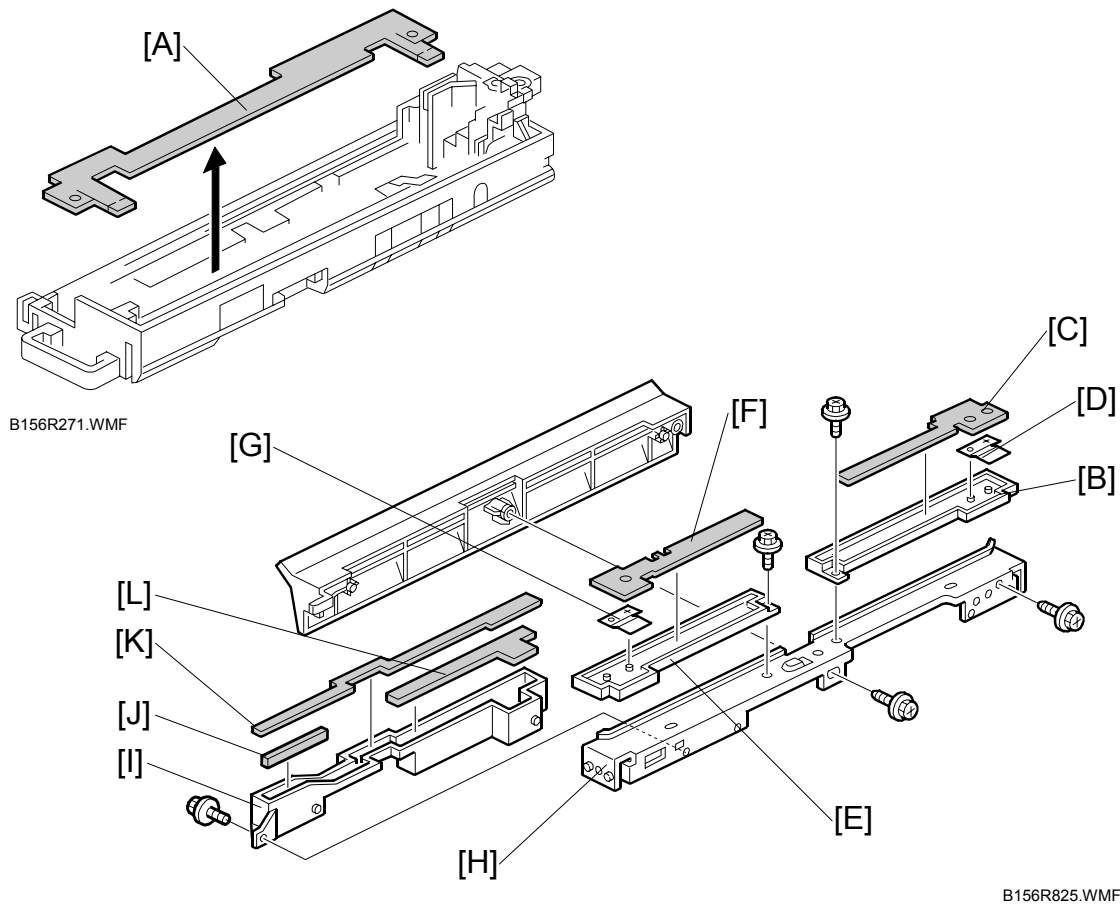
### 3.8.12 PRESSURE ROLLER THERMISTOR



B156R270.WMF

1. Pressure roller unit (☛ 3.8.10)
2. Pressure roller lower stay [A] (🔩 x 2)
3. Pressure roller thermistor holder [B] (🔩 x 1)
4. Pressure roller thermistor [C]

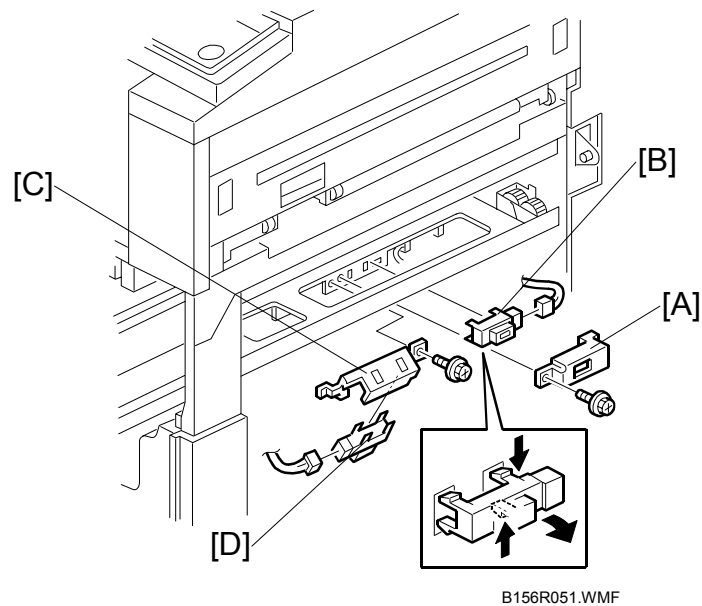
### 3.8.13 OIL ABSORBERS



Replacement  
Adjustment

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

### 3.8.14 FUSING ENTRANCE AND TRANSFER BELT SENSORS



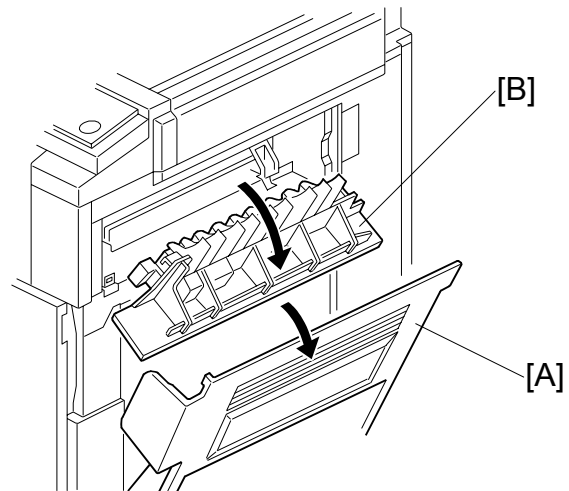
1. Right cover
2. Pull the PCU out of the machine. (☛ 3.6.1)
3. Fusing entrance sensor bracket [A] (☛ x 1)
4. Fusing entrance sensor [B] (☛ x 1)
5. Transfer belt sensor bracket [C] (☛ x 1, ☛ x 1)
6. Transfer belt sensor [D]

### 3.8.15 PAPER EXIT/OVERFLOW SENSORS

#### CAUTION

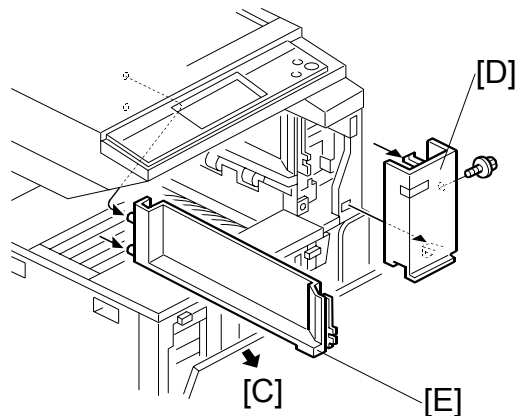
Turn off the main switch and wait until the paper exit unit cools down before beginning any of the procedures in this section. The paper exit unit can cause serious burns.

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



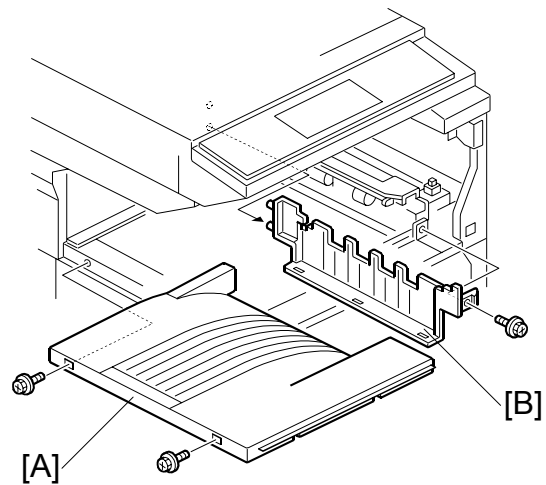
B156R272.WMF

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



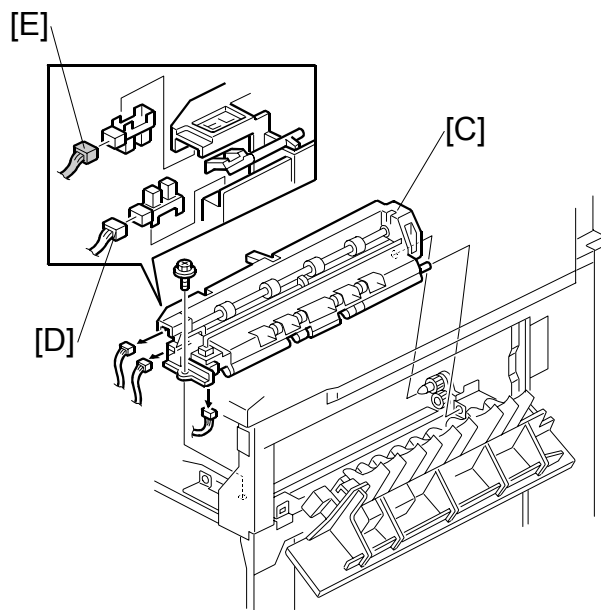
B156R273.WMF

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



B156R274.WMF

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

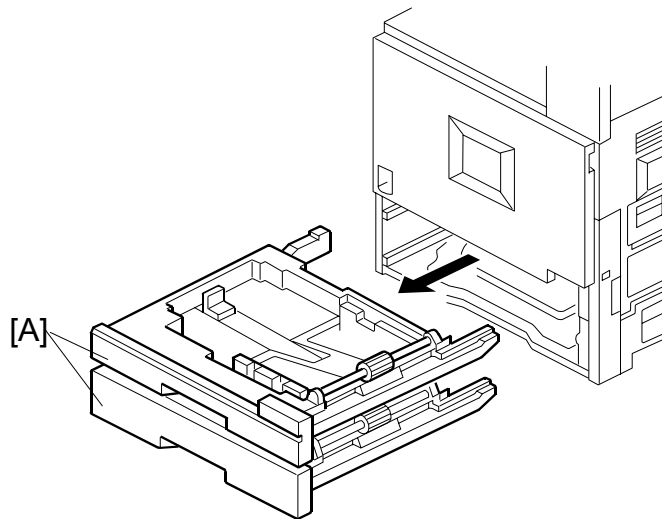


B156R275.WMF

## 3.9 PAPER FEED AND TRANSPORT

### 3.9.1 FEED ROLLER AND FRICTION PAD

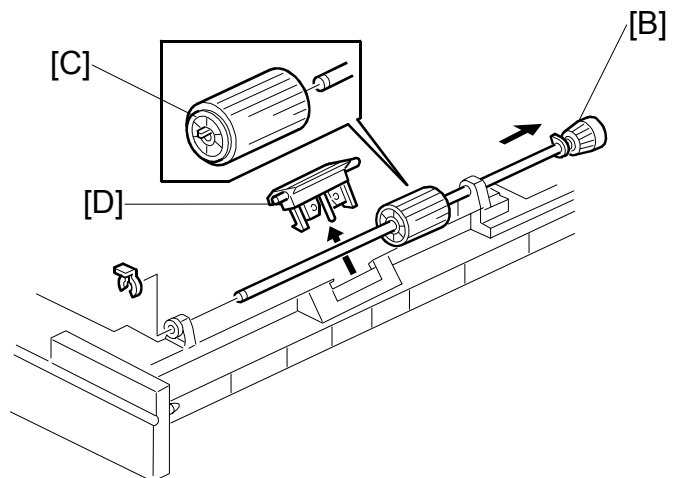
1. Paper trays [A]



B156R276.WMF

Replacement  
Adjustment

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

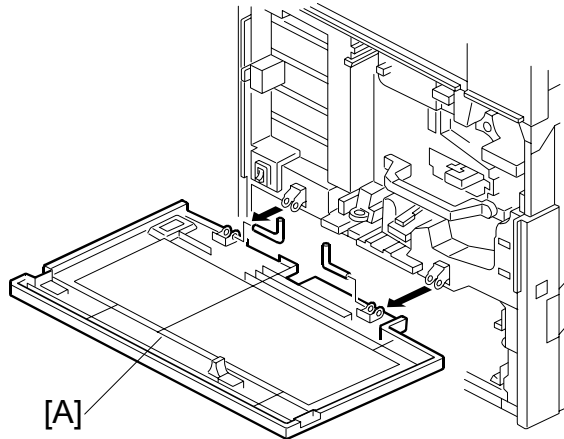


B156R277.WMF



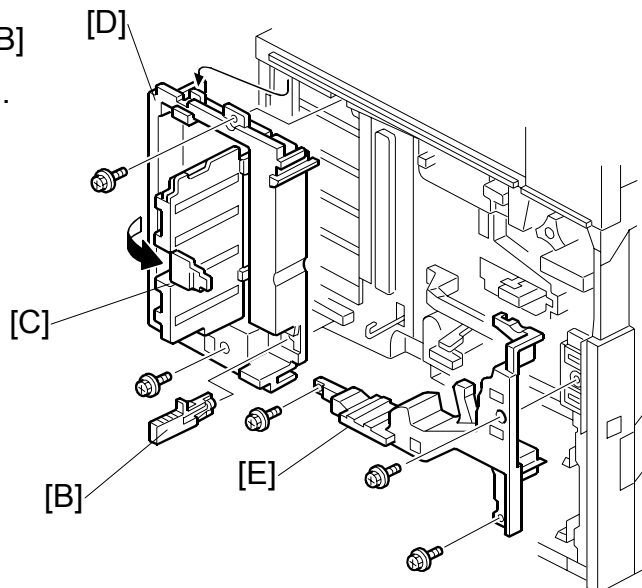
### 3.9.2 REGISTRATION SENSOR

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



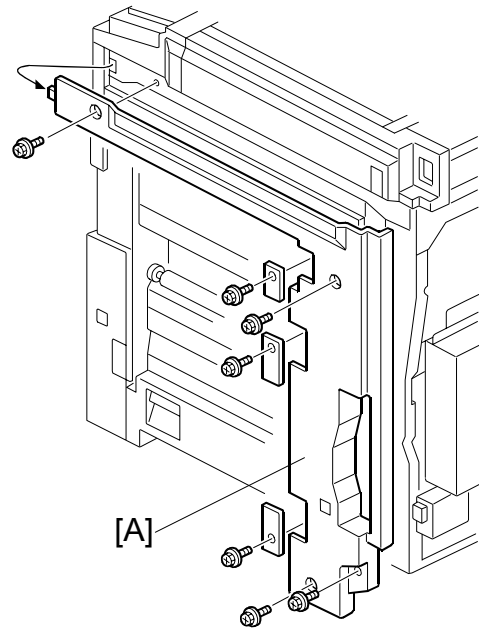
B156R278.WMF

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



B156R279.WMF

11. Rear right cover [A] (⚙ x 4)

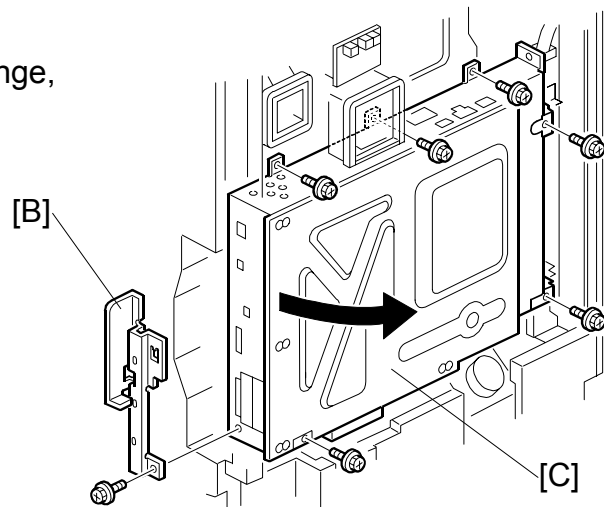


B156R604.WMF

Replacement  
Adjustment

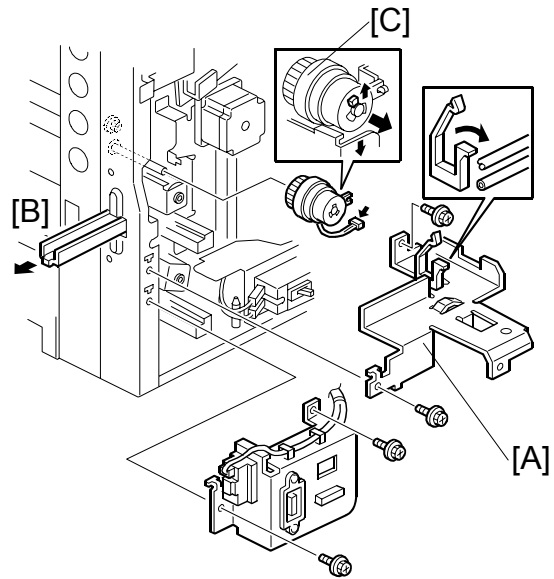
12. SD card cover [B] (⚙ x 1)

13. Move the controller box [C] on its hinge, away from the machine.  
(⚙ x 6)



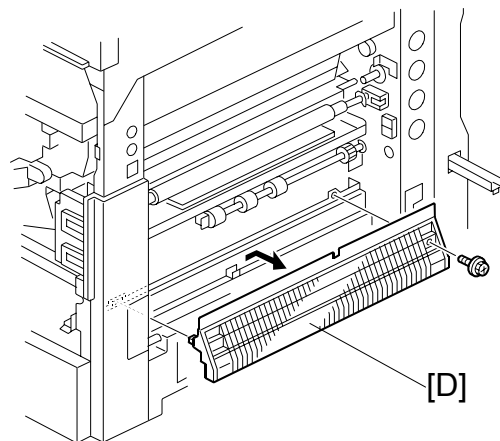
B156R605.WMF

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



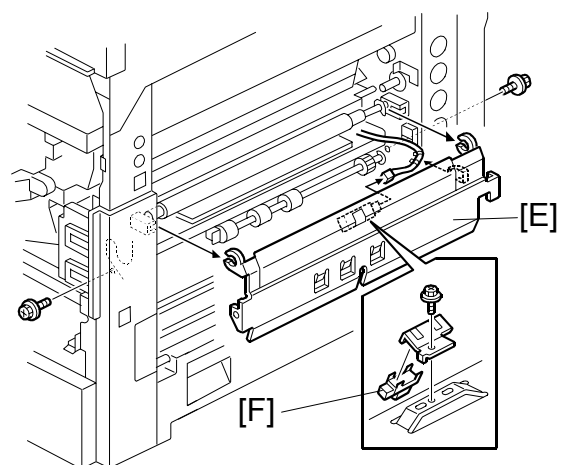
B156R606.WMF

19. Transport guide [D] (⌘ x 1)



B156R280.WMF

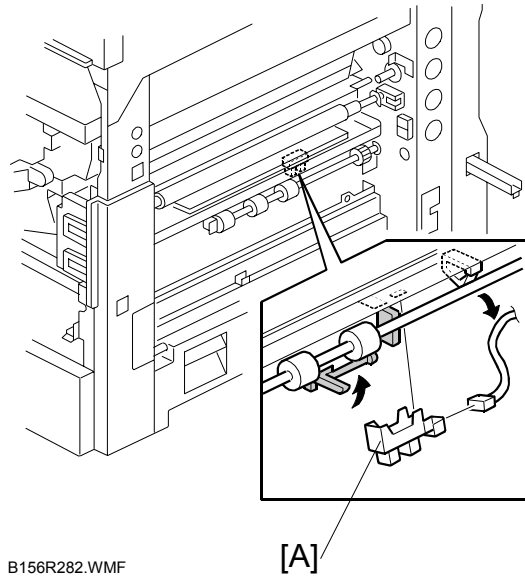
20. While releasing the wire, remove the transport stay [E] (⌘ x 2, ⌘ x 1).  
**NOTE:** You can see the wire clip from the rear of the machine.
21. Registration sensor [F] (⌘ x 1)



B156R281.WMF

### 3.9.3 PAPER FEED SENSOR 1

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

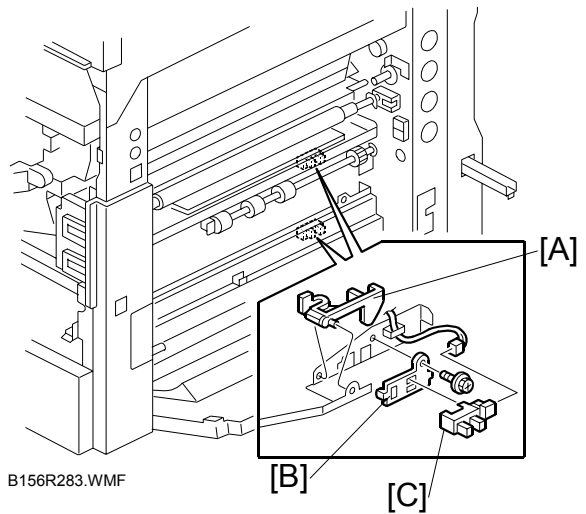


B156R282.WMF

Replacement  
Adjustment

### 3.9.4 PAPER NEAR-END SENSORS

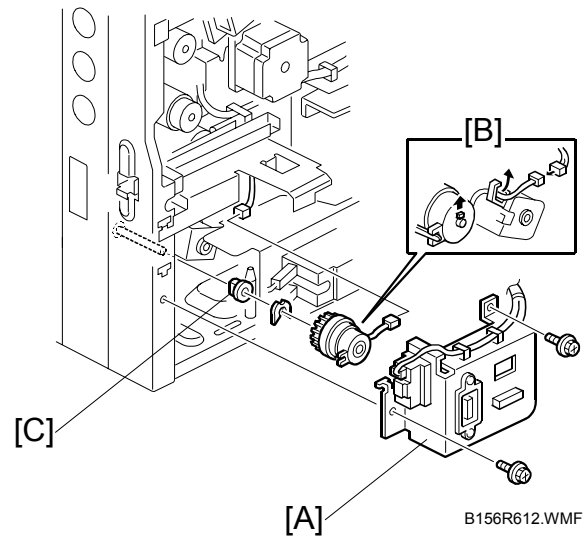
1. Transport stay (☛ 3.9.2)
2. Feeler [A]
3. Sensor bracket [B] (☛ x 1 each)
4. Paper near-end sensor [C] (☛ x 1 each)



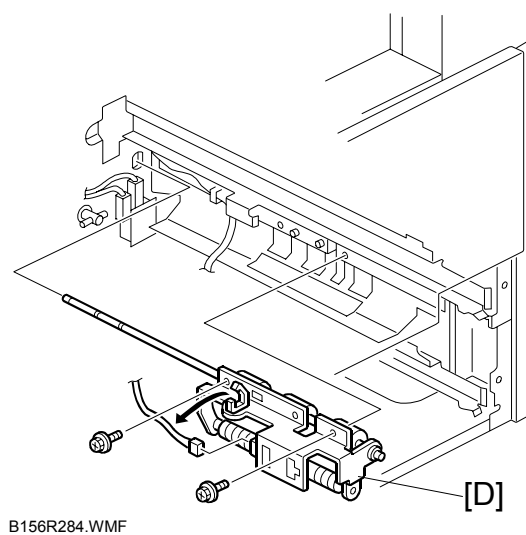
B156R283.WMF

### 3.9.5 PAPER FEED SENSOR 2

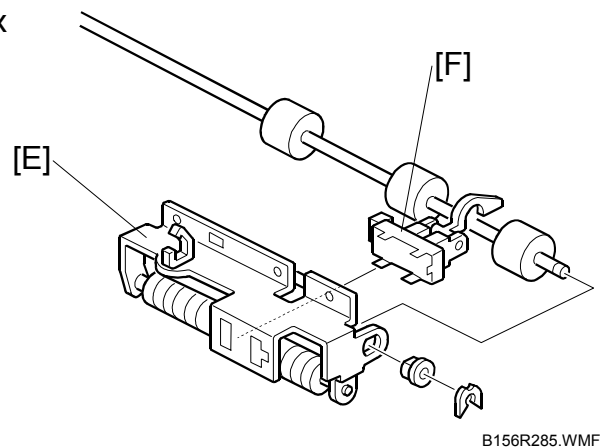
1. Controller box (☛ 3.9.2).
2. Paper trays (☛ 3.9.1)
3. Connector bracket [A] (🔩 x 3)
4. Vertical transport clutch [B] (🔩 x 1)
5. Bushing [C] (🌀 x 1)



6. Roller unit [D] (🔩 x 1, 🔩 x 2)

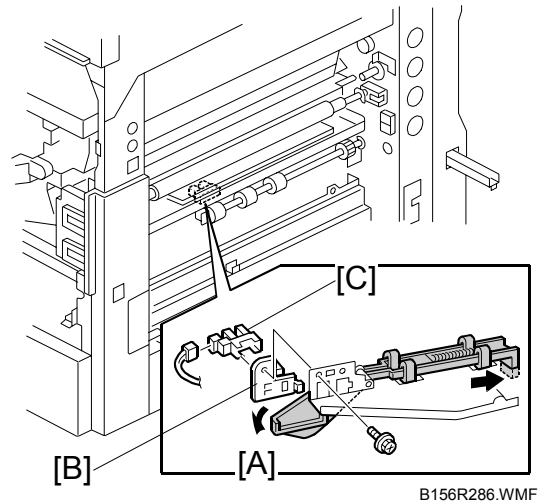


7. Roller bracket [E] (🌀 x 1, Bushing x 1)
8. Paper feed sensor 2 [F]



### 3.9.6 PAPER END SENSOR 1

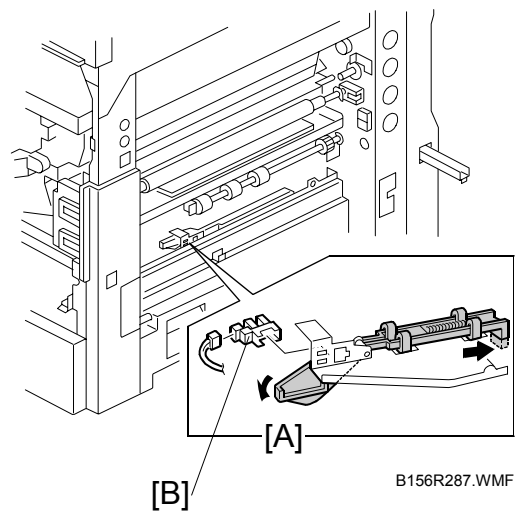
1. Transport stay (☛ 3.9.2)
2. Lower the feeler [A].
3. Sensor bracket [B] (🔩 x 1)
4. Paper end sensor 1 [C] (🔩 x 1)



Replacement  
Adjustment

### 3.9.7 PAPER END SENSOR 2

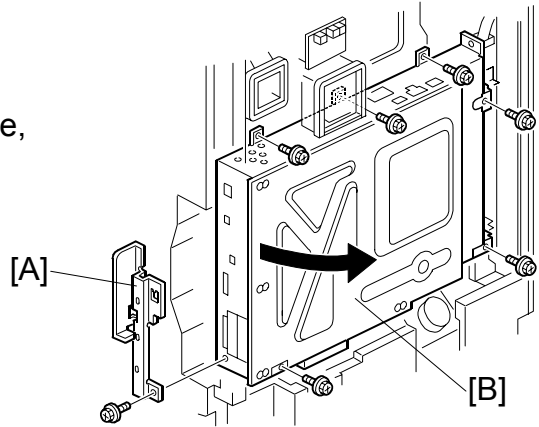
1. Transport stay (☛ 3.9.2)
2. Lower the feeler [A].
3. Paper end sensor 2 [B] (🔩 x 1)



## 3.10 ELECTRICAL COMPONENTS

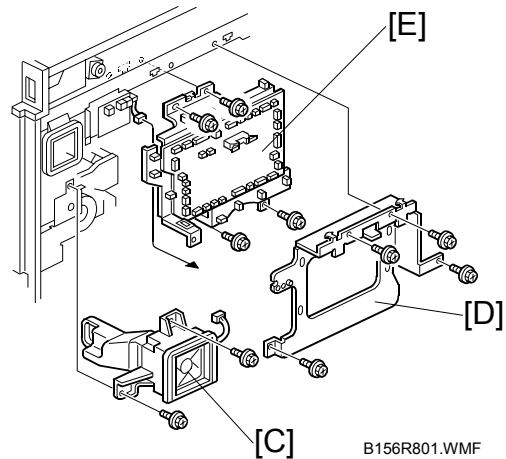
### 3.10.1 EXHAUST FAN AND I/O BOARD

1. Rear cover (☛ 3.4.2)
2. SD card cover [A] (☛ x 1)
3. Move the controller box [B] on its hinge, away from the machine (☛ x 6).



B156R605.WMF

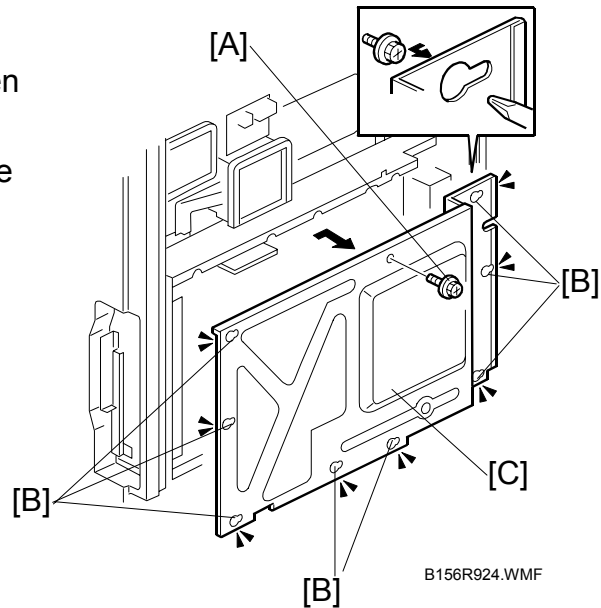
4. Exhaust fan [C] (☛ x 2, ☛ x 1)
5. I/O board cover [D] (☛ x 4)
6. I/O board [E] (☛ x 29, ☛ x 7)



B156R801.WMF

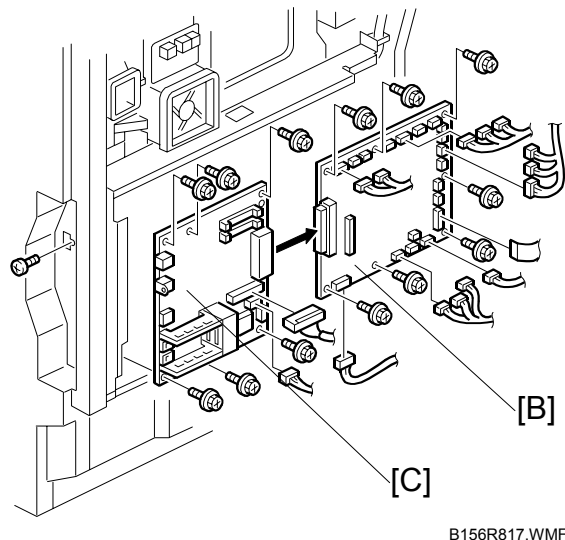
### 3.10.2 BICU BOARD AND CONTROLLER BOARD

1. Rear cover (☞ 3.4.2)
2. Remove the screw [A], and then loosen the eight screws [B].
3. Slide the controller box cover [C] to the right, and then remove it.



Replacement  
Adjustment

4. BICU board [B] (☞ x 14, ☞ x 7)  
**NOTE:** 1) Compare the settings of the dip switches on the old board with the settings on the new board. If they are different, change the settings on the new board to make them identical.  
 2) When replacing the controller board only; leave the 14 connectors connected, remove the seven screws, and disconnect the BICU board from the controller board.

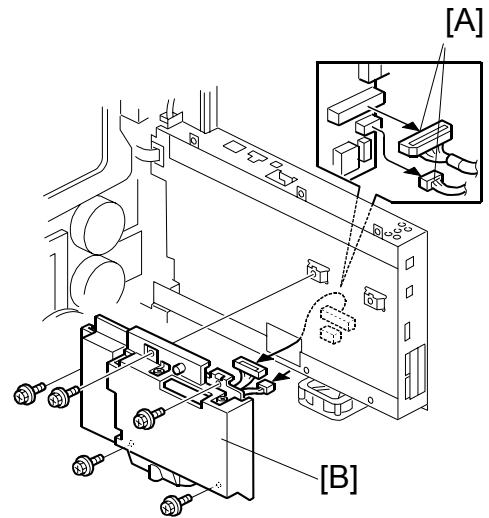


5. Controller board [C] (☞ x 7, ☞ x 2)  
**NOTE:** Remove the NVRAM, DIMMs, and optional boards from the old controller board and install them on the new one.



### 3.10.3 HDD

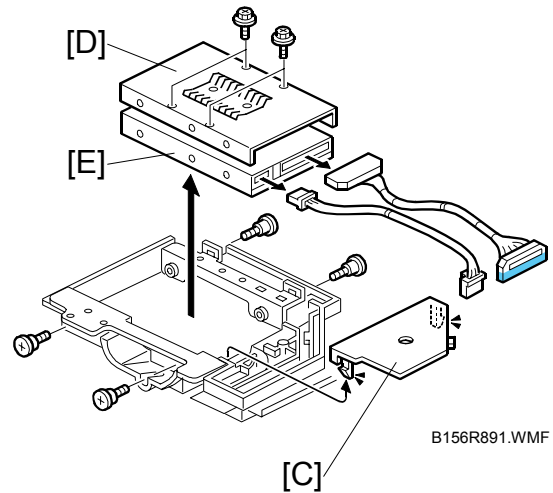
1. Controller box cover (☛ 3.10.2)
2. Disconnect the connectors [A] (☛ x 2).
3. Move the controller box, on its hinge, away from the machine. (☛ 3.10.1)
4. HDD cover [B] (☛ x 5)



B156R823.WMF

5. Harness cover [C]
6. HDD bracket [D] (☛ x 4)
7. HDD [E] (☛ x 4, ☛ x 2)

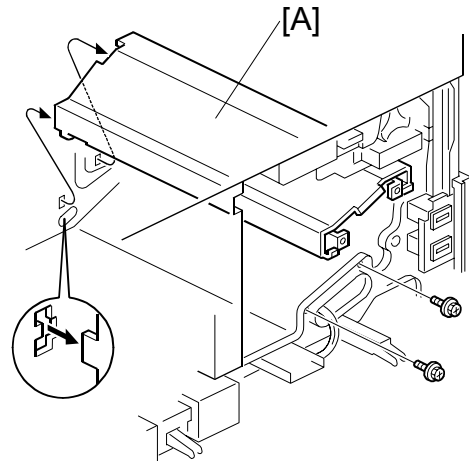
After replacing the hard disk, do SP5-853-1 to download the preset stamp data from the machine firmware to the new hard disk. Then switch the machine off/on.



B156R891.WMF

### 3.10.4 HIGH VOLTAGE SUPPLY BOARD

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



B156R288.WMF

 Replacement  
Adjustment

4. High voltage supply board [B]  
(⚙ x 18, ⚙ x 6)

**NOTE:** When reassembling, check that the connectors are correctly set.

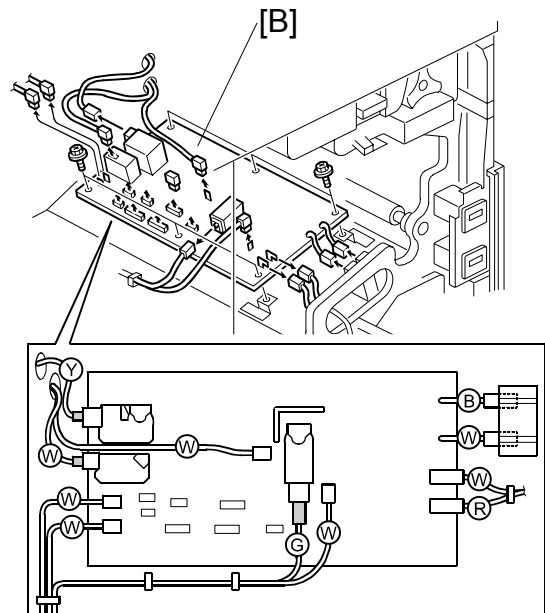
W: White connector

Y: Yellow connector

G: Green connector

B: Blue connector

R: Red connector

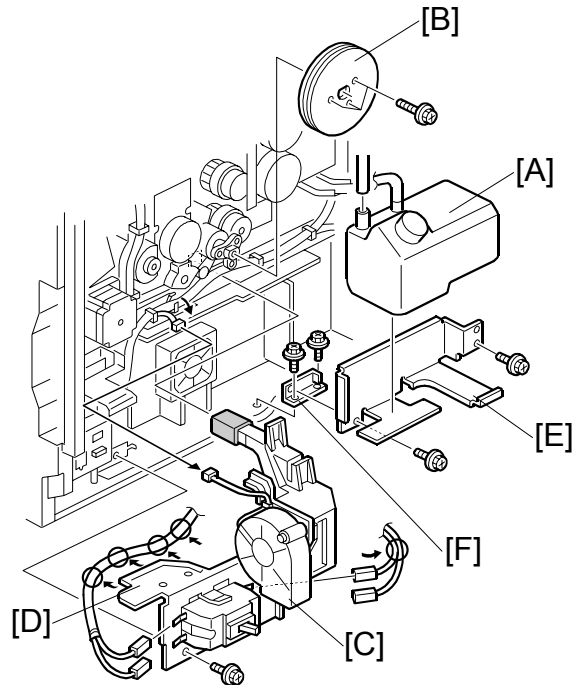


B156R824.WMF

### 3.10.5 POWER SUPPLY UNIT

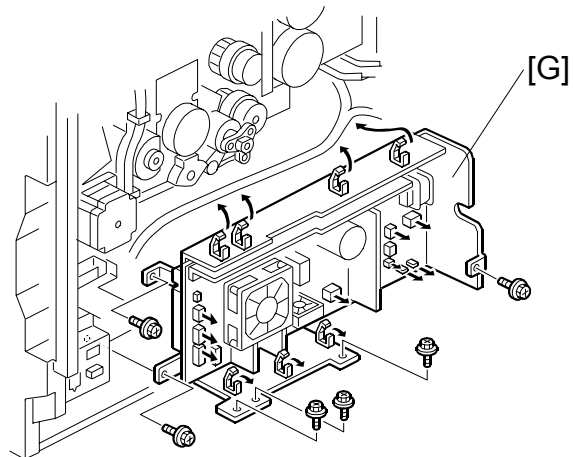
**NOTE:** When you remove the oil pipe from the oil tank, hang the left oil pipe in the notch in the controller box. Then, oil does not fall from the pipe to the floor (see section 1.18: Installation – Anti-Condensation Heater).

1. Move the controller box, on its hinge, away from the machine.  
(☛ 3.10.1).
2. Lower rear cover (☛ 3.4.2)
3. Oil tank [A]
4. Flywheel [B] (⚙ x 3)
5. Duct [C] with bracket [D]  
(☛ x 5, ⚙ x 1)
6. Oil tank holder [E] (⚙ x 2)
7. Bracket [F] (⚙ x 2)



B156R814.WMF

8. Power supply unit [G]  
(☛ x 9, ⚙ x 6)



B156R815.WMF

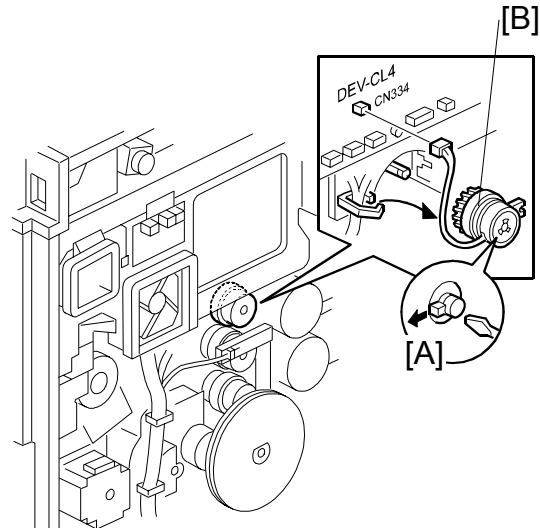
## 3.11 DRIVE UNITS

### 3.11.1 DEVELOPMENT CLUTCHES

#### *K Development Units*

1. Move the controller box, on its hinge, away from the machine (➡ 3.10.1).
2. Unhook the locks [A] and pull out the clutch [B] (🔧 x 1).

**NOTE:** When reassembling, connect the black clutch connector to the CN 334 coupler.



B156R803.WMF

 Replacement  
Adjustment

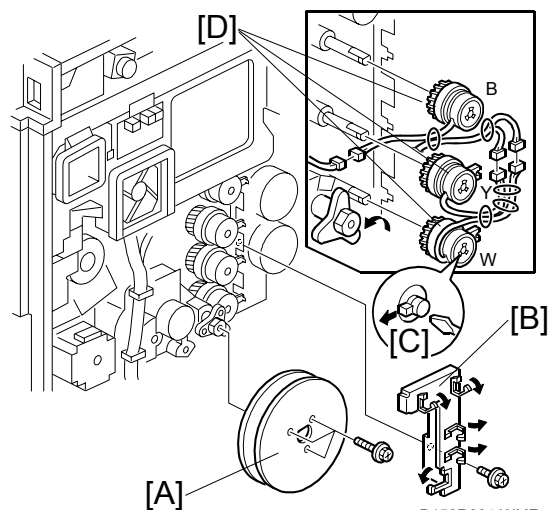
#### *C, Y and M Development Units*

1. Flywheel [A] (🔧 x 3)
2. Clutch harness bracket [B] (🔧 x 1, 🛠 x 4)
3. Unhook the locks [C] and pull out the clutches [D] (🔧 x 1).

**When reassembling, connect the clutches as follows:**

- Cyan clutch connector to the blue coupler
- Yellow clutch connector to the yellow coupler
- Magenta clutch connector to the white coupler.

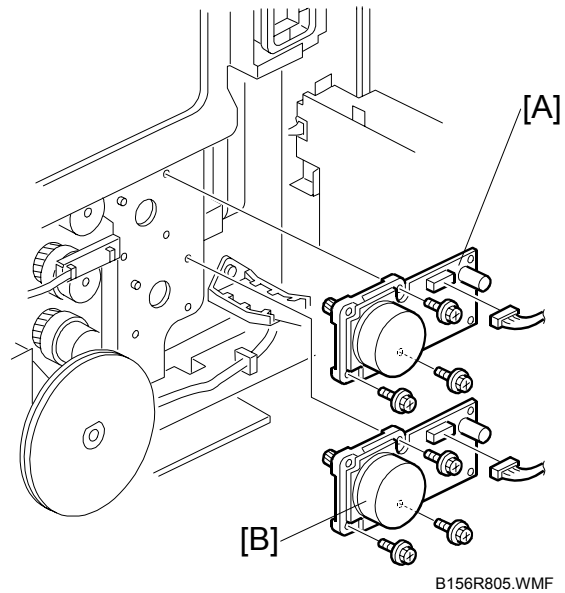
In the diagram B: Blue  
Y: Yellow  
W: White



B156R804.WMF

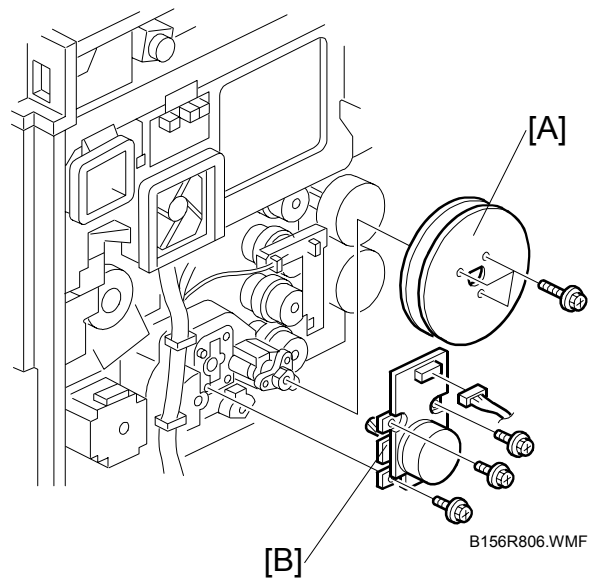
### 3.11.2 DEVELOPMENT MOTORS

1. Move the controller box, on its hinge, away from the machine (➡ 3.10.1).
2. Development motor for black and cyan [A] (⚙ x 1, 🔩 x 3)
3. Development motor for yellow and magenta [B] (⚙ x 1, 🔩 x 3)





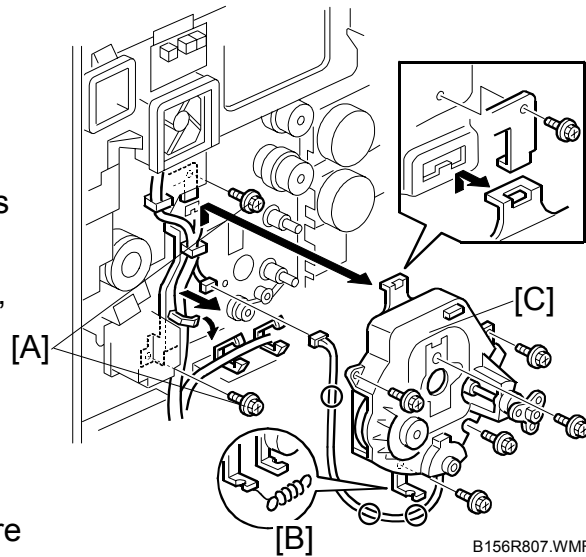
### 3.11.3 MAIN MOTOR

1. Move the controller box, on its hinge, away from the machine (➡ 3.10.1).
2. Flywheel [A] (🔩 x 3)
3. Main motor [B] (⚙ x 1, 🔩 x 3)



### 3.11.4 PCU GEAR BOX


1. Move the controller box on its hinge, away from the machine (☛ 3.10.1).
2. Main motor (☛ 3.11.3)
3. Y and M development unit clutches (☛ 3.11.1)
4. Harness bracket screws [A] (⚙ x 2,  x 2)
5. Tension spring [B]
6. PCU gear box assembly [C]  
( x 1, ⚙ x 5)

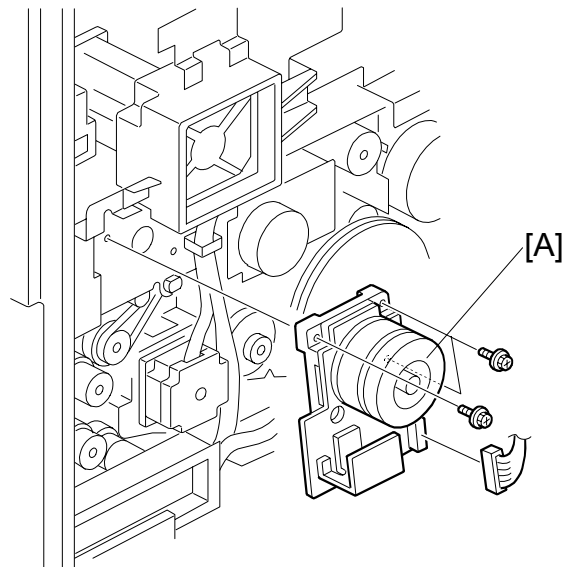


Replacement  
Adjustment

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

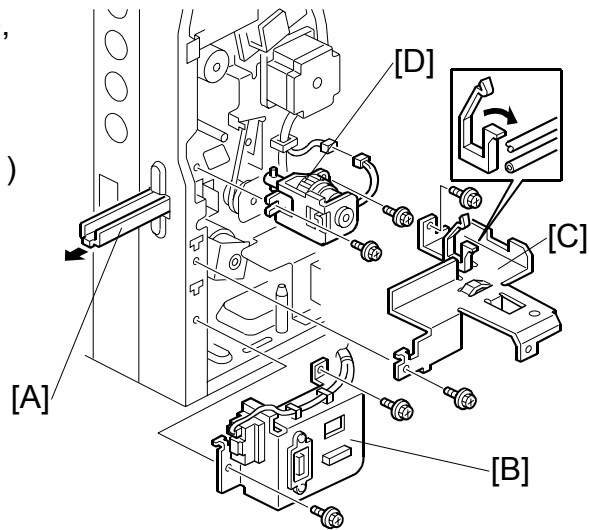
### 3.11.5 FUSING UNIT MOTOR

1. Move the controller box, on its hinge, away from the machine (☛ 3.10.1).
2. Fusing unit motor [A] ( x 1, ⚙ x 3)



### 3.11.6 PAPER FEED CLUTCH 1

1. Move the controller box, on its hinge, away from the machine (☛ 3.10.1).
2. Pull out the handle [A].
3. Connector bracket [B] (⚙ x 2, 📐 x 1)
4. Handle guard [C] (⚙ x 2)
5. Paper feed clutch bracket [D] (⚙ x 1, bushing x 2)

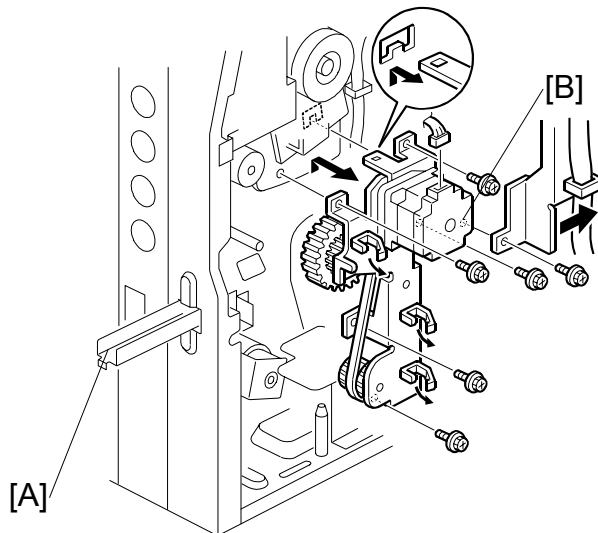


B156R811.WMF

### 3.11.7 PAPER FEED MOTOR

1. Rear cover (☛ 3.4.2)
2. Move the controller box, on its hinge, away from the machine (☛ 3.10.1).
3. Pull out the handle [A].
4. Connector bracket (☛ 3.11.6)
5. Handle guard (☛ 3.11.6)
6. Paper feed motor [B] with gears (📐 x 1, ⚙ x 6)

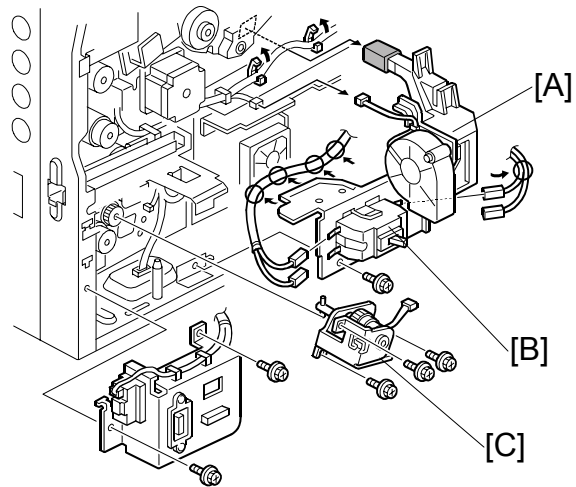
**NOTE:** When reassembling, make sure the vertical transport clutch is in position.



B156R810.WMF

### 3.11.8 PAPER FEED CLUTCH 2

1. Move the controller box, on its hinge, away from the machine (☛ 3.10.1).
2. Flywheel (☛ 3.10.5)
3. Duct [A] with bracket [B]  
(☛ x 1, ⚙ x 1)
4. Pull out the lower tray.
5. Connector bracket (☛ 3.11.6)
6. Paper feed clutch assembly [C]  
(☛ x 1, ⚙ x 3)

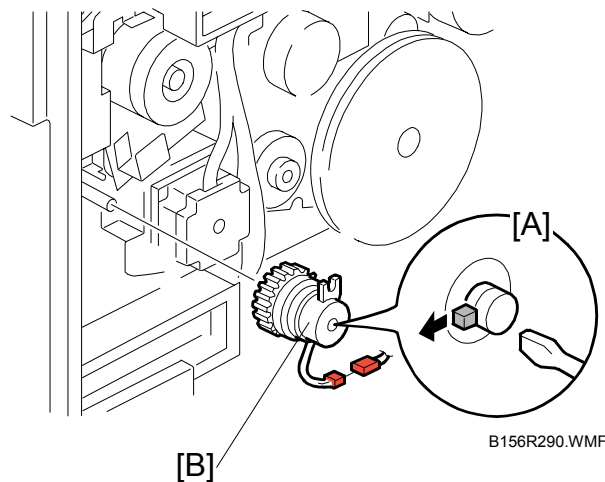


B156R812.WMF

Replacement  
Adjustment

### 3.11.9 REGISTRATION CLUTCH

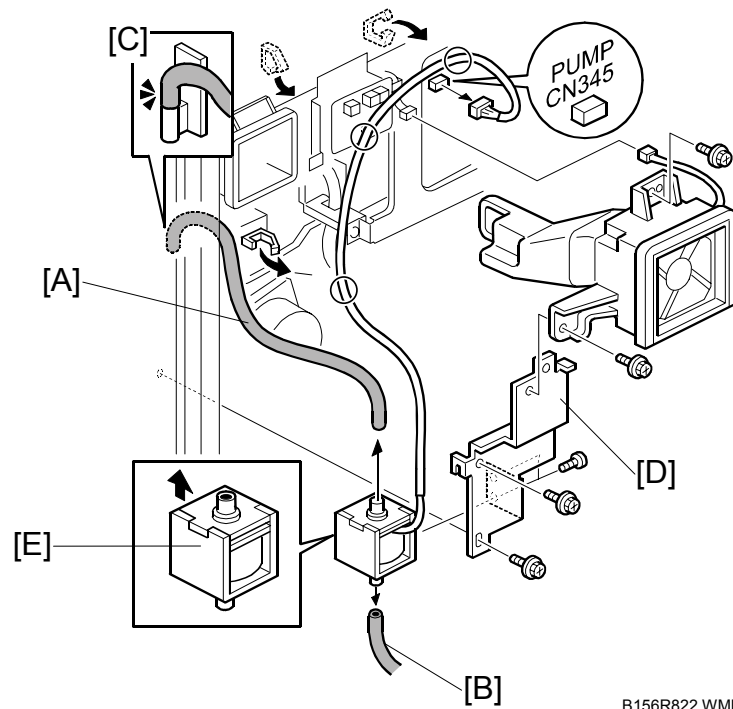
1. Move the controller box, on its hinge, away from the machine (☛ 3.10.1).
2. Unhook the lock [A] and pull the clutch out [B] (☛ x 1).



B156R290.WMF



### 3.11.10 OIL PUMP



B156R822.WMF

1. Move the controller box, on it hinge, away from the machine (➡ 3.10.1)
2. Pipes [A, B]  
**NOTE:** 1) Keep a piece of waste cloth at hand. Oil may drip from the pipe.  
 2) When reinstalling the pump, make sure to attach the upper tube correctly to the oil exit [C]. If not, oil may leak inside the machine.
3. I/O board cover (➡ 3.10.1)
4. Oil pump bracket [D] (⚙ x 3, 📐 x 1)
5. Oil pump [E] (⚙ x 2)  
 Install the correct way up. There are two tabs at the top of the pump.

## 3.12 COPY ADJUSTMENT

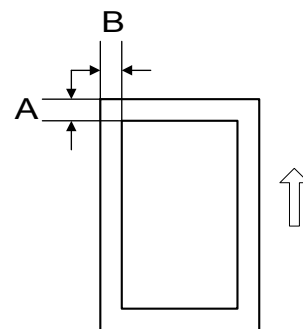
### 3.12.1 PRINTING

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

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

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

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



B156R291.WMF

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

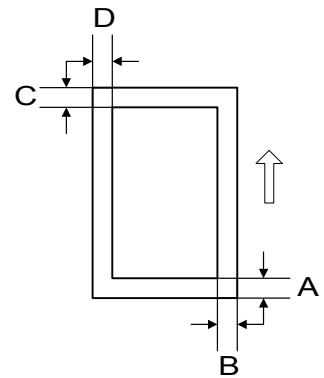
 Replacement  
 Adjustment

**Blank Margin**

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

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

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



B156R292.WMF

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

**Main Scan Magnification**

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

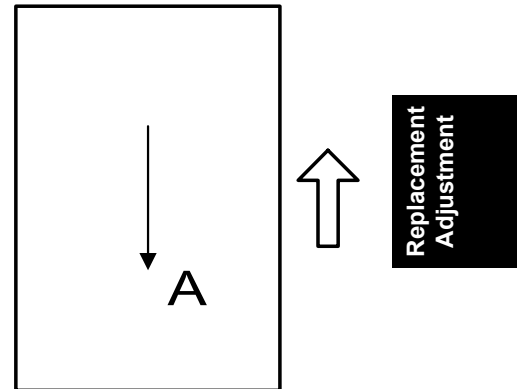
### 3.12.2 SCANNING

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

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

#### ***Scanner Sub-Scan Magnification***

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



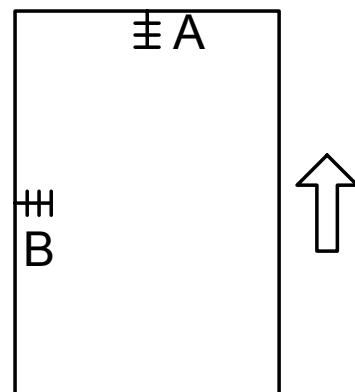
A: Sub-scan magnification

B156R293.WMF

#### ***Scanner Leading Edge and Side-to-Side Registration***

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

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



B156R294.WMF

**Main Scan Dot Position Correction**

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

1. Enter the Copy SP mode and open SP4-932.
2. Check that each value corresponds to the factory-set value.
3. Touch the *COPY Window* key and copy the C-4 chart in the full-color photo mode.

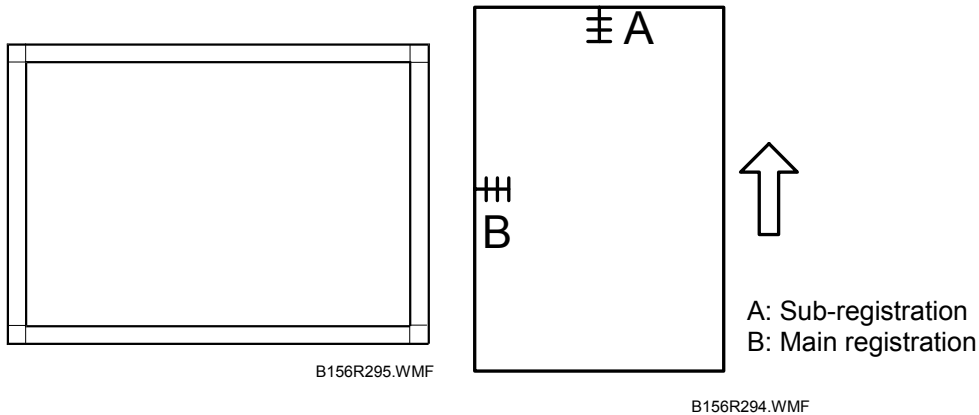
**NOTE:** Be sure to copy in the photo mode. This is because color displacement cannot be checked properly in text mode.

4. Check the yellow and cyan vertical lines. (Use a Magnification Scope to do this.) If they exactly overwrite the black line at the edges of the copy, exit the SP mode to end the adjustment. If the yellow and cyan lines significantly extend beyond the black line, proceed to the next step.
5. Press the *SP Mode* to return to the SP mode. Adjust the SP settings until the output is acceptable.

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

### 3.12.3 ARDF IMAGE ADJUSTMENT

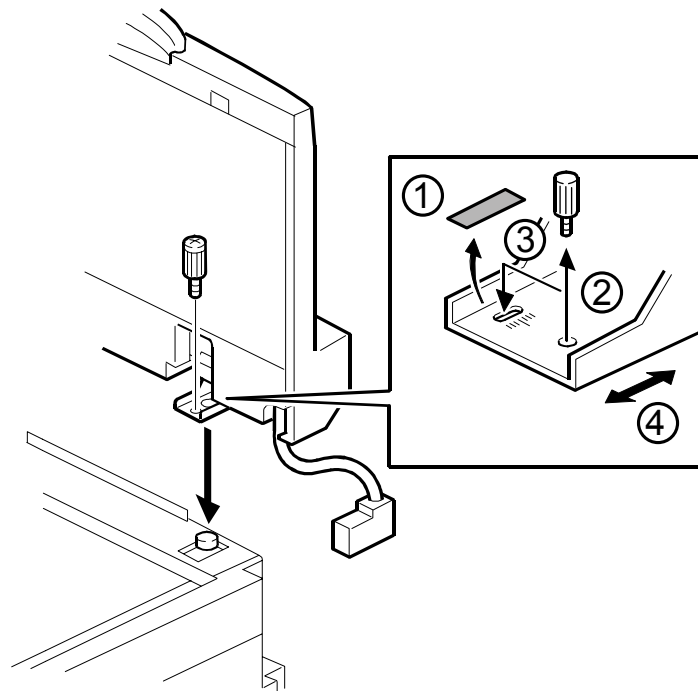
#### *ARDF Side-to-Side and Leading Edge Registration*


 Replacement  
Adjustment

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

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

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

**ARDF Skew Adjustment**

B156R297.WMF

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

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

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

## **3.13 COLOR ADJUSTMENT**

### **3.13.1 AUTO COLOR CALIBRATION (ACC)**

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

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

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



### 3.13.2 PRINTER GAMMA CORRECTION

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

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

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

#### Copy Mode

##### KCMY Color Balance Adjustment

Adjust only the "Offset" values.

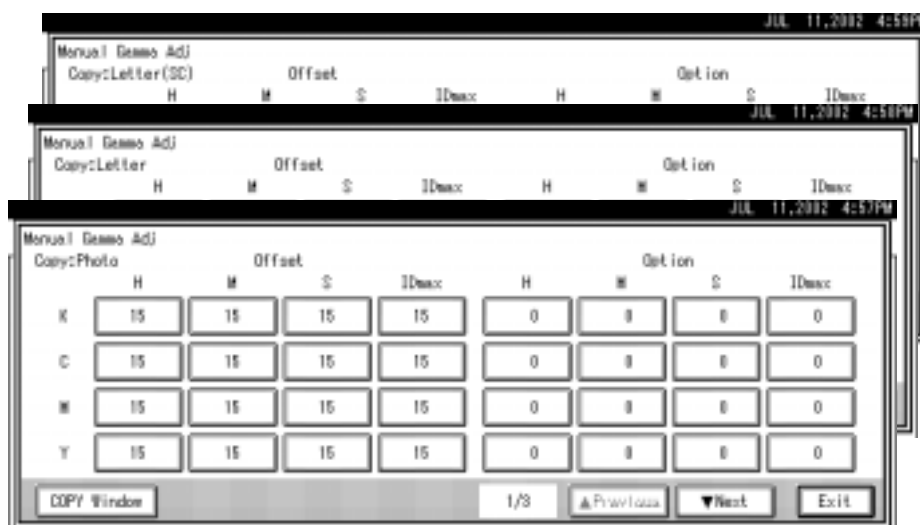
**NOTE:** Never change the "Option" values (default values are 0).

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

There are four adjustable modes:

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

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



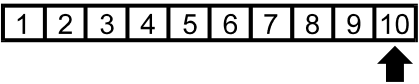
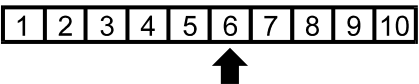
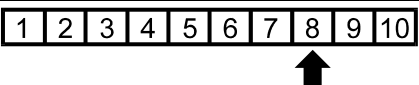
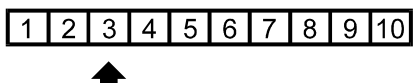
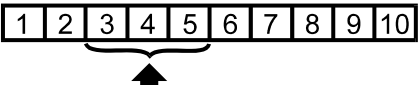
B502R500.WMF

***Adjustment Procedure***

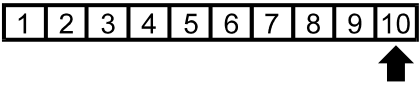
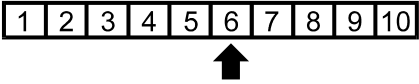
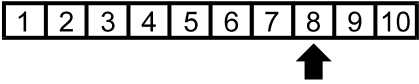
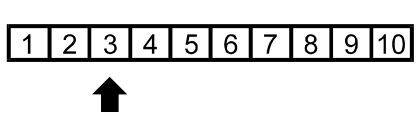
1. Copy the C-4 chart in mode that you are going to adjust.
2. Enter the SP mode.
3. Select "Copy SP".
4. Enter SP4-918 and select the screen that you are going to adjust.
5. Adjust the offset values until the copy quality conforms to the standard (☛ the tables below).

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

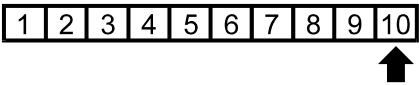
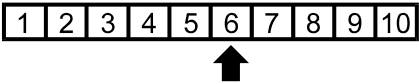
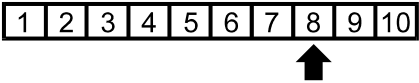
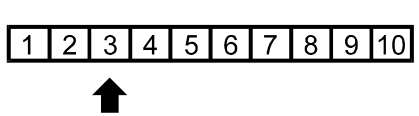
**- Photo Mode, Full Colour -**

Step	Item to Adjust	Level on the C-4 chart	Adjustment Standard
1	ID max: (K, C, M, and Y)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
4	Highlight (Low ID) (K, C, M, and Y)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter than that of level 3 on the C-4 chart.
B05 1r93 4.w mf	K Highlight (Low ID) (C,M, and Y) <on the full color copy>		Adjust the offset value so that the color balance of black scale levels 3 through 5 in the copy is seen as gray (no C, M, or Y should be visible). If the black scale contains C, M, or Y, redo step 1 to 4.

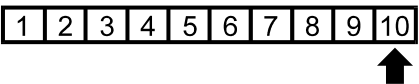
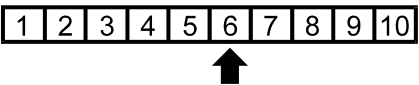
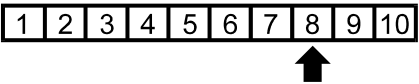
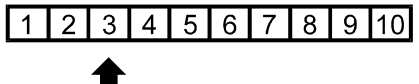
**- Photo Mode, Single Colour -**

Step	Item to Adjust	Level on the C-4 chart	Adjustment Standard
1	ID max: (K)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
B05 1r93 3.w mf	Highlight (Low ID) (K)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter than that of level 3 on the C-4 chart.

**- Text (Letter) Mode, Full Colour -**

Step	Item to Adjust	Level on the C-4 chart (K)	Adjustment Standard
1	ID max: (K, C, M, and Y)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K, C, M, and Y)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
B05 1r93 3.w mf	Highlight (Low ID) (K, C, M, and Y)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter than that of level 3 on the C-4 chart.

**- Text (Letter) Mode, Single Colour -**

Step	Item to Adjust	Level on the C-4 chart (K)	Adjustment Standard
1	ID max: (K)		Adjust the offset value so that the density of level 10 matches that of level 10 on the C-4 chart.
2	Middle (Middle ID) (K)		Adjust the offset value so that the density of level 6 matches that of level 6 on the C-4 chart.
3	Shadow (High ID) (K)		Adjust the offset value so that the density of level 8 matches that of level 8 on the C-4 chart.
B05 1r93 3.w mf	Highlight (Low ID) (K)		Adjust the offset value so that dirty background is not visible on the copy and the density of level 3 is slightly lighter than that of level 3 on the C-4 chart.

 Replacement  
Adjustment

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

***Printer Mode***

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

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

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

***Adjustment Procedure***

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

***Adjustment Reference For Gamma Correction***

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

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

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

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

Replacement  
Adjustment

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

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

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

### 3.14 SCANNER WHITE LEVEL ADJUSTMENT

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

#### ***White Level Check***

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

#### ***White Level Adjustment***

1. Perform as instructed in “White Level Check”.
2. Activate the SP mode.
3. Select SP5-990-002 and print out the SP mode data list.
4. Select SP4-902-002 (G\_DATA1) and read the value.
5. Compare the value with the values in table 1 (when Hammermill Copy Plus is used) or 2 (when Ricoh Copy paper for Aficio Color is used).
6. Increase or decrease the values in SP4-885-1, 886-1, and 887-1 if necessary.
7. Check the white level as instructed in “White Level Check”.

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

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

SP4-902-2 (G_DATA1)	SP4-885-001 (Reference Adjustment: R)	SP4-886-001 (Reference Adjustment: G)	SP4-887-001 (Reference Adjustment: B)	Necessary adjustment
255	+17	+13	+17	Increase the values in SP4- 885-1, 886-1, and 887-1.
254	+15	+12	+16	
253	+14	+11	+15	
252	+13	+10	+13	
251	+12	+9	+12	
250	+10	+8	+11	
249	+9	+7	+9	
248	+8	+6	+8	
247 : : 237	±0	±0	±0	No adjustment is required.
236	-8	-6	-8	Decrease the values in SP4- 885-1, 886-1, and 887-1.
235	-10	-7	-10	
234	-11	-8	-11	
233	-13	-10	-13	
232	-14	-11	-14	
231	-15	-12	-16	
230	-17	-13	-17	
229	-18	-14	-19	
228	-20	-15	-20	
227	-21	-16	-22	
226	-23	-17	-23	
225	-24	-19	-25	
224	-26	-20	-27	
223	-28	-21	-28	
222	-29	-22	-30	
221	-31	-23	-31	
220	-32	-24	-33	
219	-34	-26	-35	
218	-35	-27	-36	
217	-37	-28	-38	
216	-39	-29	-40	
215	-40	-30	-41	

Replacement  
Adjustment

Example 1: When the value in SP4-902-2 is “255”, add 17 to the value in SP4-885-001, 13 to the value in SP4-886-001, and 17 to the value in SP4-887-001.

Example 2: When the value in SP4-902-2 is “247”, do not change any values in SP4-885-001, SP4-886-001, and SP4-887-001.

Example 3: When the value in SP4-902-2 is “236”, subtract 8 from the value in SP4-885-001, 6 from the value in SP4-886-001, and 8 from the value in SP4-887-001.



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

SP4-902-2 (G_DATA1)	SP4-885-001 (Reference Adjustment: R)	SP4-886-001 (Reference Adjustment: G)	SP4-887-001 (Reference Adjustment: B)	Remarks
255	+23	+18	+23	Increase the values in SP4- 885-1, 886-1, and 887-1.
254	+22	+17	+21	
253	+21	+16	+20	
252	+20	+15	+19	
251	+19	+14	+18	
250	+17	+13	+17	
249	+16	+12	+15	
248	+15	+11	+14	
247	+13	+10	+13	
246	+12	+9	+12	
245	+11	+8	+11	
244	+10	+7	+9	
243	+8	+6	+8	
242 : : 232	±0	±0	±0	No adjustment is required.
231	-9	-7	-8	Decrease the values in SP4- 885-1, 886-1, and 887-1.
230	-10	-8	-10	
229	-12	-9	-11	
228	-13	-10	-13	
227	-15	-11	-14	
226	-16	-12	-16	
225	-18	-13	-17	
224	-19	-14	-19	
223	-21	-16	-20	
222	-22	-17	-22	
221	-24	-18	-23	
220	-25	-19	-25	
219	-27	-20	-26	
218	-29	-22	-28	
217	-30	-23	-30	
216	-32	-24	-31	
215	-34	-25	-33	

Example 1: When the value in SP4-902-2 is “255”, add 23 to the value in SP4-885-001, 18 to the value in SP4-886-001, and 23 to the value in SP4-887-001.


Example 2: When the value in SP4-902-2 is “242”, do not change any values in SP4-885-001, SP4-886-001, and SP4-887-001.

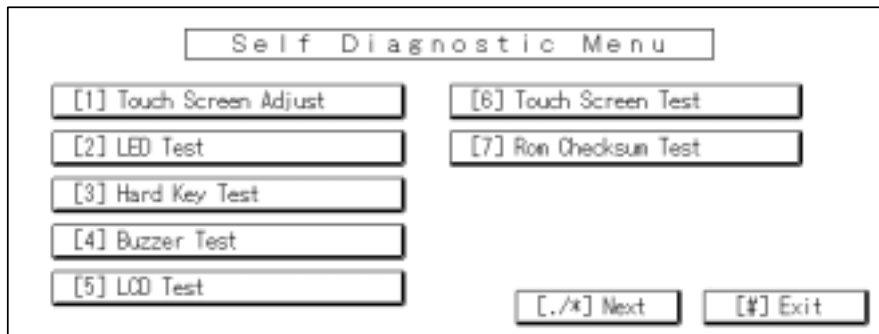
Example 3: When the value in SP4-902-2 is “231”, subtract 9 from the value in SP4-885-001, 7 from the value in SP4-886-001, and 8 from the value in SP4-887-001.

### 3.15 TOUCH SCREEN CALIBRATION

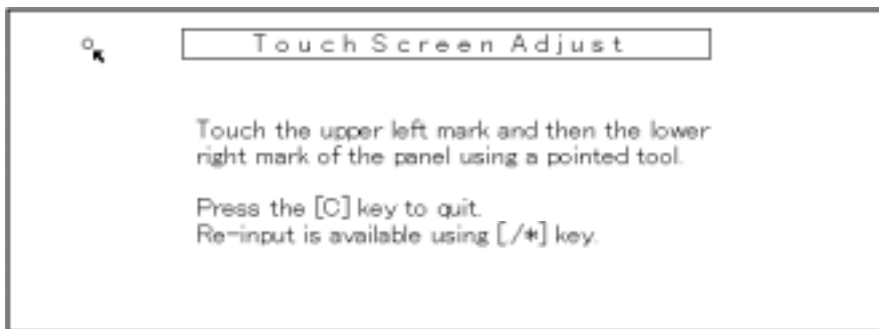
After clearing the memory, or if the touch screen detection function is not working correctly, follow this procedure to calibrate the touch screen.

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



1. Press , press **1 9 9 3**, and then press **C/Ⓢ** 5 times to open the Self-Diagnostics menu.



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2. On the touch screen press "Touch Screen Adjust" (or press **1**).
3. Use a pointed (not sharp!) tool to press the upper left mark .
4. Press the lower right mark  after it appears.
5. Touch a few spots on the touch screen to confirm that the marker (+) appears exactly where the screen is touched.  
If the + mark does not appear where the screen is touched, press Cancel and repeat from Step 2.
6. When you are finished, press [#] OK on the screen (or press **Ⓢ**).
7. Touch [#] Exit on the screen to close the Self-Diagnostic menu and save the calibration settings.

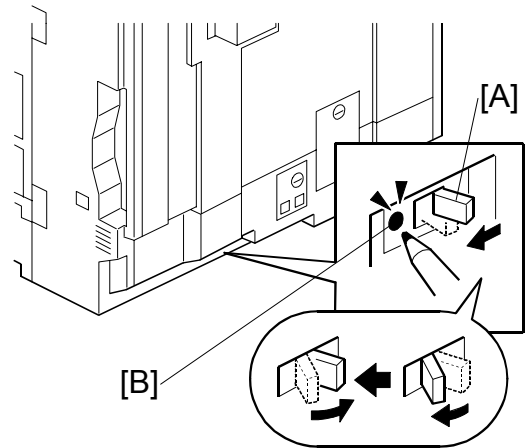
## 3.16 CHECKING THE BREAKER SWITCH

### 3.16.1 BREAKER

#### CAUTION

**Before you test the breaker, always make sure that the main power switch is off. Do not try to test the breaker switch with the copier power turned on.**

1. Make sure that the main power is turned off.
2. Make sure that the power cord of the copier is connected to the power source.
3. Check if the “—” mark on the breaker switch [A] is shown. If “—” is shown, the breaker switch is turned on.
4. Push the test button [B] of the breaker. This turns off the breaker switch (it goes from the right to the center position).



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#### IMPORTANT

If the breaker switch does not move to the center position:

- Make sure that the power cord of the copier is securely connected to the power supply.
  - Push the test button again. If the breaker switch does not move to the center position, replace the breaker switch.
5. Check that the breaker switch is turned off and the “O” mark on the switch is shown.
  6. Turn the breaker switch to the left position first. Then turn it to the “On” position (right position).

## 4. TROUBLESHOOTING

### 4.1 SERVICE CALL

#### 4.1.1 SERVICE CALL CONDITIONS

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

Trouble-  
shooting

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

#### When a Level "D" SC code occurs

A screen opens on the operation panel to tell the user that 1) an error occurred, 2) the job that the machine does at that time will be erased, and 3) the machine will reboot automatically after approximately 30 seconds.

The user can: 1) stop until the machine reboots automatically after a short time, or 2) touch "Reset" on the screen to reset the machine immediately, and go back to the copy screen.

If the operator does not touch "Reset", the next message tells the user that 1) the machine reset automatically and 2) the previous job was lost and must be done again. After the user reads the message, the user touches "Confirm" on the screen. The next screen shows the number and title of the SC code, and stops until the user turns the machine off and on.

If the operator touches "Reset" to bypass the 30-second interval for the machine to reboot, the machine reboots immediately and the operation panel displays the copy screen.

#### Important

- Do not try to use the operation panel during an automatic reboot.
- If the Remote Service System is used, the SC code is sent immediately to the Service Center

**4.1.2 SC TABLE**

<b>No. Definition</b>		<b>Symptom</b>	<b>Possible Cause</b>
101	D	Exposure lamp error	
		The standard white level is not properly detected when scanning the shading plate. (The shading data peak does not reach the specified threshold.)	<ul style="list-style-type: none"> <li>• Exposure lamp defective</li> <li>• Lamp stabilizer defective</li> <li>• Exposure lamp connector defective</li> <li>• Standard white plate dirty</li> <li>• Scanner mirror or scanner lens out of position or dirty</li> <li>• SBU defective</li> </ul>
120	D	Scanner home position error 1	
		<ul style="list-style-type: none"> <li>• The scanner home position sensor does not detect the "off" condition during scanning.</li> <li>• The scanner home position sensor does not detect the "off" condition during initialization.</li> </ul>	<ul style="list-style-type: none"> <li>• Scanner I/O board or SBU defective</li> <li>• Scanner motor defective</li> <li>• Harness between scanner I/O board and scanner motor disconnected</li> <li>• Scanner HP sensor defective</li> <li>• Harness between SBU and HP sensor disconnected</li> <li>• Scanner wire, timing belt, pulley, or carriage defective</li> </ul>
121	D	Scanner home position error 2	
		<ul style="list-style-type: none"> <li>• The scanner home position sensor does not detect the "on" condition during initialization.</li> <li>• The scanner home position sensor does not detect the "on" condition when starting to scan.</li> <li>• The scanner home position sensor does not detect the "on" condition when the scanner returns.</li> </ul>	<ul style="list-style-type: none"> <li>• Scanner I/O board or SBU defective</li> <li>• Scanner motor defective</li> <li>• Harness between scanner I/O board and scanner motor disconnected</li> <li>• Scanner HP sensor defective</li> <li>• Harness between SBU and HP sensor disconnected</li> <li>• Scanner wire, timing belt, pulley, or carriage defective</li> </ul>
142	D	White level detection error	
		The white level cannot be adjusted within the target during auto gain control.	<ul style="list-style-type: none"> <li>• Dirty exposure glass or optics section</li> <li>• SBU board defective</li> <li>• BICU board defective</li> <li>• Exposure lamp defective</li> <li>• Lamp stabilizer defective</li> </ul>
144	D	SBU communication error	
		The operation software version for the SBU does not match the installed SBU.	<ul style="list-style-type: none"> <li>• Update the BICU software.</li> <li>• Replace the SBU.</li> </ul>

No. Definition		Symptom	Possible Cause
161	D	IPU error	
		The self-diagnostic error for the IPU occurs immediately after the main power is turned on.	<ul style="list-style-type: none"> <li>• IPU board defective</li> <li>• BICU board defective (defective connection between ASICs)</li> </ul>
195	D	Serial number mismatch	
		Serial number stored in the memory is not correct. <b>NOTE:</b> Check the serial number with SP5-811-002. If the stored serial number is incorrect, contact your product specialist for details of how to solve the problem.	<ul style="list-style-type: none"> <li>• NVRAM defective</li> <li>• BICU replaced without original NVRAM</li> </ul>
199	D	PSU fan error	
		The PSU fan low signal is detected for 2 seconds when the PSU fan controller sends the high signal to the PSU fan.	<ul style="list-style-type: none"> <li>• PSU fan defective</li> <li>• Disconnected or damaged harness</li> </ul>
201	D	Polygon motor error	
		<ul style="list-style-type: none"> <li>• The polygon motor starts operating or changes its speed. → The lock signal is not detected within 5 seconds.</li> <li>• The polygon motor stops operating. → The lock signal is still detected for 3 seconds.</li> <li>• The polygon motor is operating. → The lock signal remains undetected for 0.5 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective polygon motor</li> <li>• Defective harness</li> </ul>
220	D	1st beam synchronization error	
		A polygon motor lock is detected; the LD door is closed; and the LD remains on. → The LD error (1st beam synchronization error) continues for 0.5 seconds.	<ul style="list-style-type: none"> <li>• Disconnected synchronization detector board</li> <li>• Defective LD unit</li> <li>• Defective BICU</li> </ul>
221	D	2nd beam synchronization error	
		A polygon motor lock is detected; the LD door is closed; and the LD remains on. → The LD error (2nd beam synchronization error) continues for 0.5 seconds.	<ul style="list-style-type: none"> <li>• Disconnected synchronization detector board</li> <li>• Defective LD unit</li> <li>• Defective BICU</li> </ul>
230	D	FGATE on error	
		A transfer belt mark is detected. → No FGATE on signal is detected within 1 second.	<ul style="list-style-type: none"> <li>• Defective BICU</li> </ul>
231	D	FGATE off error	
		An FGATE assert signal is detected. → The FGATE negate signal is not detected within 30 seconds.	<ul style="list-style-type: none"> <li>• Defective BICU</li> </ul>

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No. Definition		Symptom	Possible Cause
241	D	LD error	
		An LD error continues for 0.5 seconds. (After an LD error is detected, an LD error release is written to the GAVD chip during monitoring.)	<ul style="list-style-type: none"> <li>Defective LD unit</li> </ul>
280	D	Image transfer belt mark detection error	
		<ul style="list-style-type: none"> <li>An imaging process starts. → No belt mark for the first color is detected within 5 seconds.</li> <li>A color imaging process starts. → A belt mark other than the one for the first color is not detected within 8 seconds after a former belt mark has been detected.</li> </ul>	<ul style="list-style-type: none"> <li>Defective BICU</li> <li>Poor electrical connection between sensor and BICU</li> </ul>
282	D	GAVD communication error	
		Data is transferred. → The status register in the BICU does not get to the ready condition within 10 milliseconds.	<ul style="list-style-type: none"> <li>Defective BICU</li> </ul>
300	D	Charge corona unit electrical leak	
		The supply to the charge corona unit is continuously output, and the unit is operating at the minimum PWM duty value. → 1 Volt (or more) returns for 300 milliseconds.	<ul style="list-style-type: none"> <li>Short circuit in the charge corona unit</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>
302	D	Charge grid electrical leak	
		The returning voltage N from the OPC unit is detected for 60 ms. $N \geq 1/2$ output value	<ul style="list-style-type: none"> <li>Defective PCU installation (OPC belt)</li> <li>Short circuit in the charge grid</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>
305	D	Charge corona unit cleaner error	
		<ul style="list-style-type: none"> <li>Cleaning starts. → The lock signal is not detected within 30 seconds.</li> <li>Cleaning starts. → The cleaner starts to turn. → The lock signal is detected within 6 seconds.</li> <li>The lock signal is detected while the unit is moving away from the home position. → The next lock signal is detected within 6 seconds after the unit has turned toward the home position.</li> </ul>	<ul style="list-style-type: none"> <li>Defective PCU installation (OPC belt)</li> <li>Defective cleaner</li> <li>Incorrect charge corona unit installation</li> <li>Toner fallen into the cleaner drive mechanism</li> </ul>
350	D	Development short circuit error	
		A development process starts. → The returning voltage stays at 1V or less within 0.48 seconds.	<ul style="list-style-type: none"> <li>Short circuit in the development unit</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>



No. Definition		Symptom	Possible Cause
352	D	Development motor 1 error	
		<ul style="list-style-type: none"> <li>Development motor 1 changes its speed from half to normal.               <ol style="list-style-type: none"> <li>Motor 1 does not detect a 0.3-second lock signal within 0.9 seconds.</li> <li>Motor 1 does not detect the lock signal for 0.3 seconds after it detected a 0.3-second lock signal before.</li> </ol> </li> <li>The development motor starts               <ol style="list-style-type: none"> <li>Motor 1 does not detect a 1-second lock signal within 3 seconds.</li> <li>Motor 1 does not detect the lock signal for 0.3 seconds after it detected a 1-second lock signal before.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Defective development motor (Y &amp; M)</li> <li>Too much load on the development unit (Y &amp; M)</li> <li>Defective harness connection</li> </ul>
353	D	Development motor 2 error	
		<ul style="list-style-type: none"> <li>Development motor 2 changes its speed from half to normal.               <ol style="list-style-type: none"> <li>Motor 2 does not detect a 0.3-second lock signal within 0.9 seconds.</li> <li>Motor 2 does not detect the lock signal for 0.3 seconds after it detected a 0.3-second lock signal before.</li> </ol> </li> <li>The development motor starts               <ol style="list-style-type: none"> <li>Motor 2 does not detect a 1-second lock signal within 3 seconds.</li> <li>Motor 2 does not detect the lock signal for 0.3 seconds after it detected a 1-second lock signal before.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Defective development motor (K &amp; C)</li> <li>Too much load on the development unit (K &amp; C)</li> <li>Defective harness connection</li> </ul>
401	D	1st transfer (image transfer) circuit open	
		The returning voltage N from the image transfer unit is detected for 60 ms. N ≥ 1/2 output value	<ul style="list-style-type: none"> <li>Open circuit in the image transfer belt</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>
410	D	2nd transfer (paper transfer) electric leakage (+)	
		Paper transfer starts. → The positive (+) output is at the minimum PWM duty value. → The returning voltage does not reach 4.29 V or less for 60 milliseconds.	<ul style="list-style-type: none"> <li>Short circuit in the paper transfer unit</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>
411	D	2nd transfer (paper transfer) electric leakage (–)	
		Paper transfer starts. → The negative (–) output is at the minimum PWM duty value. → The returning voltage stays at 4.75 V or more for 60 milliseconds.	<ul style="list-style-type: none"> <li>Short circuit in the paper transfer unit</li> <li>Defective high voltage supply board</li> <li>Defective harness (BICU - high voltage supply board)</li> </ul>



No. Definition		Symptom	Possible Cause
412	D	2nd transfer (paper transfer) disconnection (+)	
		The returning voltage N from the paper transfer unit is detected for 180 ms. $N \leq 1/2$ output value	<ul style="list-style-type: none"> <li>• Right cover not closed</li> <li>• Defective transfer roller contact mechanism</li> <li>• Defective high voltage supply board</li> <li>• Defective harness (BICU - high voltage supply board)</li> </ul>
420	D	Discharge error (fusing bias)	
		The returning voltage N from the fusing unit is detected for 60 ms. $N \geq 1/2$ output value	<ul style="list-style-type: none"> <li>• Fusing bias short circuit</li> <li>• Scratched fusing belt</li> <li>• Defective high voltage supply board</li> <li>• Defective harness (BICU - high voltage supply board)</li> </ul>
421		Discharge plate error	
		The returning voltage N from the discharge unit is detected for 60 ms. $N \geq 1/2$ output value	<ul style="list-style-type: none"> <li>• Short circuit in the discharge plate</li> <li>• Defective high voltage supply board</li> <li>• Defective harness (BICU - high voltage supply board)</li> </ul>
430	D	Transfer belt cleaning error	
		The returning voltage N from the discharge unit is detected for 480 ms. $N \leq 1/2$ output value	<ul style="list-style-type: none"> <li>• Short circuit in the transfer belt cleaning unit</li> <li>• Defective high voltage supply board</li> <li>• Defective harness (BICU - high voltage supply board)</li> </ul>
440	D	Main motor error	
		<ul style="list-style-type: none"> <li>• The main motor starts. → The lock signal does not continue for 0.1 second within 1 second.</li> <li>• The main motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is not detected for 0.1 second.</li> <li>• The main motor changes its speed. → The lock signal does not continue for 0.1 second within 1 second.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective main motor</li> <li>• Too much load of the main motor drive</li> </ul>
460	D	Temperature sensor error	
		The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds.	<ul style="list-style-type: none"> <li>• Defective temp./ humidity sensor</li> <li>• Defective circuit</li> <li>• Defective connector</li> </ul>
461	D	Humidity sensor error	
		The output is 4.5 V (or higher) or 0.3 V (or lower) for 12 seconds.	<ul style="list-style-type: none"> <li>• Defective temp./ humidity sensor</li> <li>• Defective circuit</li> <li>• Defective connector</li> </ul>
480	D	ID sensor error	
		The ID sensor is being calibrated (process control, step 1) → While the LED is off, the output voltage is 0.5 V or lower.	<ul style="list-style-type: none"> <li>• Defective ID sensor</li> <li>• Defective circuit</li> <li>• Defective connector</li> </ul>

No. Definition		Symptom	Possible Cause
481	D	Transfer belt mark detection error	
		<ul style="list-style-type: none"> <li>The main motor is operating or changes its speed. → The lock signal is detected. → The belt mark sensor signal is not detected for 0.2 second in normal speed mode or 0.4 second in half speed mode.</li> </ul>	<ul style="list-style-type: none"> <li>Defective main motor</li> <li>Image transfer belt out of position</li> <li>Belt mark blurred or absent</li> </ul>
503	B	3rd tray error	
		<ul style="list-style-type: none"> <li>The tray lift motor turns on. → The top of the paper stack is not detected for 18 seconds.</li> <li>The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 7 seconds. → These steps are repeated 4 times.</li> </ul>	<ul style="list-style-type: none"> <li>Defective paper height sensor</li> <li>Defective tray lift motor</li> </ul>
504	B	4th tray error	
		<ul style="list-style-type: none"> <li>The tray lift motor turns on. → The top of the paper stack is not detected for 18 seconds.</li> <li>The tray is set. → The top of the paper stack is detected. → The bottom plate is lowered. → The stack detection is not cleared within 7 seconds. → These steps are repeated 4 times.</li> </ul>	<ul style="list-style-type: none"> <li>Defective paper height sensor</li> <li>Defective tray lift motor</li> </ul>
515	D	Duplex unit communication error	
		<ul style="list-style-type: none"> <li>A connection error occurs.</li> <li>The signal is sent from the copier to the duplex unit every 3 seconds while paper is not transported by the unit. However, the duplex unit does not respond within 5 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>Defective duplex unit board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Defective connection (Main unit - Duplex unit)</li> </ul>
520	D	Fusing unit motor	
		<ul style="list-style-type: none"> <li>The motor starts or changes speed. → The lock signal does not continue for 1 second within a 3-second interval.</li> <li>The motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second.</li> </ul>	<ul style="list-style-type: none"> <li>Defective fusing unit motor</li> </ul>
521	D	Paper feed motor error	
		<ul style="list-style-type: none"> <li>The motor starts or changes speed. → The lock signal does not continue for 1 second within a 3-second interval.</li> <li>The motor starts. → The lock signal is detected and operation proceeds normally. → The lock signal is interrupted for 1 second.</li> </ul>	<ul style="list-style-type: none"> <li>Defective paper feed motor</li> </ul>

No. Definition		Symptom	Possible Cause
530	D	Fusing fan motor error	
		<ul style="list-style-type: none"> <li>The main power is turned on. → The fusing fan lock signal is detected for 2 seconds.</li> <li>The fusing fan is activated. → The fusing fan lock signal is not detected for 2 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>Defective fusing fan</li> <li>Disconnected or broken harness of the fusing fan</li> </ul>
541	A	Thermistor disconnection (heating roller)	
		The fusing unit starts warm up to the print ready temperature. → The temperature does not reach 0°C for 10 seconds.	<ul style="list-style-type: none"> <li>Defective thermistor</li> <li>Thermistor loose connection</li> <li>Defective connector</li> </ul>
542	A	Fusing warm-up timeout (heating roller)	
		The main switch is turned on or a cover is closed. → The heating roller does not reach the warm-up temperature within 4 seconds.	<ul style="list-style-type: none"> <li>Defective lamp (loose connection, thermostat failure, PSU, thermostat)</li> <li>Incorrect detection (loose thermistor connection, fusing - drawer loose connection)</li> </ul>
543	A	Overheat error (heating roller)	
		The heating roller thermistor detects 220°C for 5 seconds.	<ul style="list-style-type: none"> <li>Short circuit</li> <li>Defective BICU board</li> <li>Defective PSU</li> </ul>
544	A	Overheat error (heating roller)	
		The heating roller thermistor detects 230 °C.	<ul style="list-style-type: none"> <li>Short circuit</li> <li>Defective BICU board</li> <li>Defective PSU</li> </ul>
545	A	Full power error (heating roller)	
		Fusing unit warm-up is complete. → The heating roller stops turning. → The heating roller lamp keeps outputting the maximum power for 12 seconds.	<ul style="list-style-type: none"> <li>Thermistor loose connection</li> <li>Fusing - drawer loose connection</li> </ul>
546	A	Unstable temperature (heating roller)	
		The heating roller thermistor detects unstable temperature increases or decreases within 60 seconds.	<ul style="list-style-type: none"> <li>Thermistor loose connection</li> <li>Fusing - drawer loose connection</li> </ul>
547	A	Zero cross error	
		<p>The main power is turned on and the machine checks how many zero-cross signals are generated during 500 ms.</p> <p>→ If the number of zero-cross signal generated is more than 66 or less than 45 and when this condition is detected 10 consecutive times, this code is displayed.</p>	<ul style="list-style-type: none"> <li>Replace the PSU.</li> <li>FU12 is open.</li> </ul>
551	A	Thermistor disconnection (pressure roller)	
		The pressure roller thermistor detects 7°C or lower for 80 seconds.	<ul style="list-style-type: none"> <li>Thermistor loose connection</li> <li>Defective harness</li> <li>Defective connector</li> </ul>



No. Definition		Symptom	Possible Cause
552	A	Warm-up time over (pressure roller)	
		The main switch is turned on or a cover is closed. → The fusing pressure roller does not reach the ready temperature within 200 seconds.	<ul style="list-style-type: none"> <li>Defective lamp (loose connection, thermostat failure, PSU, thermostat)</li> <li>Incorrect detection (thermistor loose connection, fusing - drawer loose connection)</li> </ul>
553	A	Overheat error (pressure roller)	
		The pressure roller thermistor detects 165°C for 5 seconds.	<ul style="list-style-type: none"> <li>Loose connection</li> <li>Defective BICU board</li> <li>Defective PSU</li> </ul>
554	A	Low temperature error (pressure roller)	
		During standby or operation, the pressure roller thermistor detects 60°C or less for 5 seconds.	<ul style="list-style-type: none"> <li>Defective lamp (loose connection, thermostat failure, PSU, thermostat)</li> <li>Incorrect detection (thermistor loose connection, fusing - drawer loose connection)</li> </ul>
555	A	Full power error (pressure roller)	
		Fusing unit warm-up is complete. → The fusing pressure roller stops turning. → The pressure roller lamp keeps outputting the maximum power for 150 seconds.	<ul style="list-style-type: none"> <li>Thermistor loose connection</li> <li>Fusing - drawer loose connection</li> </ul>
556	A	Unstable temperature (pressure roller)	
		The pressure roller thermistor detects unstable temperature increases or decreases within 60 seconds.	<ul style="list-style-type: none"> <li>Thermistor loose connection</li> <li>Fusing - drawer loose connection</li> </ul>
557	C	Zero cross over error	
		The main switch is turned on; the fusing relay turns on. → The detected zero cross is out of the target range (less than 45 or more than 65). → The zero cross is detected more than 65 in ten cases out of eleven zero cross detections.	<ul style="list-style-type: none"> <li>Noise from a power supply line</li> </ul>
570	A	Fusing oil end	
		500 sheets of paper have been output since oil end was detected.	<ul style="list-style-type: none"> <li>Insufficient oil (the oil tank in the rear of the machine)</li> <li>Defective oil pipe</li> <li>Defective oil pump</li> <li>Defective oil end sensor</li> </ul>
571	A	Fusing oil overflow	
		<ul style="list-style-type: none"> <li>The oil overflow sensor detects oil.</li> <li>When the machine covers are closed, the oil supply unit is not detected.</li> <li>When the machine covers are closed, the fusing unit is not detected.</li> </ul>	<ul style="list-style-type: none"> <li>Defective oil end sensor</li> <li>Defective oil overflow sensor</li> <li>Defective sensor cable</li> <li>Oil supply unit not installed</li> </ul>
572	D	Oil overflow sensor error	
		The oil overflow sensor power is turned off. → The oil overflow sensor does not detect the oil overflow condition.	<ul style="list-style-type: none"> <li>Defective oil overflow sensor</li> <li>Defective harness</li> <li>Defective BICU</li> </ul>

No. Definition		Symptom	Possible Cause
620	D	ADF communication error	
		The ADF has been detected. → A communication error has occurred.	<ul style="list-style-type: none"> <li>• Loose connection</li> <li>• Defective ADF</li> <li>• Defective BICU board</li> <li>• Defective scanner I/O board</li> <li>• External noise</li> </ul>
630	C	CSS communication error	
		The machine tries to communicate with one of the terminals of a relevant service center. → An error signal returns.	<ul style="list-style-type: none"> <li>• Communication error on the public telephone network (logged only; the machine can still operate)</li> </ul>
632	D	MF accounting device error 1	
		The machine sends a data frame. → No normal end signal returns. → This symptom happens three times.	<ul style="list-style-type: none"> <li>• Defective or broken line between machine and device</li> </ul>
633	D	MF accounting device error 2	
		The machine is communicating with the accounting device. → The break signal returns.	<ul style="list-style-type: none"> <li>• Defective or broken line between machine and device</li> </ul>
634	D	MF accounting device error 3	
		A backup RAM error is reported from the accounting device.	<ul style="list-style-type: none"> <li>• Defective accounting device controller</li> <li>• Defective battery in the accounting device</li> </ul>
635	D	MF accounting device error 4	
		A battery voltage error is reported from the accounting device.	<ul style="list-style-type: none"> <li>• Defective accounting device controller</li> <li>• Defective battery in the accounting device</li> </ul>
640	C	Engine-to-controller communication checksum error	
		While the BICU and controller are communicating, a checksum error has occurred.	<ul style="list-style-type: none"> <li>• Logged only; the machine can still operate</li> </ul>
641	C	Engine-to-controller response error	
		The controller has sent a frame with the RAPI protocol, but the engine does not respond.	<ul style="list-style-type: none"> <li>• Defective controller board</li> <li>• External noise</li> </ul>
670	D	Engine startup error	
		Just after the main power is turned on or the machine is recovering from auto off mode, the engine ready signal assertion fails. Just after the main power is turned on, the engine does not respond.	<ul style="list-style-type: none"> <li>• Defective BICU</li> <li>• Defective controller board</li> </ul>



No. Definition		Symptom	Possible Cause
672	D	Controller-to-operation panel communication error at startup	
		After powering on the machine, communication between the controller and operation panel does not begin, or the communication is interrupted after a normal startup.	<ul style="list-style-type: none"> <li>• Controller stalled</li> <li>• Controller board installed incorrectly</li> <li>• Defective controller board</li> <li>• Operation panel connector loose or defective</li> <li>• Poor connection of DIMM and optional boards on the controller board</li> </ul>
685	D	SBU/IPU communication error	
		While data is sent between the scanner and BICU board, a communication error has occurred.	<ul style="list-style-type: none"> <li>• Defective scanner unit cable</li> <li>• Defective SBU board</li> <li>• Defective BICU board</li> </ul>
687	D	PER command error	
		Some image data is transferred. → The controller does not report the necessary memory address.	<ul style="list-style-type: none"> <li>• Poor connection between BICU and controller</li> <li>• Defective BICU</li> <li>• Defective controller</li> </ul>
720	D	Finisher jogger motor error (500-sheet finisher)	
		<ul style="list-style-type: none"> <li>• The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position.</li> <li>• The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.</li> </ul>	<ul style="list-style-type: none"> <li>• Jogger HP sensor defective</li> <li>• Jogger motor defective</li> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>
722	B	Finisher jogger motor error (1000-sheet finisher)	
		The finisher jogger H.P sensor remains de-activated for a certain time when returning to home position. The finisher jogger H.P sensor remains activated for a certain time when moving away from home position.	<ul style="list-style-type: none"> <li>• Jogger HP sensor defective</li> <li>• Jogger motor defective</li> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>
724	B	Finisher staple hammer motor error (1000-sheet finisher)	
		Stapling hammer motor jam is detected consecutively twice after the staple hammer motor turned on.	<ul style="list-style-type: none"> <li>• Staple jam</li> <li>• Stapler overload caused by trying to staple too many sheets</li> <li>• Staple hammer motor defective</li> <li>• Stapler home position sensor defective</li> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>
725	B	Finisher stack feed-out motor error (1000-sheet finisher)	
		The stack feed-out motor jam is detected consecutively twice after the stack feed-out motor turned on.	<ul style="list-style-type: none"> <li>• Stack feed-out HP sensor defective</li> <li>• Stack feed-out motor defective</li> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>

Trouble-shooting

No. Definition		Symptom	Possible Cause
726	D	Finisher tray lift motor error (1000-sheet finisher)/ Finisher output tray motor error (500-sheet finisher)	
		<ul style="list-style-type: none"> <li>The tray lift motor jam is detected consecutively twice after the tray lift motor turned on (1000-sheet finisher).</li> <li>The output tray motor lock signal is detected for 10 seconds after the output tray motor turned on (500-sheet finisher).</li> </ul>	<ul style="list-style-type: none"> <li>Tray lift motor or output tray motor defective</li> <li>Stack height sensor defective</li> <li>Defective finisher control board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Incorrect installation</li> </ul>
727	D	Finisher stapler motor error (500-sheet finisher)	
		Stapling does not finish within a certain time after the stapler motor turned on.	<ul style="list-style-type: none"> <li>Staple jam</li> <li>Stapler overload caused by trying to staple too many sheets</li> <li>Stapler motor defective</li> <li>Defective finisher control board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Incorrect installation</li> </ul>
728	D	Finisher paper stack height error (500-sheet finisher)	
		The stack height detection lever does not return to its home position before going to detect the stack height.	<ul style="list-style-type: none"> <li>Stack height lever solenoid defective</li> <li>Stack height sensor defective</li> <li>Lever sensor defective</li> <li>Main control board defective</li> <li>Defective finisher control board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Incorrect installation</li> </ul>
730	B	Finisher stapler motor error (1000-sheet finisher)	
		The stapler motor jam is detected consecutively twice after the staple motor turned on.	<ul style="list-style-type: none"> <li>Stapler motor defective</li> <li>Stapler HP sensor defective</li> <li>Poor stapler motor connection</li> <li>Defective finisher control board</li> <li>Defective board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Incorrect installation</li> </ul>
731	D	<ul style="list-style-type: none"> <li>Output tray motor error (500-sheet finisher)</li> <li>Exit guide plate motor error (1000-sheet finisher)</li> </ul>	
		<ul style="list-style-type: none"> <li>The tray upper limit sensor does not activate within a certain time after the tray motor turned on (500-sheet finisher).</li> <li>The exit guide plate motor jam is detected consecutively twice after the exit guide plate motor turned on (1000-sheet finisher).</li> </ul>	<ul style="list-style-type: none"> <li>Defective finisher control board</li> <li>Defective BICU</li> <li>Defective IOB</li> <li>Incorrect installation</li> </ul> <p>500-sheet finisher</p> <ul style="list-style-type: none"> <li>Output tray motor defective</li> <li>Tray upper limit sensor defective</li> </ul> <p>1000-sheet finisher</p> <ul style="list-style-type: none"> <li>Exit guide plate motor defective</li> <li>Exit guide plate HP sensor defective</li> </ul>

No. Definition		Symptom	Possible Cause
732	D	Finisher shift motor error (1000-sheet finisher)	
		The shift motor jam is detected consecutively twice after the shift motor turned on.	<ul style="list-style-type: none"> <li>• Shift motor defective</li> <li>• Shift HP sensor defective</li> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>
740	D	Finisher communication error	
		<ul style="list-style-type: none"> <li>• A connection error occurs.</li> <li>• The UART reports a communication error.</li> <li>• In cases other than paper transport, after an every-3-second command is sent, the finisher does not respond within 5 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective finisher control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Incorrect installation</li> </ul>
750	D	1st paper tray unit communication error	
		<ul style="list-style-type: none"> <li>• A connection error occurs.</li> <li>• The UART reports a communication error.</li> <li>• In cases other than paper transport, after an every-3-second command is sent, the paper tray unit does not respond within 5 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective paper tray unit control board</li> <li>• Defective BICU</li> <li>• Defective IOB</li> <li>• Defective connection (Paper tray - main unit)</li> </ul>
770	B	Shift tray unit motor error	
		<ul style="list-style-type: none"> <li>• The machine starts. → The tray motor operates for 2.2 seconds. → The sensor does not detect the operation.</li> <li>• The machine is printing. → The tray motor operates for 2.2 seconds. → The sensor does not detect the operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Defective tray motor</li> <li>• Defective sensor</li> <li>• Defective shift tray connector</li> </ul>
791	D	Bridge unit error	
		The machine recognizes the finisher, but does not recognize the bridge unit.	<ul style="list-style-type: none"> <li>• Defective connector</li> <li>• Defective cable</li> </ul>
792	D	Finisher error	
		The machine does not recognize the finisher, but recognizes the relay unit.	<ul style="list-style-type: none"> <li>• Defective connector</li> <li>• Defective cable</li> <li>• Incorrect installation</li> </ul>
793	D	Interchange unit error	
		The machine recognizes the duplex unit/1-bin tray unit, but does not recognize the interchange unit.	<ul style="list-style-type: none"> <li>• Incorrect installation</li> <li>• Defective connector</li> <li>• Defective cable</li> </ul>
800	B	Startup without video output end error (K)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	<ul style="list-style-type: none"> <li>• Defective controller board</li> </ul>



No. Definition		Symptom	Possible Cause
801	B	Startup without video output end error (Y)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
802	B	Startup without video output end error (M)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
803	B	Startup without video output end error (C)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
804	B	Startup without video input end error (K)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
805	B	Startup without video input end error (Y)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
806	B	Startup without video input end error (M)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
807	B	Startup without video input end error (C)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
808	B	Startup without video input end error (R)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the scanner within the specified time.	• Defective controller board
809	B	Startup without video input end error (G)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
810	B	Startup without video input end error (B)	
		Video transfer to the engine is started, but a video transmission end command is not issued by the engine within the specified time.	• Defective controller board
818	B	Watchdog error	
		While the system program is running, no other programs can run (due to a bus hold or endless loop).	• Defective controller board



No. Definition		Symptom	Possible Cause
819	B	Kernel abnormal end error	
		A HDD error or a software error has occurred, terminating the SCS process, gwinit process, and finally the kernel program. A system process has exhausted the RAM.	<ul style="list-style-type: none"> <li>• HDD error</li> <li>• Software application error</li> <li>• RAM shortage</li> </ul>
820	B	Self-Diagnostic Error: CPU	
		An unexpected exception or interruption has occurred.	<ul style="list-style-type: none"> <li>• Defective controller board</li> <li>• Software defective</li> </ul>
821	B	Self-Diagnostic Error: ASIC	
		The ASIC returned an error during the self-diagnostic test, because the ASIC and CPU timer interrupts are compared and determined to be out of range.	<ul style="list-style-type: none"> <li>• Defective controller board</li> </ul>
822	B	Self-Diagnostic Error: HDD	
		The hard disk drive returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• HDD defective</li> <li>• HDD connector defective</li> <li>• Defective controller board</li> </ul>
823	B	Self-diagnostic Error: NIB	
		The network interface board returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• Network interface board defective</li> <li>• Defective controller board</li> </ul>
824	B	Self-diagnostic Error: NVRAM	
		The resident non-volatile RAM returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• NVRAM damaged or abnormal</li> <li>• Backup battery has discharged</li> <li>• NVRAM socket damaged</li> </ul>
826	B	Self-diagnostic Error: RTC/Optional NVRAM	
		The RTC (real time clock) or optional NVRAM returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• RTC defective</li> <li>• NVRAM defective</li> </ul>
827	B	Self-diagnostic Error: RAM	
		The resident RAM returned a verify error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• Memory malfunction</li> </ul>
828	B	Self-diagnostic Error: ROM	
		The resident read-only memory returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• Defective controller board</li> <li>• Firmware defective</li> </ul>
829	B	Self-diagnostic Error: Optional RAM	
		The optional RAM returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• RAM DIMM defective</li> <li>• Defective controller board</li> </ul>
835	B	Self-Diagnostic Error: Parallel Interface	
		A loopback test error occurred.	<ul style="list-style-type: none"> <li>• Loopback connector not detected</li> <li>• IEEE1284 connector defective</li> <li>• Defective controller board</li> </ul>
836	B	Self-diagnostic Error: Resident Font ROM	
		The resident font ROM returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>• Font ROM defective</li> </ul>



No. Definition		Symptom	Possible Cause
837	B	Self-diagnostic Error: Optional Font ROM	
		The optional font ROM returned an error during the self-diagnostic test.	<ul style="list-style-type: none"> <li>Font ROM defective</li> </ul>
838	D	Verification error	
		The verification data of the clock generator is read via the communication bus. → The data contradicts the normal value.	<ul style="list-style-type: none"> <li>Defective controller board</li> </ul>
850	B	Network I/F abnormal	
		The IP address is incorrect, or the controller cannot access the network due to a driver error.	<ul style="list-style-type: none"> <li>Incorrect network setting</li> <li>Defective controller board</li> </ul>
851	B	IEEE1394 I/F abnormal	
		The IEEE1394 interface cannot be used, due to a driver error.	<ul style="list-style-type: none"> <li>IEEE1394 interface board defective</li> <li>Defective controller board</li> </ul>
853	D	Wireless card startup error	
		The machine starts up. → The IEEE802.11b card connection board is recognized. → The wireless LAN card or bluetooth card is not recognized.	<ul style="list-style-type: none"> <li>Loose connection between the card and the connection board</li> </ul>
854	D	Wireless card access error	
		The machine has been reading the data from the card. → The machine loses access to the card; the wireless LAN card or bluetooth card connection board is still recognized.	<ul style="list-style-type: none"> <li>Loose connection between the card and the connection board</li> </ul>
855	D	Wireless card error	
		Some illegal data is found in the card.	<ul style="list-style-type: none"> <li>Defective card</li> </ul>
856	D	Wireless card connection board error	
		An error is detected in the wireless LAN card or bluetooth card connection board.	<ul style="list-style-type: none"> <li>Defective card connection board</li> </ul>
860	C	Startup without HD connection at main power on	
		The hard disk is not detected. (The hard disk is not formatted.)	<ul style="list-style-type: none"> <li>Cable between controller and HD loose or defective</li> <li>HD power connector loose or defective</li> <li>HD defective</li> <li>Controller defective</li> </ul>
861	C	Startup without HD detection when the power key was pressed	
		The hard disk is not detected.	<ul style="list-style-type: none"> <li>Cable between controller and HD loose or defective</li> <li>HD power connector loose or defective</li> <li>HD defective</li> <li>Controller defective</li> </ul>

No. Definition		Symptom	Possible Cause
862	D	Bad sector count at the maximum	
		The hard disk has 100 bad sectors in the image storage area. → More data is read from the hard disk. → SC863 occurs. → The number of bad sectors exceeds the maximum value. <b>NOTE:</b> To format the hard disk, use SP5-832-1. Bad sectors may affect quality or reduce productivity. The hard disk should be replaced when it contains bad sectors.	<ul style="list-style-type: none"> <li>• Data corruption</li> <li>• Defective hard disk</li> </ul>
863	B	Startup without HD data lead	
		Data stored on the hard disk is not read correctly.	<ul style="list-style-type: none"> <li>• Bad sector detected during operation of the HD</li> </ul>
864	B	HD data CRC error	
		<ul style="list-style-type: none"> <li>• During operation of the HD, the HD responded with a CRC error.</li> </ul>	<ul style="list-style-type: none"> <li>• Data transfer from the HD was abnormal.</li> </ul>
865	B	HD access error	
		The hard disk returned an error.	<ul style="list-style-type: none"> <li>• Error detected other than a bad sector error (SC863) or a CRC error (SC864)</li> </ul>
870	D	Address book data error	
		<p>The address book in the hard disk is accessed. → An error is detected in the address book data; address book data is not read; or data is not written into the address book.</p> <p><b>NOTE:</b> To recover from the error, do any of the following countermeasures:</p> <ul style="list-style-type: none"> <li>• Format the address book by using SP5-846-050 (all data in the address book—including the user codes and counters—is initialized).</li> <li>• Initialize the user data by using SP5-832-006 (the user codes and counters are recovered when the main switch is turned on if those data are stored in Smart Device Monitor for Admin).</li> </ul> <p>Replace the hard disk (the user codes and counters are recovered when the main switch is turned on if those data are stored in Smart Device Monitor for Admin).</p>	<ul style="list-style-type: none"> <li>• Data corruption</li> <li>• Defective hard disk</li> <li>• Defective controller software</li> </ul>
880		File Format Converter (MLB) error	
		A request to get access to the MLB was not answered within the specified time.	<ul style="list-style-type: none"> <li>• MLB defective</li> </ul>
900	B	Electronic total counter error	
		The value of the total counter is out of the normal range.	<ul style="list-style-type: none"> <li>• Defective NVRAM</li> </ul>

No. Definition		Symptom	Possible Cause
901	B	Mechanical total counter error 1	
		Mechanical counter 1 is not initialized, or not detected.	<ul style="list-style-type: none"> <li>Defective connection</li> <li>Defective counter</li> </ul>
902	B	Mechanical total counter error 2	
		Mechanical counter 2 is not initialized, or not detected.	<ul style="list-style-type: none"> <li>Defective connection</li> <li>Defective counter</li> </ul>
925	D	Net file error	
		<p>The management file for net files is corrupted; net files are not normally read.</p> <p>Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software</p>	<ul style="list-style-type: none"> <li>Defective hard disk</li> <li>Data corruption</li> <li>Defective software</li> </ul> <ol style="list-style-type: none"> <li>When SC860 to 865 occurs with this SC at the same time: <ul style="list-style-type: none"> <li>The main cause is in SC860 to 865. Refer to those possible causes.</li> </ul> </li> <li>When only SC925 occurs: <ul style="list-style-type: none"> <li>Turn the main power off and on.</li> <li>Initialize the net file partition of the HDD (with SP5-832-11) after you ask the customer for permission. This also erases the transmitted and received fax documents.</li> <li>If the above actions do not solve the problem, try to initialize all partitions of the HDD with SP5-832-1 after you ask the customer for permission.</li> <li>Replace the HDD.</li> </ul> </li> </ol>
990	B	Software performance error	
		<p>The software attempted to perform an unexpected operation.</p> <p><b>NOTE:</b> When this error occurs, the file name, address, and data will be stored in NVRAM. This information can be checked by using SP7-403. See the data and the situation in which this SC occurs. Then report the data and conditions to your technical control center.</p>	<ul style="list-style-type: none"> <li>Software defective</li> <li>Internal parameter incorrect</li> <li>Insufficient working memory</li> </ul> <p>Turn the main power off and on.</p>
991	C	Software continuity error	
		The software attempted to perform an unexpected operation. However, unlike SC990, the process can keep on running.	<ul style="list-style-type: none"> <li>Logged only; the machine can continue to operate</li> </ul>
995	D	Model matching error	
		The CPM registered in the controller does not match the DIP switch settings on the engine board.	<ul style="list-style-type: none"> <li>The controller and the engine board are not for the same model</li> </ul>

No. Definition		Symptom	Possible Cause
997	B	Application function selection error	
		The application selected by a key press on the operation panel does not start or ends abnormally.	<ul style="list-style-type: none"> <li>• Software for that application is defective</li> <li>• An option required by the application (RAM, DIMM, board) is not installed.</li> </ul>
998	B	Application start error	
		<ul style="list-style-type: none"> <li>• After switching the machine on, the application does not start within 60 s. (No applications start or end normally.)</li> </ul>	<ul style="list-style-type: none"> <li>• Software for that application is defective</li> <li>• An option required by the application (RAM, DIMM, board) is not installed.</li> </ul>
999	B	Program download error	
		<p>The download (program, print data, language data) from the SD card does not execute normally.</p> <p>Important Notes About SC999</p> <ul style="list-style-type: none"> <li>• This SC is not logged, because it operates primarily in the download mode.</li> <li>• If the machine loses power while downloading, or if for some other reason the download does not end normally, this could damage the controller board or the PCB targeted for the download and prevent subsequent downloading. If this problem occurs, the damaged PCB must be replaced.</li> </ul>	<ul style="list-style-type: none"> <li>• Software defective</li> <li>• An option required by the application (RAM, DIMM, board) is not installed</li> <li>• Board installed incorrectly</li> <li>• BICU defective</li> <li>• Controller defective</li> <li>• SD card defective</li> <li>• NVRAM defective</li> <li>• Loss of power during downloading</li> </ul>

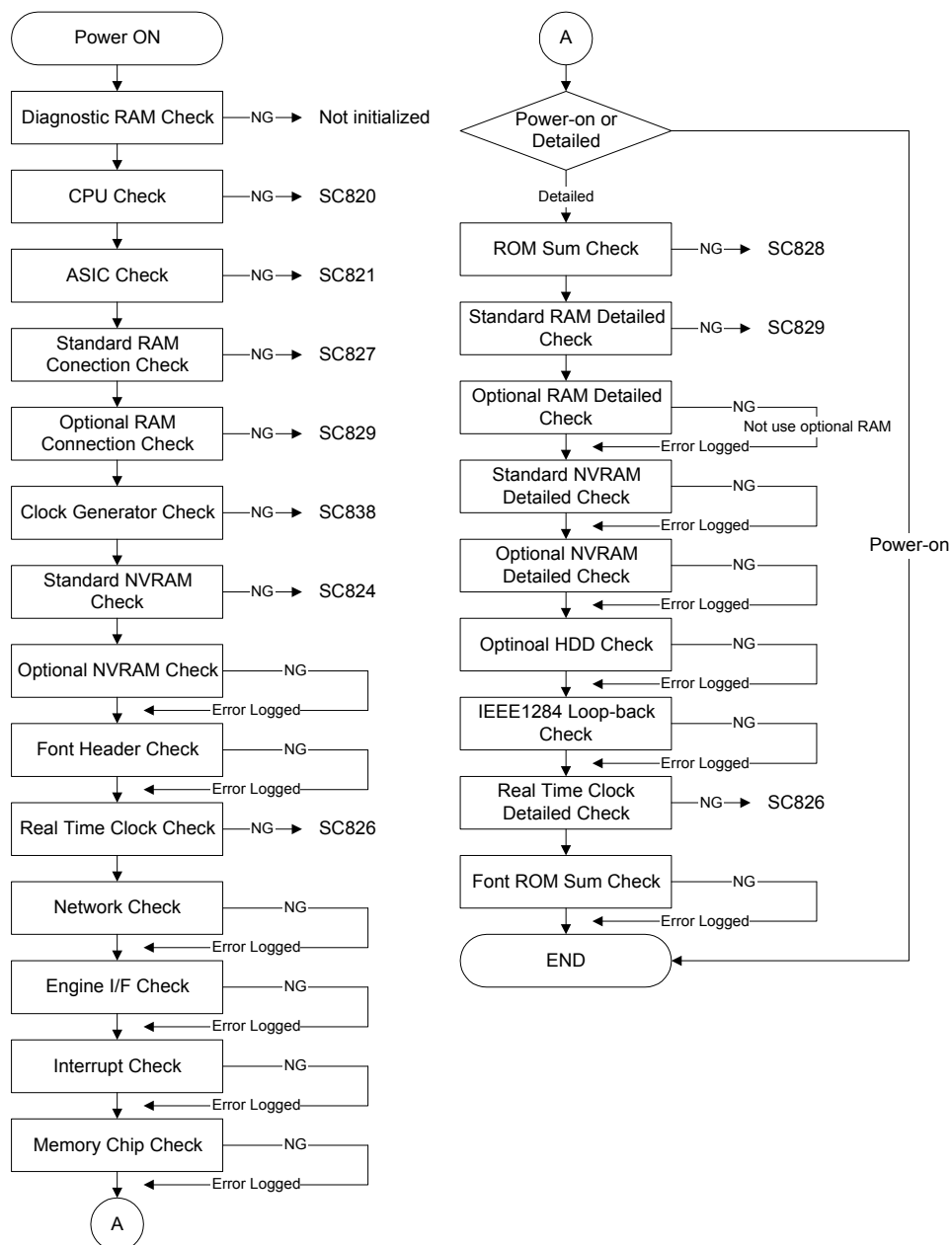
## 4.2 SELF-DIAGNOSTIC MODE

### 4.2.1 OVERVIEW

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



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

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



### 4.2.2 DETAILED SELF-DIAGNOSTICS

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

1. Turn off the machine and attach the loop-back connector to the parallel interface.
2. Hold down , press and hold down , and then while pressing both keys at the same time, switch on the machine. You will see "Now Loading" on the touch-panel, and prints the diagnostic report after completing the test.
  - Refer to the diagnostics report for the detected errors. The errors detected during self-diagnostics can be checked with SP7-832-001 (Diag. Result).
  - Refer to section 4.1 for details about the error codes.



## **4.3 IMAGE TEST MODE**

### **4.3.1 OVERVIEW**

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

### **4.3.2 VPU TEST**

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

***SP4-907-1: VPU Test Pattern: R***

***SP4-907-2: VPU Test Pattern: G***

***SP4-907-3: VPU Test Pattern: B***

### **4.3.3 IPU TEST**

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

### **4.3.4 GAVD TEST**

The LD board has the GAVD test pattern. To make sure the printing control is functioning, output any test pattern with SP5-955.

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

## 4.4 ELECTRICAL COMPONENT DEFECTS

### 4.4.1 SENSORS

Component (Symbol)	CN	Condition	Symptom
Fusing exit sensor	324 (I/O board)	Open	A paper jam is detected when paper is fed; and the paper jam is cleared when the paper is removed
		Shorted	A paper jam is detected when paper is not fed.
ID sensor	260 (BICU)	Open	No immediate symptom is seen. (☛ NOTE)
		Shorted	<ul style="list-style-type: none"> <li>The machine does not respond.</li> <li>No immediate symptom is seen. (☛ NOTE)</li> </ul>
Image transfer belt mark sensor	307 (I/O board)	Open	SC481 is displayed.
		Shorted	SC481 is displayed.
O/B waste toner bottle full sensor	307 (I/O board)	Open	Bottle full is not detected when the bottle is full.
		Shorted	No symptom is seen.
Oil end sensor	261 (BICU)	Open	No immediate symptom is seen.
		Shorted	The oil pump turns on to pump oil up when there is enough oil.
Oil overflow sensor	261 (BICU)	Open	SC571 is displayed.
		Shorted	SC571 is displayed.
Original length sensor 1	632 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Original length sensor 2	632 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Original width sensor	632 (SBU)	Open	The original size is not correctly detected. Output images are blurred.
		Shorted	The original size is not correctly detected. Output images are blurred.
Paper end sensor 1	406 (High voltage supply)	Open	Paper end is not detected when the tray is empty.
		Shorted	Paper end is detected when the tray is not empty.
Paper end sensor 2	308 (I/O board)	Open	Paper end is not detected when the tray is empty.
		Shorted	Paper end is detected when the tray is not empty.
Paper exit sensor	324 (I/O board)	Open	A paper jam is detected when paper is fed.
		Shorted	A paper jam is detected when no paper is fed.
Paper feed sensor 1	406 (High voltage supply)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed. Or, a paper jam is detected before paper is fed.

Component (Symbol)	CN	Condition	Symptom
Paper feed sensor 2	340 (I/O board)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed. Or, a paper jam is detected before paper is fed.
Paper near-end sensor 1	406 (High voltage supply)	Open	Paper near end is detected when the tray is full.
		Shorted	Paper full is detected when the tray is almost empty.
Paper near-end sensor 2	308 (I/O board)	Open	Paper end is detected when the tray is not empty.
		Shorted	<ul style="list-style-type: none"> <li>• Paper full is detected when the tray is almost empty.</li> <li>• Paper near-end is detected when the tray is full.</li> </ul>
Paper overflow sensor	324 (I/O board)	Open	Paper overflow is not detected when the paper exit tray is full.
		Shorted	Paper overflow is detected when the paper exit tray is not full.
Platen cover sensor	219 (Scanner I/O board)	Open	The original size is not correctly detected.
		Shorted	No symptom
Registration sensor	405 (High voltage supply)	Open	A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.
		Shorted	<ul style="list-style-type: none"> <li>• A paper jam is detected when paper is fed; and the paper jam is not cleared when the paper is removed.</li> <li>• A paper jam is detected before paper is fed.</li> </ul>
Scanner HP sensor	240 (SBU)	Open	SC120 is displayed.
		Shorted	The scanner motor tries to operate for about 40 seconds before SC122 is displayed.
Synchronization detector	503 (LDB)	Open	SC220 is displayed.
		Shorted	The machine does not respond. SC220 is displayed.
T/B waste toner bottle full sensor	307 (I/O board)	Open	Bottle full is not detected when the bottle is full.
		Shorted	Bottle full is detected when the bottle is not full.
Temperature/hu midity sensor	259 (BICU)	Open	SC460 is displayed.
		Shorted	SC460 is displayed.
Fusing entrance sensor	307 (I/O board)	Open	A paper jam is not detected when paper is fed.
		Shorted	A paper jam is detected when paper is not fed.
Transfer belt sensor	307 (I/O board)	Open	A paper jam is not detected when paper is fed.
		Shorted	A paper jam is detected when paper is not fed.

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

### 4.4.2 SWITCHES

Component (Symbol)	CN	Condition	Symptom
Exit cover switch	324 (I/O board)	Open	The user is prompted to close the exit cover.
		Shorted	No symptom is seen.
Front cover switch	324 (I/O board)	Open	The user is prompted to close the front cover.
		Shorted	No symptom is seen.
Interlock switch	312 (I/O board)	Open	The user is prompted to close the front cover.
		Shorted	No symptom is seen.
O/B waste toner bottle switch	307 (I/O board)	Open	The bottle is not detected when it is installed.
		Shorted	The bottle is detected when it is not installed.
Tray set/paper size switch (tray 1)	308 (I/O board)	Open	The tray is not detected when it is installed.
		Shorted	<ul style="list-style-type: none"> <li>The paper tray is detected when it is not installed.</li> <li>The paper size is incorrectly detected (a paper jam may occur).</li> </ul>
Tray set/paper size switch (tray 2)	308 (I/O board)	Open	The tray is not detected when it is installed.
		Shorted	<ul style="list-style-type: none"> <li>The paper tray is detected when it is not installed.</li> <li>The paper size is incorrectly detected (a paper jam may occur).</li> </ul>
Right cover switch	324 (I/O board)	Open	The user is prompted to close the right cover.
		Shorted	No symptom
T/B waste toner bottle switch	307 (I/O board)	Open	The bottle is not detected when it is installed.
		Shorted	Bottle full is detected when the bottle is not installed.

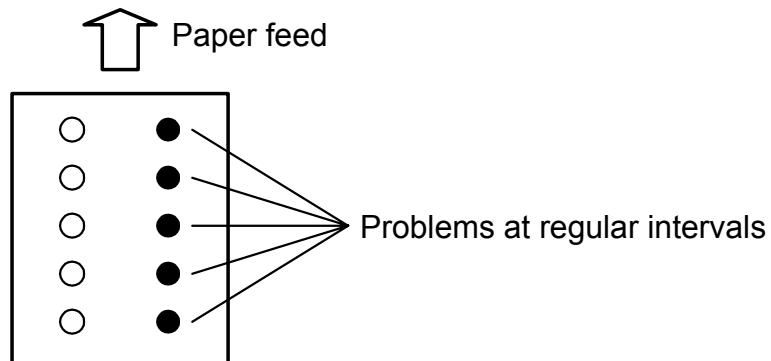
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### 4.4.3 BLOWN FUSE CONDITIONS

Fuse	Rating		Symptom when turning on the main switch
	115V	220 ~ 240V	
Power Supply Board			
FU1 (N.A.)	15A/125V	—	No response
FU2	10A/250V	5A/250V	No response
FU8	5A/250V	5A/250V	The machine starts initialization (the sound is heard), but nothing appears on the operation panel.
FU9	5A/250V	5A/250V	The machine starts program loading, and optional units (PFU, LCT, Interchange, Bypass, Duplex, bridge, shift tray and key counter) are disabled.
FU12	5A/250V	5A/250V	The machine starts program loading, and "Functional Problems" appears on the operation panel with the "SC547".

## 4.5 CHECK POINTS FOR IMAGE PROBLEMS AT REGULAR INTERVALS

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



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Colored spots at 54-mm intervals: Development roller

Abnormal image at 68-mm intervals: Transfer roller

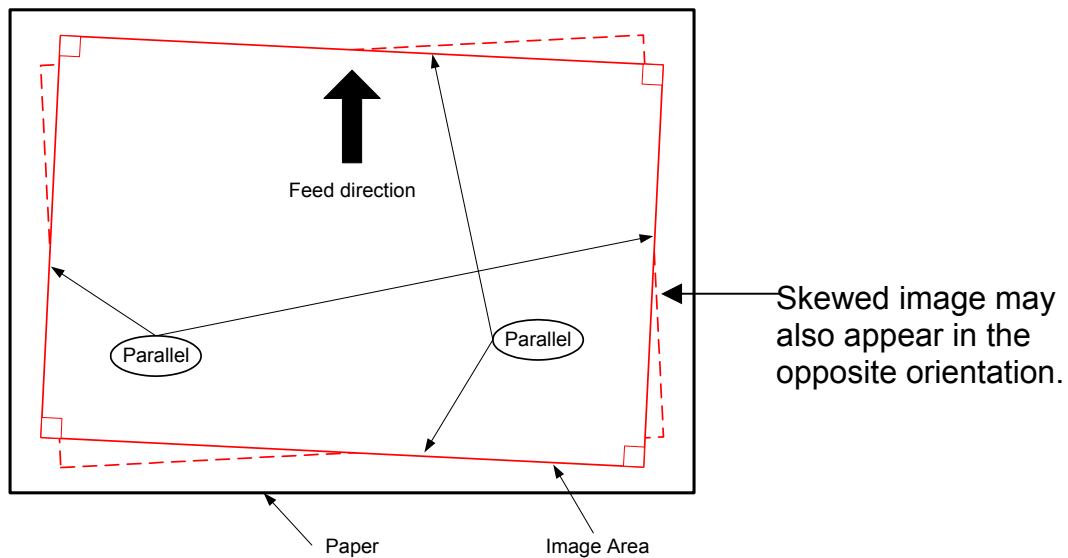
Abnormal image at 188-mm intervals: Fusing belt

Abnormal image at 125-mm intervals: Pressure roller in the fusing unit

## 4.6 SKEWED, TRAPEZOID, AND PARALLELOGRAM IMAGES

### 4.6.1 SKEWED IMAGES

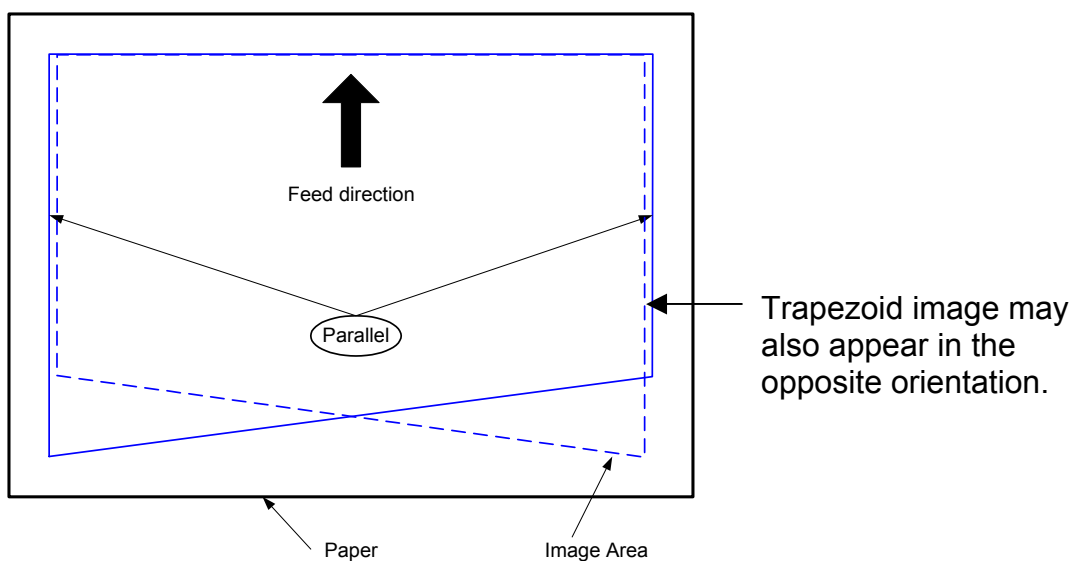
- The image's leading and trailing edges are parallel to one another.
- The image's left and right edges are also parallel.
- However, **all four sides** are slanted with respect to the paper's edge.



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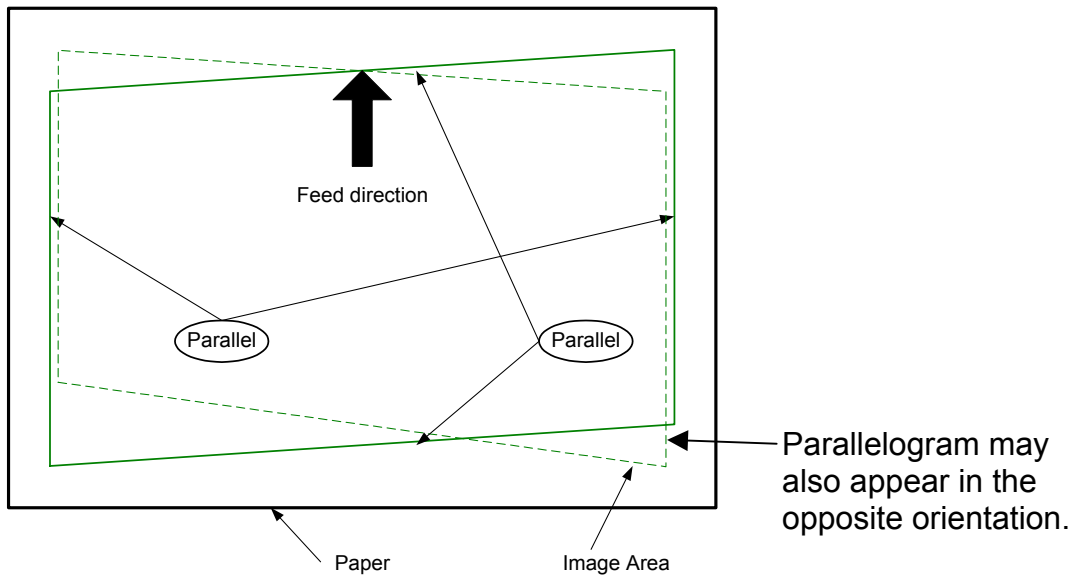
### 4.6.2 TRAPEZOID IMAGES

- Only the image's **trailing edge** is slanted with respect to the paper. The remaining 3 sides are parallel to the paper's edges.

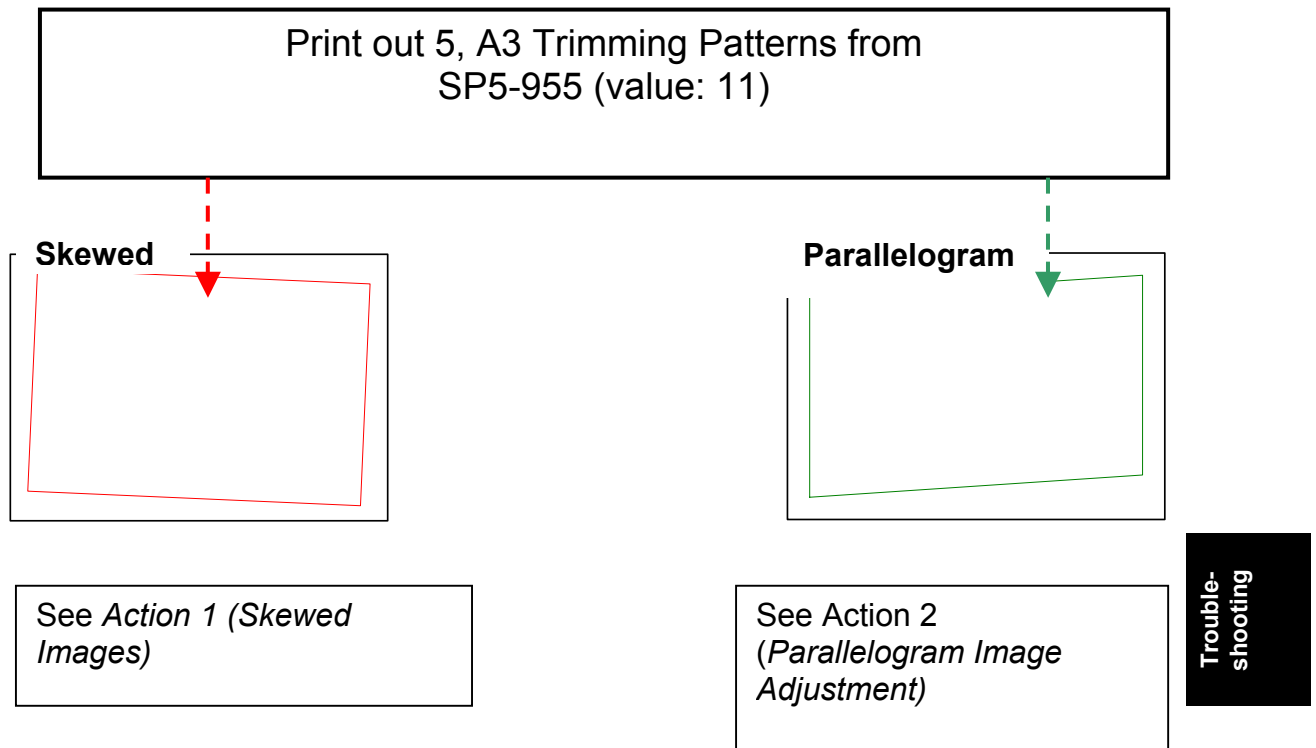


### 4.6.3 PARALLELOGRAM IMAGES

- Like skewed images, the leading/trailing edges and left/right edges are parallel to each other, however here, the **leading and trailing edges** are both slanted with respect to the paper's edge.



#### 4.6.4 CHECKING THE IMAGE WITH THE TRIMMING PATTERN

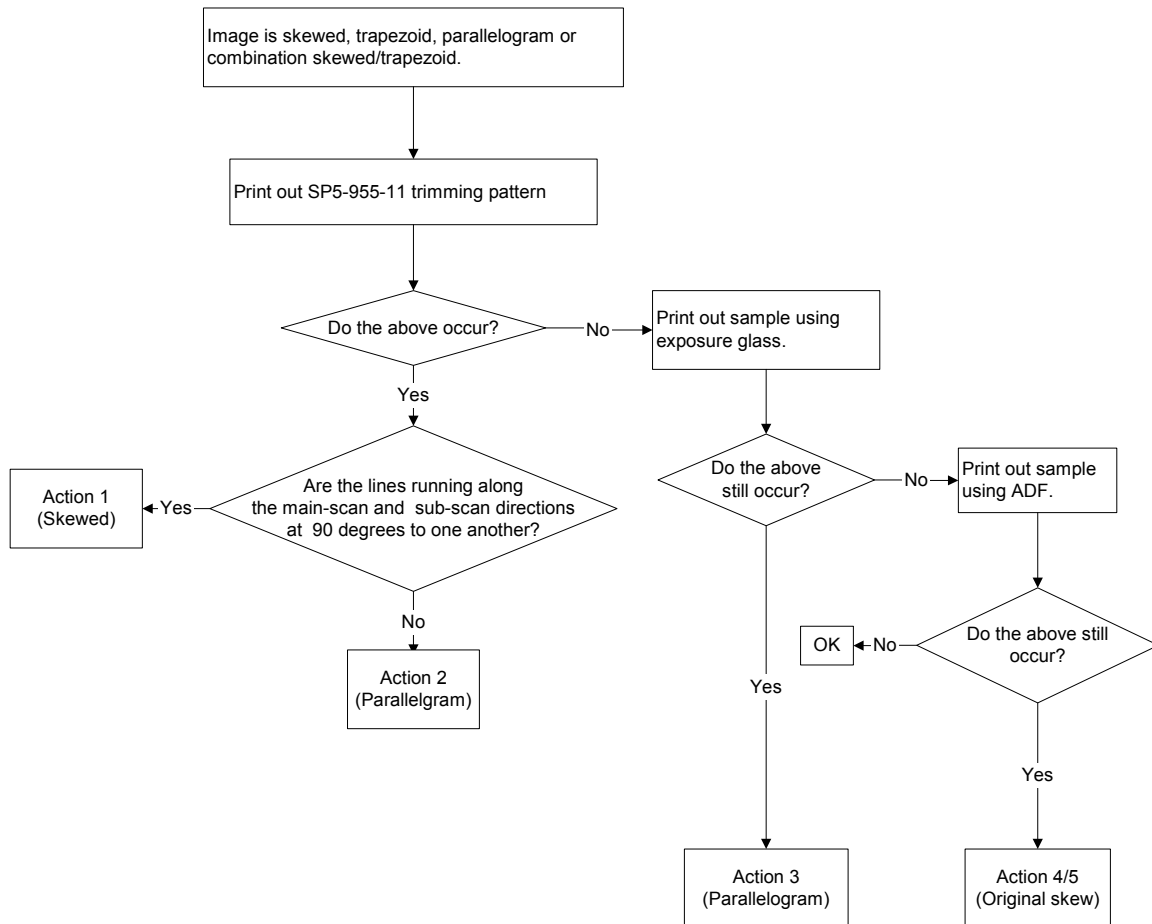




## 4.6.5 CORRECTING THE IMAGES

### Flow Chart

Please use the following flowchart to correct skewed, parallelogram, and trapezoid images.

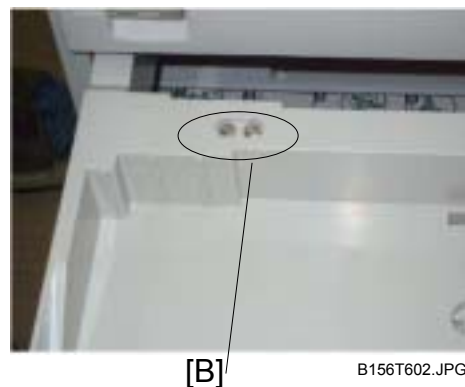
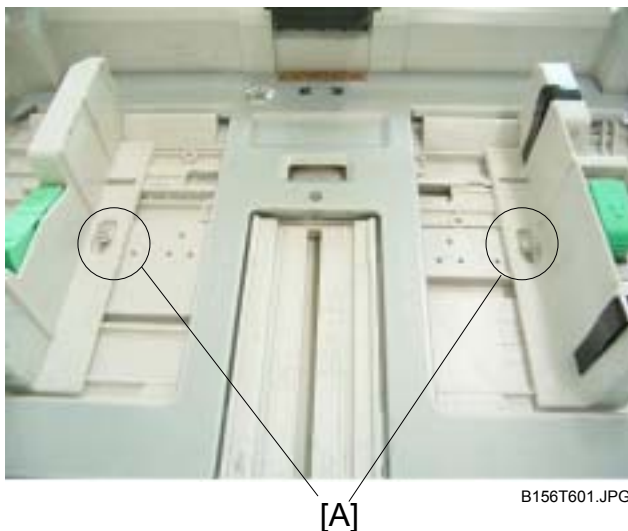


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**Action****Action 1 (skewed image of trimming pattern)**

Image skew when feeding from mainframe Trays 1 and 2 because the operator does not set the side fence flush against the paper stack.

1. Advise customers that the side fence should be set flush against the loaded paper stack, or in cases where the customer gives approval, secure the side fences in places [A] with two screws. Two screws [B] are located on the tray 1 and 2 as shown below.



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**NOTE:** The level of skew will increase twofold if there is a 1mm gap between the paper and side fence.

2. As a supplement, the level of skew can be further minimized by increasing the paper buckle in SP1-003. Try adjusting this value several times while checking the level of skew on the printouts, keeping in mind that a higher value tends to cause Z-folds and a lower value tends to cause paper jams.

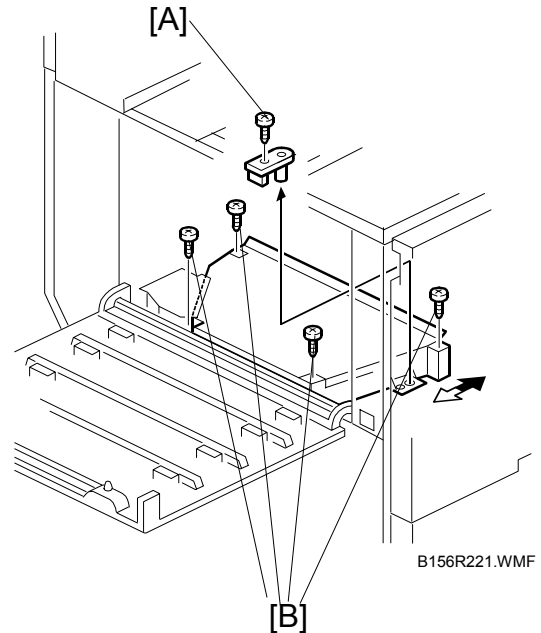
**Action 2 (parallelogram image of trimming pattern)**

Adjust the position of the laser unit as described in section **3.4.2** of the Service Manual.

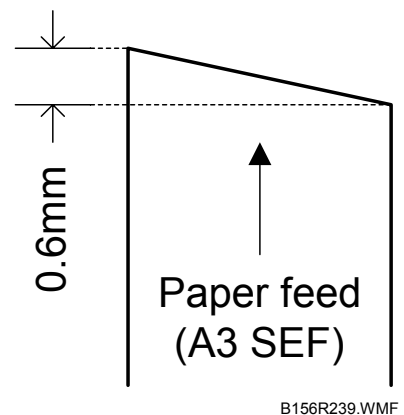
**Adjusting for Image Skew**

1. Positioning pin [A] (⌘ x 1)
2. Loosen ⌘ (x 4) [B].
3. Adjust the position of the laser optics housing unit (⬇ Adjustment).
4. Fasten ⌘ (x 4) [B].

**NOTE:** After changing the position of the laser optics housing unit, do not reinstall the positioning pin. Keep the pin in a safe place.



**NOTE:** When the image skews as shown on the right, move the unit 0.6 mm in the direction of the black arrow as shown in the diagram above and to the right.



**Action 3 (parallelogram image in platen mode)**

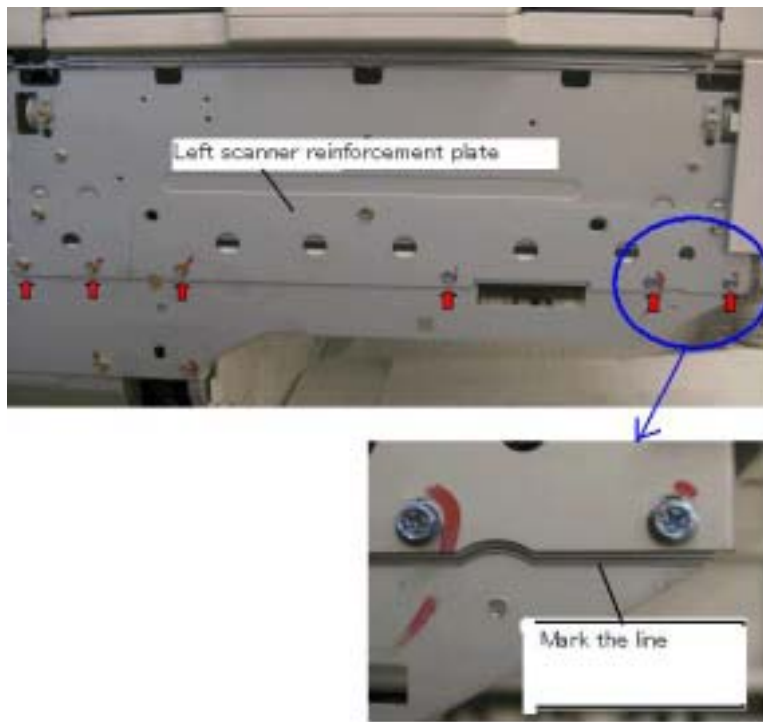
Parallelogram slants to the right → Raise the left side of the scanner unit.

Parallelogram slants to the left → Lower the left side of the scanner unit.

1. Remove the rear cover, scanner left cover, and upper left cover.
2. Mark the position of the left scanner reinforcement plate by drawing a line along the lower edge (see photograph below).
3. While holding the scanner unit in place, loosen the 6 screws of the left scanner reinforcement plate.

**Note:** The scanner must be held in place, as it will tend to sink due to its own weight.

4. Raise or lower the scanner with respect to the reference line, then tighten the screws.

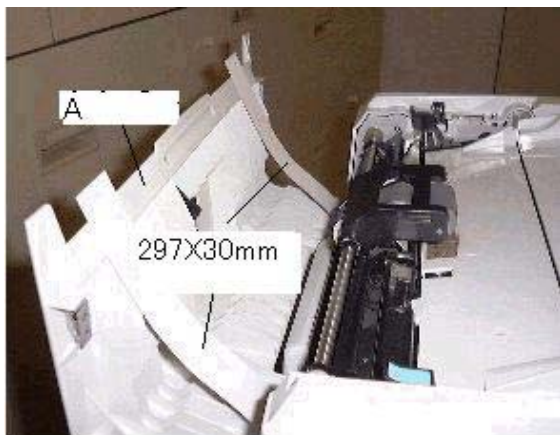


**Action 4 (original skew)**

Perform the following checks:

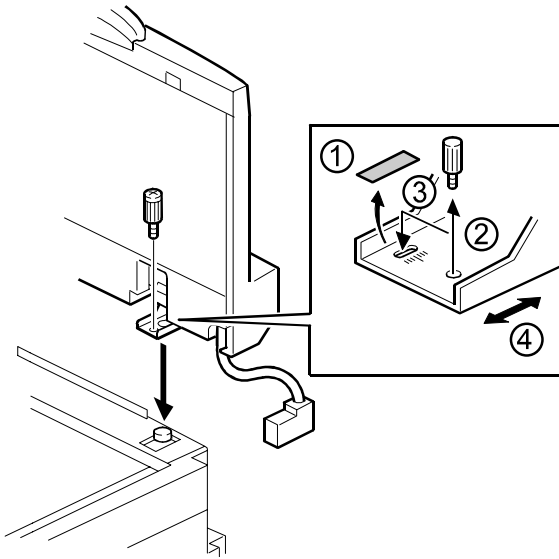
1. Make sure the ADF side fences are in the proper position for the size of the original.
  2. Check to see if the surfaces of the pick-up roller, separation roller, feed belt, transport rollers and exit rollers are dirtied, and clean if necessary.
  3. Check to see if the skewing still occurs, and if it does, continue onto the next step.
  4. Cut two sheets of paper to a size of A4 x 30mm (297mm x 30mm), then open the ADF left cover [A] and insert the two sheets into the paper path as shown (left and right sides).
  5. Close the ADF unit (keeping the ADF left cover open).
  6. Pull on both strips of paper at the same time (from the left side of the DF) and check for a difference in resistance.
- If there is **no difference** in resistance between the front and rear, adjust the ADF skew as shown below in **Action 5-1**(see ARDF Skew Adjustment in the Service Manual, 3.12.3).
  - If the resistance with the **rear sheet is larger** than the front, adjust the skew as shown below in **Action 5-2**.

DF (top)



DF (bottom)



*Action 5-1 Adjusting the original skew with equal front/rear pulling loads*

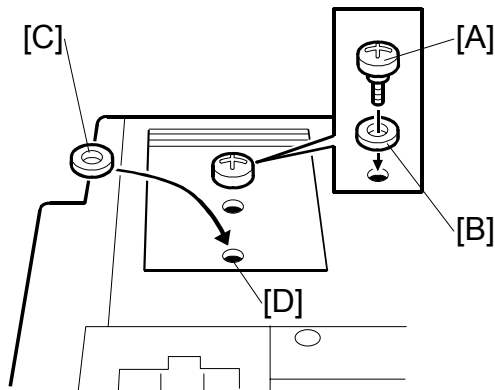
B156T011.WMF

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

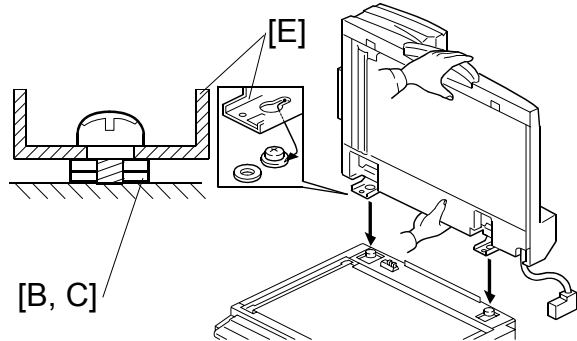
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***Action 5-2 Adjusting the original skew when the rear pulling load is larger***

Raise the left side of the ADF by adding washers as shown below.



M03070201.WMF




M03070202.WMF

1. Remove the ADF unit from the copier.
2. Remove the shoulder screw [A].
3. Add one or two washers (P/N 07010050Z [B],  $t=0.7\text{mm}$ ) between the hinge bracket (mainframe) and ADF left hinge [E] to raise the height of the left side of the ADF.
4. Add the same quantity of the washers [C] to the neighboring screw hole [D] on the hinge bracket.
5. Reattach the ADF so that the ADF hinge [E] is positioned horizontal on top of the washers added to the left hinge bracket.

## 5. SERVICE TABLES

### 5.1 SERVICE PROGRAM MODE

#### CAUTION

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

**NOTE:** The main power LED lights or flashes when:

- 1) the platen cover or ARDF is open
- 2) the hard disk or memory is accessed
- 3) the copier is communicating with another device

#### 5.1.1 SERVICE PROGRAM MODE OPERATION

##### *Starting the SP mode*

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



**Copy SP**

Service  
Tables

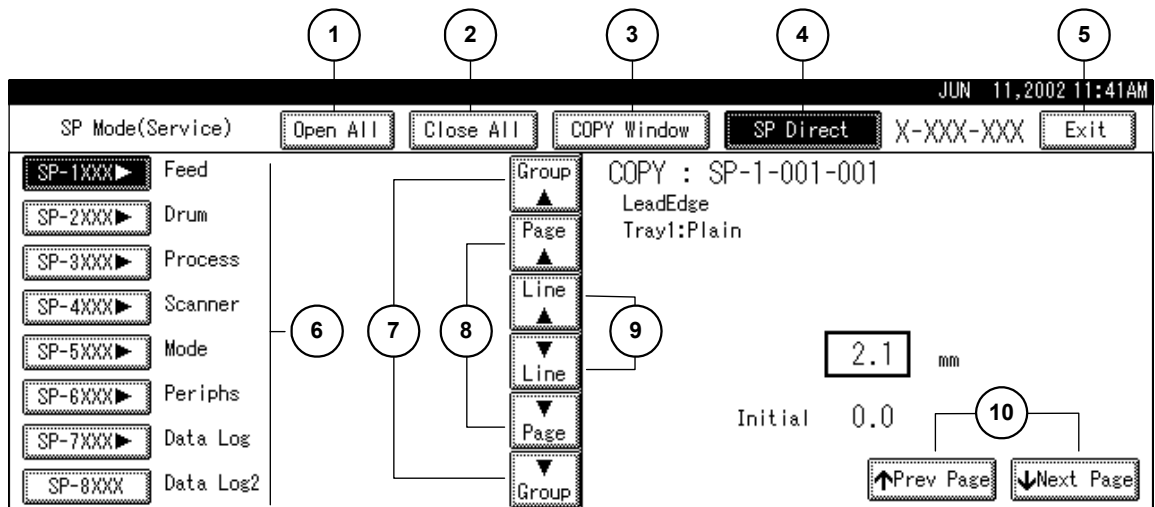
##### *Quitting the SP mode*

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



**SP Mode Touch Screen**

For details on the SP modes, see section 5.1.2.



B156S001.WMF

- ① Expands all SP mode menus.
- ② Collapses all SP mode menus.
- ③ Opens the copy window (☛ Copy Window for Test Printing).
- ④ Enables numeric keypad inputs for specifying a SP mode menu.  
(Type a menu number at the numeric keypad, and press the (#) key.)
- ⑤ Quits the SP mode.
- ⑥ Expands or collapses the menu list of each group.
- ⑦ Scrolls up or down through the groups.
- ⑧ Scrolls up or down to the previous or next page.
- ⑨ Scrolls up or down to the previous or next line.
- ⑩ Selects the previous or next menu.

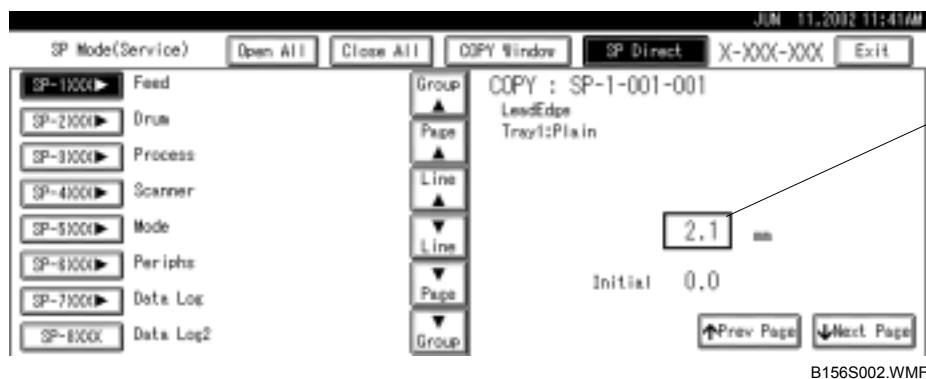
### Copy Window for Test Printing

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

### Working on SP Mode Menus

The SP mode menus are classified in three levels.

1. Find the necessary SP mode menu from the “SP Mode Table” (☛ 5.1.2).
2. Select an SP using either of the following two operations:
  - 1) Using the numeric key pad
    - a) Make sure the “SP Direct” button is highlighted. (If not, touch the button.)
    - b) Type the SP mode menu number at the numeric key pad.
  - 2) Using the touch screen
    - c) Touch the “Open All” button or the “Group #” button (where the # indicates the group number which the necessary menu belongs to).
    - d) Scroll the menu if necessary (☛ SP Mode Touch Screen).
    - e) Touch the necessary menu, or touch the “Prev Page” or “Next Page” button to select the menu.
3. Type the necessary values at the numeric key pad. The value in the input box is overwritten.



**NOTE:** 1) “Initial” indicates the default value.

2) To toggle plus/minus, press the ⏻ (clear/stop) key.

4. Press the ⏻ key. If an out-of-range value has been input in the box, the value is ignored.

**NOTE:** If you are prompted to complete the setting, touch “Yes”.

5. Quit the SP mode (☛ Quitting the SP mode).

***Service Mode Lock/Unlock***

At locations where the machine contains sensitive data, the customer engineer cannot operate the machine until the Administrator turns the service mode lock off. This function makes sure that work on the machine is always done with the permission of the Administrator.

**NOTE:** This function is not used on B051 series machines.

1. If you cannot go into the SP mode, ask the Administrator to log in with the User Tool and then set "Service Mode Lock" to OFF. After he or she logs in:  
User Tools > System Settings > Administrator Tools > Service Mode Lock > OFF
  - This unlocks the machine and lets you get access to all the SP codes.
  - The CE can do servicing on the machine and turn the machine off and on. It is not necessary to ask the Administrator to log in again each time the machine is turned on.
2. If you must use the printer bit switches, go into the SP mode and set SP 5169 to "1".
3. After machine servicing is completed:
  - Change SP 5169 from "1" to "0".
  - Turn the machine off and on. Tell the administrator that you completed servicing the machine.
  - The Administrator will then set the "Service Mode Lock" to ON.

## 5.1.2 SP MODE TABLE

In the “Function/[Setting]” column:

- The related pop-up screen name and function name (if any) appear in parenthesis following the function description.
- Comments are in *italics*.
- The setting range is enclosed in brackets, with the default setting written in **bold**.
- An asterisk (\*) after the mode number means that this mode's value is stored in the NVRAM. If you do a RAM reset, all these SP modes will be returned to their factory settings.
- **DFU** stands for **Design/Factory Use** only. Values marked **DFU** should not be changed.
- An SP number set in bold-italic (e.g. x-**001-1**) denotes a “Special Service Program” mode setting.

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

### SP1-XXX: (Feed)



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

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

<b>1</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
105*	11	Heating: OHP/Full Color	Sets the heating roller temperature for the OHP sheets in full-color mode. [120 ~ 190 / <b>175</b> / 1°C/step]
	12	Heating: Duplex/1 Color	Sets the heating roller temperature for duplex printing (both sides) in single-color mode. [120 ~ 190 / <b>150</b> / 1°C/step]
	13	Heating: Duplex/Full Color	Sets the heating roller temperature for duplex printing (both sides) in full-color mode. [120 ~ 190 / <b>155</b> / 1°C/step]
	14	Pressure: Idling	Sets the temperature at which the pressure roller starts idling. [10 ~ 100 / <b>10</b> / 1°C/step]
	15	Pressure: Ready	Sets the temperature at which the pressure roller becomes ready for printing. [60 ~ 150 / <b>65</b> / 1°C/step]
	16	Pressure: Standby	Sets the pressure roller temperature for the ready (standby) condition. After the main switch has been turned on, the machine enters this condition when the pressure roller temperature reaches the temperature specified in this SP mode. When the machine is recovering from energy saver or auto off mode, the machine becomes ready when both heat and pressure roller temperatures reach the specified temperature. Heating roller: SP1-105-3 [60 ~ 150 / <b>115</b> / 1°C/step]
	27	Heating: OFFSET +	Sets the heating roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / <b>5</b> / 1°C/step]
	28	Pressure: OFFSET +	Sets the pressure roller temperature correction for when room temperature is 15°C or lower. [0 ~ 20 / <b>0</b> / 1°C/step]
	29	Heating: OFFSET –	Sets the heating roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / <b>5</b> / 1°C/step]
	30	Pressure: OFFSET –	Sets the pressure roller temperature correction for when room temperature is 30°C or higher. [0 ~ 20 / <b>0</b> / 1°C/step]
106	Temperature Display		
	1	Heating Roller	Displays the current temperature of the heating and pressure rollers.
	2	Pressure Roller	
109	Fusing Nip		
	1	Execute Mode	Checks the fusing nip width using an OHP sheet. <ul style="list-style-type: none"> <li>• The OHP sheet stops in the fusing unit for the specified time (☛ SP1-109-2).</li> <li>• The nip width should be <math>9 \pm 0.5</math> mm at front and rear. If this requirement is not met, change the fusing unit.</li> </ul>
	2	Stop Duration	Adjusts the stoppage time for the OHP sheet in the fusing unit (☛ SP1-109-1). [0 ~ 100 / <b>10</b> / 1 s/step]

<b>1</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
905	Fusing Roller		
	1	0: New 1: Old	<p>Selects the pressure roller type. [0 ~ 1 / <b>0</b> / 1 /step] <b>DFU</b></p> <ul style="list-style-type: none"> <li>• 0: New pressure roller</li> <li>• 1: Old pressure roller</li> </ul> <p><b>NOTE:</b> If you change this SP, it changes the fusing temperature values (SP1-105-2 to 13 and SP1-105-15 to 16)</p>
920	Exit Full Timer		
	1	Exit Full Timer	[10 ~ 60 / <b>10</b> / 1 s/step] <b>DFU</b>
930	Fusing Oil Add		
	1	Fusing oil add	<p>Forces the oil pump to supply silicone oil up from the oil tank to the tank in the oil supply unit. If the oil end sensor detects oil in the oil supply unit, this SP will not start the pump.</p>
940	LEF Priority-Bypass		
	1	LEF Priority-Bypass	<p>Selects the default paper feed direction of the by-pass tray. [0 ~ 1 / <b>0</b> / 1 /step]</p> <ul style="list-style-type: none"> <li>• 0: SEF</li> <li>• 1: LEF</li> </ul> <p><i>The machine detects only the width, but detects the size based on this information.</i></p> <p><i>If the setting is 0 (SEF): When A4 LEF is placed in the bypass tray, the machine detects this as A3. A4 SEF will be detected as A4.</i></p> <p><i>If the setting is 1 (LEF): The machine will detect A4LEF as A4. However, if A4 SEF is placed in the bypass tray, it will be detected as A5.</i></p>

**SP2-XXX: (Drum)**

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
001*	Charge Bias	
	1	[M] Adjusts the charge corona unit grid voltage. [300 ~ 800 / <b>500</b> / 1 Volt/step]
	2	[C]
	3	[Y] Only effective if process control is disabled.
	4	[K]
	5	No Image Area
	6	Charger Current Adjusts the charge corona unit current. [400 ~ 800 / <b>500</b> / 1 $\mu$ A/step]
100*	Magnification Adjustment	
	1	Main Scan Adjusts the magnification in each scan direction. [-12.8 ~ 12.7 / <b>0</b> / 0.1%/step]
	2	Sub Scan
101*	Trim Adjustment	
	1	front Adjusts the width of the white margin. [0.0 ~ 9.0 / <b>4.0</b> / 0.1 mm/step]
	2	back [0.0 ~ 9.0 / <b>2.0</b> / 0.1 mm/step]
	3	lead
	4	trail
201*	Develop Bias Adjustment	
	1	[M] Adjusts the development bias. [0 ~ 500 / <b>250</b> / 1 Volt/step]
	2	[C]
	3	[Y] Only effective if process control is disabled.
	4	[K]
208	Forced Toner	
	1	[K] Forcefully supplies toner to the development unit.
	2	[C]
	3	[M]
	4	[Y]
	5	All Color
213	Toner End Set	
	1	Toner End Set Specifies how many sheets can be printed after the toner near end message. [0 ~ 255 / <b>50</b> / 1 /step] 
306	Trans Belt First	
	1	1 Color Adds the transfer current to the first page to improve insufficient transfer of the whole solid image. [3.0 ~ 14.0 / <b>9.0</b> / 1 $\mu$ A /step]
	2	2/3/4 Colors [3.0 ~ 14.0 / <b>13.0</b> / 1 $\mu$ A /step]
400*	Cleaning Bias LL1	
	1	1 Color Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m <sup>3</sup> ) is in the following range: 0 < AH $\leq$ 3.5 (this is the 'LL1' humidity range) [0 ~ 2000 / <b>1200</b> / 10 Volt/step] 
	2	2 Colors-4 Colors [0 ~ 2000 / <b>1200</b> / 10 Volt/step]
	3	Half Speed/1 Color [0 ~ 2000 / <b>1200</b> / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors [0 ~ 2000 / <b>1200</b> / 10 Volt/step]
	5	ID pattern [0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	6	No Image Area [0 ~ 2000 / <b>1400</b> / 10 Volt/step]



<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
400*	7	Jam Recovery	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	8	Toner Revital	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
401*	Cleaning Bias LL2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m <sup>3</sup> ) is in the following range: 3.5 < AH ≤ 8.0 (this is the 'LL2' humidity range) <b>DFU</b> [0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	8	Toner Revital	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
402*	Cleaning Bias NN1		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m <sup>3</sup> ) is in the following range: 8.0 < AH ≤ 14 (this is the 'NN1' humidity range) <b>DFU</b> [0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	8	Toner Revital	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
403*	Cleaning Bias NN2		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m <sup>3</sup> ) is in the following range: 14 < AH ≤ 19 (this is the 'NN2' humidity range) <b>DFU</b> [0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	6	No Image Area	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	8	Toner Revital	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
404*	Cleaning Bias HH		
	1	1 Color	Adjusts the transfer belt cleaning voltage when absolute humidity AH (g/m <sup>3</sup> ) is in the following range: 19 < AH (this is the 'HH' humidity range) <b>DFU</b> [0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	2	2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	3	Half Speed/1 Color	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	4	Half Speed/2 Colors-4 Colors	[0 ~ 2000 / <b>1700</b> / 10 Volt/step]
	5	ID pattern	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]



<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
404*	6	No Image Area	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
	7	Jam Recovery	[0 ~ 2000 / <b>1600</b> / 10 Volt/step]
	8	Toner Revital	[0 ~ 2000 / <b>1400</b> / 10 Volt/step]
501*	Fusing Bias Status		
	1	Fusing Bias Status	Displays the status of fusing and discharge pin bias control (on or off). [0 ~ 1 / <b>1</b> / 1/step] <ul style="list-style-type: none"> <li>• 0: Control off</li> <li>• 1: Control on</li> </ul>
502	Discharge Bias		
	1	LL1: 1st	Adjusts the discharge plate voltage (paper separation from transfer belt). [-2500 ~ 0 / <b>-2000</b> / 100 Volt/step]
	2	LL2: 1st	[-2500 ~ 0 / <b>-2000</b> / 100 Volt/step]
	3	NN1: 1st	[-2500 ~ 0 / <b>-1500</b> / 100 Volt/step]
503	Fusing Bias SW		
	1	Fusing Bias SW	Controls the status of fusing bias control. [0 ~ 2 / <b>2</b> / 1/step] If a current leak occurs because of a small hole in the fusing belt surface, the machine automatically turns this SP off. After this, the fusing bias is not applied until the fusing counter is reset and the SP is set back to ON or the PM counter is reset. <ul style="list-style-type: none"> <li>• 0: OFF fixed The fusing and discharge pin bias are always off.</li> <li>• 1: ON fixed The fusing and discharge pin bias are always on. It only turns off when SC 420 occurs.</li> <li>• 2: Auto The fusing and discharge pin bias turns off after 2K prints. It also turns off when SC 420 occurs, even if the number of prints is less than 2K prints. It turns on after you install a new fusing unit and reset the PM counter with SP7-804-7.</li> </ul>
801*	Charge Cleaning Interval		
	1	Reference Value	Sets the charge corona unit cleaning interval. [0 ~ 5000 / <b>600</b> / 100 counts/step] <i>See section 6 for details. SP7-925 displays the number of counts since the last cleaning.</i>
	3	Additional Value	[100 ~ 5000 / <b>400</b> / 100 counts/step] With this SP, you can adjust the interval for charge corona cleaning in the middle of a job. The charge corona cleaning is done after 600 development counts (SP2-801-1), at job end or after 1000 development counts (= the sum of the settings in SP2-801-1 and -3) in the middle of the job.
802	Charger Cleaning		
	1	Charger Cleaning	Executes a forced charge corona unit cleaning. Set to 1 to start cleaning.

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
803	Charger Cleaning Off Time	
	1	Charger Cleaning Off Time [10 ~ 200 / <b>10</b> / 10 sec /step] Sets the time for charging the corona wire after charger cleaning to prevent uneven image density.
904	1C Bias Adjustment	
	1	M Default 50V <b>DFU</b>
	2	C Default 0V <b>DFU</b>
	3	Y Default 0V <b>DFU</b>
	4	K Default 0V <b>DFU</b>
905	Paper Transfer Roller Type	
	1	0:D type 1:S type Selects the paper transfer roller type. [0 ~ 1 / <b>0</b> / 1 /step] <b>DFU</b> • 0: Drum type • 1: Straight type
912*	Temperature Humidity Display	
	1	Temperature Displays the temperature measured by the temperature sensor inside the machine. [-127 ~ 127 / <b>0</b> / 1°C/step]
912*	2	Humidity 1 Displays the humidity measured by the humidity sensor inside the machine. [0 ~ 255 / <b>0</b> / 1%/step]
	3	Humidity 2 Displays the absolute humidity calculated from the temperature/humidity sensor readings. [0 ~ 65535 / <b>0</b> / 0.1 g/m <sup>3</sup> /step]
	4	Environment Level Displays the current humidity level calculated from the absolute humidity. • LL1: 0 < AH ≤ 3.5 • LL2: 3.5 < AH ≤ 8.0 • NN1: 8.0 < AH ≤ 14 • NN2: 14 < AH ≤ 19 • HH: 19 < AH * AH = absolute humidity
920	ITB Cleaning Clutch OFF Time	
	1	[−500 ~ 500 / <b>0</b> / 10 ms/step] <b>DFU</b>
921	ITB Cleaning Clutch OFF Mode	
		[0 ~ 1 / <b>0</b> / 1 /step] <b>DFU</b> • 0: New PCU – with ITB cleaning blade (do not adjust SP 2-920) • 1: Old PCU – without ITB cleaning blade
924	ITB Cleaning Clutch Off/On	
	1	Time [100 ~ 500 / <b>300</b> / 10 /step] Toner accumulates on the edge of the ITB cleaning blade. Turning the ITB clutch Off/On forces accumulated toner on the blade edge to drop on the ITB while there is no image on the ITB, and then this toner can be removed. If this is not done, toner may drop on the image. These SPs adjust the time and number of times for blade cleaning.
	2	Number [0 ~ 5 / <b>2</b> / 1 /step]
925	ITB Cleaning Exec Variable	
	1	[1 ~ 100 / <b>20</b> / 1 sheet/step] <b>DFU</b>



<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
926	Coverage Ratio Reference <b>DFU</b>		
	1	MC	[0~ 100 / <b>1.7</b> / 0.1%/step]
	2	FC	[0~ 100 / <b>1.7</b> / 0.1%/step]
927	Disable Time (ITB Cleaning) <b>DFU</b>		
	1		[0 ~ 14 / <b>3</b> / 1 sec/step]
938	OPC Reverse Interval		
	1		<p>[0 ~ 100 / <b>10</b> / 1 /step]</p> <p>The main motor turns the OPC belt in reverse for 500ms at the end of every job, to remove unwanted particles between the OPC belt and OPC cleaning blade. However, it is not necessary to do this often. In addition, if the frequency of OPC belt reverse rotation is reduced, the cleaning blade operates better.</p> <p>This SP adjusts the counter for the OPC belt reverse rotation, and is incremented as follows:            LT/A4 LEF or shorter: 1, Longer than LT/A4 LEF: 2.</p> <p>When this SP reaches its set maximum, reverse rotation is done for 500ms at job end.</p>
940	OPC Lubricant Mode		
	1	OPC Lubricant Mode	<p>Executes a forced OPC lubrication to reduce the friction on the OPC belt. <b>DFU</b></p> <p><i>The OPC belt and the lubricant brush operate for 2 minutes.</i></p>
944	OPC Lubrication: High Coverage		
	1	Setting	<p>Enables/disables OPC lubrication after a certain amount of images are printed. The lubrication timing depends on SP2-944-2 to -5.</p> <p>[0 ~ 1 / <b>1</b> / 1 /step]</p> <ul style="list-style-type: none"> <li>• 0: Disables</li> <li>• 1: Enables</li> </ul> <p><i>When high coverage images are continuously printed, cleaning of the OPC may not be enough. To correct this, OPC lubrication is carried out during printing</i></p>
	2	Image Coverage–1	<p>Specifies standard average coverage condition 1.</p> <p>[50 ~ 800 / <b>300</b> / 10 units/step]</p> <p><i>OPC lubrication is executed under the following conditions.</i></p> <ul style="list-style-type: none"> <li>• After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-4.</li> <li>• The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 1.</li> </ul>
	3	Image Coverage–2	<p>Specifies standard average coverage condition 2.</p> <p>[50 ~ 800 / <b>200</b> / 10 units/step]</p> <p><i>OPC lubrication is executed under the following conditions.</i></p> <ul style="list-style-type: none"> <li>• After the previous OPC lubrication, the number of output pages reaches the value specified with SP2-944-5.</li> <li>• The average coverage of the outputs after the previous OPC lubrication exceeds standard average coverage condition 2.</li> </ul>

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
944	4	Sheets-1	[6 ~ 80 / <b>30</b> / 1 sheet/step]
	5	Sheets-2	[6 ~ 80 / <b>60</b> / 1 sheet/step]
	6	Time	Specifies the time for OPC lubrication. [8 ~ 30 / <b>14</b> / 1 sec/step]
950	Start Registration Adjustment 1		
	1	K (32/24cpm)	Color registration adjustment: Adjusts the start timing of imaging for each color. [-6 ~ 6 / <b>1</b> / 1 /step] The value indicates 2 lines. 2 lines = 0.047566 ms (about 85 μm) <ul style="list-style-type: none"> <li>• +: Delays the start timing.</li> <li>• -: Advances the start timing.</li> <li>• The start timing is adjusted only in plain paper mode, and when one of the following conditions is satisfied:               <ol style="list-style-type: none"> <li>1) Between the two images on the transfer belt (when two images are developed on the OPC at the same time (● 6.3))</li> <li>2) B4 SEF or larger (multi-print job)</li> </ol> </li> </ul>
	2	M (32/24cpm)	[-6 ~ 6 / <b>-1</b> / 1 /step]
	3	C (32/24cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	4	Y (32/24cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	5	K (32/24cpm)	Adjusts the start timing of the second imaging for each color. [-6 ~ 6 / <b>2</b> / 1 /step]
	6	M (32/24cpm)	[-6 ~ 6 / <b>-1</b> / 1 /step]
	7	C (32/24cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	8	Y (32/24cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
950	9	K (20cpm)	Adjusts the start timing of imaging for each color. [-6 ~ 6 / <b>1</b> / 1 /step]
	10	M (20cpm)	[-6 ~ 6 / <b>-1</b> / 1 /step]
	11	C (20cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	12	Y (20cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	13	K (20cpm)	[-6 ~ 6 / <b>1</b> / 1 /step]
	14	M (20cpm)	[-6 ~ 6 / <b>-1</b> / 1 /step]
	15	C (20cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
	16	Y (20cpm)	[-6 ~ 6 / <b>0</b> / 1 /step]
951	Clock Phase Control		
	1	LD 1	Adjusts the clock phase of the LD to reduce the density difference between the left and right sides of the printout when the color misalignment correction (SP2-952-1) is enabled. [0 ~ 8 / <b>0</b> / 1 /step] <i>Do this after installing a new laser unit; see Replacement and Adjustment for details.</i>
	2	LD 2	

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
952	Color Misalignment Correction	
	1	Color Misalignment Correction Selects either color misalignment correction or reduction in density difference between the left and right sides of pages. [0 ~ 1 / 1 / 1 /step] <ul style="list-style-type: none"> <li>• 1: ON The data for LD1 and LD2 are switched between the left and right sides of each page. This is done because of the difference in the output of each LD. However, in some cases this correction may cause density differences between sides.</li> <li>• 0: OFF Use this setting if there are density differences between sides.</li> </ul>
953	S Reg. Adjustment	
	1	0:New 1:Old [0 ~ 1 / 0 / 1 /step] <b>DFU</b>
954	New PCU Settings	
	1	0:New 1:Old Selects the PCU type. [0 ~ 1 / 0 / 1 /step] <b>DFU</b> <ul style="list-style-type: none"> <li>• 0: New PCU</li> <li>• 1: Old PCU</li> </ul>
960	Toner End Recovery: Bk	<b>DFU</b>
	1	1st Mode
	2	1st Number Times
	3	1st Drive Time
	4	1st Stop Time
	5	2nd Mode
	6	2nd Number Times
	7	2nd Drive Time
	8	2nd Stop Time
	9	3rd Mode
	10	3rd Number Times
	11	3rd Drive Time
	12	3rd Stop Time
	13	4th Mode
	14	4th Number Times
	15	4th Drive Time
	16	4th Stop Time
961	Toner End Recovery: C	<b>DFU</b>
	1	Sets the toner end recovery cycle. [0 ~ 400 / 15 / 1 /step] In "1 cycle", the development unit turns for five seconds and stops for one second. If you set "0" with this SP, the toner end recovery is not done.
962	Toner End Recovery: M	<b>DFU</b>
	1	[0 ~ 400 / 15 / 1 /step]
963	Toner End Recovery: Y	<b>DFU</b>
	1	[0 ~ 400 / 15 / 1 /step]

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
964	Bk: Recovery Select		
	1		Selects the toner end recovery mode for black. [0 ~ 2 / <b>0</b> / 1 /step] 0: Quick Mode 1: Long Mode (quiet) 2: Medium Mode
970	Oil Removal Mode		
	1	Oil Removal 1	Enables/disables the oil removal process for a multi-page job. [0 ~ 1 / <b>1</b> / 1 /step] • 0: <i>Disables</i> • 1: <i>Enables</i> Oil on duplex copies gets on the transfer belt, and this can cause uneven image density. To remove this oil, printing stops, the PCU turns, and the cleaning unit removes the oil.
	2	Oil Removal 2	Enables/disables the oil removal process after job end. [0 ~ 1 / <b>1</b> / 1 /step] • 0: <i>Disables</i> • 1: <i>Enables</i>
	3	Number of Continue	Specifies how many times the oil removal process is repeated. [1 ~ 20 / <b>5</b> / 1 /step] <i>The more times the oil removal is repeated, the better the output images are; but the longer it takes.</i>
	4	Number of Duplex	Specifies how often the oil removal process is done. The unit is the number of duplex prints. The counter counts down once every narrow (A4 SEF or less) duplex sheet, and counts back up 1 for every other type of sheet. [1 ~ 50 / <b>10</b> / 1 /step]
	5	ITB Cleaning Clutch Off/On Number	[0 ~ 5 / <b>2</b> / 1 /step] This SP sets the number of times the ITB clutch is turned on/off at the end of oil removal mode (SP2-970-01 - this removes oil from the ITB to ensure uniform image density). Turning the ITB clutch on/off helps to remove excess toner that can cling to and then drop from the edge of the newly added ITB cleaning blade during oil removal.
980	Dctr Roller Interval		
	1	Job_Interruption: K	Specifies the timing for reversing the doctor roller during the multiple printing with single color. When this counter reaches the prescribed value, reversing the doctor roller is done during the print job. In addition, reversing the doctor roller is done when the counter reaches the 1/2 prescribed value in these SPs after the toner near end has been detected. [0 ~ 200 / <b>100</b> / 10 /step] 0: <i>Disables job interruption.</i>
	2	Job_Interruption: M	
	3	Job_Interruption: C	
	4	Job_Interruption: Y	
	5	Job_end: K	Specifies the timing for reversing the doctor roller after job end with single color. When this counter reaches the prescribed value and next job is not commanded, reversing the doctor roller is done after the job end. [1 ~ 100 / <b>20</b> / 1 /step]
	6	Job_end: M	
	7	Job_end: C	
	8	Job_end: Y	

<b>2</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
981	Toner Revitalization	
	1	Job_Interruption Specifies the number of prints for executing toner revitalization in the middle of a job. [0 ~ 200 / <b>100</b> / 10 /step] <i>0: Disables job interruption. For A4 SEF, the counter counts twice.</i>
	2	Job_End Specifies the number of prints for executing toner revitalization at the end of a job. [0 ~ 100 / <b>20</b> / 1 /step] <i>0: Disables toner refresh at end of a job. For A4 SEF, the counter counts twice.</i>
982	Dev. Motor Control	
	1	Speed Shift Time Specifies the interval for changing the development motor speed from half speed to normal speed. [0 ~ 500 / <b>100</b> / 10 ms/step] <b>DFU</b>
	2	Dev.CL_Off Time Specifies the interval until turning off the development clutch after turning off the development motor. [-150 ~ 0 / <b>-60</b> / 10 ms/step] <b>DFU</b>
983	Development Fan Continued Time	
	1	Sets more time for development fan operation. [0 ~ 900 / <b>0</b> / 10 sec /step] <i>When the machine operates with high CV in a high-temperature and high-humidity environment, dirty background can occur. Because of this, the fan operates for a longer interval to decrease the development unit temperature and to prevent dirty background.</i>



**SP3-XXX: (Process)**




<b>3</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
001	Forced Process Control	
	1	Execute
	2	Display
003*	Lubricant Interval	
	1	Interval
	2	Forced Interval

3	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
004*	Environment Change		
	1	Temperature	Sets the temperature/humidity change that triggers process control (process control is done if temperature or humidity has changed by this amount since the previous process control). [0 ~ 100 / <b>15</b> / 1°C/step]
	2	Humidity	[0 ~ 200 / <b>15</b> / 1 g/m <sup>3</sup> /step]
006*	Density Adjustment		
	1	M/A Correction	Select the toner density compensation level for process control. If prints are not dark enough when making multi-print jobs, increasing this value ensures that prints will be darker after the next process control. The default (0) is for no correction. SP3-006-1: Use this one if the density of solid areas is not satisfactory. SP3-006-2: Use this one if the density of highlight areas is not satisfactory. [0 ~ 3 / <b>0</b> / 1/step] <ul style="list-style-type: none"><li>0: <i>None</i></li><li>1: <i>Weak</i></li><li>2: <i>Medium</i></li><li>3: <i>Strong</i></li></ul> The higher the value, the darker the prints will be.
	2	Highlight Correction	
125	ACC Self Check Set		
	1	0: No 1: Yes	Enables process control execution before ACC. [0 ~ 1 / <b>1</b> / 1/step] <ul style="list-style-type: none"><li>0: <i>No</i></li><li>1: <i>Yes</i></li></ul>
911	Doctor Roller Rotation Interval		
	1	M Development	The doctor rollers for M and K are rotated backwards to prevent toner clumping. It is not necessary to do this for every M & K job, because this may cause doctor roller filming and dirty background images. To prevent this, the reverse rotation is done after 20 development jobs. These SP modes can adjust the reverse rotation interval. The doctor roller reverse rotation for SP3-911 is performed at job end. [1 ~ 50 / <b>20</b> / 1 /step] <b>DFU</b>
	2	K Development	
922*	Lubricant Clutch Off		
	1	1C	The setting determines the number of seconds after image transfer belt cleaning roller charging that the clutch is turned off. [0 ~ 11 / <b>0</b> / 1 sec/step]
	2	2C/3C/4C	[0 ~ 11 / <b>3</b> / 1 sec/step]
929	Development Unit Replace		
	1	M	Initializes the development unit for each color. [0 ~ 1 / <b>0</b> / -] <ul style="list-style-type: none"><li>0: <i>No action</i></li><li>1: <i>Initialize the development unit</i></li></ul> When you initialize the development unit, refer to 3.5 development unit in the Replacement and Adjustments.
	2	C	
	3	Y	
	4	Bk	

3	Mode No. (Class 1, 2, and 3)	Function / [ Setting ]
970	Image Area Rate	
	1	M Specifies the minimum image area (expressed as a percentage of an A4 page) required to maintain optimum development unit condition (☛ Toner Revitalization: SP3-971). [0 ~ 10.0 / <b>2.0</b> / 0.1 %/step] <i>After 20 sheets over a number of small jobs (or after 50 sheets in one job), if the developed area is less than the value of this SP mode, toner is transferred to the image transfer belt and cleaned off. This is performed during the doctor roller reverse rotation.</i>
	2	C [0 ~ 10.0 / <b>2.0</b> / 0.1 %/step]
	3	Y [0 ~ 10.0 / <b>2.0</b> / 0.1 %/step]
	4	Bk [0 ~ 10.0 / <b>4.7</b> / 0.1 %/step]
971	Toner Revitalization	
	1	Toner Revitalization Enables/disables the toner revitalization. [0 ~ 1 / <b>1</b> / 1 /step] • 0: Disables • 1: Enables <i>Continuous printing with a relatively low coverage ratio (CMYK less than 5% each) tends to reduce the charge potential of the toner, because the toner remains in the hopper for a long time. This can lead to spots on the copy. Toner revitalization removes this defective toner periodically.</i>
972	Development Counter	
		Selects the development counter method. This counter is only used for toner revitalization. [0 ~ 1 / <b>0</b> / 1 /step] 0: A4 SEF 1 count 1: A4 SEF 1.4 count <i>If dirty background occurs after you make many copies with A4 SEF paper, then set this to 1. Then, toner revitalization will be done more frequently.</i>
980	1C Idling	
	1	1C Idling Enables/disables 1-color idling after paper transfer. [0 ~ 1 / <b>0</b> / 1 /step] • 0: Disables • 1: Enables <i>Set this to 1 if the user complains about diagonal lines in solid areas of prints that only use one toner color (M, C, or Y).</i>
990	Process Control Off	
	1	All ON/OFF Selection (0: OFF/ 1: ON) Turns on/off process control for all process control execution timings. [0 ~ 1 / <b>0</b> / 1 /step] <b>DFU</b> • 0: OFF (Process control enabled) • 1: ON (Process control disabled)

<b>3</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
990	2	After CH Cleaning ON/OFF Selection (0: OFF/ 1: ON)	Turns on/off process control for the process control that is done after charge corona wire cleaning. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"><li>• 0: OFF (<i>Process control enabled</i>)</li><li>• 1: ON (<i>Process control disabled</i>)</li></ul>

**SP4-XXX: (Scanner)**

4	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
008*	Scanner Sub Scan Magnification		
	1	Scanner Sub Scan Magnification	Adjusts the magnification in the sub scan direction for scanning. [–1.0 ~ 1.0 / <b>0.0</b> / 0.1 %/step] Use the  key to toggle between + and – before entering the value. The specification is ± 1%. See “Replacement and Adjustment – Copy Adjustment” for details.
010	Scanner Leading Edge Registration		
	1	Scanner Leading Edge Registration	Adjusts the leading edge registration for scanning in platen mode. [–3.0 ~ 3.0 / <b>0.0</b> / 0.1 mm/step] (–): The image moves in the direction of the leading edge. Use the  key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See “Replacement and Adjustment – Copy Adjustment” for details.
011*	Scanner Side-to-side Registration		
	1	Scanner Side-to-side Registration	Adjusts the side-to-side registration for scanning in platen mode. [–6.0 ~ 6.0 / <b>0.0</b> / 0.1 mm /step] (–): The image disappears at the left side. (+): The image appears. Use the  key to toggle between + and – before entering the value. The specification is 2 ± 1.5 mm. See “Replacement and Adjustment – Copy Adjustment” for details.
012*	Scale Shadow Erase		
	1	Book: Lead Edge L	Adjusts the erase margin at each side for scanning. [0.0 ~ 3.0 / <b>0.0</b> / 0.1 mm/step] Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.
	2	Book: Trail Edge R	
	3	Book: Left	
	4	Book: Right	
	5	ADF: Lead Edge	
	7	ADF: Left	
	8	ADF: Right	
013	Scanner Free Run		
	1	Lamp: OFF	Performs a scanner free run with the exposure lamp on or off. Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.
	2	Lamp: ON	
017	Scan		
	1	Shading ON	Performs a scanner free run with shading on or off. Only one scan is made. Press ON on the touch panel to start this feature. Press OFF on the touch panel to stop.
	2	Shading OFF	

<b>4</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
020	DF Glass Dust Check		
	1	Dust Check	Turns DF glass dust detection on/off. [0 ~ 1 / <b>0</b> / 1 /step] • 0: OFF • 1: ON
	2	Detect Level	Selects the detection level. [0 ~ 8 / <b>4</b> / 1 /step] 0: Least detailed detection, 8: Most detailed detection
	3	Image Correct Level	Selects the vertical line correction when using the DF. [0 ~ 4 / <b>0</b> / 1 /step] 0: Disables image correction level 4: Most effective correction
301	APS Data Confirmation		
	1	APS Data Confirmation	Displays the status of the APS sensors and platen/DF cover sensor.
303	APS Minimum Size Setting		
	1		Selects whether the copier determines that the original is A5 sideways or lengthwise size when the APS sensor cannot detect the size. [0 ~ 2 / <b>0</b> / 1 /step] <i>If "2: A5 lengthwise" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise.</i> <i>If "1: A5 sideways" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 sideways.</i> <i>If "0: Not detected" is selected, "Cannot detect original size" will be displayed.</i>
305	ADF Size Change		
	1		Selects the original size type for the default original size detection. [0 ~ 2 / <b>0</b> / 1 /step] 0: Standard 1: A4/LT 2: 8K/16K
400	Scanning Blank Margin		
	1	Book: Lead Edge L	Specifies the scanning blank margin for each edge in platen mode. [ 0 ~ 3.0 / <b>0</b> / 0.1 mm/step]
	2	Book: Trail Edge R	
	3	Book: Left	
	4	Book: Right	
	5	ADF: Lead Edge	Specifies the scanning blank margin for each edge in ADF mode. [ 0 ~ 3.0 / <b>0</b> / 0.1 mm/step]
	7	ADF: Left	
	8	ADF: Right	

4	Mode No. (Class 1, 2, and 3)	Function / [ Setting ]
417	IPU Test Pattern Select	
	1	select any test pattern  Prints test patterns from the IPU video data outputs. <ul style="list-style-type: none"> <li>• 0: Scanning Image</li> <li>• 1: Checker</li> <li>• 2: Oblique Checker</li> <li>• 3: Horizontal Gray Scale</li> <li>• 4: Vertical Gray Scale</li> <li>• 5: RGB YMCK Scale</li> <li>• 6: UCR Gray Scale</li> <li>• 7: Color Patch 16 Steps 1</li> <li>• 8: Color Patch 16 Steps 2</li> <li>• 9: Color Patch 64 Steps</li> <li>• 10: Checker (YMCK)</li> <li>• 11: Patch (YMCK)</li> <li>• 12: Banding 1 (Gray)</li> <li>• 13: Banding 2 (Gray)</li> <li>• 14: Horizontal Gray Scale 2</li> <li>• 15: Scanning Image + Checker</li> <li>• 16: Scanning Image + Gray Scale</li> </ul> Change to the copy mode display by pressing the Interrupt key, then print the test pattern.
440	Chroma Adjustment	
	1	Adjusts the color chroma for the scanner. [0 ~ 5 / 3 / 1 /step] <b>DFU</b>
460	ADS (Digital) Level	
	2	Selects the auto erase background level. All background below this level is automatically erased. [0~ 128 / 10 / 1 /step]
540	Printer Vector	
	1	R: Option
	2	R: R
	3	R: G
	4	R: B
	5	Y: Option
	6	Y: R
	7	Y: G
	8	Y: B
	9	G: Option
	10	G: R
	11	G: G
	12	G: B
	13	C: Option
	14	C: R
	15	C: G
	16	C: B
	17	B: Option
	18	B: R

<b>4</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
540	19	B: G	Adjust the vector correction of the filter in the CCD on the SBU unit. [0 ~ 255/ <b>0</b> / 1 /step] <i>When replacing the SBU, input the data from the data sheet that is included with the spare SBU unit.</i>
	20	B: B	
	21	M: Option	
	22	M: R	
	23	M: G	
	24	M: B	
550	Scanner Application		
	5	Text (Print) MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Text (Print) Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Text (Print) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Text (Print) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
551	Scanner Application		
	5	Text (OCR) MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Text (OCR) Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Text (OCR) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Text (OCR) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
552	Scanner Application		
	5	Text (OCR) D.O.C MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Text (OCR) D.O.C Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Text (OCR) D.O.C Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Text (OCR) D.O.C Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast



<b>4</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
553	Scanner Application	
	5	Text /Photo MTF Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Text /Photo Smoothing Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Text /Photo Brightness Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Text /Photo Contrast Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
554	Scanner Application	
	5	Photo MTF Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Photo Smoothing Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Photo Brightness Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Photo Contrast Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
555	Scanner Application	
	5	Grayscale MTF Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Grayscale Smoothing Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Grayscale Brightness Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Grayscale Contrast Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
558	Scanner Application	
	5	Color (T/P) MTF Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Color (T/P) Smoothing Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing

<b>4</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
558	7	Color (T/P) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Color (T/P) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
559	Scanner Application		
	5	Color (GlossyPhoto) MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	Color (GlossyPhoto) Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	Color (GlossyPhoto) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	Color (GlossyPhoto) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
560	Scanner Application		
	5	sRGB (T/P) MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	sRGB (T/P) Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	sRGB (T/P) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	sRGB (T/P) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
561	Scanner Application		
	5	sRGB (GlossyPhoto) MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	sRGB (GlossyPhoto) Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	sRGB (GlossyPhoto) Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	sRGB (GlossyPhoto) Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast

4	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
562	Scanner Application		
	5	ACS MTF	Adjusts the MTF level. [0 ~ 15 / <b>8</b> / 1 /step] 0: Least effective MTF, 15: Most effective MTF
	6	ACS Smoothing	Adjusts the smoothing level. [0 ~ 7 / <b>4</b> / 1 /step] 0: Least effective smoothing, 7: Most effective smoothing
	7	ACS Brightness	Adjusts the brightness level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least bright, 255: Brightest
	8	ACS Contrast	Adjusts the contrast level. [1 ~ 255 / <b>128</b> / 1 /step] 1: Least effective contrast, 255: Most effective contrast
628	Gain Adjustment: R		
	1	R EVEN	Displays the values of the even and odd gain adjustment.
	2	R ODD	
629	Gain Adjustment: G		
	1	G EVEN	Displays the values of the even and odd gain adjustment.
	2	G ODD	
630	Gain Adjustment: B		
	1	B EVEN	Displays the values of the even and odd gain adjustment.
	2	B ODD	
661	Last Gain Data: R		
	1	R EVEN	Displays the last gain value for the even red signal in the CCD image processing circuit.
	2	R ODD	Displays the last gain value for the odd red signal in the CCD image processing circuit.
662	Last Gain Data: G		
	1	G EVEN	Displays the last gain value for the even green signal in the CCD image processing circuit.
	2	G ODD	Displays the last gain value for the odd green signal in the CCD image processing circuit.
663	Last Gain Data: B		
	1	B EVEN	Displays the last gain value for the even blue signal in the CCD image processing circuit.
	2	B ODD	Displays the last gain value for the odd blue signal in the CCD image processing circuit.
688	DF: Density Adjustment		
	1	DF: Density Adjustment	Adjusts the brightness for scanning using the ARDF. [83 ~ 100 / <b>100</b> / 1 %/step] <i>The density when scanning from the DF exposure glass tends to be higher than the density from the main exposure glass. SP4-688 adjusts the density on the DF exposure glass.</i>
800	DF: Density Correction		
	1	R	Adjusts the red density when scanning with the ARDF [-20 ~ 20 / <b>0</b> / 1 %/step]
	2	G	Adjusts the green density when scanning with the ARDF [-20 ~ 20 / <b>0</b> / 1 %/step]

<b>4</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
800	3	B	Adjusts the blue density when scanning with the ARDF [−20 ~ 20 / <b>0</b> / 1 %/step]
885	Level Adjustment: R		Adjusts the ADC reference voltage. Details are in Replacement and Adjustment. [−128 ~ 127 / <b>49</b> / 1 /step]
886	Level Adjustment: G		Adjusts the ADC reference voltage. [−128 ~ 127 / <b>17</b> / 1 /step]
887	Level Adjustment: B		Adjusts the ADC reference voltage. [−128 ~ 127 / <b>29</b> / 1 /step]
902	ACC Data Display		Displays ACC data. [0 ~ 255 / <b>0</b> / 1 /step]
	1	R DATA 1	
	2	G DATA 1	
	3	B DATA 1	
	4	R DATA 2	
	5	G DATA 2	
	6	B DATA 2	
905*	Dither selection		
	1	Dither selection	[0 ~ 255 / <b>0</b> / 1 /step] <b>DFU</b>
906*	Binary Threshold		
	1	Binary Threshold	Specifies the black/white threshold for binary image processing. [0 ~ 255 / <b>128</b> / 1 /step] <i>Lower values increase the proportion of black in the image.</i>
907	VPU Test Pattern Selection		
	1	select any test pattern: R	[0 ~ 4 / <b>0</b> / 1 /step] • 0: CCD • 1: Black • 2: White • 3: 15-grade gray scale • 4: Vertical line
	2	select any test pattern: G	
	3	select any test pattern: B	
918	Manual Gamma Adjustment		
			Please refer to section 3.13.2
932*	Picture Element Correction		
	1	R: Left	Corrects the left or right side alignment of the red or blue filter on the CCD. [0 ~ 9 / <b>5</b> / 1 /step]
	2	R: Right	
	3	B: Left	
	4	B: Right	

**SP5-XXX: (Mode)**

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
024*	mm/inch Display Selection	
	1	mm/inch Display Selection Selects a unit system. North America: [0 ~ 1 / <b>1</b> / 1 /step] Europe: [0 ~ 1 / <b>0</b> / 1 /step] • 0: <i>mm</i> • 1: <i>inch</i>
044	Operation Panel Bit SW <b>DFU</b>	
	1	SW 1
	2	SW 2
045*	Accounting Counter	
	1	Counter Method Changes the counter method. The setting can only be changed once. [0 ~ 1 / <b>0</b> / 1 /step] • 0: <i>Developments</i> • 1: <i>Prints</i>
051	Toner Refill Detection Display	
	1	Toner Refill Detection Display Activates/inactivates the toner refill detection display. [0 ~ 1 / <b>0</b> / 1 /step] • 0: <i>ON</i> • 1: <i>OFF</i>
104	A3/DLT Double Count	
	1	A3/DLT Double Count Turns on/off the double count for A3/11" x 17". [0 ~ 2 / <b>0</b> / 1/step] • 0: <i>No</i> • 1: <i>Yes</i> • 2: <i>Yes except By-pass</i>
112	Non-Standard Paper Selection	
	1	0: OFF 1: ON Turns the custom paper size selection on/ off. [0 ~ 1 / <b>1</b> / 1 /step] • 0: <i>OFF</i> • 1: <i>ON</i>
113	Optional Counter Type	
	1	Default Optional Counter Type Determines the type of accounting device. [0 ~ 9 / <b>0</b> / 1 /step] • 0: <i>None</i> • 1: <i>Key Card (RK3, 4)</i> • 2: <i>Key Card (count down)</i> • 3: <i>Prepaid Card</i> • 4: <i>Coin Lock</i> • 5: <i>MF Key Card</i> • 6: <i>(not used)</i> • 7: <i>(not used)</i> • 8: <i>Key Counter + Vendor</i> • 9: <i>Bar-code Printer</i>
	2	External Optional Counter Type For use with the SDK package. [0 ~ 3 / <b>0</b> / 1 /step] • 0: <i>None</i> • 1: <i>Expansion Device 1</i> • 2: <i>Expansion Device 2</i> • 3: <i>Expansion Device 3</i>

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
118	Disable copying		
	1	Disable copying	[0 ~ 1 / <b>0</b> / 1 /step] <i>0: Copying enabled</i> <i>1: Copying disabled</i>
120	Mode Clear Opt. Counter Removal		
	1	Mode Clear Opt. Counter Removal	Selects the mode clear for all accounting devices when canceling the accounting devices counter. [0 ~ 2 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• <i>0: Yes (always cleared)</i></li> <li>• <i>1: Standby (cleared before and after a job, not cleared during an interrupt)</i></li> <li>• <i>2: No (never cleared)</i></li> </ul>
121	Counter Up Timing		
	1	Counter Up Timing	Selects the accounting timing. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• <i>0: Feed (counted up when the feed sensor detects the paper)</i></li> <li>• <i>1: Exit (counted up when the exit sensor detects the paper)</i></li> </ul> <i>SP5-121 affects only the timing for sending signals to the accounting device. The counters for other units or devices are not affected.</i>
126	F Size Setting		
	1	F Size Setting	Selects the size when the original size sensors of the ADF or platen detect that the original size is "F size". [0 ~ 2 / <b>0</b> / 1/step] <ul style="list-style-type: none"> <li>• <i>0: 8 ½ x 13</i></li> <li>• <i>1: 8 ½ x 13 ¼</i></li> <li>• <i>2: 8 x 13</i></li> </ul>
127	APS Mode		
	1	APS Mode	Enables or disables the APS (Auto Paper Selection) mode. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• <i>0: Enables</i></li> <li>• <i>1: Disables</i></li> </ul>
128	Code Mode With Key/Card Option		
	1	Code Mode With Key/Card Option	[0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• <i>0: No combination (user codes cannot be used with key/card options)</i></li> <li>• <i>1: Combination (user codes can be used with key/card options)</i></li> </ul> <i>Also see SP 5-113.</i>

5	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
131	Paper Size Type		
	1	Paper Size Type	Selects the original size type. [0 ~ 2 / <b>Depending on DIP switch setting</b> / 1 /step] <ul style="list-style-type: none"><li>0: Japan</li><li>1: N. America</li><li>2: Europe</li></ul> DIP switch setting (☛ 5.8)
150	Bypass Length Setting		
	1	Bypass Length Setting	Use or do not use long paper in the bypass tray. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"><li>0: OFF</li><li>1: ON (jams are not detected in the paper path)</li></ul> The standard length (sub scan) is limited to 600mm even if "1" is selected in this SP.
162	Application Switch Method		
	1	App. Switch Method	Selects the switching method of the application display. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"><li>0: Soft Key Set</li><li>1: Hard Key Set</li></ul>
167	Fax Printing Mode at Optional		
	1	Fax Printing Mode at Optional Counter Off	Selects the fax printing mode without the optional accounting device when the fax printing is set for accounting. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"><li>0: Automatic printing</li><li>1: No automatic printing</li></ul>
169	CE Login		
	1	CE Login	If you change the printer bit switches, you must 'log in' to service mode with this SP before you go into the printer SP mode. [0 ~ 1 / <b>0</b> / 1 /step] 0: Off. Printer bit switches cannot be adjusted. 1: On. Printer bit switches can be adjusted.
212	Page Numbering		
	3	Duplex Printout Right/Left Position	Adjusts the positions of the 2nd page's numbers. [-10 ~ 10 / <b>0</b> / 1 mm/step]
	4	Duplex Printout High/Low Position	
228	Scan Binary Bound		
	1	Scan Binary Bound	Selects the scan binary boundary for IMH. [0 ~ 1 / <b>0</b> / 1 /step] 0: 8 bit boundary 1: 32 bit boundary

5	Mode No. (Class 1, 2, and 3)	Function / [ Setting ]
302	Setting Time	
	2 Time Difference	Sets the time difference. North America: [–1440 ~ 1440 / –300 / 1 minute/step] Europe: [–1440 ~ 1440 / 60 / 1 minute/step]  <i>Values indicate the time difference from the Greenwich Mean Time (GMT). “–300” indicates the eastern standard time of Canada and the United States of America. “60” indicates the standard time of the French Republic.</i>
307	Summer Time	
	1 Setting	Enables or disables the summer time mode. [0 ~ 1 / <b>NA, EU, ASIA</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Disabled</li> <li>1: Enabled</li> </ul> NA and EUR: 1, ASIA: 0 <b>NOTE:</b> Make sure that both SP5-307-3 and -4 are correctly set. Otherwise, this SP is not activated even if this SP is set to "1".
	3 Rule Set (Start)	Specifies the start setting for the summer time mode. There are 8 digits in this SP. For months 1 to 9, the "0" cannot be input in the first digit, so the eight-digit setting for -2 or -3 becomes a seven-digit setting.  <i>1st and 2nd digits: The month. [1 to 12]            3rd digit: The week of the month. [1 to 5]            4th digit: The day of the week.                      [0 to 6 = Sunday to Saturday]            5th and 6th digits: The hour. [00 to 23]            7th digit: The length of the advanced time.                      [0 to 9 / 1 hour /step]            8th digit: The length of the advanced time.                      [0 to 5 / 10 minutes /step]            For example: 3500010 (EU default)            The timer is advanced by 1 hour at am 0:00 on the 5th Sunday in March</i> <ul style="list-style-type: none"> <li>The digits are counted from the left.</li> <li>Make sure that SP5-307-1 is set to "1".</li> </ul>
	4 Rule Set (End)	Specifies the end setting for the summer time mode. There are 8 digits in this SP. 1st and 2nd digits: The month. [1 to 12] 3rd digit: The week of the month. [1 to 5] 4th digit: The day of the week. [0 to 6 = Sunday to Saturday] 5th and 6th digits: The hour. [00 to 23] The 7th and 8 digits must be set to "00". <ul style="list-style-type: none"> <li>The digits are counted from the left.</li> <li>Make sure that SP5-307-1 is set to "1".</li> </ul>



<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
401*	Access Control	
	When installing the SDK application, SAS (VAS) adjusts the following settings. <b>DFU</b>	
	200	SDK1 Unique ID This ID is overwritten by SAS (VAS) when you install or uninstall the SDK application.
	201	SDK1 Certification Method [ 0 ~ 255 / <b>0</b> / 1 /step]
	210	SDK2 Unique ID
	211	SDK2 Certification Method [ 0 ~ 255 / <b>0</b> / 1 /step]
	220	SDK3 Unique ID
	221	SDK3 Certification Method [ 0 ~ 255 / <b>0</b> / 1 /step]
404	User Code Count Clear	
	1	User Code Count Clear Clears the user code counter.
501	PM Alarm	
	1	PM Alarm Level Specifies the PM alarm level. [0 ~ 9999 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: Disables the PM alarm</li> <li>• 1 ~ 9999: Specifies the PM alarm level.</li> </ul> <p>The PM alarm occurs when <math>L \times 1000 \geq C</math>, where <i>L</i> is the specified level and <i>C</i> is the current PM counter value.</p>
	2	Original Count Alarm Turns the original count alarm on or off. [0 ~ 1 / <b>1</b> / 1 /step] <b>Used for RSS.</b> <ul style="list-style-type: none"> <li>• 0: OFF</li> <li>• 1: ON</li> </ul>
504	Jam Alarm Used with RSS.	
	1	Jam Alarm Selects the jam alarm level. [0 ~ 3 / <b>3</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: Z (none)</li> <li>• 1: L (6K x 1/4)</li> <li>• 2: M (6K x 1/2)</li> <li>• 3: H (6K)</li> </ul> <p>When you select "1, 2 or 3", the machine does these steps:</p> <ol style="list-style-type: none"> <li>1) The jam alarm counter increases by "1" when a paper jam is detected (except for jams in the ADF).</li> <li>2) The jam alarm counter decreases by "1" when the set number of sheets was copied or printed after the machine detected the previous paper jam.</li> <li>3) A jam alarm occurs when the jam alarm counter gets to "10".</li> </ol>
505	Error Alarm Used with RSS.	
	1	Error Alarm Specifies the error alarm level. [0 ~ 255 / <b>40</b> / 1 /step] <p>The unit is a hundred sheets. The default "40" means 4,000 sheets.</p>
507	Supply Alarm Used with RSS.	

5	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
	1	Paper Supply Alarm	Turns the supply alarm on or off. [0 ~ 1 / <b>0</b> / 1 /step] • 0: Off • 1: On <i>This alarm occurs when one of the limits in SPs 5507-128 to 172 is reached.</i>
	2	Staple Supply Alarm	Turns the supply alarm on or off. [0 ~ 1 / <b>0</b> / 1 /step] • 0: Off • 1: On <i>This alarm occurs when every 1000 staples are used.</i>
	3	Toner Supply Alarm	Turns the supply alarm on or off. [0 ~ 1 / <b>0</b> / 1 /step] • 0: Off • 1: On <i>This alarm occurs when toner near end occurs.</i>
	128	Interval: Others	The machine issues the control call when the number of paper sheets reaches the specified value. [ 250 ~ 10000 / <b>1000</b> / 1 sheet/step]
	132	Interval: A3	
	133	Interval: A4	
	134	Interval: A5	
	141	Interval: B4	
	142	Interval: B5	
	160	Interval: DLT	
	164	Interval: LG	
	166	Interval: LT	
172	Interval: HLT		
508	CC Call Used with RSS.		
1	Jam Remains	Enables/disables alarms for unremoved jams. [0 ~ 1 / <b>1</b> / 1 /step] • 0: Disabled • 1: Enabled	
2	Continuous Jams	Enables/disables alarms for consecutive jams. [0 ~ 1 / <b>1</b> / 1 /step] • 0: Disabled • 1: Enabled	
3	Continuous Door Open	Enables/disables alarms when a cover remains open continuously. [0 ~ 1 / <b>1</b> / 1 /step] • 0: Disabled • 1: Enabled	

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
508	4	Low Call Mode	<p>Selects the alarm mode.</p> <p>[0 ~ 1 / 1 / 1 /step]</p> <ul style="list-style-type: none"> <li>0: Normal Mode (CC Auto Call)</li> <li>1: Reduce Mode (CC Manual Call)</li> </ul> <p>When selecting 1 (reduce mode), SP5-508-011 through -023 specify parameters (referred to as "P" in the following descriptions). Alarms occur under the following conditions:</p> <ul style="list-style-type: none"> <li>Continuous jam: When paper jams occur P times consecutively, where P can be between 2 and 10. The default for P is 5 (☛ SP5-508-012).</li> <li>Continuous door open: When a door is left open for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-013).</li> <li>Unremoved jam: When a paper jam is left unremoved for P minutes, where P can be between 3 and 30. The default for P is 10 (☛ SP5-508-011).</li> </ul>
	11	Jam Detection: Time Length	Specifies the unremoved jam timer (☛ SP5-508-004). [3 ~ 30 / 10 / 1 minute/step]
	12	Jam Detection: Continuous Count	Specifies the number of consecutive jams (☛ SP5-508-004). [2 ~ 10 / 5 / 1 time/step]
	13	Door Open: Time Length	Specifies the continuous door open timer (☛ SP5-508-004). [3 ~ 30 / 10 / 1 minute/step]
	21	Jam Operation: Time Length	<p>Selects how the machine handles the unremoved jam alarm.</p> <p>[0 ~ 1 / 1 / 1 /step]</p> <ul style="list-style-type: none"> <li>0: Auto call</li> <li>1: Beeper</li> </ul> <p>If an unremoved jam occurs, a phone call is automatically made when 0 (auto call) is selected. To enable SP5-508-21 through -23, SP5-508-4 must be set to 1.</p>
508	22	Jam Operation: Continuous Count	<p>Selects how the machine handles the consecutive jam alarm.</p> <p>[0 ~ 1 / 1 / 1 /step]</p> <ul style="list-style-type: none"> <li>0: Auto call</li> <li>1: Manual Call</li> </ul>
	23	Door Operation: Time Length	<p>Selects how the machine handles the continuous door open alarm.</p> <p>[0 ~ 1 / 1 / 1 /step]</p> <ul style="list-style-type: none"> <li>0: Auto call</li> <li>1: Manual Call</li> </ul>
610	ACC Factory Setting		
	4	Recall	Recalls the ACC factory settings.
	5	Overwrite	Overwrites the ACC factory settings with the current settings.
	6	Previous Setting	Recalls the previous ACC settings.

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
611	2nd. Single Color Adj.	
	1	B-C [0 ~ 100 / <b>90</b> / 1 %/step]
	2	B-M [0 ~ 100 / <b>60</b> / 1 %/step]
	3	G-C [0 ~ 100 / <b>85</b> / 1 %/step]
	4	G-Y [0 ~ 100 / <b>80</b> / 1 %/step]
	5	R-M [0 ~ 100 / <b>95</b> / 1 %/step]
	6	R-Y [0 ~ 100 / <b>65</b> / 1 %/step]
801	Memory Clear – Refer to section 5.1.9 for how to use this SP	
	1	All Clear Clears the settings from the NVRAM and initializes the settings.
	2	Engine Clear Clears the engine settings.
	3	SCS Clears the system settings.
	4	IMH Memory Clr Clears IMH data. <b>DFU</b>
	5	MCS Clears MCS data. <b>DFU</b>
	6	Copier application Clears the copy settings.
	7	Fax Application Clears the fax settings.
	8	Printer Application Clears the user tool settings.
	9	Scanner Application Clears the scanner settings. <i>This SP must be performed after updating the scanner software.</i>
	10	Web Service/Network Application Clears the net file settings.
	11	NCS Clears the network settings.
	12	R-FAX Clears the R-FAX settings.
	14	Clear DCS Setting Clears the DCS settings.
	15	Clear UCS Setting Clears the UCS settings.
	16	MIRS Setting Clears the MIRS settings.
	17	CCS Clears the CCS settings.
802	Free Run	
	1	A4: BANK 2: Bk
	2	A4: TRAY 1: Bk
	3	A4: By-pass: Bk
	4	A4: BANK 2: FC
	5	All Mode
Makes a free run test. All mode: Goes through tests 1 to 4. [0 ~ 1 / 0 / 1/step] • 0: OFF • 1: ON		
803	Input Check (See section 5.1.4, "Input Check")	
804	Output Check (See section 5.1.5, "Output Check".)	
810	SC Reset	
	1	SC Reset Resets a fusing-related SC. <i>Resets a type A service call condition.</i> <b>NOTE:</b> Turn the main switch off and on after using this SP.
811	Serial Number Display	
	2	SN Display Displays the machine serial number.
812*	Service Telephone No. Setting	
	1	Service 5-812-1: Service representative telephone number
	2	Facsimile 5-812-2: Service representative fax number
	3	Supply 5-812-3: Number for ordering consumables
	4	Operation 5-812-4: Telephone number of the sales representative • Both numbers and alphabetic characters can be input.

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
816	Remote Service	
	1	I/F Setting Selects the remote service setting. [0 ~ 2 / <b>2</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Remote service off</li> <li>1: CSS remote service on</li> <li>2: NRS remote service on</li> </ul>
	2	CE Call Performs the CE Call at the start or end of the service. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Start of the service</li> <li>1: End of the service</li> </ul> <i>This SP is activated only when SP 5816-001 is set to "2".</i>
	3	Function Flag Enables/disables the remote service function. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Disabled</li> <li>1: Enabled</li> </ul>
	6	Device Information Call Display Setting Displays/does not display the device information call content. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Not displayed</li> <li>1: Displayed</li> </ul>
	7	SSL Disable Uses/does not use the RCG certification by SSL when calling the RCG. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Uses the RCG certification</li> <li>1: Does no use the RCG certification</li> </ul>
	8	RCG Connect Timeout Specifies the connect timeout interval when calling the RCG. [1 ~ 90 / <b>10</b> / 1 second/step]
	9	RCG Write Timeout Specifies the write timeout interval when calling the RCG. [0 ~ 100 / <b>60</b> / 1 second/step]
	10	RCG Read Timeout Specifies the read timeout interval when calling the RCG. [0 ~ 100 / <b>60</b> / 1 second/step]
	11	Port 80 Enable Enables/disables the access via port 80 to the SOAP (Simple Object Access Protocol) method. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>0: Disabled</li> <li>1: Enabled</li> </ul>
821	Remote Service Address	
	1	CSS-PI device code Selects the PI device code. [0 ~ 4 / <b>0</b> / 1 /step] <i>To validate the setting, turn off and on the main power switch.</i>
	2	RCG IP Address Sets the RCG IP address for calling the center.
824	NV-RAM Data Upload	
	1	NV-RAM Data Upload Use this to copy NVRAM data from the machine to an SD card.

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
825	NV-RAM Data Download	
	1	NV-RAM Data Download  Imports data from an SD card to the NVRAM.  <i>When data has been normally imported into the NVRAM, a message appears on the operation panel. After reading the message, turn the main power switch off and on.</i>
828	Network Setting	
	50	1284 Compatibility (Centro)  Validates/invalidates IEEE1284 compatibility. [0 ~ 1 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: Invalidated</li> <li>1: Validated</li> </ul>
	52	ECP (Centro)  Validates/invalidates ECP. [0 ~ 1 / 1 / 1 /step] <i>This SP is activated only when SP5828-050 is set to "1".</i> <ul style="list-style-type: none"> <li>0: Invalidated</li> <li>1: Validated</li> </ul>
	65	Job Spooling  Enables/disables Job Spooling. [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: Disabled</li> <li>1: Enabled</li> </ul>
	66	Job Spooling Clear: Start Time  Enables/disables Job Spooling Clear when the main power turns on. [0 ~ 1 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: ON (Erases the spooled job in the HDD before the main power is turned off.)</li> <li>1: OFF (Prints the spooled job in the HDD before the main power is turned off.)</li> </ul>
828	69	Job Spooling (Protocol)  Enables/disables Job Spooling for each protocol. [0 ~ 1 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: Enables Job Spooling</li> <li>1: Disables Job Spooling</li> </ul> <i>Bit switch</i> <i>Bit 0: LPR</i> <i>Bit 1: FTP</i> <i>Bit 2: IPP</i> <i>Bit 3: SMB</i> <i>Bit 4: BMLinks</i> <i>Bit 5: DIPRINT</i> <i>Bit 6: Reserved</i> <i>Bit 7: Reserved</i>
	84	Printing Settings List  Prints the settings list related to NCS parameters.
	90	TELNET (0: OFF 1:ON)  Turns on/ off TELNET. [0 ~ 1 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: OFF</li> <li>1: ON</li> </ul>

<b>5</b>		<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
828	91	Web (0: OFF 1: ON)	Turns on/ off the web. [0 ~ 1 / 1 / 1 /step] • 0: OFF • 1: ON
832	HDD		
	Enter the SP number for the partition to initialise, then press $\text{Ⓢ}$ . When the execution ends, cycle down and on. <b>NOTE:</b> Use this SP mode only for hard disk error recovery.		
	1	HDD Formatting (ALL)	Initializes the hard disk.
	2	HDD Formatting (IMH)	Initializes followings: • Documents stored on the document server • Stamp print data • Scanner delivery images • Fax delivery images
	3	HDD Formatting (Thumbnail)	Initializes MCS thumbnail images.
	4	HDD Formatting (Job Log)	Initializes lob data used by the Poplar server.
	5	HDD Formatting (Printer Fonts)	Initializes printer fonts, overlay forms.
	6	HDD Formatting (User Info)	Initializes user information (UCS).
	7	Mail RX Data	Initializes mail receive data (DCS)
	8	Mail TX Data	Initializes mail send data (DCS)
	9	HDD Formatting (Data for a Design)	Designer use only.
	10	HDD Formatting (Log)	Initializes the logs (fax history and debug log).
	11	HDD Formatting (Ridoc interface)	Initializes the Net File management area.
833	e-Cabinet enable		
	13	e-Cabinet enable	Enables/disables the e-Cabinet. [0 ~ 1 / 0 / 1 /step] • 0: Disabled • 1: Enabled The "e-Cabinet" supplies the interface for registration, editing, deleting and obtaining the user's code name. <b>NOTE:</b> Turn the main switch on and off after using this SP. <b>NOTE:</b>
834	Operation Panel Image Exposure		
	1		Turns the operation panel image capture function on/off. [0 ~ 1 / 0 / 1 /step] 0: Disable, 1: Enable
836	Capture Setting		
	1	Capture Function 0: Off 1: On	Turn the capture function on/off. [0 ~ 1 / 0 / 1 /step] • 0: Off • 1: On

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
836	2	Panel Setting Displays or does not display the capture function buttons. [0 ~ 1 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>Displayed</i></li> <li>• 1: <i>Not displayed</i></li> </ul>
	71	Reduction for Copy Color Selects the reduction rate of the document resolution when transmitting the stored document data with the copy color mode to the document management server. [0 ~ 3 / <b>2</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>No reduction</i></li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> </ul>
	72	Reduction for Copy B&W Text Selects the reduction rate of the document resolution when transmitting the stored document data with the copy B&W text mode to the document management server. [0 ~ 3 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>No reduction</i></li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> </ul>
	73	Reduction for Copy B&W Other Selects the reduction rate of the document resolution when transmitting the stored document data with the copy B&W other mode to the document management server. [0 ~ 3 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>No reduction</i></li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> </ul>
	74	Reduction for Printer Color Selects the reduction rate of the document resolution when transmitting the stored document data with the print color mode to the document management server. [0 ~ 3 / <b>2</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>No reduction</i></li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> </ul>
	75	Reduction for Printer B&W Selects the reduction rate of the document resolution when transmitting the stored document data with the print B&W mode to the document management server. [0 ~ 3 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: <i>No reduction</i></li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> </ul>



<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
836	76	Reduction for Printer B&W HQ	Selects the reduction rate of the document resolution when transmitting the stored document data with the print B&W HQ mode to the document management server. [0 ~ 3 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: No reduction</li> <li>1: 1/2</li> <li>2: 1/3</li> <li>3: 1/4</li> </ul>
	77	Reduction for Printer Color 1200dpi	Selects the reduction rate of the document resolution when transmitting the stored document data with the print color 1200dpi mode to the document management server. [1, 3 ~ 5 / 4 / 1 /step] <ul style="list-style-type: none"> <li>1: 1/2</li> <li>2: Skipped</li> <li>3: 1/4:</li> <li>4: 1/6</li> <li>5: 1/8</li> </ul>
	78	Reduction for Printer B&W 1200dpi	Selects the reduction rate of the document resolution when transmitting the stored document data with the print B&W 1200dpi mode to the document management server. [1, 3 ~ 5 / 1 / 1 /step] <ul style="list-style-type: none"> <li>1: 1/2</li> <li>2: Skipped</li> <li>3: 1/4:</li> <li>4: 1/6</li> <li>5: 1/8</li> </ul>
	81	Format for Copy Color	This SP shows the format when capturing the image with copy color mode. This SP cannot be adjusted. <ul style="list-style-type: none"> <li>0: JFIF/JPEG</li> <li>1: TIFF/MMR</li> <li>2: TIFF/MH</li> <li>3: TIFF/MR</li> </ul> <i>This SP is activated only when the File Format Converter has been installed.</i>
	82	Format for Copy B&W Text	Selects the format when capturing the image with copy B&W text mode. [0 ~ 3 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: JFIF/JPEG</li> <li>1: TIFF/MMR</li> <li>2: TIFF/MH</li> <li>3: TIFF/MR</li> </ul>
	83	Format for Copy B&W Other	Selects the format when capturing an image with copy B&W modes other than 'text'. [0 ~ 3 / 1 / 1 /step] <ul style="list-style-type: none"> <li>0: JFIF/JPEG</li> <li>1: TIFF/MMR</li> <li>2: TIFF/MH</li> <li>3: TIFF/MR</li> </ul>

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
836	84	Format for Printer Color	This SP shows the format when capturing the image with print color mode. This SP cannot be adjusted. • 0: JFIF/JPEG
	85	Format for Printer B&W	Selects the format when capturing the image with print B&W mode. [0 ~ 3 / 1 / 1 /step] • 0: JFIF/JPEG • 1: TIFF/MMR • 2: TIFF/MH • 3: TIFF/MR
	86	Format for Printer B&W HQ	Selects the format when capturing the image with print B&W HQ mode. [0 ~ 3 / 2 / 1 /step] • 0: JFIF/JPEG • 1: TIFF/MMR • 2: TIFF/MH • 3: TIFF/MR
	91	Default for JPEG	Selects the default quality for JPEG [5 ~ 95 / 50 / 1 /step]
839	IEEE1394		
	4	Host Name	Displays the 1394 host name. [Text up to 64 bytes / NULL / - /step]
	7	Cycle Master	Turns the cycle master function on/off. [0 ~ 1 / 1 / 1 /step] • 0: OFF • 1: ON
	8	BCR mode	Selects either 'Standard', 'IRM Color Copy', or 'Always Effective'.
	9	IRM 1394a Check	Turns the IRM 1394a check on/off. [0 ~ 1 / 0 / -] • 0: OFF • 1: ON <i>If the IRM is not defined as 1394a standard, its node is used as IRM.</i>
	10	Unique ID	[0 ~ 1 / 1 / -] • 0: OFF • 1: ON
839	11	Logout	Prevents initiators from logging on or makes initiators log off. [0 ~ 1 / 1 / -] • 0: OFF <i>(Prevents the initiators, having already logged on, to log on if they try to log on.)</i> • 1: ON <i>(Makes initiators, having already logged on, to log off if they try to log on.)</i>
	12	Login	Allows/disallows an initiator to exclusively log on. [0 ~ 1 / 0 / -] • 0: OFF (Disallows) • 1: ON (Allows)

5	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
839	13	Login MAX	Specifies the maximum initiators able to log on. [0 ~ 63 / <b>8</b> / 1 /step]
840	IEEE 802.11b		
	6	Channel MAX	Specifies the maximum number of IEEE 802.11b channels. North America/ Asia: [1 ~ 11 / <b>11</b> / 1 /step] Europe: [1 ~ 14 / <b>14</b> / 1 /step]
	7	Channel MIN	Specifies the minimum number of IEEE 802.11b channels. North America/ Asia: [1 ~ 11 / <b>1</b> / 1 /step] Europe: [1 ~ 14 / <b>1</b> / 1 /step]
	11	WEP Key Select	Selects the WEP key. [00, 01, 10, 11 / <b>00</b> / – /step] <ul style="list-style-type: none"><li>• 00: 1st key</li><li>• 01: 2nd key</li><li>• 10: 3rd key</li><li>• 11: 4th key</li></ul>
841	Supply Name Setting		
	1	Toner Name Setting: Black	Specifies supply names with the soft keys on the LCD. These appear on the screen when the user presses the Inquiry button in the user tools screen.
	2	Toner Name Setting: Cyan	
	3	Toner Name Setting: Yellow	
	4	Toner Name Setting: Magenta	
	7	Org Stamp	
	11	Staple Std1	
	12	Staple Std2	
	13	Staple Std3	
14	Staple Std4		
842	Net File Analysis Mode Setting		
	1	Net File Analysis Mode Setting	<b>DFU</b> Default: <b>00000000</b> – do not change Netfiles: Jobs to be printed from the document server using a PC and the DeskTopBinder software
844	USB		
	1	Transfer Rate	Selects the “Full Speed” or “Auto Change” for the transfer rate. Default: <b>Auto Change</b>
	2	Vendor ID	Specifies the vendor ID. [0 ~ FFFF / <b>5CA</b> / -/step]
	3	Product ID	Specifies the product ID. [0 ~ FFFF / <b>403</b> / -/step]

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
844	4	Device Release Number	Specifies the device release number with BCD (Binary Coded Decimal). [0 ~ 9999 / <b>100</b> / 1 /step]
845	Delivery Server Setting		
	1	FTP Port No.	Specifies the FTP port number. [0 ~ 65535 / <b>3670</b> / 1 /step]
	2	IP Address (Primary)	Specifies the primary distribution server IP address. [000.000.000.000 ~ 255.255.255.255 / <b>000.000.000.000</b> / 1/step]
	6	Delivery Error Display Time	Specifies the display time of the distribution delivery error. [0 ~ 999 / <b>300</b> / 1 second/step]
	8	IP Address (Secondary)	Specifies the secondary distribution server IP address. [000.000.000.000 ~ 255.255.255.255 / <b>000.000.000.000</b> / 1/step]
	9	Delivery Server Model	Changes the delivery server model. [0 ~ 4 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: Unknown</li> <li>• 1: SG1 Provided</li> <li>• 2: SG1 Package</li> <li>• 3: SG2 Provided</li> <li>• 4: SG2 Package</li> </ul>
	10	Delivery Srv. Capability	Selects the capability of the server registered as the I/O device for each function. [0 to 255 / <b>00000000</b> / 1/step] 0: Disabled, 1: Enabled Bit switch: <ul style="list-style-type: none"> <li>• Bit 0: Sender specification required (if set to 1, Bit6 is set to "0")</li> <li>• Bit 1: Function to link MK-1 user and sender</li> <li>• Bit 2: Sender password function</li> <li>• Bit 3: Fax RX delivery function</li> <li>• Bit 4: Address book automatic update function</li> <li>• Bit 5: Mail RX confirmation setting</li> <li>• Bit 6: Direct specification of mail address</li> <li>• Bit 7: Comments information</li> </ul>
846	11	Delivery Srv. Capability (Ext)	Selects the capability of the server registered as the I/O device for each function. [0 to 255 / <b>00000000</b> / 1/step] 0: Disabled, 1: Enabled Bit switch: <ul style="list-style-type: none"> <li>• Bit 0 ~ 5: Not used</li> <li>• Bit 6: RDH authorization link</li> <li>• Bit 7: Address book usage limitation (Limitation for each authorized user)</li> </ul>
	UCS Setting		
	1	Machine ID (for Delivery Server)	Displays the machine ID of the distribution server.
	2	Machine ID Clear (for Delivery Server)	Clears the machine ID of the distribution server.

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
846	3	Maximum Entries Specifies the maximum entry counts. [2000 ~ 20000 / <b>2000</b> / 1 /step]
	6	Delivery Server Retry Timer Specifies the retry interval. The retry is executed when the machine fails to get an address book from the distribution server. [0 ~ 255 / <b>0</b> / 1 second/step] <b>NOTE:</b> <i>When this SP is set to "0", the retry is not executed.</i>
	7	Delivery Server Retry Times Specifies the retry times. The retry is executed when the machine fails to get an address book from the distribution server. [0 ~ 255 / <b>0</b> / 1 /step] <b>NOTE:</b> <i>When this SP is set to "0", the retry is not executed.</i>
	8	Delivery Server Maximum Entries Specifies the maximum account entries in the distribution server user information that UCS controls. [2000 ~ 20000 / <b>2000</b> / 1 /step]
	10	LDAP Search Timeout Specifies the timeout for searching the LDAP server. [1 ~ 255 / <b>60</b> / 1 /step]
	47	Initialize Local Addr Book Clears the local address book information, including the user code.
	48	Initialize Delivery Addr Book Clears the distribution address book information, except the user code.
	49	Initialize LDAP Addr Book Clears the LDAP address book information, except the user code.
	50	Initialize All Addr Book Clears all the address book information, including the user code. <b>NOTE:</b> <i>The administrator's account information cannot be cleared with this SP.</i>
	51	Backup All Addr Book Uploads all directory information to the SD card.
	52	Restore All Addr Book Downloads all directory information from the SD card.
	53	Clear Backup Info Deletes the address book data from the SD card in the service slot. <i>Deletes only the files that meet same machine category. This feature does not work if the card is write-protected.</i> <b>NOTE:</b> <i>After you do this SP, go out of the SP mode, and then turn the power off. Do not remove the SD card until the Power LED stops flashing.</i> <b>NOTE:</b>
	90	Plain Data Forbidden Enables or disables the address book data writing to the HDD or SD card in plane data. [0 ~ 1 / <b>0</b> / 1 /step] <i>0: Enable</i> <i>1: Disable</i>
	91	FTP Auth Port Setting Specifies the FTP port for getting a distribution server address. [0 ~ 65535 / <b>3671</b> / 1 /step]
	94	Encryption Stat Shows the status of the encryption function for the address book data.
	<b>98</b>	Bit SW 2 <b>Not Used:</b> These bit switches are not used at this time.

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
846	<b>99</b>	Bit SW	<b>Not Used:</b> These bit switches are not used at this time.
847	Net File Resolution Reduction		
	1	Rate for Copy Color	Selects the net file resolution reduction (copy, color) [0 ~ 5 / 2 / 1 /step] <ul style="list-style-type: none"> <li>0: No reduction</li> <li>1: 1/2</li> <li>2: 1/3</li> <li>3: 1/4</li> <li>4: 1/6</li> <li>5: 1/8</li> </ul> <i>This resolution reduction is for jobs displayed on a PC screen with the DeskTopBinder software. SP 5847 adjustments are only available when the File Format Converter is installed.</i>
	2	Rate for Copy B&W Text	Selects the net file resolution reduction (copy, black & white, text) [0 ~ 6 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: No reduction</li> <li>1: 1/2</li> <li>2: 1/3</li> <li>3: 1/4</li> <li>4: 1/6</li> <li>5: 1/8</li> <li>6: 2/3</li> </ul>
	3	Rate for Copy B&W Other	Selects the net file resolution reduction (copy, black & white, others) [0 ~ 6 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: No reduction</li> <li>1: 1/2</li> <li>2: 1/3</li> <li>3: 1/4</li> <li>4: 1/6</li> <li>5: 1/8</li> <li>6: 2/3</li> </ul>
	4	Rate for Printer Color	Selects the net file resolution reduction (printer, color) [0 ~ 5 / 2 / 1 /step] <ul style="list-style-type: none"> <li>0: No reduction</li> <li>1: 1/2</li> <li>2: 1/3</li> <li>3: 1/4</li> <li>4: 1/6</li> <li>5: 1/8</li> </ul>

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
847	5	Rate for Printer B&W	Selects the net file resolution reduction (printer, black & white) [0 ~ 6 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: No reduction</li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> <li>• 4: 1/6</li> <li>• 5: 1/8</li> <li>• 6: 2/3</li> </ul>
	6	Rate for Printer B&W HQ	Selects the net file resolution reduction (printer, black & white) [0 ~ 6 / <b>0</b> / 1 /step] <ul style="list-style-type: none"> <li>• 0: No reduction</li> <li>• 1: 1/2</li> <li>• 2: 1/3</li> <li>• 3: 1/4</li> <li>• 4: 1/6</li> <li>• 5: 1/8</li> <li>• 6: 2/3</li> </ul>
	21	Network Quality Default for JPEG	Selects the net file default quality level (network, JPEG) [5 ~ 95 / <b>50</b> / 1 /step]
848	Web Service		
	5848 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. 5848 100 sets the maximum size of images that can be downloaded. The default is equal to 1 gigabyte.		
	1	Access Ctrl: Net File Protocol (Lower 4bits only)	Bit switch settings. <b>0000</b> : No access control 0001: Denies access to DeskTop Binder. Access and deliveries from Scan Router have no effect on capture.
	2	Access Ctrl: Repository (only Lower 4bits)	0000: No access control 0001: Denies access to DeskTop Binder. <b>0010</b> : No writing control
	3	Access Ctrl: Doc. Svr. Print (Lower 4bits)	Switches access control on and off. <b>0000</b> : No access control 0001: Denies access to DeskTop Binder.
	4	Access Ctrl: uDirectory (Lower 4bits)	
	5	Access Ctrl: Delivery Input (Lower 4bits)	
	7	Access Ctrl: Comm. Log Fax (Lower 4bits)	
	9	Access Ctrl: Job Ctrl (Lower 4bits)	Switches access control on and off. 0000: No access control <b>0001</b> : Denies access to DeskTop Binder.
	11	Access Ctrl: Device management (Lower 4bits)	Switches access control on and off. <b>0000</b> : No access control 0001: Denies access to DeskTop Binder.
	13	Access Ctrl: Device Ctrl Fax (Lower 4bits)	

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
848	21	Access Ctrl: Delivery (Lower 4bits)	Switches access control on and off. <b>0000</b> : No access control 0001: Denies access to DeskTop Binder.
	22	Access Ctrl: uAdministration (Lower 4bits)	
	41	Security Setting (Lower 4bits only)	
	100	Repository: Download Image Max Size	Specifies the max size of the downloaded image data when downloading an image data. [1 ~ 1024 / <b>1024</b> / 1 MB /step]
849	Installation Date		
	1	Display	Displays the date when the electrical counter was reset to zero.
	2	Switch to Print	Allows /disallows printing the installation day on the user counter list. [0 ~ 1 / <b>1</b> / 1 /step] • 0: OFF (Not printed) • 1: ON (Printed)
850	Address Book Function		
	3	Replacement of Circuit Classifications	Replaces all the line type settings in the address book for fax at the same time. <b>Japan only</b>
853	Stamp Data Download		
	1	Stamp Data Download	Copies the stamp data stored in the ROM to the HDD. Do this SP to download the fixed stamp data from the machine ROM onto the hard disk. Then these stamps can be used by the system. If this is not done, the user will not have access to the fixed stamps ("Confidential", "Urgent", etc.). You must always do this SP after you replace or format the HDD. Always switch the machine off and on after you do this SP.
856	Remote ROM Update		
	2	Local Port	Validates/invalidates the firmware download from the local port (IEEE 1284) when updating the remote ROM. [0 ~ 1 / <b>0</b> / 1 /step] • 0: Invalidated • 1: Validated <b>NOTE:</b> This setting is automatically reset to "0" after rebooting. <b>NOTE:</b>
857	Save Debug Log		
	1	On/Off (1: ON 0: OFF)	Turns the save debug log function on/off. [0 ~ 1 / <b>0</b> / 1 /step] • 0: OFF • 1: ON



<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
857	2	Target (2: HDD 3: SD) Selects the storage device when the conditions set with SP5-858 are satisfied. [2 ~ 3 / 2 / 1 /step] <ul style="list-style-type: none"> <li>• 2: HDD</li> <li>• 3: SD Card</li> </ul>
	5	Save to HDD Saves the selected key number log to the HDD.
	6	Save to SD Card Saves the selected key number log to the SD Card.
	9	Copy HDD to SD Card (Latest 4MB) Copies the latest 4MB log file on the HDD to the SD Card. Each file is automatically given a unique name.
	10	Copy HDD to SD Card (Latest 4MB Any Key) Copies the latest 4MB log file of the selected key number on the HDD to the SD Card. Each file is automatically given a unique name. <b>NOTE:</b> <i>If the selected number is not on the HDD, this SP has no effect.</i>
	11#	Erase HDD Debug Data Deletes the debug log file on the HDD.
	12#	Erase SD Card Debug Data Deletes the debug log file on the SD Card (this file is copied when the conditions set with SP5-858 are satisfied). <b>NOTE:</b> <i>The debug log files, which are copied with SP5-857-10, cannot be deleted with this SP.</i> <b>NOTE:</b>
	13	Free Space on SD Card Displays the free space on the SD Card.
	14	Copy SD to SD (Latest 4MB) Copies the latest 4MB log file on the SD Card to another SD Card. Each file is automatically given a unique name.
	15	Copy SD to SD (Latest 4MB Any Key) Copies the latest 4MB log file of the selected key number on the SD Card to another SD Card. Each file is automatically given a unique name. <b>NOTE:</b> <i>If the selected number is not on the HDD, this SP has no effect.</i> <b>NOTE:</b>
858	16	Make HDD Debug Makes a debug log file.
	17	Make SD Debug <i>This function is automatically executed without this SP when saving a debug log file to the HDD or SD Card at the very first time. However, it takes a long time to save it. In that case, the user may turn off the main power before completing the saving. To prevent failing to save it, this SP is useful.</i>
858	Debug Save When	
	1	Engine SC Error (0: OFF 1:ON) Turns on/off the debug log save to the device set with SP5-857-2 when an engine SC error occurs. [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>• 0: OFF</li> <li>• 1: ON</li> </ul>

<b>5</b>		<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
858	2	Controller SC Error (0: OFF 1:ON)	Turns on/off the debug log save to the device set with SP5857-2 when a controller SC error occurs. [0 ~ 1 / 0 / 1 /step] • 0: OFF • 1: ON
	3	Any SC Error	Saves the debug log to the device set with SP5-857-2 when the SC that you have set occurs.
	4	Jam (0: OFF 1: ON)	Turns on/off the debug log save to the device set with SP5857-2 when a paper jam occurs. [0 ~ 1 / 0 / 1 /step] • 0: OFF • 1: ON
859	Debug Save Key No.		
	1	Key 1	Sets the key number of a specific event (☛ NOTE) whose logs are saved in the specified storage location (☛ NOTE). When multiple key numbers are assigned, the logs are collected in this order: Key 1, Key 2, ..., Key 9, Key 10. [0000000 to 9999999 / 0 / 1/step] <b>NOTE:</b> The event is set with SP5-858. The storage location is set with SP5-857-2.
	2	Key 2	
	3	Key 3	
	4	Key 4	
	5	Key 5	
	6	Key 6	
	7	Key 7	
	8	Key 8	
	9	Key 9	
	10	Key 10	
860	SMTP/ POP3/ IMAP4		
	20	Partial Mail Receive Timeout	Specifies the amount of the time to keep a received mail that is divided into more than one mail. [1 ~ 168 / 72 / 1 hour /step] <i>The received mail is discarded if the remaining portion of the mail is not received during this prescribed time.</i>
	21	MDN Response RFC2298 Compliance	Determines whether RFC2298 compliance is switched on for MDN reply mail. [0 ~ 1 / 1 / 1 /step] • 0: No • 1: Yes
	22	SMTP Auth. From Field Replacement	Determines whether the FROM item of the mail header is switched to the validated account after the SMTP server is validated. [0 ~ 1 / 0 / 1 /step] • 0: No. "FROM" item not switched. • 1: Yes. "FROM" item switched.
	25	SMTP Auth. Direct Setting	Selects the authentication method for SMTP. <i>Bit switch:</i> • Bit 0: LOGIN • Bit 1: PLAIN • Bit 2: CRAM MD5 • Bit 3: DIGEST MD5 • Bit 4 ~ 7: Not used <b>NOTE:</b> This SP is activated only when the SMTP Authentication (UP) is set to "on".

<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>																																																			
866	<b>E-mail Alert      Not Used</b>																																																					
	1	Notice function of E-Mail	Turn the E-mail notice function on/off. [0 ~ 1 / 0 / 1 /step]																																																			
	5	Add Date Field	[0 ~ 1 / 0 / 1 /step]																																																			
870	<b>Common Key Info Writing</b>																																																					
	1	Writing	Writes the common key information of the device authentication for NRS specifications to the flash ROM etc.																																																			
870	3	Initialize	Initialize the common key information. <b>DFU</b>																																																			
871	<b>HDD function disable</b>																																																					
	1	HDD function disable (0: OFF 1: ON)	Turns the HDD disable function on/off. This function must be activated when the data overwrite security unit is installed. [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: OFF</li> <li>1: ON (HDD function limited)</li> </ul>																																																			
873	<b>SD Card Appli Move</b>																																																					
	1	Move Exec	Copies the application programs from the original SD card in the SD card slot 3 to an SD card in the SD card slot 1.																																																			
	2	Undo Exec	Copies back the application programs from an SD card in SD Card Slot 1 to the original SD card in the SD card slot 3. Use this menu when you have mistakenly copied some programs by using "Move Exec" (SP5873-1).																																																			
875	<b>SC Auto Reboot</b>																																																					
	1	SC Auto Reboot	Determines whether the machine reboots automatically when an SC error occurs. [0 ~ 1/ 0 / 1/step]] <ul style="list-style-type: none"> <li>0: The machine reboots automatically when the machine issues an SC error and logs the SC error code. If the same SC occurs again, the machine does not reboot.</li> <li>1: The machine does not reboot when an SC error occurs.</li> </ul> <i>The reboot does not occur for Type A, B, or C SC codes.</i>																																																			
878	<b>Option Setup</b>																																																					
	1	Option Setup	Use this SP when you install the Data Overwrite Security unit. Press "EXECUTE" to do this SP.																																																			
907	<b>Plug &amp; Play Maker/ Model Name</b>																																																					
	1	Plug & Play Maker/ Model Name	[0 ~ 11 / 0 / - ] <i>Select the required setting from the menu.</i> <table> <thead> <tr> <th></th><th><b>MF</b></th><th><b>Model Name</b></th><th><b>NetBeui</b></th></tr> </thead> <tbody> <tr><td>0</td><td>RICOH</td><td>Aficio 3224C</td><td>Aficio3224C</td></tr> <tr><td>1</td><td>RICOH</td><td>Aficio 3232C</td><td>Aficio3232C</td></tr> <tr><td>2</td><td>SAVIN</td><td>C2410</td><td>C2410</td></tr> <tr><td>3</td><td>SAVIN</td><td>C3210e</td><td>C3210e</td></tr> <tr><td>4</td><td>Gestetner</td><td>DSc424</td><td>DSc424</td></tr> <tr><td>5</td><td>Gestetner</td><td>DSc432</td><td>DSc432</td></tr> <tr><td>6</td><td>NRG</td><td>DSc424</td><td>DSc424</td></tr> <tr><td>7</td><td>NRG</td><td>DSc432</td><td>DSc432</td></tr> <tr><td>8</td><td>infotec</td><td>ISC1024c</td><td>ISC1024c</td></tr> <tr><td>9</td><td>infotec</td><td>ISC1032c</td><td>ISC1032c</td></tr> <tr><td>10</td><td>LANIER</td><td>LD124c</td><td>LD124c</td></tr> <tr><td>11</td><td>LANIER</td><td>LD132c</td><td>LD132c</td></tr> </tbody> </table>		<b>MF</b>	<b>Model Name</b>	<b>NetBeui</b>	0	RICOH	Aficio 3224C	Aficio3224C	1	RICOH	Aficio 3232C	Aficio3232C	2	SAVIN	C2410	C2410	3	SAVIN	C3210e	C3210e	4	Gestetner	DSc424	DSc424	5	Gestetner	DSc432	DSc432	6	NRG	DSc424	DSc424	7	NRG	DSc432	DSc432	8	infotec	ISC1024c	ISC1024c	9	infotec	ISC1032c	ISC1032c	10	LANIER	LD124c	LD124c	11	LANIER	LD132c
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<b>5</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
912	Unit PM Alert	
	1	Unit PM Alert Display or does not display the unit PM alert for PCU and development units when the PM counters for the PCU and development units reach the PM cycle. [0 ~ 1 / 1 / 1 /step] 0: Does not display the alert banner 1: Display the alert banner
913	Switchover Permission Time	
	2	Print Application Timer 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. [3 ~ 30 / 3 / 1 minute/step]
	102	Print Application Set [0 ~ 1 / 1 / 1 /step] <b>DFU</b>
955	Test Pattern	
	1	Pattern Selects the test pattern. See section 5-1-3.
	2	Density Selects the image density for a test pattern. [0 ~ 255 / <b>255</b> / 1 /step]
967	Copy Server: Set Function	
	1	(0: ON 1: OFF) Enables and disables the document server. This is a security measure that prevents image data from being left in the temporary area of the HDD. After changing this setting, you must switch the main switch off and on to enable the new setting.
<b>970</b>	Debug Serial Output <b>DFU</b>	
	1	
974	Cherry Server	
	1	Cherry Server Selects which version of the Scan Router application program, "Light" or "Full (Professional)", is installed. [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: <i>Light version (supplied with this machine)</i></li> <li>1: <i>Full version (optional)</i></li> </ul>
985	Device Setting	
	1	On Board NIC Enables/disables the On-Board Ethernet NIB. [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: <i>disable</i></li> <li>1: <i>enable</i></li> </ul>
	2	On Board USB Enables/disables the "On Board USB". [0 ~ 1 / 0 / 1 /step] <ul style="list-style-type: none"> <li>0: <i>disable</i></li> <li>1: <i>enable</i></li> </ul>

5	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
990*	SP Print Mode		
	1	All (Data List)	[0 ~ 0xff / <b>0x00</b> / 0 /step]
	2	SP (Mode Data List)	Prints SP setting data.
	3	User Program	[0 ~ 255 / <b>0</b> / 0 /step]
	4	Logging Data	• SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7.
	5	Diagnostic Report	• All: All SP mode settings
	6	Non-Default	• Non-Default: SP settings that have been changed from the defaults
	7	NIB Summary (Configuration page, system log page NVRAM log page)	
	8	Capture Log	
	21	Copier User Program (Copy Management Report)	[0 ~ 0xff / <b>0x00</b> / 0 /step] Prints SP setting data. [0 ~ 255 / <b>0</b> / 0 /step]
	22	Scanner SP	• SP all print: All items printed out with SP5-990-2, 3, 4, 6, and 7.
	23	Scanner User Program (Scanner Management Report)	• All: All SP mode settings • Non-Default: SP settings that have been changed from the defaults
996	Density Adjustment		
	1	Bk	Adjusts the density.
	2	Y	[-3 ~ 3 / <b>0</b> / 1 /step]
	3	M	-3: Image becomes lighter
	4	C	3: Image becomes darker This setting changes the development bias and charge corona voltage to adjust the image density.

**SP6-XXX: (Peripherals)**

<b>6</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [ Setting ]</b>
006*	ADF Adjustment	
	1	S-to-S Registration Adjusts the side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / <b>0</b> / 0.1 mm/step] <i>First adjust the copier registration. Then if ADF registration is incorrect, adjust this SP.</i>
	2	Leading Edge Registration Adjusts the sub-scan registration of the optional ADF. [–5.0 ~ 5.0 / <b>0</b> / 0.1 mm/step]
	3	Trailing Edge Erase Adjusts the trail edge erase of the optional ADF. [–5.0 ~ 5.0 / <b>0</b> / 0.1 mm/step]
	4	S-to-S Registration (Rear) Adjusts the rear-side side-to-side registration of the optional ADF. [–5.0 ~ 5.0 / <b>0</b> / 0.1 mm/step] <i>First adjust the copier registration. Then if ADF registration is incorrect, adjust this SP.</i>
	5	Sub-scan Magnification Adjusts the sub-scan magnification of the optional ADF. [–5.0 ~ 5.0 / <b>0</b> / 0.1 %/step]
	6	Orig. Buckling Enables/disables original buckling during rear side scanning. Disable if the customer is scanning fragile originals. [0 ~ 1 / <b>1</b> / 1 /step] • 0: Disabled • 1: Enabled
	7	Buckle Adjustment Adjusts original buckling for rear side scanning. [–5.0 ~ 5.0 / <b>0</b> / 0.1 mm/step]
007	DF Input Check	
	1	Original Set
	2	Original Width 1
	3	Original Width 2
	4	Original Length 1
	5	Original Length 2
	6	Orig. Trailing Edge
	7	Cover Open
	8	DF Position
	9	Registration
	10	Original Exit
	11	Original Reverse
008	DF Output Check	
	1	Feed Motor (Forward)
	2	Feed Motor (Reverse)
	3	Trans. Motor (Forward)
	4	Feed Clutch
	5	Pick-up Solenoid
	6	Junction Gate Solenoid
	7	Stamp Solenoid

<b>6</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
009	ADF Free Run		
	1	ADF Free Run	Executes an ADF free run. [0 ~ 1 / 0 / 1 /step] • 0: End • 1: Start
010	ADF Stamp Position		
	1	ADF Stamp Position	Adjusts the stamp position of the optional ADF. [-5.0 ~ 5.0 / 0 / 0.1 mm/step]
050	Staple Position		
	1	Staple Position	Adjusts the staple position of the optional finisher. [-3.5 ~ 3.5 / 0.0 / 0.5 mm/step]
117	Finisher Input Check		
	1	Entrance	Displays the signals received from sensors and switches in the finisher.
	2	Tray Exit	
	4	Staple Entrance	
	5	Stapler Home Position	
	6	Jogger Fence Home Position	See section 5.1.4
	8	Feed-out Belt Home Position	
	9	Stapler Tray Paper	
	10	Stapler Rotation Home Position	
	11	Staple	
	14	Staple Sheet	
	17	Exit Plate Home Position	
	18	Tray Shift Home Position	
	21	Stack Height	
	23	Tray Lower Limit	
	35	Paper Limit	
	101	500 Fin Entrance	
	102	500 Fin Exit	
	103	500 Fin Jogger Home Position	
	104	500 Fin Top Cover	
	105	500 Fin Height	
	106	500 Fin Lever	
117	107	500 Fin Upper Limit	Displays the signals received from sensors and switches in the finisher. See section 5.1.4
	108	500 Fin Near Limit	
	109	500 Fin Staple Cover	
	110	500 Fin Stapler Home Position	
	111	500 Fin Staple End	
	112	500 Fin Staple	
	113	500 Fin Stapler Lock	
118	Output Check		
	1	Fin All Off	Switches on each electrical component of the finisher.
	2	Upper Transfer Motor	See section 5.1.5

<b>6</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
118	3	Lower Transfer Motor	Switches on each electrical component of the finisher. See section 5.1.5
	4	Exit Motor	
	5	Tray Gate Sol	
	6	Tray Lift Motor	
	7	Jogger Motor	
	12	Stapler Motor	
	13	Staple Hummer	
	15	Stapler Gate Sol	
	16	Pos. Roller Sol	
	18	Feed-out Motor	
	19	Shift Motor	
	22	Guide Plate Motor	
	23	Fin Free Run 1	
	24	Fin Free Run 2	
	101	500 Fin All Off	
	102	500 Fin Main Motor	
	103	500 Fin Jogger Motor	
	104	500 Fin Paddle Sol	
	105	500 Fin Gear Sol	
	106	500 Fin Lever Sol	
	107	500 Fin Tray Motor	
	108	500 Fin Stapler Motor	
	109	500 Fin Free Run 1	
	110	500 Fin Free Run 2	



**SP7-XXX: (Data Log)**

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
001*	Operation Time		
	1	Operation Time	Displays the main motor operation time. [0000000 ~ 9999999 / 0 / 1 minute/step] <i>Logging this operation time helps identify the cause of a difficulty by analyzing the correlation between the printing count and the OPC-belt operation time.</i>
106*	Waste Tnr Cnter (Waste Toner Counter)		
	1	OPC	Displays the waste toner bottle counters. [0 ~ 65535 / 0 / 1 /step]
	2	Belt	[0 ~ 65535 / 0 / 1 /step]
401*	Total SC Counter		
	1	SC Counter	Displays how many times SC codes have been output. [0 ~ 9999 / 0 / 0 time/step]
403	SC History		
	1	Latest	Displays the latest ten SC codes.
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
502*	Total Paper Jam Counter		
	1	Total Paper Jam Counter	Displays the total number of jams detected. [0 ~ 9999 / 0 / 0 /step]
503	Total Original Jam Counter		
	1	Total Original Jam Counter	Displays the total original jam count. [0 ~ 9999 / 0 / 0 /step]
504*	Paper Jam Location		
	1	Initial jam	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / 0 / 0 /step]
	3	main003 (Tray 1: ON)	
	4	main004 (Tray 2: Non Feed)	
	5	main005 (Tray 3: Non Feed)	
	6	main006 (Tray 4: Non Feed)	
	7	main007 (Bypass: Non Feed)	
	8	main008 (1st Relay ON)	
	9	main009 (2nd Relay: ON)	
	10	main010 (3rd Relay: ON)	
	12	main012 (Registration from Tray)	

<b>7</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
504*	13	main013 (Registration from Duplex)	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / 0 / 0 /step]
	14	main014 (Duplex Exit)	
	15	main015 (Interchange Exit: ON)	
	16	main016 (Paper Exit: On)	
	17	main017 (Bridge Exit: On)	
	18	main018 (Bridge Relay: On)	
	19	main019 (Duplex Entrance 1: On)	
	20	main020 (Duplex Entrance 2: On)	
	23	main023 (Duplex Exit: On)	
	40	Finisher040 (Finisher Entrance: On)	
	41	Finisher041 (Finisher Exit: On)	
	58	main058 (1st Relay: Off)	
	59	main059 (2nd Relay: Off)	
	60	main060 (3rd Relay: Off)	
	61	main061 (4th Relay: Off)	
	63	main063 (Registration: Off)	
	64	main064 (Fusing Exit)	
	65	main065 (Interchange Exit: Off)	
	66	main066 (Paper Exit: Off)	
	67	main067 (Bridge Exit: Off)	
	68	main068 (Bridge Relay: Off)	
	69	main069 (Duplex Entrance 1: Off)	
	70	main070 (Duplex Entrance 2: Off)	
	73	main073 (Duplex Exit: Off)	
	80	Wrap around ITB	
	100	Finisher100 (Finisher Entrance: Off)	
	101	Finisher 101 (Finisher Exit: Off)	

<b>7</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
504*	103	main103 (Finisher Staple)	Displays the number of jams according to the location where they were detected. [0 ~ 9999 / 0 / 0 /step]
	104	main104 (Finisher Stack Feed-out)	
	105	main105 (Finisher Paper Taking out)	
	107	main107 (Finisher Drive Error)	
	108	main108 (Finisher Tray Lift Error)	
	109	main109 (Finisher Jogger Error)	
	110	main110 (Finisher Tray Shift Error)	
	111	main111 (Finisher Stapler Error)	
	112	main112 (Finisher Stack Feed-out)	
	114	main114 (Finisher Feed out Error)	
	115	main115 (Finisher No Response)	
505	Original Jam Detection		
	1	Initial jam	
	5	Regist Sensor005	
	6	Exit 006	Exit = Original Trailing Edge Sensor (S9)
	7	Inverter Sensor 007	Inverter Sensor = Original Reverse Sensor (S10)
505	55	Regist Sensor 055	
	56	Exit 056	Exit = Original Trailing Edge Sensor (S9)
	57	Inverter Sensor 057	Inverter Sensor = Original Reverse Sensor (S10)
506*	Jam Count by Paper Size		
	5	A4 LEF	Displays the number of jams according to paper size. [0 ~ 9999 / 0 / 1 /step]
	6	A5 LEF	
	14	B5 LEF	
	38	LT LEF	
	44	HLT LEF	
	132	A3 SEF	
	133	A4 SEF	Displays the number of jams according to paper size. [0 ~ 9999 / 0 / 1 /step]
	134	A5 SEF	
	141	B4 SEF	
	142	B5 SEF	
	160	DLT SEF	
	164	LG SEF	
	166	LT SEF	
	172	HLT SEF	
	255	Others	

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
507*	Plotter Jam History		Displays the latest 10 paper jams.  <i>The information contains the following four lines:</i> <ul style="list-style-type: none"><li>• Location code (☛ SP7-504)</li><li>• Paper size</li><li>• Total counter (as of the jam)</li><li>• Date</li></ul>
	1	Latest	
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
508	Original Jam History		Displays the logs of the latest 10 original jams. <i>The logs are composed of the following four lines:</i> <ul style="list-style-type: none"><li>• Location code (☛ SP7-505)</li><li>• Paper size</li><li>• Total counter (as of the jam)</li><li>• Date</li></ul>
	1	Latest	
	2	Latest 1	
	3	Latest 2	
	4	Latest 3	
	5	Latest 4	
	6	Latest 5	
	7	Latest 6	
	8	Latest 7	
	9	Latest 8	
	10	Latest 9	
801	ROM No./ Firmware Version		Displays the firmware versions and part numbers if available.
803*	PM Counter Display		Displays the number of sheets printed for each current unit. [0 ~ 9999999 / 0 / 1 sheet/step] <ul style="list-style-type: none"><li>• For clearing the counters, see SP7-804.</li></ul>
	1	Paper	
	2	PCU	
	3	Development: M	
803*	4	Development: C	Displays the number of sheets printed for each current unit. [0 ~ 9999999 / 0 / 1 sheet/step] <i>For clearing the counters, see SP7-804.</i>
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Tnr: OPC	
	10	Waste Tnr: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Bank 1 Feed	
	15	Bank 2 Feed	
	16	Bank 3 Feed	
	17	Bank 4 Feed	
	18	Manual Feed	
	19	Paper Transfer unit	
	20	ADF	
	21	PCU: Rotation Time (9045 mm = 120kD)	

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
804	PM Counter Reset		
	1	Paper	Clears the PM counters. [0 ~ 1 / 0 / 1 /step] • For displaying the counter, see SP7-803. • 7-804-2 resets 7-803-2 and 7-803-21.
	2	PCU	
	3	Development: M	
	4	Development: C	
	5	Development: Y	
	6	Development: Bk	
	7	Fusing Unit	
	8	Charger	
	9	Waste Tnr: OPC	
	10	Waste Tnr: Belt	
	11	Oil	
	12	Filter 1	
	13	Filter 2	
	14	Tray 1 Roller	
	15	Tray 2 Roller	
	16	Tray 3 Roller	
	17	Tray 4 Roller	
	18	By-pass Feed	
	19	Paper Transfer Unit	
	20	ADF	
	100	All	
807	SC Jam Counter Reset		
	1	SC Jam Counter Reset	Clears the counters related to SC codes and paper jams. [0 ~ 1 / 0 / 0 /step]
826	MF Error Counter		
	1	Error Total	Displays the MF error counters.
	2	Error Staple	
827	MF Error Counter Clear		
	1	MF Error Counter Clear	Clears the MF error counter.
832*	Self-Diagnose Result Display		
	1	Self-Diagnose Result Display	Displays the result of the diagnostics. Refer to section 4.2 for the error codes.

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
833	Coverage		
	1	Last: M	Displays coverage ratios. [0.00 ~ 100.0 / <b>0.00</b> / 0.01 %step] <i>This SP mode displays the “coverage ratio” of the output, i.e. the ratio of the total pixel area of the image data to the total printable area on the paper.</i>  <i>Do not use this counter for billing purposes. This is because this value is not directly proportional to the amount of toner consumed, although of course it is one factor that affects this amount. The other major factors involved include: the type, total image area and image density of the original, toner concentration and developer potential.</i> <i>Last: This is the coverage for the previous sheet.</i> <i>Average: This is the average coverage for each sheet.</i>
	2	Last: C	
	3	Last: Y	
	4	Last: Bk	
	5	Average: M	
	6	Average: C	
	7	Average: Y	
	8	Average: Bk	
834	Tnr Consume (Toner Consume)		
	5	M	Displays the coverage ratios, including toner revitalization mode. [0 ~ 9999999 / <b>0</b> / 1 /step] <i>This displays the average coverage ratio, including toner consumed during printing and toner consumed during toner revitalization mode (SP3-971).</i> <i>Do not use this counter for billing purposes.</i>
	6	C	
	7	Y	
	8	Bk	
835	ACC Counter		
	1	Copy ACC	Displays the number of times ACC has been done for each mode. [0 ~ 9999999 / <b>0</b> / 1 /step]
	2	Printer ACC	
836	Total Memory Size		
	1	Total Memory Size	Displays the memory capacity.
850	High Duty Cnt (High Duty Counter)		
	1	M	Used for the toner revitalization process (SP3-971). Counts the number of developments made during the past 12 hours.
	2	C	
	3	Y	
	4	Bk	
852	DF Glass Dust Chk Cnt (DF Glass Dust Check Counter)		
	1	DF Glass Dust Chk Cnt	Displays the number of times that dust was detected on the DF glass.
901	Assert Info. (Assert Information)		
	1	File Name	Records the location where the last problem (SC990) was detected in the program. The data stored in this SP is used for problem analysis. [0 ~ 0 / <b>0</b> / 0 /step]
	2	Number of Lines	
	3	Location	

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
904	Waste Tnr Full Cln (Waste Toner Full Clear)		
	1	OPC	Clears the waste toner bottle full counters.
	2	Belt	
	100	All	
906*	PM Counter-PREV		
	1	PCU	Displays the previous PM counters. [0 ~ 9999999 / 0 / 0 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Tnr: OPC	
	9	Waste Tnr: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
	14	Tray 2 Roller	
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	ADF	
	20	PCU: Turn Time	
907	Replace Cnter (Replace Counter)		
	1	PCU	Displays the number of times the unit was replaced. [0 ~ 255 / 0 / 1 /step]
	2	Development: M	
	3	Development: C	
	4	Development: Y	
	5	Development: Bk	
	6	Fusing Unit	
	7	Charger	
	8	Waste Tnr: OPC	
	9	Waste Tnr: Belt	
	10	Oil	
	11	Filter 1	
	12	Filter 2	
	13	Tray 1 Roller	
907	14	Tray 2 Roller	[0 ~ 255 / 0 / 1 /step]
	15	Tray 3 Roller	
	16	Tray 4 Roller	
	17	By-pass Feed	
	18	Paper Transfer Unit	
	19	Toner: M	
	20	Toner: C	
	21	Toner: Y	
	22	Toner: Bk	
	23	ADF	

7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
908	Proc Cont Cnter (Process Control Counter)		
	1	Proc Cont Cnter	Displays the process control counter. [0 ~ 9999999 / 0 / 1 sheet/step]
909	Proc Cont Reset (Process Control Reset)		
	1	Proc Cont Reset	Resets the process control counter.
913	Oil Cnter (Oil Counter)		
	1	Oil Cnter	Displays the oil supply unit counter. [0 ~ 65535 / 0 / 1 sheet/step]
914	Oil Cln Cnt Rst (Oil Clean Counter Reset)		
	1	Oil Cln Cnt Rst	Resets the oil cleaner counter.
915	Proc Error Log (Process Error Log)		
	1	Log 1	Displays the latest three process control error logs. <i>The following are the error codes:</i> <i>Development unit initial settings errors:</i> <ul style="list-style-type: none"><li>• 110: Incorrect image detected by cyan ID sensor</li><li>• 116: Incorrect image detected by magenta ID sensor</li><li>• 118: No black image</li></ul> <i>Development bias settings errors:</i> <ul style="list-style-type: none"><li>• 113: Incorrect image detected by cyan ID sensor</li><li>• 114: Incorrect image detected by magenta ID sensor</li><li>• 115: Incorrect image detected by yellow ID sensor</li><li>• 123: Incorrect image detected by black ID sensor</li></ul> <i>ID sensor errors:</i> <ul style="list-style-type: none"><li>• 103: ID sensor error</li><li>• 104: ID sensor unable to detect image</li><li>• 105: OPC belt not detected</li></ul>
	2	Log 2	
	3	Log 3	
920	Machine Counter		
	1	Machine Counter	[0 ~ 0xFFFFFFFF / 0 / 1 /step]
921	Machine Cnt Clr (Machine Counter Clear)		
	1	Machine Cnt Clr	Clears the machine counter.
922	Toner End Cnter (Toner End Counter)		
	1	K Toner	Displays the toner end counter, which indicates the possible print count after a toner near end.
	2	C Toner	
	3	M Toner	
	4	Y Toner	
923	Toner End Cnt Clr (Toner End Counter Clear)		
	1	K Toner	Clears the toner end counter (SP7-922).  <i>The machine goes back to the normal operation mode if the toner end counter is cleared.</i>
	2	C Toner	
	3	M Toner	
	4	Y Toner	
	100	All	
924	Charger Cln Cntr (Charger Clean Counter)		
	1	Charger Cln Cntr	Displays how many times the charge corona wire has been cleaned. [0 ~ 9999999 / 0 / 1 sheet/step] <i>SP7-926 resets the counter.</i>



7	Mode No. (Class 1, 2, and 3)		Function / [ Setting ]
925	Time Cnter Disp (Time Counter Display)		
	1	Time Cnter Disp	Displays the current counter of the charge corona unit cleaning interval. (Number of counts since the last cleaning) <i>SP2-801 specifies the charge corona unit cleaning interval.</i>
926	Chgr Cln Cnt Rst (Charger Cleaner Counter Reset)		
	1	Chgr Cln Cnt Rst	Resets the charge wire cleaner counter (SP7-924).
927	Time Cnter Clr (Timer Counter Clear)		
	1	Time Cnter Clr	Clears the counter of the charge corona unit cleaning interval. <i>SP7-927 clears the counter displayed by SP7-925, but does not clear the value specified with SP2-801.</i>
928	PREV PM Cnt Clr (Previous PM Counter Clear)		
	1	PREV PM Cnt Clr	Clears the previous PM counter (SP7-906).
929	Replace Cnter Clr (Replace Counter Clear)		
	1	Replace Cnter Clr	Clears the replace counter.
931	Engine Status Display <b>DFU</b>		
	1	Status 1	These SPs are used for previous models.
	2	Status 2	
	3	Status 3	
	4	Status 4	
	5	Status 5	
	6	Status 6	
	7	Status 7	
	8	Status 8	
	9	Status 9	
	10	Status 10	
	11	Status 11	
	12	Status 12	
	13	Status 13	
	14	Status 14	
	15	Status 15	
	16	Status 16	
	17	Status 17	
934	Coverage Cler (Coverage Clear)		
	1	Average	Clears the average coverage. This SP clears the following SPs: <ul style="list-style-type: none"><li>• <i>SP8-831-1 to 4</i></li><li>• <i>SP8-841-1 to 4</i></li></ul>
	2	Toner	Clears the consumed toner bottle number. This SP clears the following SP: <ul style="list-style-type: none"><li>• <i>SP8-781-1 to 4</i></li></ul>
	3	S: PREV Toner	Clears the number of prints copied or printed with last toner bottle. This SP clears the following SPs: <ul style="list-style-type: none"><li>• <i>SP8-891-1 to 4</i></li><li>• <i>SP8-901-1 to 4</i></li><li>• <i>SP8-911-1 to 4</i></li></ul>

<b>7</b>	<b>Mode No. (Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
934	4	S: Coverage 0-100	<p>Clears the number of scanned sheets for each coverage range.</p> <p>This SP clears the following SPs:</p> <ul style="list-style-type: none"> <li>• <i>SP8-851-001 ~ 004 (0 ~ 10%)</i></li> <li>• <i>SP8-861-001 ~ 004 (11 ~ 20%)</i></li> <li>• <i>SP8-871-001 ~ 004 (21 ~ 30%)</i></li> <li>• <i>SP8-881-001 ~ 004 (31% ~ )</i></li> </ul>
	255	ALL	<p>Clears the all coverage related data.</p> <p>This SP clears SPs that can be cleared in the SP7-934-1 to 4.</p>

**SP8-xxx: Data Log2**

Many of these counters are provided for features that are currently not available, such as sending color faxes, and so on. However, here are some Group 8 codes that when used in combination with others, can provide useful information.

SP Numbers	What They Do
SP8 211~SP8 216	The number of pages scanned to the document server.
SP8 401~SP8 406	The number of pages printed from the document server
SP8 691~SP8 696	The number of pages sent from the document server

Specifically, the following questions can be answered:

- How is the document server actually being used?
- What application is using the document server most frequently?
- What data in the document server is being reused?

Most of the SPs in this group are prefixed with a letter that indicates the mode of operation (the mode of operation is referred to as an 'application'). Before reading the Group 8 Service Table, make sure that you understand what these prefixes mean.

Prefixes	What it means	
T:	Total: (Grand Total).	Grand total of the items counted for all applications (C, F, P, etc.)..
C:	Copy application.	Totals (pages, jobs, etc.) executed for each application when the job was <i>not</i> stored on the document server.
F:	Fax application.	
P:	Print application.	
S:	Scan application.	
L:	Local storage (document server)	Totals (jobs, pages, etc.) for the document server. The L: counters work differently case by case. Sometimes, they count jobs/pages stored on the document server; this can be in document server mode (from the document server window), or from another mode, such as from a printer driver or by pressing the Store File button in the Copy mode window. Sometimes, they include occasions when the user uses a file that is already on the document server. Each counter will be discussed case by case.
O:	Other applications (external network applications, for example)	Refers to network applications such as Web Image Monitor. Utilities developed with the SDK (Software Development Kit) will also be counted with this group in the future.

The Group 8 SP codes are limited to 17 characters, forced by the necessity of displaying them on the small LCDs of printers and faxes that also use these SPs. Read over the list of abbreviations below and refer to it again if you see the name of an SP that you do not understand.

### Key for Abbreviations

Abbreviation	What it means
/	"By", e.g. "T:Jobs/Apl" = Total Jobs "by" Application
>	More (2> "2 or more", 4> "4 or more")
AddBook	Address Book
Apl	Application
B/W	Black & White
Bk	Black
C	Cyan
ColCr	Color Create
ColMode	Color Mode
Comb	Combine
Comp	Compression
Deliv	Delivery
DesApl	Designated Application. The application (Copy, Fax, Scan, Print) used to store the job on the document server, for example.
Dev Counter	Development Count, no. of pages developed.
Dup, Duplex	Duplex, printing on both sides
Emul	Emulation
FC	Full Color
FIN	Post-print processing, i.e. finishing (punching, stapling, etc.)
Full Bleed	No Margins
GenCopy	Generation Copy Mode
GPC	Get Print Counter. For jobs 10 pages or less, this counter does not count up. For jobs larger than 10 pages, this counter counts up by the number that is in excess of 10 (e.g., for an 11-page job, the counter counts up 11-10 =1)
IFax	Internet Fax
ImgEdt	Image Edit performed on the original with the copier GUI, e.g. border removal, adding stamps, page numbers, etc.
K	Black (YMCK)
LS	Local Storage. Refers to the document server.
LSize	Large (paper) Size
Mag	Magnification
MC	One color (monochrome)
NRS	New Remote Service, which allows a service center to monitor machines remotely. "NRS" is used overseas, "CSS" is used in Japan.
Org	Original for scanning
OrgJam	Original Jam
Palm 2	Print Job Manager/Desk Top Editor: A pair of utilities that allows print jobs to be distributed evenly among the printers on the network, and allows files to moved around, combined, and converted to different formats.
PC	Personal Computer

Abbreviation	What it means
PGS	Pages. A page is the total scanned surface of the original. Duplex pages count as two pages, and A3 simplex count as two pages if the A3/DLT counter SP is switched ON.
PJob	Print Jobs
Ppr	Paper
PrtJam	Printer (plotter) Jam
PrtPGS	Print Pages
R	Red (Toner Remaining). Applies to the wide format model A2 only. This machine is under development and currently not available.
Rez	Resolution
SC	Service Code (Error SC code displayed)
Scn	Scan
Sim, Simplex	Simplex, printing on 1 side.
S-to-Email	Scan-to-E-mail
SMC	SMC report printed with SP5990. All of the Group 8 counters are recorded in the SMC report.
Svr	Server
TonEnd	Toner End
TonSave	Toner Save
TXJob	Send, Transmission
YMC	Yellow, Magenta, Cyan
YMCK	Yellow, Magenta, Cyan, Black

**NOTE:** All of the Group 8 SPs are reset with SP5-801-1 Memory All Clear.

<b>8</b>	<b>Mode No.(Class 1, 2, and 3)</b>		<b>Function / [ Setting ]</b>
1	T:Total Jobs	*CTL	These SPs count the number of times each application is used to do a job. [0 ~ 99999999/ 0 / 1] <b>NOTE:</b> The L: counter is the total number of times the other applications are used to send a job to the document server, plus the number of times a file already on the document server is used.
2	C:Total Jobs	*CTL	
3	F:Total Jobs	*CTL	
4	P:Total Jobs	*CTL	
5	S:Total Jobs	*CTL	
6	L:Total Jobs	*CTL	

- These SPs reveal the number of times an application is used, not the number of pages processed.
- When an application is opened for image input or output, this counts as one job.
- Interrupted jobs (paper jams, etc.) are counted, even though they do not finish.
- Only jobs executed by the customer are counted. Jobs executed by the customer engineer using the SP modes are not counted.
- When using secure printing (when a password is required to start the print job), the job is counted at the time when either “Delete Data” or “Specify Output” is specified.
- A job is counted as a fax job when the job is stored for sending.
- When a fax is received to fax memory, the F: counter increments but the L: counter does not (the document server is not used).
- A fax broadcast counts as one job for the F: counter (the fax destinations in the broadcast are not counted separately).
- A fax broadcast is counted only after all the faxes have been sent to their destinations. If one transmission generates an error, then the broadcast will not be counted until the transmission has been completed.
- A printed fax report counts as one job for the F: counter.
- The F: counter does not distinguish between fax sending or receiving.
- When a copy job on the document server is printed, SP8022 also increments, and when a print job stored on the document server is printed, SP8024 also increments.
- When an original is both copied and stored on the document server, the C: and L: counters both increment.
- When a print job is stored on the document server, only the L: counter increments.
- When the user presses the Document Server button to store the job on the document server, only the L: counter increments.
- When the user enters document server mode and prints data stored on the document server, only the L: counter increments.
- When an image received from Palm 2 is received and stored, the L: counter increments.
- When the customer prints a report (user code list, for example), the O: counter increments. However, for fax reports and reports executed from the fax application, the F: counter increments.

11	T:Jobs/LS	*CTL	These SPs count the number of jobs stored to the document server by each application, to reveal how local storage is being used for input. [0~99999999/ 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
12	C:Jobs/LS	*CTL	
13	F:Jobs/LS	*CTL	
14	P:Jobs/LS	*CTL	
15	S:Jobs/LS	*CTL	
16	L:Jobs/LS	*CTL	
17	O:Jobs/LS	*CTL	

- When a scan job is sent to the document server, the S: counter increments.  
When you enter document server mode and then scan an original, the L: counter increments.
- When a print job is sent to the document server, the P: counter increments.
- When a network application sends data to the document server, the O: counter increments.
- When an image from Palm 2 is stored on the document server, the O: counter increments.
- When a fax is sent to the document server, the F: counter increments.

21	T:Pjob/LS	*CTL	These SPs reveal how files printed from the document server were stored on the document server originally. [0~99999999/ 0 / 1] The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel.
22	C:Pjob/LS	*CTL	
23	F:Pjob/LS	*CTL	
24	P:Pjob/LS	*CTL	
25	S:Pjob/LS	*CTL	
26	L:Pjob/LS	*CTL	
27	O:Pjob/LS	*CTL	

- When a copy job stored on the document server is printed with another application, the C: counter increments.
- When an application like DeskTopBinder merges a copy job that was stored on the document server with a print job that was stored on the document server, the C: and P: counters both increment.
- When a job already on the document server is printed with another application, the L: counter increments.
- When a scanner job stored on the document server is printed with another application, the S: counter increments. If the original was scanned from within document server mode, then the L: counter increments.
- When images stored on the document server by a network application (including Palm 2), are printed with another application, the O: counter increments.
- When a copy job stored on the document server is printed with a network application (Web Image Monitor, for example), the C: counter increments.
- When a fax on the document server is printed, the F: counter increments.

8 031	T:Pjob/DesApl	*CTL	These SPs reveal what applications were used to output documents from the document server. [0~9999999/ 0 / 1] The L: counter counts the number of jobs printed from within the document server mode screen at the operation panel.
8 032	C:Pjob/DesApl	*CTL	
8 033	F:Pjob/DesApl	*CTL	
8 034	P:Pjob/DesApl	*CTL	
8 035	S:Pjob/DesApl	*CTL	
8 036	L:Pjob/DesApl	*CTL	
8 037	O:Pjob/DesApl	*CTL	

- When documents already stored on the document server are printed, the count for the application that started the print job is incremented.
- When the print job is started from a network application (Desk Top Binder, Web Image Monitor, etc.) the L: counter increments.

8 041	T:TX Jobs/LS	*CTL	These SPs count the applications that stored files on the document server that were later accessed for transmission over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). [0~9999999/ 0 / 1] <b>NOTE:</b> Jobs merged for sending are counted separately. The L: counter counts the number of jobs scanned from within the document server mode screen at the operation panel.
8 042	C:TX Jobs/LS	*CTL	
8 043	F:TX Jobs/LS	*CTL	
8 044	P:TX Jobs/LS	*CTL	
8 045	S:TX Jobs/LS	*CTL	
8 046	L:TX Jobs/LS	*CTL	
8 047	O:TX Jobs/LS	*CTL	

- When a stored copy job is sent from the document server, the C: counter increments.
- When images stored on the document server by a network application or Palm2 are sent as an e-mail, the O: counter increments.

8 051	T:TX Jobs/DesApl	*CTL	These SPs count the applications used to send files from the document server over the telephone line or over a network (attached to an e-mail, or as a fax image by I-Fax). Jobs merged for sending are counted separately. [0~9999999/ 0 / 1] The L: counter counts the number of jobs sent from within the document server mode screen at the operation panel.
8 052	C:TX Jobs/DesApl	*CTL	
8 053	F:TX Jobs/DesApl	*CTL	
8 054	P:TX Jobs/DesApl	*CTL	
8 055	S:TX Jobs/DesApl	*CTL	
8 056	L:TX Jobs/DesApl	*CTL	
8 057	O:TX Jobs/DesApl	*CTL	

- If the send is started from Desk Top Binder or Web Image Monitor, for example, then the O: counter increments.



8 061	T:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total the finishing methods. The finishing method is specified by the application.		
8 062	C:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for copy jobs only. The finishing method is specified by the application.		
8 063	F:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for fax jobs only. The finishing method is specified by the application. Note: Finishing features for fax jobs are not available at this time.		
8 064	P:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for print jobs only. The finishing method is specified by the application.		
8 065	S:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for scan jobs only. The finishing method is specified by the application. Note: Finishing features for scan jobs are not available at this time.		
8 066	L:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for jobs output from within the document server mode screen at the operation panel. The finishing method is specified from the print window within document server mode.		
8 067	O:FIN Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs total finishing methods for jobs executed by an external application, over the network. The finishing method is specified by the application.		
8 06x 1	Sort	Number of jobs started in Sort mode. When a stored copy job is set for Sort and then stored on the document server, the L: counter increments. (See SP8 066 1)	
8 06x 2	Stack	Number of jobs started out of Sort mode.	
8 06x 3	Staple	Number of jobs started in Staple mode.	
8 06x 4	Booklet	Number of jobs started in Booklet mode. If the machine is in staple mode, the Staple counter also increments.	
8 06x 5	Z-Fold	Number of jobs started In any mode other than the Booklet mode and set for folding (Z-fold).	
8 06x 6	Punch	Number of jobs started in Punch mode. When Punch is set for a print job, the P: counter increments. (See SP8 064 6.)	
8 06x 7	Other	Reserved. Not used.	

8 071	T:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count the number of jobs broken down by the number of pages in the job, regardless of which application was used.		
8 072	C:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count and calculate the number of copy jobs by size based on the number of pages in the job.		
8 073	F:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count and calculate the number of fax jobs by size based on the number of pages in the job.		
8 074	P:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count and calculate the number of print jobs by size based on the number of pages in the job.		
8 075	S:Jobs/PGS		[0~99999999/ 0 / 1]
	These SPs count and calculate the number of scan jobs by size based on the number of pages in the job.		
8 076	L:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count and calculate the number of jobs printed from within the document server mode window at the operation panel, by the number of pages in the job.		
8 077	O:Jobs/PGS	*CTL	[0~99999999/ 0 / 1]
	These SPs count and calculate the number of "Other" application jobs (Web Image Monitor, Palm 2, etc.) by size based on the number of pages in the job.		
8 07x 1	1 Page	8 07x 8	21~50 Pages
8 07x 2	2 Pages	8 07x 9	51~100 Pages
8 07x 3	3 Pages	8 07x 10	101~300 Pages
8 07x 4	4 Pages	8 07x 11	301~500 Pages
8 07x 5	5 Pages	8 07x 12	501~700 Pages
8 07x 6	6~10 Pages	8 07x 13	701~1000 Pages
8 07x 7	11~20 Pages	8 07x 14	1001~ Pages

- For example: When a copy job stored on the document server is printed in document server mode, the appropriate L: counter (SP8-076 0xx) increments.
- Printing a fax report counts as a job and increments the F: counter (SP8-073).
- Interrupted jobs (paper jam, etc.) are counted, even though they do not finish.
- If a job is paused and re-started, it counts as one job.
- If the finisher runs out of staples during a print and staple job, then the job is counted at the time the error occurs.
- For copy jobs (SP8-072) and scan jobs (SP8-075), the total is calculated by multiplying the number of sets of copies by the number of pages scanned. (One duplex page counts as 2.)
- The first test print and subsequent test prints to adjust settings are added to the number of pages of the copy job (SP8-072).
- When printing the first page of a job from within the document server screen, the page is counted.

8 111	T:FAX TX Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax, either directly or using a file stored on the document server, on a telephone line. <b>Note:</b> Color fax sending is not available at this time.		
8 113	F:FAX TX Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent by fax directly on a telephone line. <b>Note:</b> Color fax sending is not available at this time.		
8 11x 1	B/W		
8 11x 2	Color		

- These counters count jobs, not pages.
- This SP counts fax jobs sent over a telephone line with a fax application, including documents stored on the document server.
- If the mode is changed during the job, the job will count with the mode set when the job started.
- If the same document is faxed to both a public fax line and an I-Fax at a destination where both are available, then this counter increments, and the I-Fax counter (8 12x) also increments.
- The fax job is counted when the job is scanned for sending, not when the job is sent.

8 121	T:IFAX TX Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) sent, either directly or using a file stored on the document server, as fax images using I-Fax. <b>NOTE:</b> Color fax sending is not available at this time.		
8 123	F:IFAX TX Jobs	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of jobs (color or black-and-white) sent (not stored on the document server), as fax images using I-Fax. <b>NOTE:</b> Color fax sending is not available at this time.		
8 12x 1	B/W		
8 12x 2	Color		

- These counters count jobs, not pages.
- The counters for color are provided for future use; the color fax feature is not available at this time.
- The fax job is counted when the job is scanned for sending, not when the job is sent.

8 131	T:S-to-Email Jobs	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) scanned and attached to an e-mail, regardless of whether the document server was used or not.		
8 135	S:S-to-Email Jobs	*CTL	
	These SPs count the number of jobs (color or black-and-white) scanned and attached to e-mail, without storing the original on the document server.		
8 13x 1	B/W		
8 13x 2	Color		
8 13x 3	ACS		

- These counters count jobs, not pages.
- If the job is stored on the document server, after the job is stored it is determined to be color or black-and-white then counted.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- If several jobs are combined for sending to the Scan Router, Scan-to-Email, or Scan-to-PC, or if one job is sent to more than one destination. each send is counted separately. For example, if the same document is sent by Scan-to-Email as well as Scan-to-PC, then it is counted twice (once for Scan-to-Email and once for Scan-to-PC).

8 141	T:Deliv Jobs/Svr	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) scanned and sent to a Scan Router server.		
8 145	S:Deliv Jobs/Svr	*CTL	
	These SPs count the number of jobs (color or black-and-white) scanned in scanner mode and sent to a Scan Router server.		
8 14x 1	B/W		
8 14x 2	Color		
8 13x 3	ACS		

- These counters count jobs, not pages.
- The jobs are counted even though the arrival and reception of the jobs at the Scan Router server cannot be confirmed.
- If even one color image is mixed with black-and-white images, then the job is counted as a "Color" job.
- If the job is cancelled during scanning, or if the job is cancelled while the document is waiting to be delivered, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8 151	T:Deliv Jobs/PC	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total number of jobs (color or black-and-white) scanned and sent to a folder on a PC (Scan-to-PC). <b>NOTE:</b> At the present time, SP8 -151 and 8-155 perform identical counts.		
8 155	S:Deliv Jobs/PC	*CTL	
	These SPs count the total number of jobs (color or black-and-white) scanned and sent with Scan-to-PC.		
8 15x 1	B/W		
8 15x 2	Color		
8 13x 3	ACS		

- These counters count jobs, not pages.
- If the job is cancelled during scanning, it is not counted.
- If the job is cancelled while it is waiting to be sent, the job is not counted.
- If the job is cancelled during sending, it may or may not be counted, depending on what stage of the process had been reached when the job was cancelled.
- Even if several files are combined for sending, the transmission counts as one job.

8 161	T:PCFAX TX Jobs	*CTL	These SPs count the number of PC Fax transmission jobs. A job is counted from when it is registered for sending, not when it is sent. [0~99999999/ 0 / 1] <b>NOTE:</b> At the present time, these counters perform identical counts.
8 163	F:PCFAX TX Jobs	*CTL	

- This counts fax jobs started from a PC using a PC fax application, and sending the data out to the destination from the PC through the copier.

8 191	T:Total Scan PGS	*CTL	These SPs count the pages scanned by each application that uses the scanner to scan images. [0~99999999/ 0 / 1]
8 192	C:Total Scan PGS	*CTL	
8 193	F:Total Scan PGS	*CTL	
8 195	S:Total Scan PGS	*CTL	
8 196	L:Total Scan PGS	*CTL	

- SP8-191 to 8-196 count the number of scanned sides of pages, not the number of physical pages.
- These counters do not count reading user stamp data, or reading color charts to adjust color.
- Previews done with a scanner driver are not counted.
- A count is done only after all images of a job have been scanned.
- Scans made in SP mode are not counted.

### Examples

- If 3 B5 pages and 1 A3 page are scanned with the scanner application but not stored, the S: count is 4.
- If both sides of 3 A4 sheets are copied and stored to the document server using the Store File button in the Copy mode window, the C: count is 6 and the L: count is 6.
- If both sides of 3 A4 sheets are copied but not stored, the C: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

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

8 211	T:Scan PGS/LS	*CTL	These SPs count the number of pages scanned into the document server. [0~9999999/ 0 / 1]
8 212	C:Scan PGS/LS	*CTL	
8 213	F:Scan PGS/LS	*CTL	The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8 215	S:Scan PGS/LS	*CTL	
8 216	L:Scan PGS/LS	*CTL	

- Reading user stamp data is not counted.
- If a job is cancelled, the pages output as far as the cancellation are counted.
- If the scanner application scans and stores 3 B5 sheets and 1 A4 sheet, the S: count is 4.
- If pages are copied but not stored on the document server, these counters do not change.
- If both sides of 3 A4 sheets are copied and stored to the document server, the C: count is 6 and the L: count is 6.
- If you enter document server mode then scan 6 pages, the L: count is 6.

8 221	ADF Org Feeds	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of pages fed through the ADF for front and back side scanning.		
8 221 1	Front	Number of front sides fed for scanning: With an ADF that can scan both sides simultaneously, the Front side count is the same as the number of pages fed for either simplex or duplex scanning. With an ADF that cannot scan both sides simultaneously, the Front side count is the same as the number of pages fed for duplex front side scanning. (The front side is determined by which side the user loads face up.)	
8 221 2	Back	Number of rear sides fed for scanning: With an ADF that can scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex scanning. With an ADF that cannot scan both sides simultaneously, the Back count is the same as the number of pages fed for duplex rear-side scanning.	

- When 1 sheet is fed for duplex scanning the Front count is 1 and the Back count is 1.
- If a jam occurs during the job, recovery processing is not counted to avoid double counting. Also, the pages are not counted if the jam occurs before the first sheet is output.

8 231	Scan PGS/Mode	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of pages scanned by each ADF mode to determine the work load on the ADF.		
8 231 1	Large Volume	Selectable. Large copy jobs that cannot be loaded in the ADF at one time.	
8 231 2	SADF	Selectable. Feeding pages one by one through the ADF.	
8 231 3	Mixed Size	Selectable. Select "Mixed Sizes" on the operation panel.	
8 231 4	Custom Size	Selectable. Originals of non-standard size.	
8 231 5	Platen	Book mode. Raising the ADF and placing the original directly on the platen.	

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.
- The user cannot select mixed sizes or non-standard sizes with the fax application so if the original's page sizes are mixed or non-standard, these are not counted.
- If the user selects "Mixed Sizes" for copying in the platen mode, the Mixed Size count is enabled.
- In the SADF mode if the user copies 1 page in platen mode and then copies 2 pages with SADF, the Platen count is 1 and the SADF count is 3.

8 241	T:Scan PGS/Org	*CTL	[0~9999999/ 0 / 1]			
	These SPs count the total number of scanned pages by original type for all jobs, regardless of which application was used.					
8 242	C:Scan PGS/Org	*CTL	[0~9999999/ 0 / 1]			
	These SPs count the number of pages scanned by original type for Copy jobs.					
8 243	F:Scan PGS/Org	*CTL	[0~9999999/ 0 / 1]			
	These SPs count the number of pages scanned by original type for Fax jobs.					
8 245	S:Scan PGS/Org	*CTL	[0~9999999/ 0 / 1]			
	These SPs count the number of pages scanned by original type for Scan jobs.					
8 246	L:Scan PGS/Org	*CTL	[0~9999999/ 0 / 1]			
	These SPs count the number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen					
		8 241	8 242	8 243	8 245	8 246
8 24x 1: Text		Yes	Yes	Yes	Yes	Yes
8 24x 2: Text/Photo		Yes	Yes	Yes	Yes	Yes
8 24x 3: Photo		Yes	Yes	Yes	Yes	Yes
8 24x 4: GenCopy, Pale		Yes	Yes	No	Yes	Yes
8 24x 5: Map		Yes	Yes	No	Yes	Yes
8 24x 6: Normal/Detail		Yes	No	Yes	No	No
8 24x 7: Fine/Super Fine		Yes	No	Yes	No	No
8 24x 8: Binary		Yes	No	No	Yes	No
8 24x 9: Grayscale		Yes	No	No	Yes	No
8 24x 10: Color		Yes	No	No	Yes	No
8 24x 11: Other		Yes	Yes	Yes	Yes	Yes

- If the scan mode is changed during the job, for example, if the user switches from ADF to Platen mode, the count is done for the last selected mode.



8 251	T:Scan PGS/ImgEdt	*CTL	These SPs show how many times Image Edit features have been selected at the operation panel for each application. Some examples of these editing features are: <ul style="list-style-type: none"> <li>• Erase&gt; Border</li> <li>• Erase&gt; Center</li> <li>• Image Repeat</li> <li>• Centering</li> <li>• Positive/Negative</li> </ul> [0~99999999/ 0 / 1] Note: The count totals the number of times the edit features have been used. A detailed breakdown of exactly which features have been used is not given.
8 252	C:Scan PGS/ImgEdt	*CTL	
8 254	P:Scan PGS/ImgEdt	*CTL	
8 256	L:Scan PGS/ImgEdt	*CTL	
8 257	O:Scan PGS/ImgEdt	*CTL	

The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen.

8 261	T:Scn PGS/ColCr	*CTL	
8 262	C:Scn PGS/ColCr	*CTL	
8 266	L:Scn PGS/ColCr		
8 26x 1	Color Conversion	These SPs show how many times color creation features have been selected at the operation panel.	
8 26x 2	Color Erase		
8 26x 3	Background		
8 26x 4	Other		

8 281	T:Scan PGS/TWAIN	*CTL	These SPs count the number of pages scanned using a TWAIN driver. These counters reveal how the TWAIN driver is used for delivery functions. [0~99999999/ 0 / 1] <b>NOTE:</b> At the present time, these counters perform identical counts.
8 285	S:Scan PGS/TWAIN	*CTL	

8 291	T:Scan PGS/Stamp	*CTL	These SPs count the number of pages stamped with the stamp in the ADF unit. [0~99999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen
8 293	F:Scan PGS/Stamp	*CTL	
8 295	S:Scan PGS/Stamp	*CTL	
8 296	L:Scan PGS/Stamp	*CTL	

8 301	T:Scan PGS/Size	*CTL	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by all applications. Use these totals to compare original page size (scanning) and output (printing) page size [SP8-441].		
8 302	C:Scan PGS/Size	*CTL	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Copy application. Use these totals to compare original page size (scanning) and output (printing) page size [SP8-442].		
8 303	F:Scan PGS/Size	*CTL	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Fax application. Use these totals to compare original page size (scanning) and output page size [SP8-443].		
8 305	S:Scan PGS/Size	*CTL	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned by the Scan application. Use these totals to compare original page size (scanning) and output page size [SP8-445].		
8 306	L:Scan PGS/Size	*CTL	[0~9999999/ 0 / 1]
	These SPs count by size the total number of pages scanned and stored from within the document server mode screen at the operation panel, and with the Store File button from within the Copy mode screen. Use these totals to compare original page size (scanning) and output page size [SP8-446].		
8 30x 1	A3		
8 30x 2	A4		
8 30x 3	A5		
8 30x 4	B4		
8 30x 5	B5		
8 30x 6	DLT		
8 30x 7	LG		
8 30x 8	LT		
8 30x 9	HLT		
8 30x 10	Full Bleed		
8 30x 254	Other (Standard)		
8 30x 255	Other (Custom)		

8 311	T:Scan PGS/Rez	*CTL	[0~99999999/ 0 / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings.		
8 315	S:Scan PGS/Rez	*CTL	[0~99999999/ 0 / 1]
	These SPs count by resolution setting the total number of pages scanned by applications that can specify resolution settings. <b>NOTE:</b> At the present time, SP8-311 and 8-315 perform identical counts.		
8 31x 1	1200dpi ~		
8 31x 2	600dpi~1199dpi		
8 31x 3	400dpi~599dpi		
8 31x 4	200dpi~399dpi		
8 31x 5	~199dpi		

- Copy resolution settings are fixed so they are not counted.
- The Fax application does not allow finely-adjusted resolution settings so no count is done for the Fax application.

8 381	T:Total PrtPGS	*CTL	These SPs count the number of pages printed by the customer. The counter for the application used for storing the pages increments. [0~9999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8 382	C:Total PrtPGS	*CTL	
8 383	F:Total PrtPGS	*CTL	
8 384	P:Total PrtPGS	*CTL	
8 385	S:Total PrtPGS	*CTL	
8 386	L:Total PrtPGS	*CTL	
8 387	O:Total PrtPGS	*CTL	

- When the A3/DLT double count function is switched on with SP5-104, 1 A3/DLT page is counted as 2.
- When several documents are merged for a print job, the number of pages stored are counted for the application that stored them.
- These counters are used primarily to calculate charges on use of the machine, so the following pages are not counted as printed pages:
  - Blank pages in a duplex printing job.
  - Blank pages inserted as document covers, chapter title sheets, and slip sheets.
  - Reports printed to confirm counts.
  - All reports done in the service mode (service summaries, engine maintenance reports, etc.)
  - Test prints for machine image adjustment.
  - Error notification reports.
  - Partially printed pages as the result of a copier jam.

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

8 401	T:PrtPGS/LS	*CTL	These SPs count the number of pages printed from the document server. The counter for the application used to print the pages is incremented. The L: counter counts the number of jobs stored from within the document server mode screen at the operation panel. [0~9999999/ 0 / 1]
8 402	C:PrtPGS/LS	*CTL	
8 403	F:PrtPGS/LS	*CTL	
8 404	P:PrtPGS/LS	*CTL	
8 405	S:PrtPGS/LS	*CTL	
8 406	L:PrtPGS/LS	*CTL	

- Print jobs done with Web Image Monitor and Desk Top Binder are added to the L: count.
- Fax jobs done with Web Image Monitor and Desk Top Binder are added to the F: count.

8 411	Prints/Duplex	*CTL	This SP counts the amount of paper (front/back counted as 1 page) used for duplex printing. Last pages printed only on one side are not counted. [0~9999999/ 0 / 1]
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8 421	T:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing. This is the total for all applications.
8 422	C:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the copier application.
8 423	F:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the fax application.
8 424	P:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the printer application.
8 425	S:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by the scanner application.
8 426	L:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing from within the document server mode window at the operation panel.
8 427	O:PrtPGS/Dup Comb	*CTL	[0~9999999/ 0 / 1] These SPs count by binding and combine, and n-Up settings the number of pages processed for printing by Other applications
8 42x 1	Simplex> Duplex		
8 42x 2	Duplex> Duplex		
8 42x 3	Book> Duplex		
8 42x 4	Simplex Combine		
8 42x 5	Duplex Combine		
8 42x 6	2>		2 pages on 1 side (2-Up)
8 42x 7	4>		4 pages on 1 side (4-Up)
8 42x 8	6>		6 pages on 1 side (6-Up)
8 42x 9	8>		8 pages on 1 side (8-Up)
8 42x 10	9>		9 pages on 1 side (9-Up)
8 42x 11	16>		16 pages on 1 side (16-Up)
8 42x 12	Booklet		
8 42x 13	Magazine		

- These counts (SP8-421 to SP8-427) are especially useful for customers who need to improve their compliance with ISO standards for the reduction of paper consumption.
- Pages that are only partially printed with the n-Up functions are counted as 1 page.
- Here is a summary of how the counters work for Booklet and Magazine modes:

Booklet	
Original Pages	Count
1	1
2	2
3	2
4	2
5	3
6	4
7	4
8	4

Magazine	
Original Pages	Count
1	1
2	2
3	2
4	2
5	4
6	4
7	4
8	4

8 431	T:PrtPGS/ImgEdt	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of pages output with the three features below, regardless of which application was used.		
8 432	C:PrtPGS/ImgEdt	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of pages output with the three features below with the copy application.		
8 434	P:PrtPGS/ImgEdt	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of pages output with the three features below with the print application.		
8 436	L:PrtPGS/ImgEdt	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of pages output from within the document server mode window at the operation panel with the three features below.		
8 437	O:PrtPGS/ImgEdt	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total number of pages output with the three features below with Other applications.		
8 43x 1	Cover/Slip Sheet	Total number of covers or slip sheets inserted. The count for a cover printed on both sides counts 2.	
8 43x 2	Series/Book	The number of pages printed in series (one side) or printed as a book with booklet right/left pagination.	
8 43x 3	User Stamp	The number of pages printed where stamps were applied, including page numbering and date stamping.	

8 441	T:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by all applications.		
8 442	C:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by the copy application.		
8 443	F:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by the fax application.		
8 444	P:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by the printer application.		
8 445	S:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by the scanner application.		
8 446	L:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed from within the document server mode window at the operation panel.		
8 447	O:PrtPGS/Ppr Size	*CTL	[0~99999999/ 0 / 1]
	These SPs count by print paper size the number of pages printed by Other applications.		
8 44x 1	A3		
8 44x 2	A4		
8 44x 3	A5		
8 44x 4	B4		
8 44x 5	B5		
8 44x 6	DLT		
8 44x 7	LG		
8 44x 8	LT		
8 44x 9	HLT		
8 44x 10	Full Bleed		
8 44x 254	Other (Standard)		
8 44x 255	Other (Custom)		

- These counters do not distinguish between LEF and SEF.

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

8 461	T:PrtPGS/Ppr Type	*CTL	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by all applications. <ul style="list-style-type: none"> <li>• These counters are not the same as the PM counter. The PM counter is based on feed timing to accurately measure the service life of the feed rollers. However, these counts are based on output timing.</li> <li>• Blank sheets (covers, chapter covers, slip sheets) are also counted.</li> <li>• During duplex printing, pages printed on both sides count as 1, and a page printed on one side counts as 1.</li> </ul>		
8 462	C:PrtPGS/Ppr Type	*CTL	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the copy application.		
8 463	F:PrtPGS/Ppr Type	*CTL	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the fax application.		
8 464	P:PrtPGS/Ppr Type	*CTL	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed by the printer application.		
8 466	L:PrtPGS/Ppr Type	*CTL	[0~9999999/ 0 / 1]
	These SPs count by paper type the number pages printed from within the document server mode window at the operation panel.		
8 46x 1	Normal		
8 46x 2	Recycled		
8 46x 3	Special		
8 46x 4	Thick		
8 46x 5	Normal (Back)		
8 46x 6	Thick (Back)		
8 46x 7	OHP		
8 46x 8	Other		



<b>8 471</b>	PrtPGS/Mag	*CTL	[0~9999999/ 0 / 1]
	These SPs count by magnification rate the number of pages printed.		
8 471 1	~49%		
8 471 2	50%~99%		
8 471 3	100%		
8 471 4	101%~200%		
8 471 5	201% ~		

- Counts are done for magnification adjusted for pages, not only on the operation panel but performed remotely with an external network application capable of performing magnification adjustment as well.
- Magnification adjustments done with printer drivers with PC applications such as Excel are also counted.
- Magnification adjustments done for adjustments after they have been stored on the document server are not counted.
- Magnification adjustments performed automatically during Auto Reduce/Enlarge copying are counted.
- The magnification rates of blank cover sheets, slip sheets, etc. are automatically assigned a rate of 100%.

8 481	T:PrtPGS/TonSave	*CTL	
8 484	P:PrtPGS/TonSave	*CTL	
	These SPs count the number of pages printed with the Toner Save feature switched on. <b>NOTE:</b> These SPs return the same results as this SP is limited to the Print application. [0~9999999/ 0 / 1]		

8 491	T:PrtPGS/Col Mode	*CTL	These SPs count the number of pages printed in the Color Mode by each application.
8 492	C:PrtPGS/Col Mode	*CTL	
8 493	F:PrtPGS/Col Mode	*CTL	
8 496	L:PrtPGS/Col Mode	*CTL	
8 49x 1	B/W		
8 49x 2	Single Color		
8 49x 3	Two Color		
8 49x 4	Full Color		

8 501	T:PrtPGS/Col Mode	*CTL	These SPs count the number of pages printed in the Color Mode by the print application.
8 504	P:PrtPGS/Col Mode	*CTL	
8 50x 1	B/W		
8 50x 2	Single Color		
8 50x 3	Full Color		

8 511	T:PrtPGS/Emul	*CTL	[0~99999999/ 0 / 1]
	These SPs count by printer emulation mode the total number of pages printed.		
8 514	P:PrtPGS/Emul	*CTL	[0~99999999/ 0 / 1]
	These SPs count by printer emulation mode the total number of pages printed.		
8 514 1	RPCS		
8 514 2	RPDL		
8 514 3	PS3		
8 514 4	R98		
8 514 5	R16		
8 514 6	GL/GL2		
8 514 7	R55		
8 514 8	RTIFF		
8 514 9	PDF		
8 514 10	PCL5e/5c		
8 514 11	PCL XL		
8 514 12	IPDL-C		
8 514 13	BM-Links	Japan Only	
8 514 14	Other		

- SP8-511 and SP8-514 return the same results as they are both limited to the Print application.
- Print jobs output to the document server are not counted.

8 521	T:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by all applications.		
8 522	C:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Copy application.		
8 523	F:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Fax application. <b>NOTE:</b> Print finishing options for received faxes are currently not available.		
8 524	P:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Print application.		
8 525	S:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed by the Scanner application.		
8 526	L:PrtPGS/FIN	*CTL	[0~99999999/ 0 / 1]
	These SPs count by finishing mode the total number of pages printed from within the document server mode window at the operation panel.		
8 52x 1	Sort		
8 52x 2	Stack		
8 52x 3	Staple		
8 52x 4	Booklet		
8 52x 5	Z-Fold		
8 52x 6	Punch		
8 52x 7	Other		

**NOTE:** 1) If stapling is selected for finishing and the stack is too large for stapling, the unstapled pages are still counted.  
2) The counts for staple finishing are based on output to the staple tray, so jam recoveries are counted.

8 531	Staples	*CTL	This SP counts the amount of staples used by the machine. [0~99999999/ 0 / 1]
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8 581	T:Counter	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total output broken down by color output, regardless of the application used. In addition to being displayed in the SMC Report, these counters are also displayed in the User Tools display on the copy machine.		
8 581 1	Total		
8 581 2	Total: Full Color		
8 581 3	B&W/Single Color		
8 581 4	Development: CMY		
8 581 5	Development: K		
8 581 6	Copy: Color		
8 581 7	Copy: B/W		
8 581 8	Print: Color		
8 581 9	Print: B/W		
8 581 10	Total: Color		
8 581 11	Total: B/W		
8 581 12	Full Colour: A3		
8 581 13	Full Colour: B4 JIS or Smaller		
8 581 14	Full Colour Print		
8 581 15	Mono Colour Print		
8 581 16	Full Colour GPC		

8 582	C:Counter	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total output of the copy application broken down by color output.		
8 582 1	B/W		
8 582 2	Single Color		
8 582 3	Two Color		
8 582 4	Full Color		

8 583	F:Counter	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total output of the fax application broken down by color output.		
8 583 1	B/W		
8 583 2	Single Color		

8 584	P:Counter	*CTL	[0~99999999/ 0 / 1]
	These SPs count the total output of the print application broken down by color output.		
8 584 1	B/W		
8 584 2	Single Color		
8 584 3	Full Color		

8 586	L:Counter	*CTL	[0~9999999/ 0 / 1]
	These SPs count the total output of the local storage broken down by color output.		
8 582 1	B/W		
8 582 2	Single Color		
8 582 3	Two Color		
8 582 4	Full Color		

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

8 631	T:FAX TX PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number.		
8 633	F:FAX TX PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to a telephone number.		
8 63x 1	B/W		
8 63x 2	Color		

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8-631 and SP8-633 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8 641	T:IFAX TX PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by fax to as fax images using I-Fax.		
8 643	F:IFAX TX PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the number of pages sent by Fax as fax images using I-Fax.		
8 64x 1	B/W		
8 64x 2	Color		

- If a document has color and black-and-white pages mixed, the pages are counted separately as B/W or Color.
- At the present time, this feature is provided for the Fax application only so SP8-641 and SP8-643 are the same.
- The counts include error pages.
- If a document is sent to more than one destination with a Group transmission, the count is done for each destination.
- Polling transmissions are counted but polling RX are not.
- Relay, memory, and confidential mailbox transmissions and are counted for each destination.

8 651	T:S-to-Email PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for both the Scan and document server applications.		
8 655	S:S-to-Email PGS	*CTL	[0~9999999/ 0 / 1]
	These SPs count by color mode the total number of pages attached to an e-mail for the Scan application only.		
8 65x 1	B/W		
8 65x 2	Color		

Service  
Tables

- NOTE:**
- 1) The count for B/W and Color pages is done after the document is stored on the HDD. If the job is cancelled before it is stored, the pages are not counted.
  - 2) If Scan-to-Email is used to send a 10-page document to 5 addresses, the count is 10 (the pages are sent to the same SMTP server together).
  - 3) If Scan-to-PC is used to send a 10-page document to 5 folders, the count is 50 (the document is sent to each destination of the SMB/FTP server).
  - 4) Due to restrictions on some devices, if Scan-to-Email is used to send a 10-page document to a large number of destinations, the count may be divided and counted separately. For example, if a 10-page document is sent to 200 addresses, the count is 10 for the first 100 destinations and the count is also 10 for the second 100 destinations, for a total of 20.).

8 661	T:Deliv PGS/Svr	*CTL	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by both Scan and LS applications.		
8 665	S:Deliv PGS/Svr	*CTL	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a Scan Router server by the Scan application.		
8 66x 1	B/W		
8 66x 2	Color		

**NOTE:** 1) The B/W and Color counts are done after the document is stored on the HDD of the Scan Router server.

2) If the job is canceled before storage on the Scan Router server finishes, the counts are not done.

3) The count is executed even if regardless of confirmation of the arrival at the Scan Router server.

8 671	T:Deliv PGS/PC	*CTL	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent to a folder on a PC (Scan-to-PC) with the Scan and LS applications.		
8 675	S:Deliv PGS/PC	*CTL	[0~99999999/ 0 / 1]
	These SPs count by color mode the total number of pages sent with Scan-to-PC with the Scan application.		
8 67x 1	B/W		
8 67x 2	Color		

8 681	T:PCFAX TXPGS	*CTL	These SPs count the number of pages sent by PC Fax. These SPs are provided for the Fax application only, so the counts for SP8 681 and SP8 683 are the same. [0~9999999/ 0 / 1]
8 683	F:PCFAX TXPGS	*CTL	

- This counts pages sent from a PC using a PC fax application, from the PC through the copier to the destination.
- When sending the same message to more than one place using broadcasting, the pages are only counted once. (For example, a 10-page fax is sent to location A and location B. The counter goes up by 10, not 20.)

8 691	T:TX PGS/LS	*CTL	These SPs count the number of pages sent from the document server. The counter for the application that was used to store the pages is incremented. [0~9999999/ 0 / 1] The L: counter counts the number of pages stored from within the document server mode screen at the operation panel. Pages stored with the Store File button from within the Copy mode screen go to the C: counter.
8 692	C:TX PGS/LS	*CTL	
8 693	F:TX PGS/LS	*CTL	
8 694	P:TX PGS/LS	*CTL	
8 695	S:TX PGS/LS	*CTL	
8 696	L:TX PGS/LS	*CTL	

- NOTE:** 1) Print jobs done with Web Image Monitor and Desk Top Binder are added to the count.
- 2) If several documents are merged for sending, the number of pages stored are counted for the application that stored them.
- 3) When several documents are sent by a Fax broadcast, the F: count is done for the number of pages sent to each destination.

8 701	TX PGS/Port	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of pages sent by the physical port used to send them. For example, if a 3-page original is sent to 4 destinations via ISDN G4, the count for ISDN (G3, G4) is 12.		
8 701 1	PSTN-1		
8 701 2	PSTN-2		
8 701 3	PSTN-3		
8 701 4	ISDN (G3, G4)		
8 701 5	Network		

8 711	T: Scan PGS/Comp	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of total pages compressed by each compression method.		
8 711 1	JPEG/ JPEG2000		
8 711 2	TIFF (Multi/ Single)		
8 711 3	PDF		
8 711 4	Other		



8 715	S: Scan PGS/Comp	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of pages for the scanner compressed by each compression method.		
8 715 1	JPEG/ JPEG2000		
8 715 2	TIFF (Multi/ Single)		
8 715 3	PDF		
8 715 4	Other		

8 741	RX PGS/Port	*CTL	[0~9999999/ 0 / 1]
	These SPs count the number of pages received by the physical port used to receive them.		
8 741 1	PSTN-1		
8 741 2	PSTN-2		
8 741 3	PSTN-3		
8 741 4	ISDN (G3,G4)		
8 741 5	Network		

8 771	Dev Counter	*CTL	[0~9999999/ 0 / 1]
	These SPs count the frequency of use (number of rotations of the development rollers) for black and other color toners.		
8 771 1	Total		
8 771 2	K		
8 771 3	Y		
8 771 4	M		
8 771 5	C		

8 781	No. of Toner	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of already replaced toner bottles. <b>NOTE:</b> Currently, the data in SP7-833-011 through 014 and the data in SP8-781-001 through -004 are the same.		
8 781 1	K	The number of black-toner bottle	
8 781 2	Y	The number of yellow-toner bottle	
8 781 3	M	The number of magenta-toner bottle	
8 781 4	C	The number of cyan-toner bottle	

8 791	LS Memory Remain	*CTL	This SP displays the percent of space available on the document server for storing documents. [0~100/ 0 / 1]
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8 801	Toner Remain	*CTL	[0~100/ 0 / 1]
	These SPs display the percent of toner remaining for each color. This SP allows the user to check the toner supply at any time. <b>NOTE:</b> 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).		
8 801 1	K		
8 801 2	Y		
8 801 3	M		
8 801 4	C		

8 831	Coverage Average	*BCU	[0~100/ 0 / 1]
	These SPs display the average coverage by color. (SP7-833)		
8 831 1	K		
8 831 2	Y		
8 831 3	M		
8 831 4	C		

8 841	Coverage Newest Page	*BCU	[0~100/ 0 / 1]
	These SPs display the coverage of the last print by color. (SP7-833)		
8 841 1	K		
8 841 2	Y		
8 841 3	M		
8 841 4	C		

8 851	Coverage: 0-10%	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of scanned sheets on which the coverage of each color is from 0% to 10%.		
8 851 1	S: BK		
8 851 2	S: Y		
8 851 3	S: M		
8 851 4	S: C		

8 861	Coverage: 11-20%	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of scanned sheets on which the coverage of each color is from 11% to 20%.		
8 851 1	S: BK		
8 851 2	S: Y		
8 851 3	S: M		
8 851 4	S: C		

8 871	Coverage: 21-30%	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of scanned sheets on which the coverage of each color is from 21% to 30%.		
8 871 1	S: BK		
8 871 2	S: Y		
8 871 3	S: M		

8 871 4	S: C
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8 881	Coverage: 31%-	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of scanned sheets on which the coverage of each color is 31% or higher.		
8 881 1	K		
8 881 2	Y		
8 881 3	M		
8 881 4	C		

8 891	Page/Toner Bottle	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of sheets output by the scan application.		
8 891 1	K		
8 891 2	Y		
8 891 3	M		
8 891 4	C		

8 901	Page/Toner Bottle Prev 1	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of sheet output by the scan application with the previously replaced units.		
8 901 1	K		
8 901 2	Y		
8 901 3	M		
8 901 4	C		

8 911	Page/Toner Bottle Prev 2	*BCU	[0~9999999/ 0 / 1]
	These SPs display the number of sheet output by the scan application with the previously replaced units.		
8 911 1	K		
8 911 2	Y		
8 911 3	M		
8 911 4	C		

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

8 951	AddBook Register	*CTL	
	These SPs count the number of events when the machine manages data registration.		
8 951 1	User Code	User code registrations.	[0~9999999/ 0 / 1]
8 951 2	Mail Address	Mail address registrations.	
8 951 3	Fax Destination	Fax destination registrations.	
8 951 4	Group	Group destination registrations.	
8 951 5	Transfer Request	Fax relay destination registrations for relay TX.	
8 951 6	F-Code	F-Code box registrations.	
8 951 7	Copy Program	Copy application registrations with the Program (job settings) feature.	[0~255 / 0 / 255]
8 951 8	Fax Program	Fax application registrations with the Program (job settings) feature.	
8 951 9	Printer Program	Printer application registrations with the Program (job settings) feature.	
8 951 10	Scanner Program	Scanner application registrations with the Program (job settings) feature.	

### 5.1.3 TEST PATTERN PRINTING (SP5-955-1)

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

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

After finishing your tests, reset SP 5-955-1 to 0.

## 5.1.4 INPUT CHECK

### Main Machine Input Check (SP5-803)

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

0 0 0 0 0 0 0 0
-----------------

Bit    7 6 5 4 3 2 1 0

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

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

SP5-803 -XXX		Description	Reading	
			0	1
26	Fuser Entrance Sensor	Fusing entrance sensor	Detected	Not detected
27	PCU-Coil Paper Check	Transfer belt sensor	Detected	Not detected
28	PPI-Level: Bit 0	High voltage power supply unit	Detected	Not detected
29	PPI-Level: Bit 1	High voltage power supply unit	Detected	Not detected
30	Toner End: M	Toner end sensor: M	Not end	End
31	Toner End: C	Toner end sensor: C	Not end	End
32	Toner End: Y	Toner end sensor: Y	Not end	End
33	Toner End: K	Toner end sensor: K	Not end	End
38	O/B Waste Toner Sensor	OPC belt waste toner sensor	Full	Not full
39	O/B Waste Toner Switch	OPC belt waste toner bottle switch	Set	Not set
40	Belt Mark	Belt mark sensor	Not detected	Detected
42	T/B Waste Toner Sensor	Transfer belt waste toner sensor	Full	Not full
43	T/B Waste Toner Switch	Transfer belt waste toner bottle switch	Set	Not set
44	LD 5V Cover	Interlock switch	Closed	Open
45	Left Cover		Closed	Open
46	Right Upper Cover		Closed	Open
47	Front Cover		Closed	Open
49	Main Motor Lock	Main motor lock	Locked	Not locked
50	Paper Feed Motor Lock	Paper feed motor lock	Locked	Not locked
51	Polygon Motor Lock	Polygon motor lock	Locked	Not locked
52	1 Bin Set		Set	Not set
53	1 Bin Paper Sensor		Detected	Not detected
54	Dev. Motor 1: Lock	Development motor for black and cyan	Locked	Not locked
55	Dev. Motor 2: Lock	Development motor for yellow and magenta	Locked	Not locked
56	PSU-Fan Lock	PSU fan motor lock	Locked	Not locked
57	Fuser-Fan lock	Fusing fan motor lock	Locked	Not locked
60	Duplex Connection	Duplex unit	Not connected	Connected
61	Bank 1 Connection	1st optional paper tray	Not connected	Connected
62	Bank 2 Connection	2nd optional paper tray	Not connected	Connected
63	Finisher Connection	Finisher Connection	Not connected	Connected
64	Bridge Exit Sensor		Detected	Not detected
65	Bridge Relay Sensor		Detected	Not detected
66	Bridge Set Sensor		Set	Not set
67	Bridge Right Cover		Closed	Open
68	Bridge Left Cover		Closed	Open
69	Bank Upper Relay	Relay Sensor 3 (optional paper tray unit)	No paper	Paper present

SP5-803 -XXX		Description	Reading	
			0	1
70	Bank Lower Relay	Relay Sensor 4 (optional paper tray unit)	No paper	Paper present
71	Bank Cover 1	Right cover (vertical guide switch)	Closed	Open
72	Bank Cover 2	2nd optional tray: Right cover (vertical guide switch)	Closed	Open
73	Bank Tray 1 Set	1st optional tray: Set	Not set	Set
74	Bank Tray 2 Set	2nd optional tray: Set	Not set	Set
75	Bank Tray 1 Paper End	1st optional tray: Paper end	Not end	End
76	Bank Tray 2 Paper End	2nd optional tray: Paper end	Not end	End
77	Bank Tray 1 Paper Size	1st optional tray: Paper size	(See table 3.)	
78	Bank Tray 2 Paper Size	2nd optional tray: Paper size		
79	Bank Tray 1 Paper Height	1st optional tray: Paper height	(See table 4.)	
80	Bank Tray 2 Paper Height	2nd optional tray: Paper height		
81	Duplex Entrance	Duplex: Entrance sensor	Not detected	Detected
82	Duplex Exit	Duplex: Exit sensor	Detected	Not detected
83	Duplex Open	Duplex unit open switch	Closed	Open
84	Duplex Cover	Duplex cover sensor	Open	Closed
86	Scanner Home Position	Scanner HP sensor	Detected	Not detected
87	Recycle Counter	Mechanical Counter Set	Set	Not set
88	Counter Set		Set	Not set
89	Key Counter Set		Set	Not set
90	Shift Tray Home Position Sensor		Detected	Not detected
91	Platen Cover Sensor		Detected	Not detected



**Table 1: Tray 1 and 2 Paper Size**

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

0: pushed

1: not pushed

**Table 2: By-pass Tray Paper Size**

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

**Table 3: Optional Paper Tray Unit Paper Size**

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

**Table 4: Optional Paper Tray Unit Paper Near End**

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

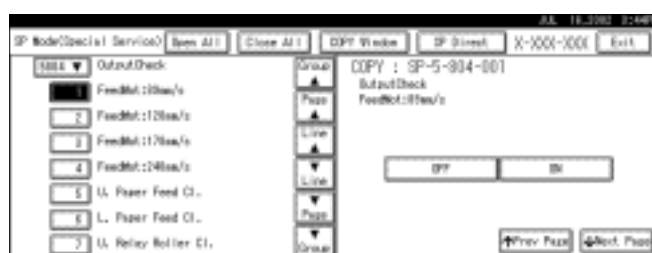
**ARDF Input Check (SP6-007)**

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

0 0 0 0 0 0 0 0
-----------------

Bit    7 6 5 4 3 2 1 0

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



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

**Finisher Input Check (SP6-117)**

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

0 0 0 0 0 0 0
---------------

Bit    7 6 5 4 3 2 1 0

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

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

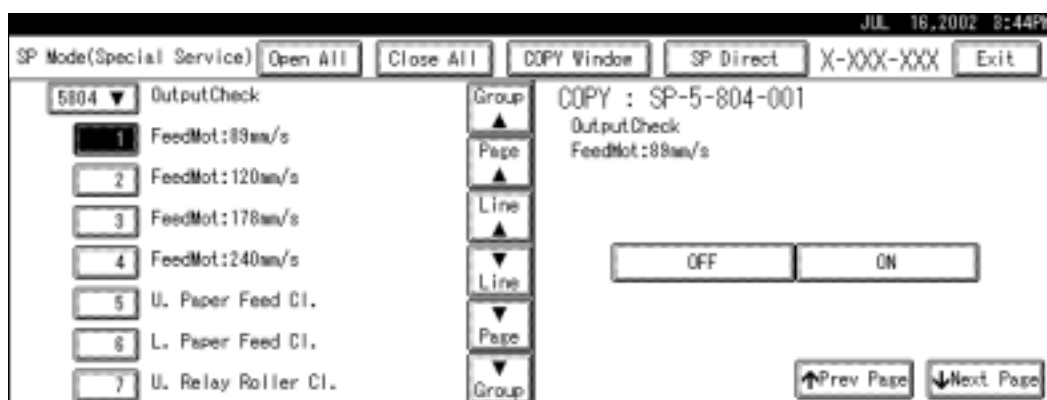
### 5.1.5 OUTPUT CHECK

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

#### Main Machine Output Check (SP5-804)

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

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



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 Service  
Tables

**Output Check Table**

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

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

<b>SP5-804 -XXX</b>		<b>Description</b>
59	Development Motor 1 High Speed (Rev)	Development motor for black and cyan: High Speed (Reverse)
60	Development Motor 2 (Fwd)	Development motor for yellow and magenta: (Forward)
61	Development Motor 2 High Sped (Fwd)	Development motor for yellow and magenta: High Speed (Forward)
62	Development Motor 2 (Rev)	Development motor for yellow and magenta (Reverse)
63	Development Motor 2 High Speed (Rev)	Development motor for yellow and magenta: High Speed (Reverse)
100	Bank Upper Feed Cl	1st paper feed clutch (optional paper tray unit)
101	Bank Lower Feed Cl	2nd paper feed clutch (optional paper tray unit)
102	Bank Feed Motor: L	1st paper feed motor (optional paper tray unit)
103	Bank Feed Motor: H	1st Paper feed motor – half speed (optional paper tray unit)
110	Shift Tray Motor: CW	Shift Tray Motor – continuous clockwise
111	Shift Tray Motor: CCW	Shift Tray Motor – continuous counter-clockwise
112	Shift Tray Motor: Run	Shift Tray Motor – shifts once
120	Duplex Reverse Motor (Forward)	Duplex: Inverter motor
121	Duplex Reverse Motor (Reverse)	Duplex: Inverter motor – reverse
122	Duplex Feed Motor (Forward)	Duplex: Transport motor
123	Duplex Feed Motor (Reverse)	Duplex: Transport motor – reverse
124	Duplex Solenoid	Duplex: Inverter gate solenoid
125	Duplex Free Run	Duplex: Free run
130	Bridge Motor: H	
131	Bridge Motor: L	
132	Bridge Gate Sol	
140	Fusing Fan: H	
141	Fusing Fan: L	
142	Dev Fan: H	Development Fan Motor: H
143	Dev. Fan: L	Development Fan Motor: L
144	Cooling Fan: H	Controller Fan Motor: H
145	Cooling Fan: L	Controller Fan Motor: L
146	Ozone Fan: Hi	
147	Ozone Fan: Low	
148	Scanner Fan: Hi	
149	Scanner Fan: Low	
160	Bridge Cooling Fan: H	
161	Bridge Cooling Fan: L	
162	PSU Fan	

**ARDF Output Check (SP6-008)**

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

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

**Finisher Output Check (SP6-118)**

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

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

### 5.1.6 SMC DATA LISTS (SP5-990)

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

<b>SMC (System Parameter and Data Lists)</b>	
1	All Data List
2	SP Mode Data List
3	User Program
4	Logging Data
5	Self-Diagnostic Report
6	Non-Default
7	NIB summary
8	Capture Log (Jobs to be printed from the document server using a PC and the Desk Top Binder software)
21	Copier User Program
22	Scanner SP
23	Scanner User Program

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

### 5.1.7 ORIGINAL JAM HISTORY DISPLAY

#### **Total Count**

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

#### **Details on the Most Recent Jams**

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

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



## 5.1.8 COPY JAM HISTORY DISPLAY

### ***Total Count***

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

### ***Details on the Most Recent Jams***

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

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

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

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

SP8-381 to -387 SP8-391 and -411 SP8-491 to -493 and -496 SP8-581 to -584 and -586	Counter values
SP5-811	Machine serial number
SP5-907	Plug & play brand name and production name setting

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

#### Using an SD card

1. Upload the NVRAM data to an SD card (➡ 5.4.2 NVRAM Data Upload).
2. Print out all SMC data lists (SP5-990).  
**NOTE:** Be sure to print out all the lists. If the NVRAM data upload is not completed, it is necessary to manually change the SP mode settings.
3. Open SP5-801.
4. Press the number for the item that you want to initialize. The number you select determines which application software is initialized. Touch 1, for example, if you want to initialize all modules; or select the appropriate number from the table below.

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

No.	What It Initializes	Comments
10	Web Service/Network Application	Deletes the network file application management files and thumbnails, and initializes the job login ID.
11	NCS (Network Control Service)	Initializes the system defaults and interface settings (IP addresses also), SmartNetMonitor for Admin, WebStatusMonitor settings, and the TELNET settings.
12	R-FAX	Initializes the job login ID, SmartNetMonitor for Admin, job history, and local storage file numbers.
14	Clear DCS Setting	Initializes the DCS (Delivery & Receive Control Server) settings
15	Clear UCS Setting	Initializes the UCS (User Directory Control Server) settings.
16	MIRS Setting	Initializes the MIRS (Machine Information Report Service) settings.
17	CCS	Initializes the CCS (Certification and Charge-control Service) settings.

5. Touch *EXECUTE*, and turn the main switch off and on.
6. Download the NVRAM data from an SD card (☛ 5.4.2).

### ***Without Using a Flash Memory Card***

If there is no SD card, follow the steps below.

1. Execute SP5-990 to print out all SMC data lists.
2. Open SP5-801.
3. Select the number for the item that you want to initialize.
4. Press *EXECUTE* and turn the main switch off and on.
5. Make sure that you do the following:
  - Do the printer and scanner registration and magnification adjustments (☛ 3.12 "Copy Adjustments").
  - Do the touch screen calibration (☛ 3.15 "Touch Screen Calibration").
  - Referring to the SMC data lists, re-enter all values that have been changed from their factory settings.
  - Do the white level adjustment (☛ Section 3.14 "Scanner White Level Adjustment")
6. Check the copy quality and the paper paths, and do any necessary adjustments.

## 5.2 PRINTER SERVICE MODE

### 5.2.1 SERVICE MODE TABLE

#### Service Table Key

Notation	What it means
[range / <b>default</b> / step]	Example: [-9 ~ +9 / <b>+3.0</b> / 0.1 mm step]. The setting can be adjusted in the range $\pm 9$ , value reset to +3.0 after an NVRAM reset, and the value can be changed in 0.1 mm steps with each key press.
<i>italics</i>	Comments added for your reference.
*	This value is stored in NVRAM. After a RAM reset, the default value (factory setting) is restored.
DFU	Denotes "Design or Factory Use". Do not change this value

SP1	Mode Number	Function / [Setting]
001	Bit Switch	
	1	Bit Switch 1 Settings
	2	Bit Switch 2 Settings
	3	Bit Switch 3 Settings
	4	Bit Switch 4 Settings
	5	Bit Switch 5 Settings
	6	Bit Switch 6 Settings
	7	Bit Switch 7 Settings
	8	Bit Switch 8 Settings
003	Clear Setting	
	1	Initialize Printer System
	3	Delete Program
004	Print Summary	
	1	Print Printer Summary
005	Display Version	
	1	
006	Sample/ Locked Print	
	1	0:Link with Doc. Srv 1:Enable
101	Data Recall	
	1	Factory
	2	Previous
	3	Current
	4	ACC

SP1	Mode Number		Function / [Setting]
102	Resolution Settings		
	1	Toner Control Mode Selection	Selects the printing mode (resolution) for the printer gamma adjustment.  <b>1800x600 Photo</b> 1800x600 Text 1800x600 Graph 600x600 Photo 600x600 Text
103	Test Page		
	1	Color Gray Scale	Prints the <i>Color Calibration Test Sheet</i> or <i>Color Test Pattern</i> to check the color balance before and after toner control adjustment (gamma adjustment).  <i>For toner control adjustment, see SP1-104 and SP1-105.</i>
	2	Color Pattern	
104	Gamma Adjustment		
	1	Black: Highlight	Adjusts the printer gamma for the mode selected in the “Mode Selection” menu. [0 ~ 30 / <b>15</b> / 1/step ]  <i>For the Color Calibration Test Sheet and Color Test Pattern, see SP1-103. For saving adjusted values, see SP1-105.</i>
	2	Black: Shadow	
	3	Black: Middle	
	4	Black: IDmax	
	21	Cyan: Highlight	
	22	Cyan: Shadow	
	23	Cyan: Middle	
	24	Cyan: IDmax	
	41	Magenta: Highlight	
	42	Magenta: Shadow	
	43	Magenta: Middle	
	44	Magenta: IDmax	
	61	Yellow: Highlight	
	62	Yellow: Shadow	
	63	Yellow: Middle	
	64	Yellow: IDmax	
105	Save Tone Control Value		
	1	Save Tone Control Value	Stores the print gamma adjusted with the “Gamma Adj.” menu item as the current setting. Before the machine stores the new ‘current setting’, it moves the data currently stored as the ‘current setting’ to the ‘previous setting’ memory storage location.
106	Toner Limit		
	1	Toner Limit Photo	Adjusts the maximum toner amount for image development. [100 ~ 400 / <b>260</b> / 1%/step]
	2	Toner Limit Text	[100 ~ 400 / <b>260</b> / 1%/step]

## 5.2.2 SP MODES RELATED TO THE PRINTER CONTROLLER

The following SP modes are located in the copier SP mode.

☛ Section 5.1.

SP No.	Description	Function and Setting
5104	A3/DLT Double Count	Specifies whether the counter is doubled for A3/DLT. 0: No, 1: Yes, 2: Yes except By-pass If Yes is selected, the total counter and the current user code counter count up twice when A3 or DLT paper is used. <b>NOTE:</b> Contact your supervisor if you wish to change this SP.
5801	Memory All Clear	Resets data for process control and all software counters, and returns all modes and adjustments to their defaults values.
5907	Plug & Play	Selects the brand name and the production name for Windows Plug & Play. This information is stored in NVRAM.
7832	Self-Diagnose Result Display	Displays the controller self-diagnostic result.

## 5.3 SCANNER SERVICE MODE

### 5.3.1 SCANNER PROGRAM MODE TABLE

#### SP1-XXX (System and Others)

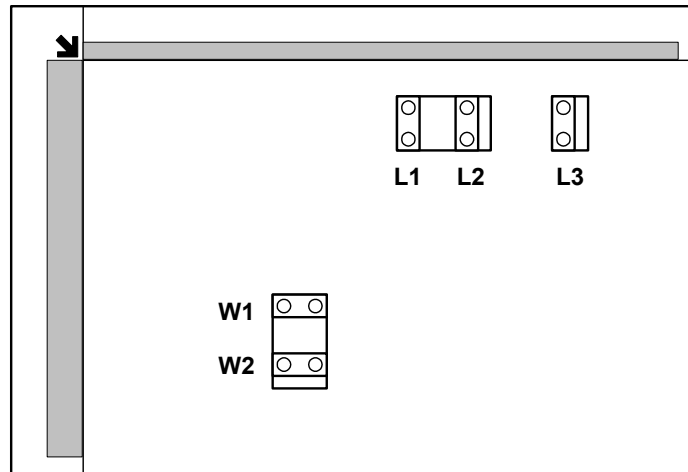
<b>1</b>	<b>Mode No. (Class 1, 2, and 3)</b>	<b>Function / [Setting]</b>
004	<b>[Compression Type]</b>	
	1	Compression Type Selects the compression type for binary picture processing. [ 1 to 3 / <u>1</u> / 1/step ] 1: MH, 2: MR, 3: MMR
005	<b>[Erase margin (Remote scan)]</b>	
	1	Erase Margin Creates an erase margin for all edges of the scanned image. <i>If the machine has scanned the edge of the original, create a margin.</i> [0 to 5 / <u>0</u> / 1 mm/step]
009	Remote scan disable	
	1	0: enable 1: disable [0 or 1 / <b>0</b> / 1 /step] Remote scan: Network TWAIN scanner

#### SP2-XXX (Scanning-image quality)

<b>2</b>	<b>Mode Number (Class 1, 2, and 3)</b>	<b>Function / [Setting]</b>
021	<b>[Compression ratio of gray-scale]</b>	
	1	Compression ratio (Normal image) Selects the compression ratio for grayscale processing mode (JPEG) for the three settings that can be selected at the operation panel. [ 5 to 95 / <u>50</u> / 1 /step ] 5: lowest compression ratio, 95: highest compression ratio
	2	Compression ratio (High-comp image) [ 5 to 95 / <u>60</u> / 1 /step ]
	3	Compression ratio (Low-comp image) [ 5 to 95 / <u>40</u> / 1 /step ]
	4	Compression ratio (High Lv2-comp image) [ 5 to 95 / <u>70</u> / 1 /step ]
	5	Compression ratio (Low Lv2-comp image) [ 5 to 95 / <u>30</u> / 1 /step ]

### 5.3.2 APS OUTPUT DISPLAY (SP4-301)

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



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Code	Sensors				
	W1	W2	L1	L2	L3
5	○	○	—	—	—
132	○	○	○	○	○
165	—	—	○	○	○
133	—	—	○	○	—
128	Other combinations				

○: Activated

—: Deactivated



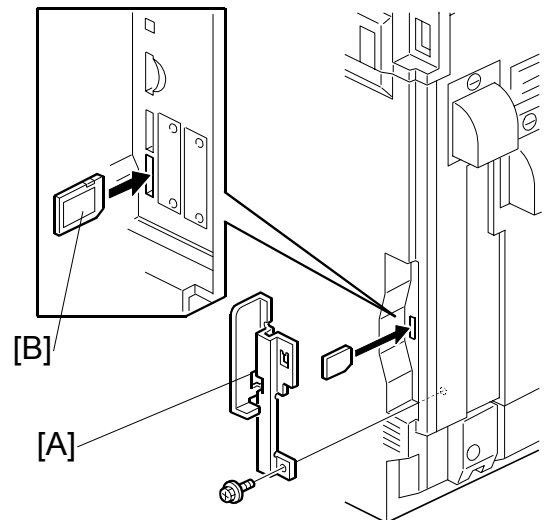
## 5.4 PROGRAM DOWNLOAD

### 5.4.1 FIRMWARE

The procedure is the same for all firmware modules.

**NOTE:** If you will change scanner firmware, print 5-990-22 and -23 (SMC reports for scanner settings) before you start this procedure.

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



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#### **⚠ CAUTION**

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

8. After confirming that downloading is completed, turn off the main power and remove the SD card.
9. If more software needs to be downloaded, repeat steps 1 to 7.
10. Turn the main power on and confirm that the new software loads and that the machine starts normally.
11. After installing new scanner firmware, perform copier SP5-801-9 (Memory All Clear – Scanner Application). Then input scanner settings that are different from the defaults (see the SMC prints of 5-990-22 and -23 that you made earlier).

**NOTE:** If the download failed, an error message appears on the panel. In this case, download the firmware again using the SD card. In this condition, if the firmware cannot be downloaded again, do the following:

Controller firmware: Turn on dip switch 1 on the controller board, and switch on. The machine boots from the SD card. Download the new firmware.

Others: Replace the appropriate PCB.

### 5.4.2 NVRAM DATA UPLOAD/DOWNLOAD

The content of the NVRAM can be uploaded to and downloaded from an SD card.

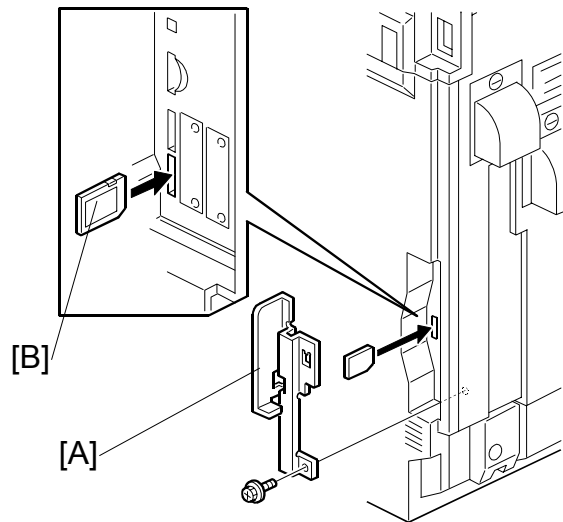
The following data (related to the accounting counter) are not uploaded from NVRAM to the SD card:

- SP8-381 to -387
- SP8-391 and -411
- SP8-491 to -493 and -496
- SP8-581 to -584 and -586

#### ***Uploading NVRAM Data (SP5-824)***

The data in the NVRAM in the machine can be uploaded to an SD memory card.

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

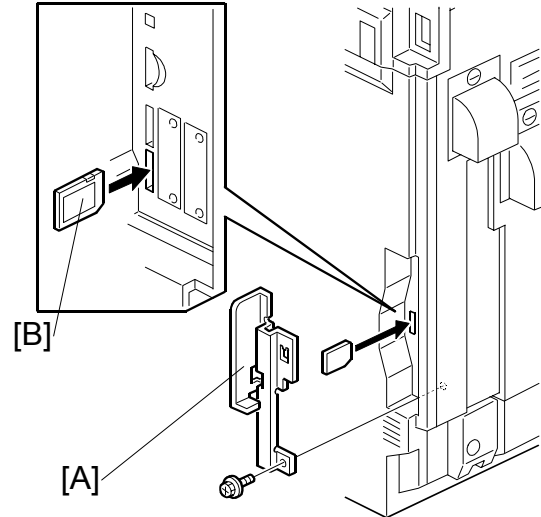


B156I451.WMF

**Downloading NVRAM Data (SP5-825)**

SP5-825 downloads data from an SD card to the NVRAM inside the machine.

1. Turn off the main switch.
2. Remove the cover [A] (⌀ x 1).
3. Insert the SD card [B] into SD card slot 3.
4. Turn on the main switch.
8. Open SP5-825.
5. Touch *EXECUTE* to start download the NVRAM data.
6. Turn off the main switch, and then remove the SD card.



B156I451.WMF

Note that the following errors may occur during downloading:

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



## 5.5 SOFTWARE RESET

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

### *Procedure 1*

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




### *Procedure 2*

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

## 5.6 SYSTEM SETTINGS AND COPY SETTING RESET

### 5.6.1 SYSTEM SETTING RESET

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

1. Press the User Tools/Counter key ().
2. Hold down the  key and touch *System Settings*.  
**NOTE:** Hold down the  key before touching *System Settings*.






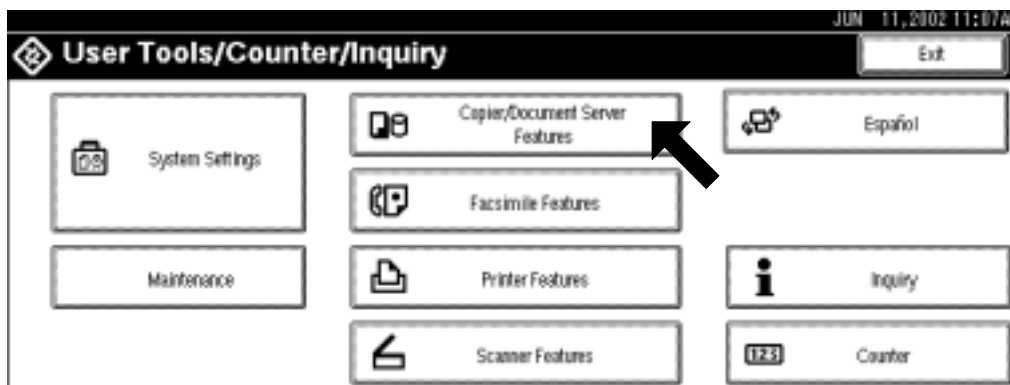
B156S503.WMF

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

## 5.6.2 COPIER SETTING RESET

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

1. Press the User Tools/Counter key ()
2. Hold down the  key and then touch *Copier/Document Server Features*.  
**NOTE:** Hold down the  key before touching *Copier/Document Server Features*.



B156S504.WMF


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

## 5.7 USER TOOLS

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

### 5.7.1 HOW TO ENTER USER TOOLS

#### ***UP Mode Initial Screen: User Tools/Counter Display***

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

#### ***System Settings***

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

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

#### ***Copier/Document Server Features***

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

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

#### ***Printer, Facsimile, Scanner Settings***

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

#### ***Inquiry***

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

The following SP mode settings will be displayed.

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

**Counter**

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

- The total counters will be displayed.

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

**5.8 DIP SWITCHES****Controller Board: SW2**

DIP SW No.	OFF	ON
1	Boot-up from SD card	Boot-up from SD card
2 to 7	Default: OFF <b>DFU</b>	
8	Default: ON <b>DFU</b>	

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

**BICU Board: SW2**

DIP SW No.	Function	Settings					
1	Not used	<b>DFU</b>					
2	Destination	Off:	Off:	Off:	On:	On:	Off:
3		Off: JAN	On: NA	Off: EU	On: AA	Off: TWN	On: CHN
4		Off:	Off:	On:	Off:	Off:	On:
5	Not used	<b>DFU</b>					
6	Debug Mode	<b>DFU</b>					

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



## 5.9 SD CARD APPLICATION MOVE

### **Overview**

The service program “SD Card Appli Move” (SP5873) copies application programs from one SD card to a different card.

The machine has three SD card slots. Slots 1 and 2 are used for application programs, and Slot 3 is used for servicing only.

Three SD cards cannot be used at the same time for applications. If the customer must use more than two SD cards, more than one application can be stored on the same SD card.

### **Important**

- The data necessary for authentication is transferred with the application program to the target SD card.
- Always use a new SD card. Do not use the SD card if it was previously used with a computer. Correct operation is not guaranteed if this type of SD card is used.
- Keep the SD card in a safe place after you copy the application program from the card to another card. The SD card is the only evidence that the customer is licensed to use the application program, and the CE may need to check the SD card and its data to solve a problem in the future.
- Licensing does not let you copy PostScript data to a different SD card. But, you can copy an application from an SD card to an SD card that holds PostScript data.
- If an SD card was used to combine applications on that card, that SD card cannot be used for a different function.

***Move Exec***

Do this procedure to move an application from one SD card to another.

1. Turn the main switch off.
2. Put the destination SD card in SD Card Slot 1.
3. Put the source SD card into SD Card Slot 3. This SD card holds the application program that you want to copy to the destination SD card in Slot 1.
4. Turn the main switch on.
5. Go into the SP mode.
6. Do SP5873-001 "Move Exec."
7. Obey the messages on the operation panel to complete the procedure.
8. Turn the main switch off.
9. Remove the SD card from SD Card Slot 3.
10. Turn the main switch on.
11. Check that the application programs combined on the SD card in Slot 1 operate correctly.

***Undo Exec***

Do this procedure to repair the original source SD card if you accidentally move the application to a different SD card.

1. Turn the main switch off.
2. Put the original source SD card in SD Card Slot 3. The application program is copied back into this card.
3. Put the original destination SD card (with the stored application program that you want to return to the original source SD card in Slot 3) in SD card Slot 1.
4. Turn the main switch on.
5. Go into the SP mode and do SP5873-002 (Undo Exec)
6. Obey the messages on the operation panel to complete the procedure.
7. Turn the main switch off.
8. Remove the SD card from SD card Slot 3
9. Turn the main switch on.
10. Check that the application programs run correctly.

## 5.10 USING THE DEBUG LOG

This machine provides a Save Debug Log feature that allows the Customer Engineer to save and retrieve error information for analysis.

Every time an error occurs, debug information is recorded in volatile memory but this information is lost when the machine is switched off and on.



To capture this debug information, the Save Debug Log feature provides two main features:

- Switching on the debug feature so error information is saved directly to the HDD for later retrieval.
- Copying the error information from the HDD to an SD card.

When a user is experiencing problems with the machine, follow the procedure below to set up the machine so the error information is saved automatically to the HDD. Then ask the user to reproduce the problem.


### 5.10.1 SWITCHING ON AND SETTING UP SAVE DEBUG LOG

The debug information cannot be saved until the “Save Debug Log” function has been switched on and a target has been selected.

1. Enter the SP mode and switch the Save Debug Log feature on.
  - Press  then use the 10-key pad to enter ①①⑦.
  - Press and hold down  for more than 3 seconds.
  - Touch “Copy SP”.
  - On the LCD panel, open SP5857.

2. Under “5857 Save Debug Log”, touch “1 On/Off”.

<p>COPY : SP-5-857-001</p> <p>Save Debug Log</p> <p>On/Off (1:ON 0:OFF)</p> <p><input type="text" value="1"/></p> <p>Initial 0</p>
--

3. On the control panel keypad, press “1” then press . This switches the Save Debug Log feature on.

**NOTE:** The default setting is “0” (OFF). This feature must be switched on in order for the debug information to be saved.

4. Next, select the target destination where the debug information will be saved. Under “5857 Save Debug Log”, touch “2 Target”, enter “2” with the operation panel key to select the hard disk as the target destination, then press  $\text{\textcircled{\#}}$ .

```

COPY : SP-5-857-002
Save Debug Log
Target (2:HDD 3:SD)

  2

Initial 2

```

**NOTE:** Select “3 SD Card” to save the debug information directly to the SD card if it is inserted in the service slot.

5. Now touch “5858” and specify the events that you want to record in the debug log. SP5858 (Debug Save When) provides the following items for selection.

1	Engine SC Error	Saves data when an engine-related SC code is generated.
2	Controller SC Error	Saves debug data when a controller-related SC Code is generated.
3	Any SC Error	Saves data only for the SC code that you specify by entering code number.
4	Jam	Saves data for jams.

**NOTE:** More than one event can be selected.

#### Example 1: To Select Items 1, 2, 4

Touch the appropriate item(s). Press “ON” for each selection. This example shows “Engine SC Error” selected.

```

COPY : SP-5-858-001
Debug Save When
Engine SC Error

OFF      ON

```

#### Example 2: To Specify an SC Code

Touch “3 Any SC Error”, enter the 3-digit SC code number with the control panel number keys, then press  $\text{\textcircled{\#}}$ . This example shows an entry for SC670.

```

COPY : SP-5-858-003
Debug Save When
Any SC Error

  670

```

**NOTE:** For details about SC code numbers, please refer to the SC tables in Section “4. Troubleshooting”.

6. Next, select the one or more memory modules for reading and recording debug information. Touch “5859”.

Under “5859” press the appropriate key item for the module that you want to record.

Enter the appropriate 4-digit number, then press (#).

**NOTE:** Refer to the two tables below for the 4-digit numbers to enter for each key.

The example below shows “Key 1” with “2222” entered.

COPY : SP-5-859-001  
 Debug Save Key No.  
 Key 1

2222

The following keys can be set with the corresponding numbers. (The initials in parentheses indicate the names of the modules.)

#### 4-Digit Entries for Keys 1 to 10

KEY NO.	COPY	PRINTER	SCANNER	WEB
1	2222 (SCS)			
2	2223 (SRM)			
3	256 (IMH)			
4	1000 (ECS)			
5	1025 (MCS)			
6	4848 (COPY)	4400 (GPS)	5375 (Scan)	5682 (NFA)
7	2224 (BCU)	4500 (PDL)	5682 (NFA)	6600 (WebDB)
8		4600 (GPS-PM)	3000 (NCS)	3300 (PTS)
9		2000 (NCS)	2000 (NCS)	6666 (WebSys)
10		2224 (BCU)		2000 (NCS)

**NOTE:** The default settings for Keys 1 to 10 are all zero (“0”).

#### Key to Acronyms

Acronym	Meaning	Acronym	Meaning
ECS	Engine Control Service	NFA	Net File Application
GPS	GW Print Service	PDL	Printer Design Language
GSP-PM	GW Print Service – Print Module	PTS	Print Server
IMH	Image Memory Handler	SCS	System Control Service
MCS	Memory Control Service	SRM	System Resource Management
NCS	Network Control Service	WebDB	Web Document Box (Document Server)

The machine is now set to record the debugging information automatically on the HDD (the target selected with SP5857-002) for the events that you selected SP5858 and the memory modules selected with SP5859.

Please keep the following important points in mind when you are doing this setting:

- Note that the number entries for Keys 1 to 5 are the same for the Copy, Printer, Scanner, and Web memory modules.
- The initial settings are all zero.
- These settings remain in effect until you change them. Be sure to check all the settings, especially the settings for Keys 6 to 10. To switch off a key setting, enter a zero for that key.
- You can select any number of keys from 1 to 10 (or all) by entering the corresponding 4-digit numbers from the table.
- You cannot mix settings for the groups (COPY, PRINTER, etc.) for 006~010. For example, if you want to create a PRINTER debug log you must select the settings from the 9 available selections for the “PRINTER” column only.
- One area of the disk is reserved to store the debug log. The size of this area is limited to 4 MB.

### 5.10.2 RETRIEVING THE DEBUG LOG FROM THE HDD



Retrieve the debug log by copying it from the hard disk to an SD card.

1. Insert the SD card into the service slot of the copier.
2. Enter the SP mode and execute SP5857-009 (Copy HDD to SD Card (Latest 4 MB)) to write the debugging data to the SD card.
3. Use a card reader to copy the file and send it for analysis to your local Ricoh representative by email, or just send the SD card by mail.

### 5.10.3 RECORDING ERRORS MANUALLY

Since only SC errors and jams are recorded to the debug log automatically, for any other errors that occur while the customer engineer is not on site, please instruct customers to perform the following immediately after occurrence to save the debug data. Such problems would include a controller or panel freeze.

**NOTE:** In order to use this feature, the customer engineer must have previously switched on the Save Debug Feature (SP5857-001) and selected the hard disk as the save destination (SP5857-002).

1. When the error occurs, on the operation panel, press  (Clear Modes).
2. On the control panel, enter "01" then hold down  for at least 3 sec. until the machine beeps then release. This saves the debug log to the hard disk for later retrieval with an SD card by the service representatives.
3. Switch the machine off and on to resume operation.

The debug information for the error is saved on the hard disk so the service representatives can retrieve it on their next visit by copying it from the HDD to an SD card.

## 5.10.4 NEW DEBUG LOG CODES

### **SP5857-015      *Copy SD Card-to-SD Card: Any Desired Key***

This SP copies the log on an SD card (the file that contains the information written directly from shared memory) to a log specified by key number. The copy operation is executed in the log directory of the SD card inserted in the same slot. (This function does not copy from one slot to another.) Each SD card can hold up to 4 MB of file data. Unique file names are created for the data during the copy operation to prevent overwriting files of the same name. This means that log data from more than one machine can be copied onto the same SC card. This command does not execute if there is no log on the HDD for the name of the specified key.

### **SP5857-016      *Create a File on HDD to Store a Log***

This SP creates a 32 MB file to store a log on the HDD. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the HDD when the first log is stored on the HDD, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the HDD. With the file already created on the HDD for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-011 to delete the debug log data from the HDD and then execute this SP (SP5857-016).

### **SP5857-017      *Create a File on SD Card to Store a Log***

This SP creates a 4 MB file to store a log on an SD card. However, this is not a completely empty file. The created file will hold the number “2225” as the SCS key number and other non-volatile information. Even if this SP is not executed, a file is created on the SD card when the first log is stored on the SD card, but this operation takes time. This creates the possibility that the machine may be switched off and on before the log can be created completely. If you execute this SP to create the log file beforehand, this will greatly reduce the amount of time required to acquire the log information and save onto the SD card. With the file already created on the SD card for the log file, the data only needs to be recorded; a new log file does not require creation. To create a new log file, execute SP5857-012 to delete the debug log data from the SD card and then execute this SP (SP5857-017).

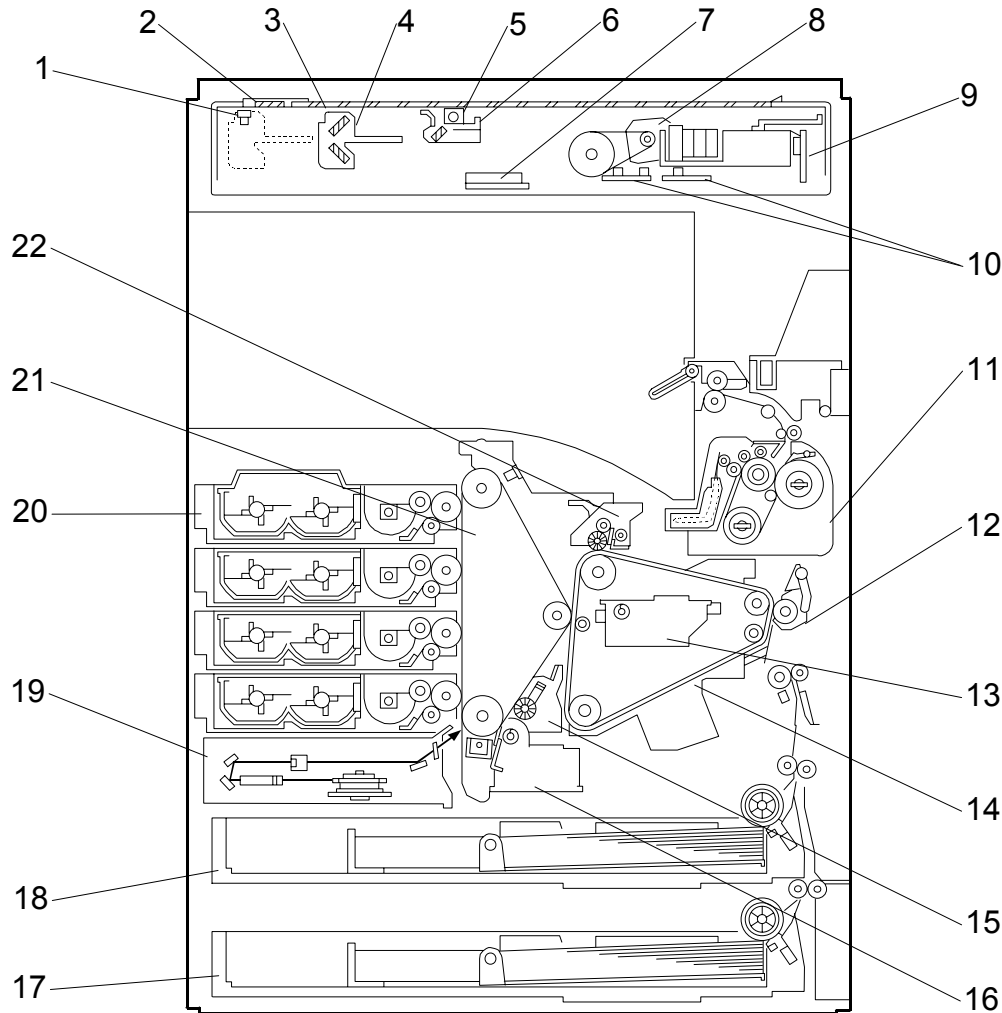




## 6. DETAILED SECTION DESCRIPTIONS

### 6.1 OVERVIEW

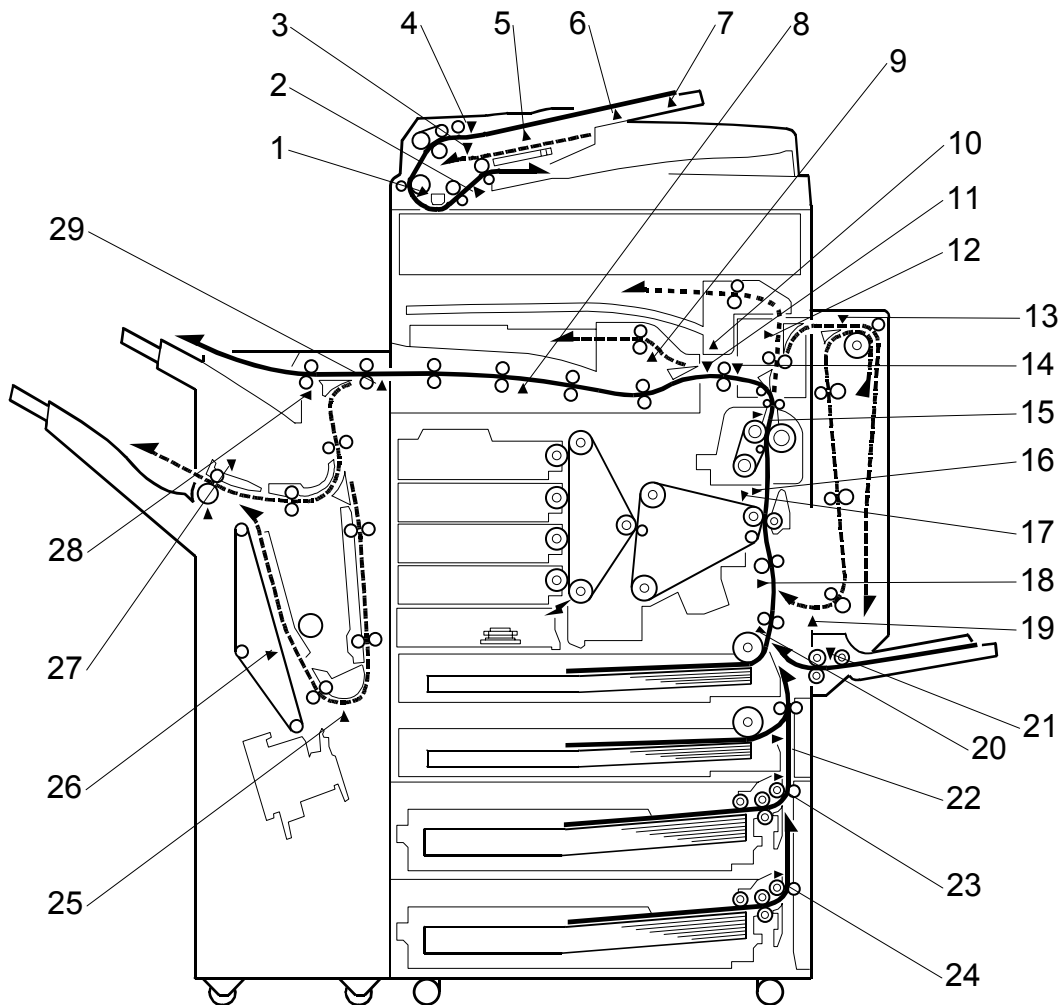
#### 6.1.1 MECHANICAL COMPONENTS



Detailed  
Descriptions

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

## 6.1.2 PAPER PATH

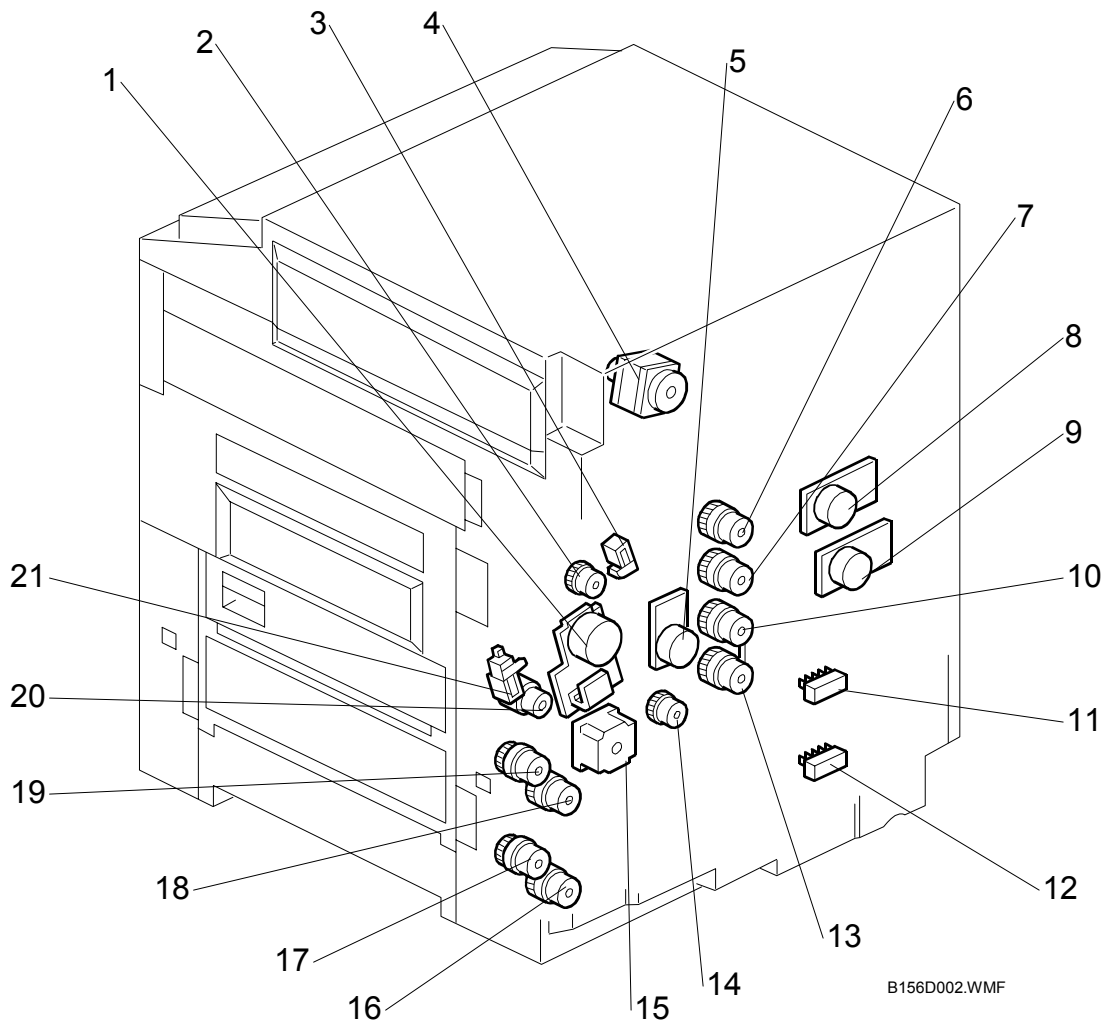


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- |   |  |
|---|--|
| 1. Registration sensor (ARDF)           | 17. Transfer belt sensor                     |
| 2. Original exit sensor (ARDF)          | 18. Registration sensor                      |
| 3. Original set sensor (ARDF)           | 19. Exit sensor (Duplex unit)                |
| 4. Original trailing edge sensor (ARDF) | 20. Paper feed sensor                        |
| 5. Original width sensor board (ARDF)   | 21. Paper end sensor (By-pass tray)          |
| 6. Original length sensor 1 (ARDF)      | 22. Paper feed sensor                        |
| 7. Original length sensor 2 (ARDF)      | 23. Relay sensor (Paper tray 3)              |
| 8. Relay sensor (Bridge unit)           | 24. Relay sensor (Paper tray 4)              |
| 9. Tray exit sensor (Bridge unit)       | 25. Stapler tray entrance sensor (Finisher)  |
| 10. Paper sensor (1-bin tray)           | 26. Stack feed-out belt HP sensor (Finisher) |
| 11. Paper overflow sensor               | 27. Lower tray exit sensor (Finisher)        |
| 12. Exit sensor (Interchange unit)      | 28. Paper limit sensor (Finisher)            |
| 13. Entrance sensor (Duplex unit)       | 29. Entrance sensor (Finisher)               |
| 14. Paper exit sensor                   |  |
| 15. Fusing exit sensor                  |  |
| 16. Fusing entrance sensor              |  |

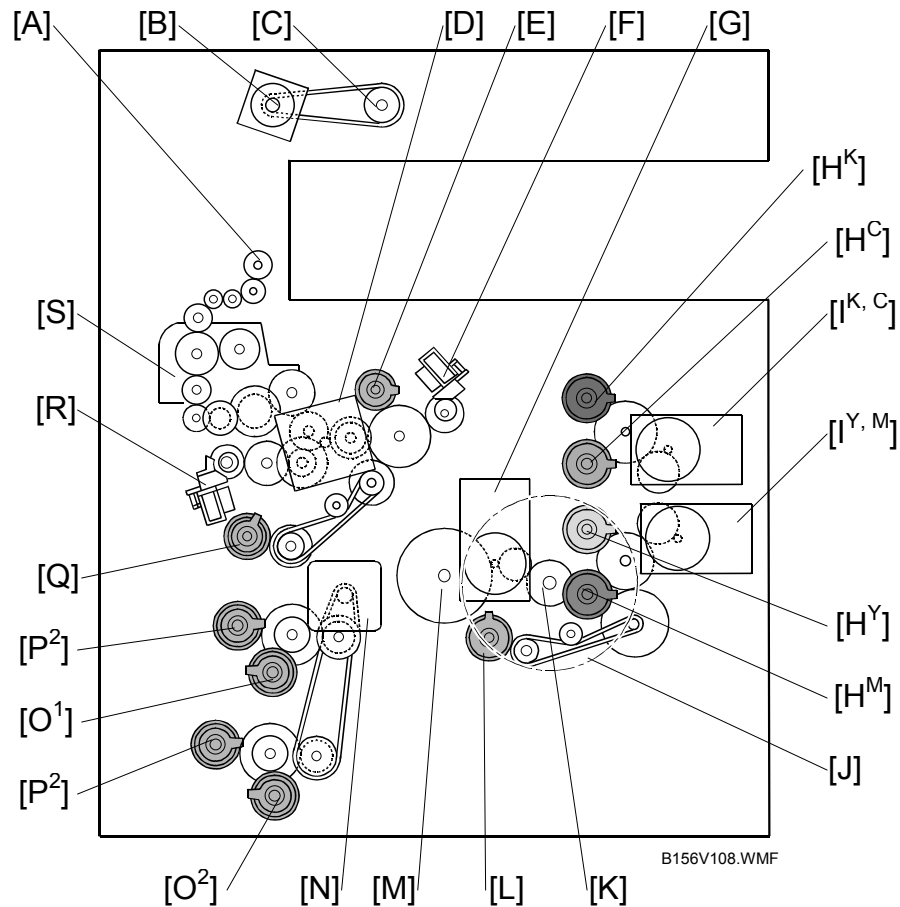
### 6.1.3 DRIVE COMPONENTS

#### Layout



Detailed  
Descriptions

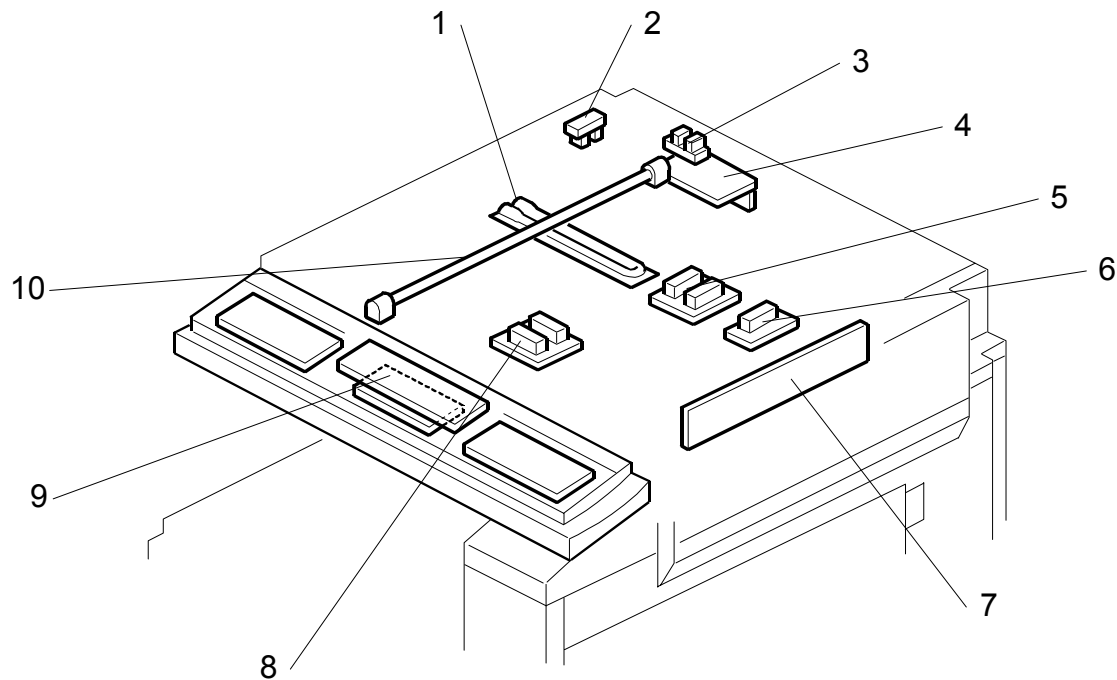
- |  |                                 |
|--|---------------------------------|
| 1. Fusing unit motor                             | 11. Paper size switch 1         |
| 2. Image transfer belt cleaning clutch           | 12. Paper size switch 2         |
| 3. Image transfer belt cleaning contact solenoid | 13. Development clutch - M      |
| 4. Scanner motor                                 | 14. OPC belt cleaning clutch    |
| 5. Main motor                                    | 15. Paper feed motor            |
| 6. Development clutch - K                        | 16. Paper feed clutch 2         |
| 7. Development clutch - C                        | 17. Vertical transport clutch 2 |
| 8. Development motor 2 - K and C                 | 18. Paper feed clutch 1         |
| 9. Development motor 1 - Y and N                 | 19. Vertical transport clutch 1 |
| 10. Development clutch - Y                       | 20. Registration clutch         |
|  | 21. Paper transfer solenoid     |

**Drive Power Path**

Motor (Type)	Drives ...
Scanner [B] (Stepper)	<ul style="list-style-type: none"> <li>Scanner motor gear [C]</li> </ul>
Development [I <sup>K&amp;C</sup> ] (DC brushless)	<ul style="list-style-type: none"> <li>Development clutches [H<sup>K, C</sup>] → Development unit for K and C</li> </ul>
Development [I <sup>Y&amp;M</sup> ] (DC brushless)	<ul style="list-style-type: none"> <li>Development clutches [H<sup>Y, M</sup>] → Development unit for Y and M</li> <li>OPC belt cleaning clutch [L] → OPC belt cleaning unit</li> </ul>
Main [G] (DC brushless)	<ul style="list-style-type: none"> <li>OPC belt [K] with the flywheel [J]</li> <li>Image transfer belt [M]</li> </ul>
Fusing Unit [D] (DC brushless)	<ul style="list-style-type: none"> <li>Fusing unit [S]</li> <li>Paper exit unit [A]</li> <li>Image transfer belt cleaning clutch [E] → Image transfer belt cleaning unit</li> <li>Registration clutch [Q] → Registration roller</li> <li>Paper transfer roller</li> <li>Belt cleaning contact solenoid [F] → Image transfer belt cleaning unit contact mechanism</li> <li>Paper transfer solenoid [R] → Paper transfer roller contact mechanism</li> <li>Interchange unit and one-bin tray</li> </ul>
Paper Feed [N] (Stepper)	<ul style="list-style-type: none"> <li>Paper feed clutch [O<sup>1,2</sup>] → Paper pick-up roller</li> <li>Vertical transport clutch [P<sup>1,2</sup>]</li> </ul>

## 6.1.4 ELECTRICAL COMPONENTS

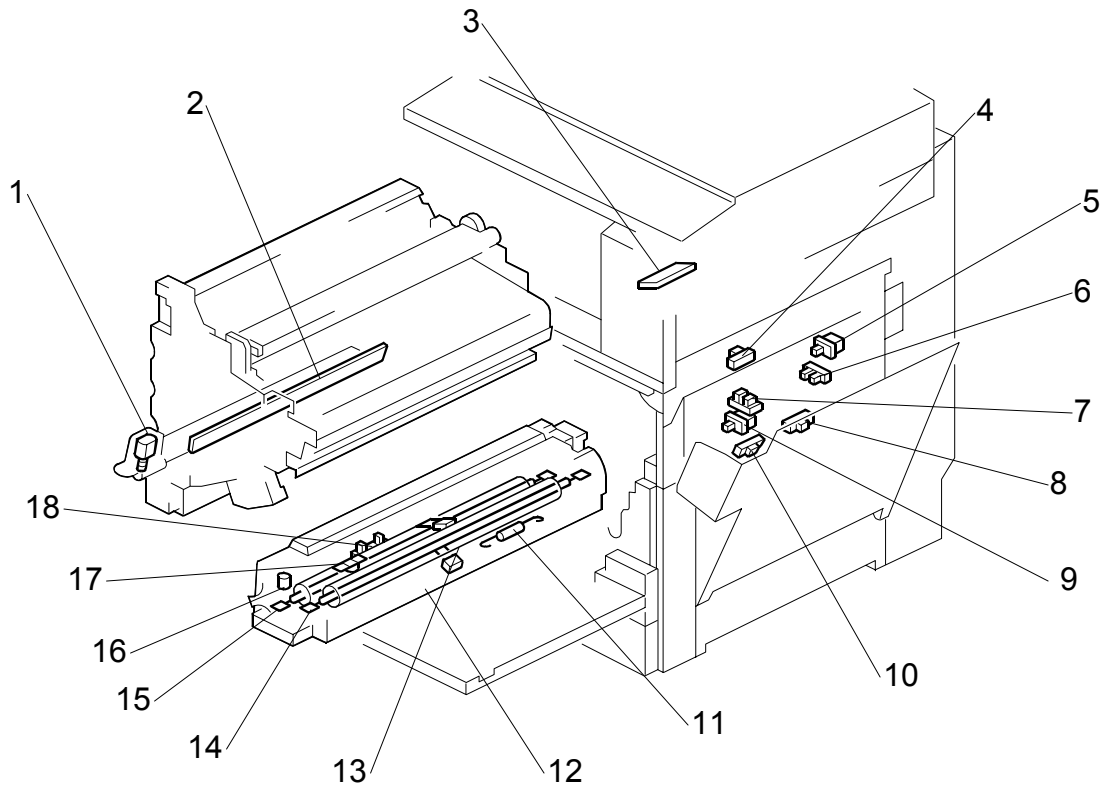
### *Scanner Unit*



B156D003.WMF

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

Detailed  
Descriptions

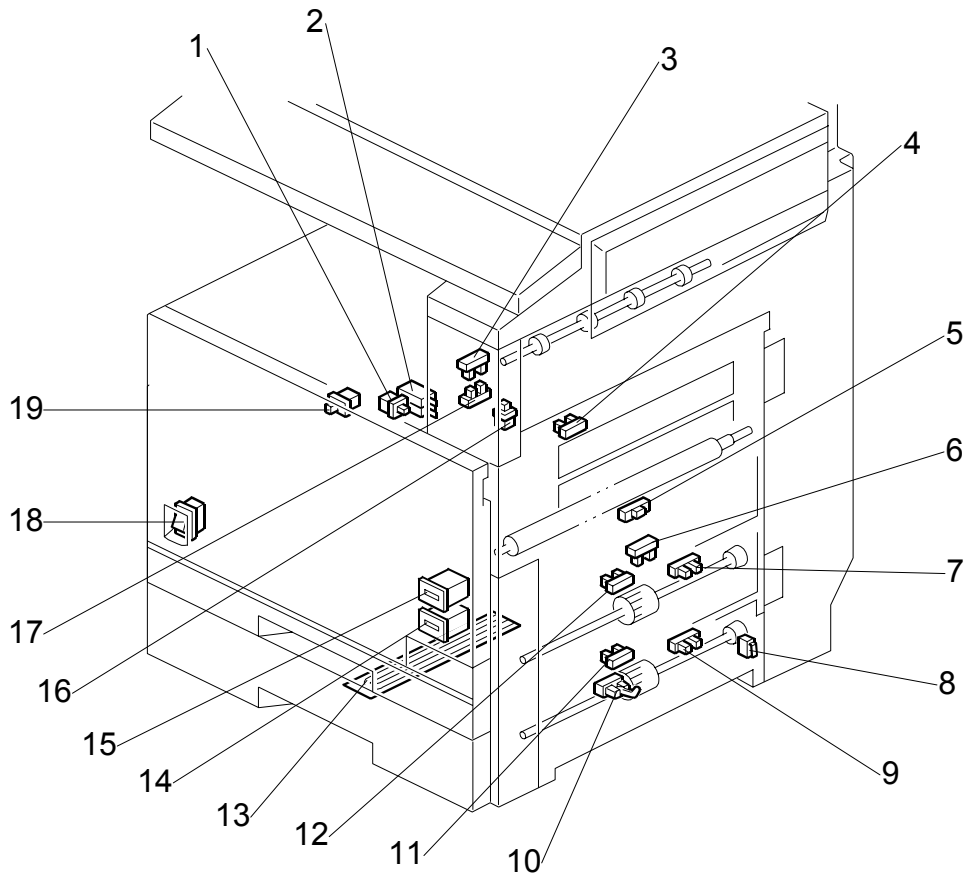
**Image Transfer**

B156D004.WMF

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| 1. Charge corona wire cleaner motor | 10. Transfer belt sensor        |
| 2. Quenching lamp                   | 11. Pressure roller thermofuse  |
| 3. ID sensor                        | 12. Pressure roller thermistor  |
| 4. Belt mark sensor                 | 13. Heating roller thermistor   |
| 5. T/B waste toner bottle switch    | 14. Pressure roller fusing lamp |
| 6. T/B waste toner sensor           | 15. Heating roller fusing lamp  |
| 7. O/B waste toner sensor           | 16. Oil overflow sensor         |
| 8. Fusing entrance sensor           | 17. Heating roller thermostat   |
| 9. O/B waste toner bottle switch    | 18. Oil end sensor              |

T/B: Image transfer belt

O/B: OPC belt

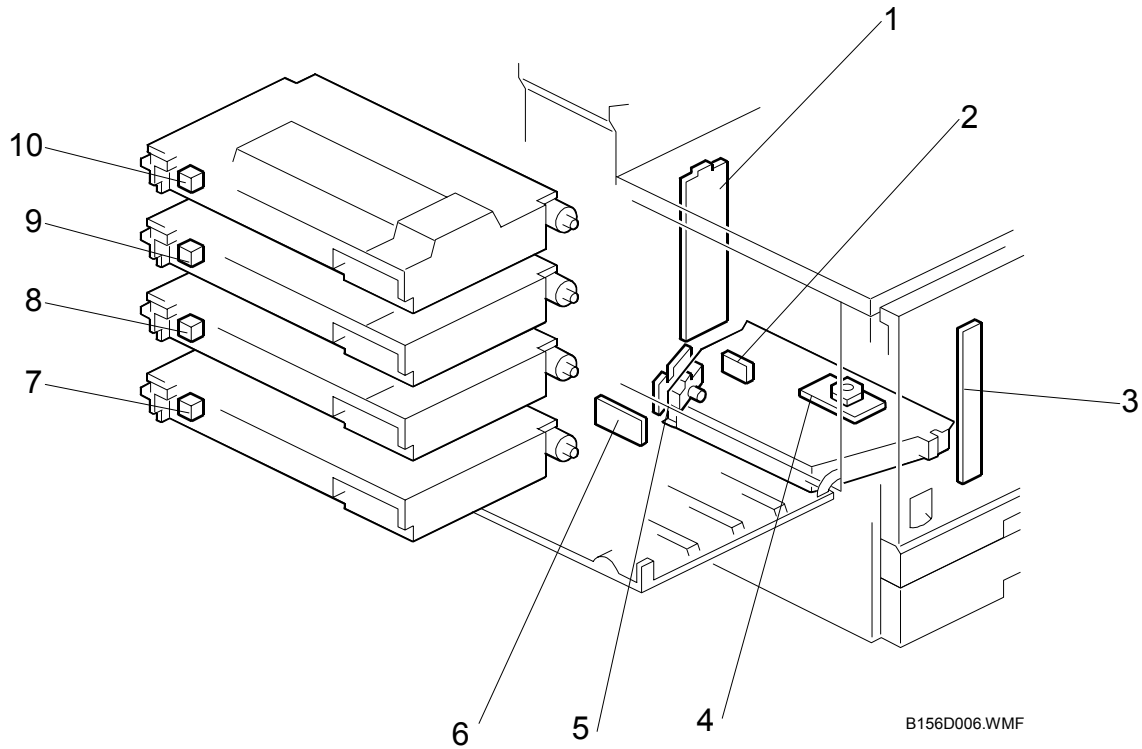
***Paper Path***

B156D005.WMF

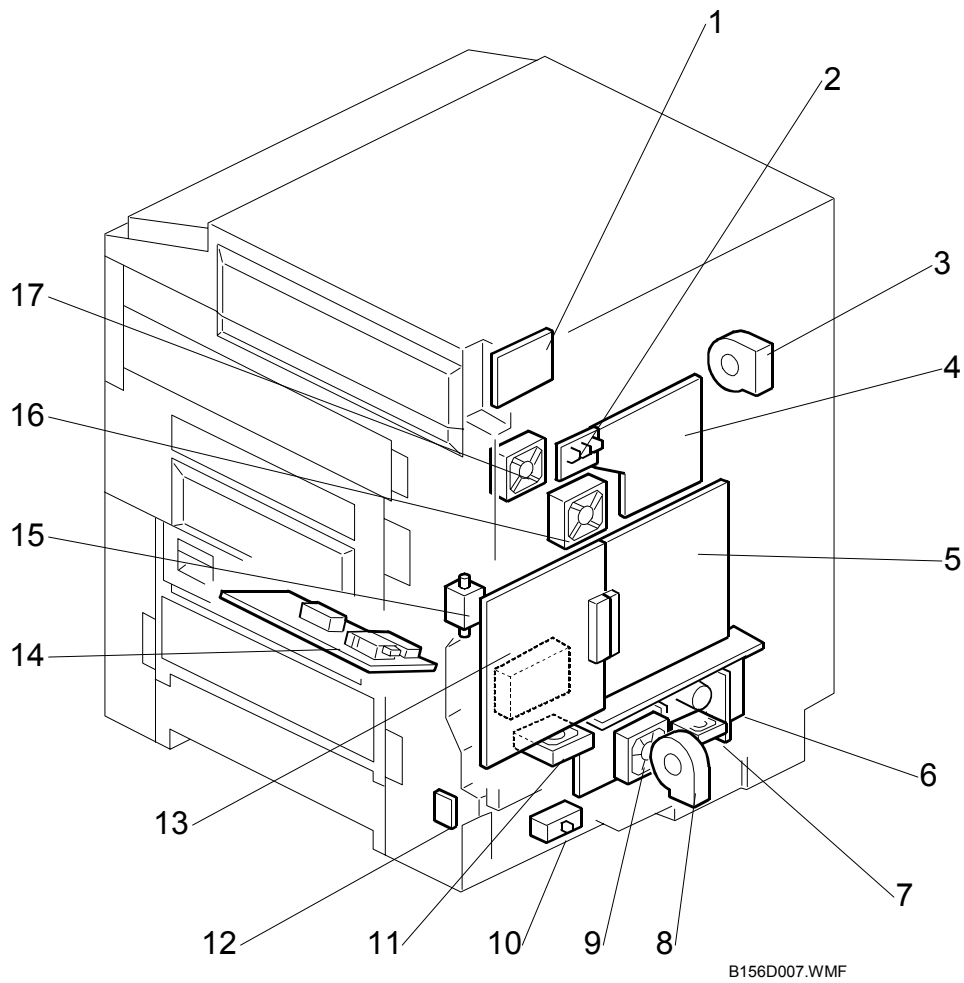
- |                               |                            |
|-------------------------------|----------------------------|
| 1. Right cover switch         | 11. Paper end sensor 2     |
| 2. Interlock switch           | 12. Paper end sensor 1     |
| 3. Paper overflow sensor      | 13. Tray heater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

Detailed  
Descriptions



***Development Units***

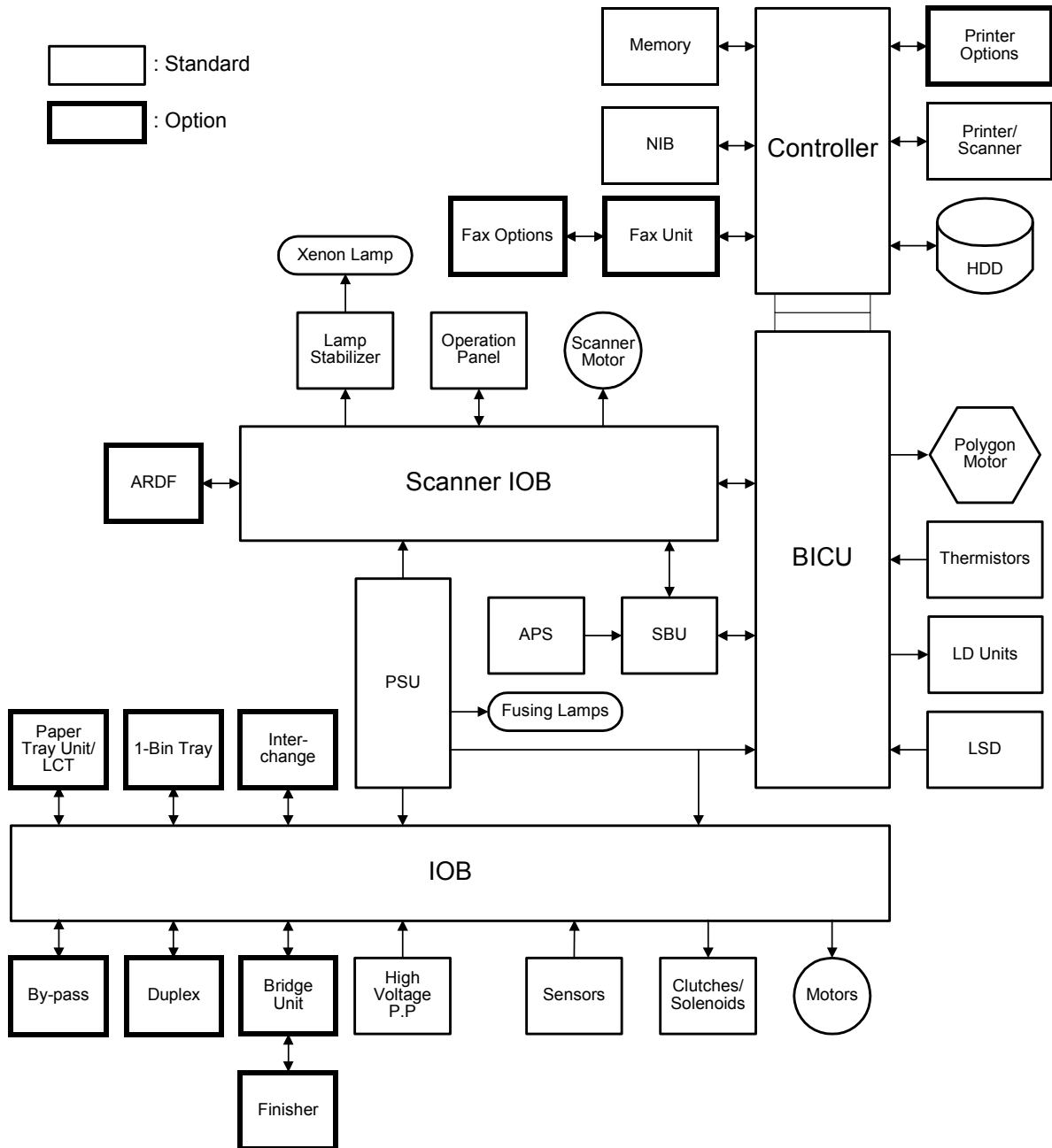
- |                                 |                          |
|---------------------------------|--------------------------|
| 1. Rear development board       | 6. Memory chip I/F Board |
| 2. Laser synch. detection board | 7. Memory chip M         |
| 3. Front development board      | 8. Memory chip Y         |
| 4. Polygonal mirror motor       | 9. Memory chip C         |
| 5. LD unit                      | 10. Memory chip K        |

**Boards**

- |                      |                                 |
|----------------------|---------------------------------|
| 1. Scanner I/O board | 9. PSU fan 1                    |
| 2. CSS board         | 10. Breaker                     |
| 3. Development fan   | 11. Controller fan              |
| 4. I/O board         | 12. Temperature/humidity sensor |
| 5. BICU board        | 13. Controller board            |
| 6. Power supply unit | 14. High voltage supply board   |
| 7. PSU fan 2         | 15. Oil pump                    |
| 8. Ozone fan         | 16. Fusing unit fan             |
|                      | 17. Paper exit fan              |

## 6.2 BOARD STRUCTURE

### 6.2.1 BLOCK DIAGRAM



B156D511.WMF

**1. Controller (Main Board)**

Controls the memory and the fax/scanner/printer options.

**2. BICU (Base Engine and Image Control Unit)**

This is the scanner and engine control board. It controls the following functions:

- Engine sequence
- Timing control for peripherals
- Image processing control and video control
- Operation control
- Drive control for the sensors, motors, and solenoids of the printer and scanner
- High voltage supply board control
- Fusing control

**3. IOB (Input/Output Board)**

Controls the sensors, motors, clutches, and solenoids of the main unit.

**4. Scanner IOB (Scanner Input/Output Board)**

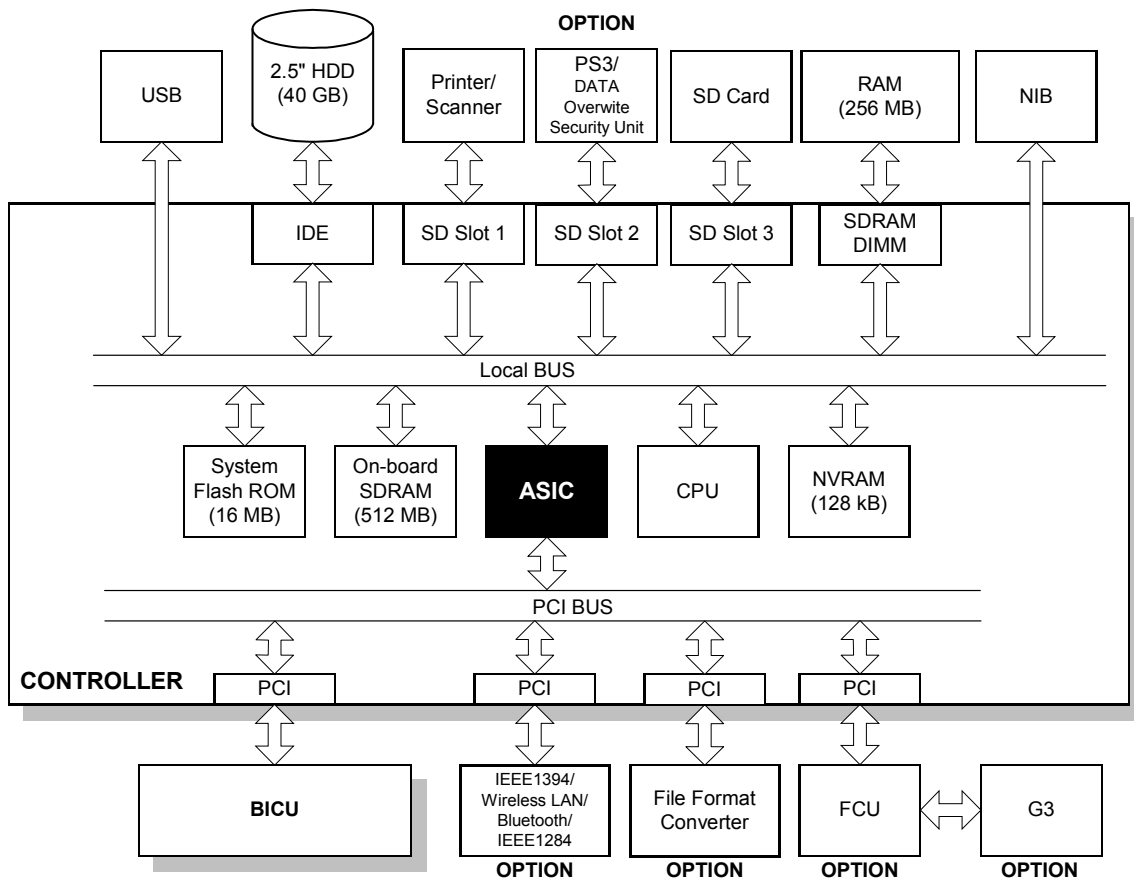
Handles the following functions.

- Serial interfaces with ARDF and operation panel
- Scanner motor control

**5. SBU (Sensor Board Unit)**

The SBU converts the analog signals from the CCD into digital signals.

## 6.2.2 CONTROLLER



B156D510.WMF

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

The fax option requires FCU installation also.

Systems and application software can be downloaded from the controller's SD Card slot. For details about how to download software from an SD card (☛ 5.4).

### 1. CPU:

PMC RM7035C-466MHz

### 2. ASIC:

This is a dedicated chip developed for use with GW architecture. It controls the following functions: memory, local bus, interrupts, PCI bus, video data, HDD, network, operation panel, and image processing.

### 3. Flash ROM:

16MB Flash ROM for the system program

**4. SDRAM (on-board):**

768 MB SDRAM (512MB + 256MB)

**5. SD Card Slots:**

Three slots are provided for three SD cards. Slot 1 is for the printer and scanner applications (standard). Slot 2 is for the PostScript 3 or the Data Overwrite Security applications (optional). Slot 3 is for service purposes, such as firmware updates.

**6. NVRAM:**

Stores the engine and controller settings

**7. PCI Interface:**

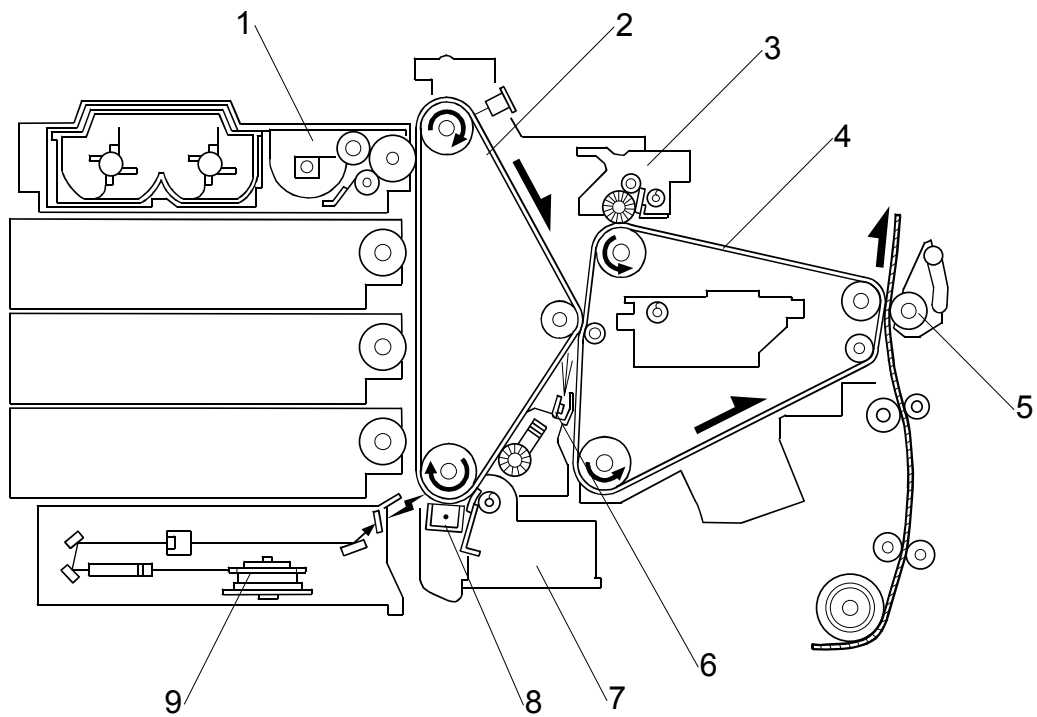
For installing the FCU board, File Format Converter, IEEE1394, Bluetooth, IEEE1284 and wireless LAN. The IEEE1394, wireless LAN, Bluetooth and IEEE1284 cannot both be installed on the same machine at the same time.

**8. HDD:**

Used for the document server. Also used for collation, locked print, sample print, form overlay, and font storage. The hard disk is partitioned as shown below.

Partition	40GB HDD	Function	Comment
Image Local Storage	15,000 MB	Document server	Remains stored even after cycling power off/on.
File System 1	500 MB	Downloaded fonts, forms.	Remains stored even after cycling power off/on.
File System 2	1,000 MB	Job spooling area	Erased after power off.
File System 3	2,400 MB	Work data area	Remains stored even after cycling power off/on.
File System 4	500 MB	Temporary print image file	Erase after power off.
Image TMP	16,800 MB	Commonly used area for applications	Erased after power off.
		Copier application	Erased after power off.
		Printer application	Erased after power off.
		Scanner application	Erased after power off.
Job Log	10 MB	Job log	Remains stored even after cycling power off/on.
Swap	406 MB	Debug, Swap	Remains stored even after power is turned off/on.
SDK	1,200 MB	SDK application	Remains stored even after power is turned off/on.
Address book/ Mil data	2,000 MB	Address book/ Mail box/ Net files	Remains stored even after power is turned off/on.
Others	1,276 MB	Stamps/ SAF thumbnail etc.	Remains stored even after power is turned off/on.
Total	41,092 MB		

## 6.3 COPY PROCESS



B156D008.WMF

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

**1. Drum Charge**

The corona wire gives the drum a negative charge.

**2. Black (K) Image Creation****a) Laser Exposure**

The laser diode (LD) emits two laser beams. The laser beams create a latent image on the OPC surface.

**b) Development**

The development roller transfers negatively charged toner to the latent image. The OPC belt surface holds only one toner color at one time.

**c) Image Transfer**

The OPC belt transfers the single-color toner image to the image transfer belt.

**d) Cleaning**

The OPC belt cleaning unit cleans the image transfer belt.

**3. Magenta (M) Image Creation**

Same as 2 a) through 2 d) above.

**4. Cyan (C) Image Creation**

Same as 2 a) through 2 d) above.

**5. Yellow (Y) Image Creation**

Same as 2 a) through 2 d) above.

**6. Paper Transfer**

The paper transfer roller transfers the combined CMYK toner image to the paper.

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

**7. Separation**

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

**8. Fusing**

The fusing unit fuses the image to the paper.

**9. Cleaning**

The image transfer belt cleaning unit cleans the belt.

**10. Quenching**

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



## 6.4 PROCESS CONTROL

### 6.4.1 OVERVIEW

The copier adjusts the following process control parameters:

- Development bias (VB)
- Charge corona grid voltage (VG)

These 2 parameters maintain a consistent gamma for the engine.

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

### 6.4.2 PROCESS CONTROL STEPS

#### *Six Steps*

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


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

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

#### ***When is Process Control Done?***

When an event arises, the specified steps are performed.

Event	Condition	Steps
Forced process control	When forced process control is done (engine SP mode 3-001-1)	① → ⑥
Process control regular interval	End of job: When more than 200 sheets have been printed upon completion of a job. (The interval can be changed with engine SP3-003-1.) Black-and-white outputs are not included in this count. During a job: If the number of prints since process control gets to 700, printing stops and process control is done. The interval can be changed with engine SP 3-003-1 [default: 200] and engine SP 3-003-2 [default: 500]. Change only SP 3-003-2 if you do not wish to change the "end-of-job" interval.	①, ④, ⑤, ⑥
Power on	When the fusing pressure roller temperature is 60°C or lower immediately after the power is turned on.	①, ④, ⑤, ⑥
Environmental change	When the change in the temperature/humidity sensor output since the previous process control exceeds a certain value. SP3-004 can be used to change the threshold temperature and humidity values.	①, ④, ⑤, ⑥

Event	Condition	Steps
K toner cartridge or K development unit replacement	This is done after clearing the K toner near-end state (i.e., when a new K development unit is added). The machine idles and when the development roller stops for 10 seconds, indicating that idling is over, process control occurs.	①, ③, ④, ⑤
Color development unit replacement	After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs.	① → ⑥
Color toner cartridge replacement	After the color toner end or near-end state is reset, the machine idles to transfer color toner to the development unit. After idling, process control occurs.	①, ④, ⑤, ⑥
24 hours after previous process control	Same as "power on" process control	①, ④, ⑤, ⑥
PCU replacement	After the PCU counter is reset, it is lubricated (new OPC belt lubricant application mode). Then process control occurs.	① → ⑥
After charge corona wire cleaning	The wire is cleaned at these times, if a set number of developments were done since the last cleaning: <ul style="list-style-type: none"> <li>• In the middle of a job</li> <li>• At the end of a job</li> <li>• Immediately before the machine goes to low power mode</li> </ul> For more information:  6.7.2	
ACC	Process control is done just before ACC is done (this process control can be enabled/disabled with SP 3-125).	

### Supplementary Information on Process Control

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

#### Step 1. ID Sensor Calibration

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

#### Step 2. Initializing Color Development Bias

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

Colour development bias initialisation is not always done. This is to reduce the amount of time taken for process control. Also, in step 4, the current colour

development bias values are fine-tuned to correct for any changes in the machine or temperature/humidity since the last full process control.

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

### ***Step 3. Initialising K Development Bias***

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

### ***Step 4. Fine-tuning the YMCK Development Biases***

The machine makes another solid pattern

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

The machine adjusts the development bias based on these results.

### ***Step 5. Charge Grid Voltage Adjustment***

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

0	0	0
240	240	0
0	0	0

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

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

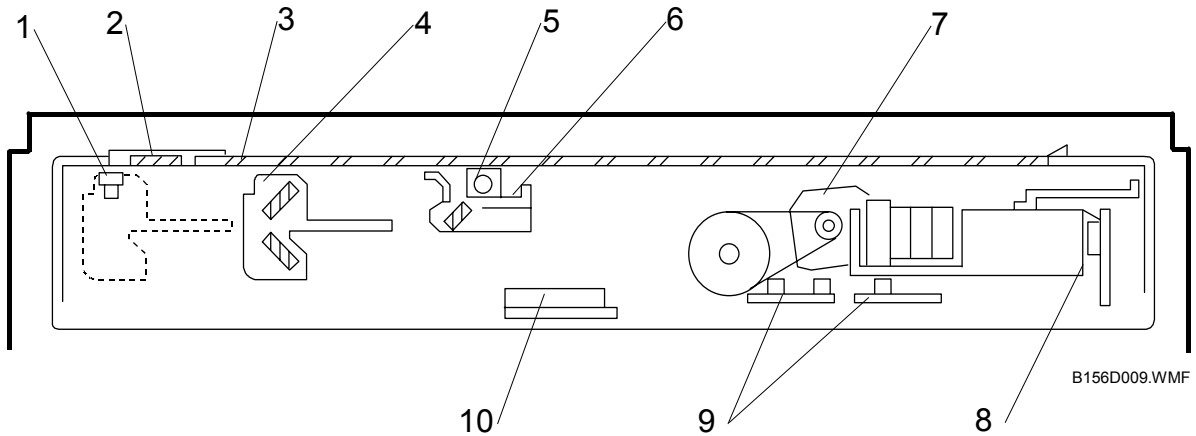
If there is a difference between the target M/A and the detected M/A, the grid voltage is adjusted.

### ***Step 6. Resetting the Process Control Interval Counter***

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

## 6.5 SCANNING

### 6.5.1 OVERVIEW



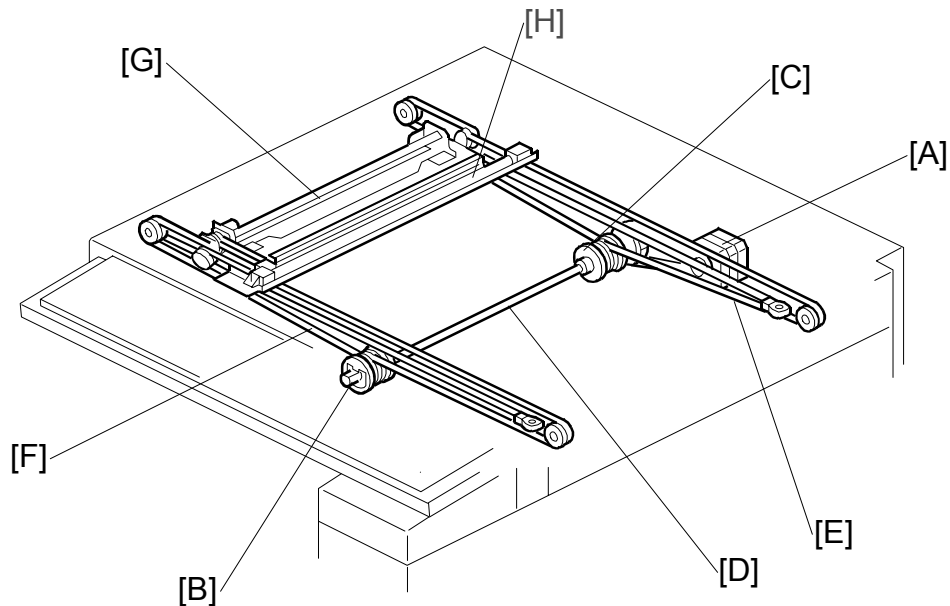
- |                               |                               |
|-------------------------------|-------------------------------|
| 1. Scanner HP sensor          | 6. 1st scanner (1st carriage) |
| 2. ADF exposure glass         | 7. Scanner motor              |
| 3. Exposure glass             | 8.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

(🖨️  *Digital Processes – Digital scanning – Basic concepts*)

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

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

## 6.5.2 SCANNER DRIVE



B156D010.WMF

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

### **Book Mode**

The scanner I/O board controls the scanner motor.

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

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

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

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

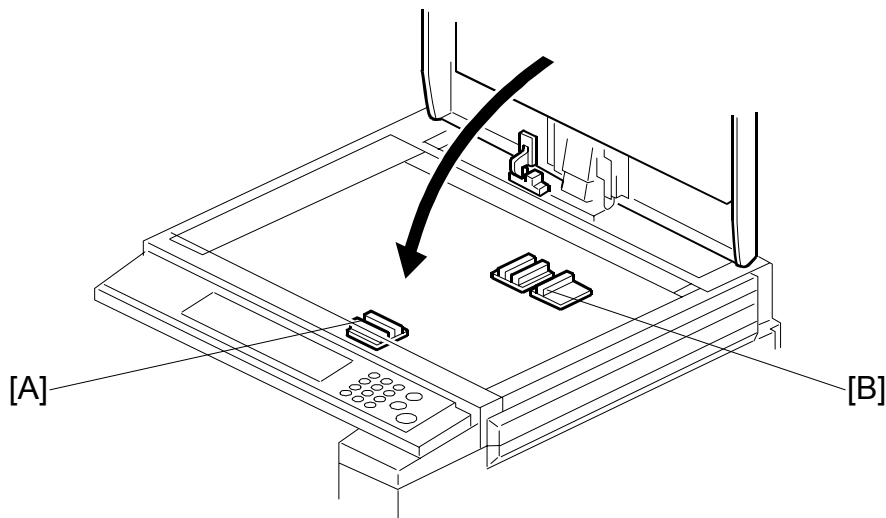
### **ARDF Mode**

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

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

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

### 6.5.3 ORIGINAL SIZE DETECTION



B156D011.WMF

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

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

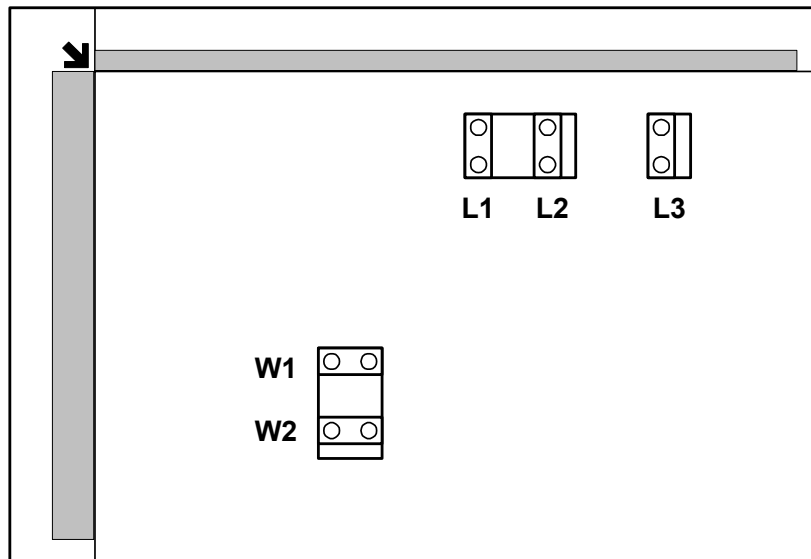
The SBU board checks each sensor signal at the following times:

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

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

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

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



B156D012.WMF

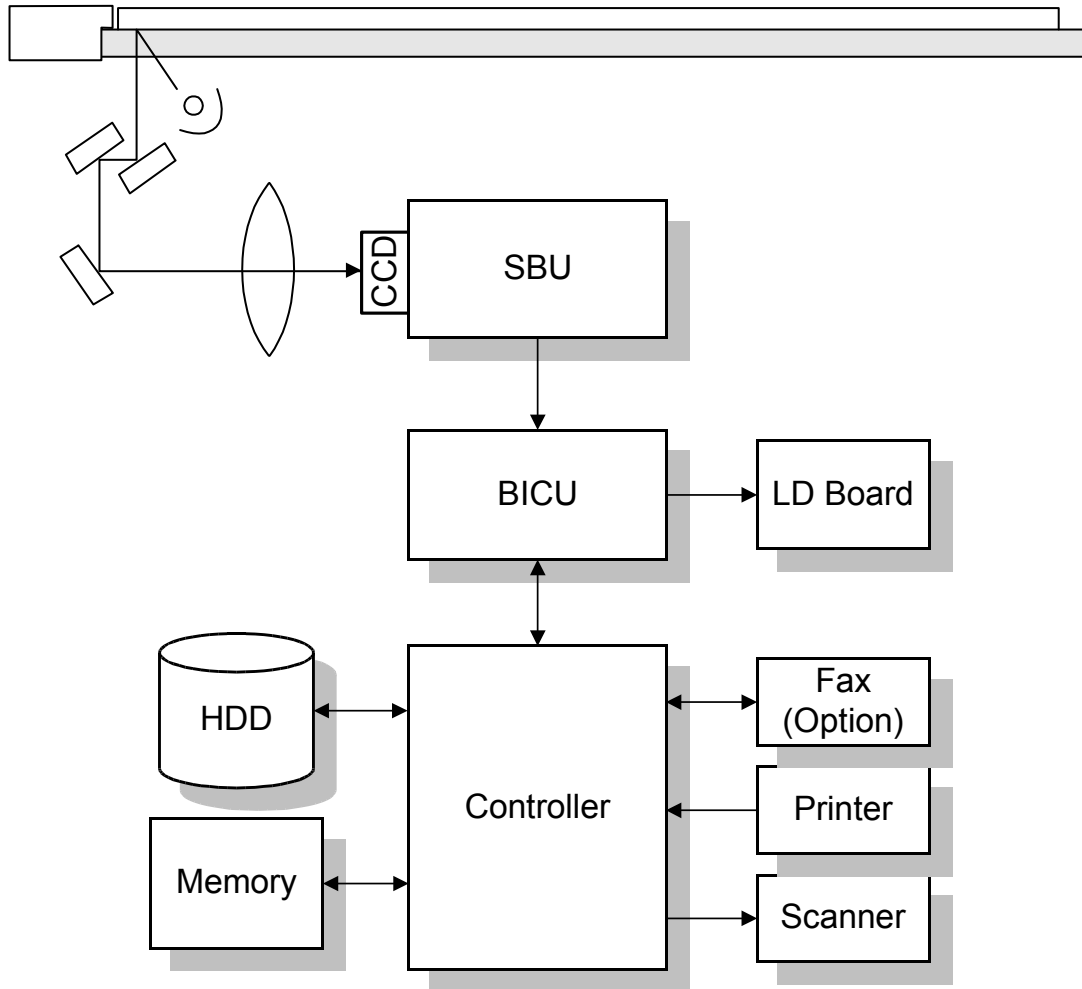
Original Size		Length Sensor			Width Sensor		SP4-301 display
Metric	Inch	L3	L2	L1	W2	W1	
A3	11" x 17"	O	O	O	O	O	132
B4	10" x 14"	O	O	O	X	O	141
F4	8.5" x 14" (8" x 13")	O	O	O	X	X	165
A4-L	8.5" x 11"	X	O	O	X	X	133
B5-L		X	X	O	X	X	142
A4-S	11" x 8.5"	X	X	X	O	O	5
B5-S		X	X	X	X	O	14
A5-L, A5-S	5.5" x 8.5",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

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

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

## 6.6 IMAGE PROCESSING

### 6.6.1 OVERVIEW



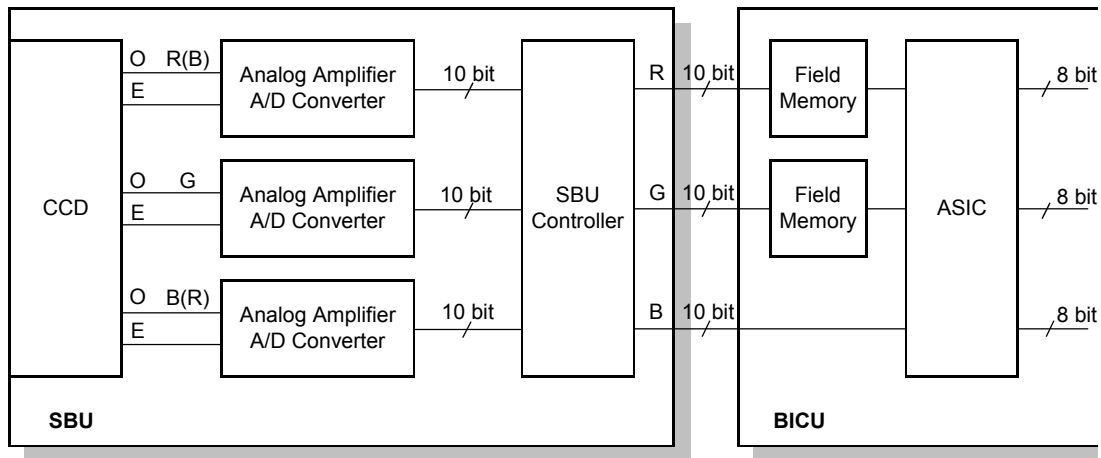
B156D512.WMF

Detailed  
Descriptions

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



## 6.6.2 SBU BLOCK DIAGRAM



B156D013.WMF

### Signal Processing

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

### A/D Conversion

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

### White Level Correction

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

### Others

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

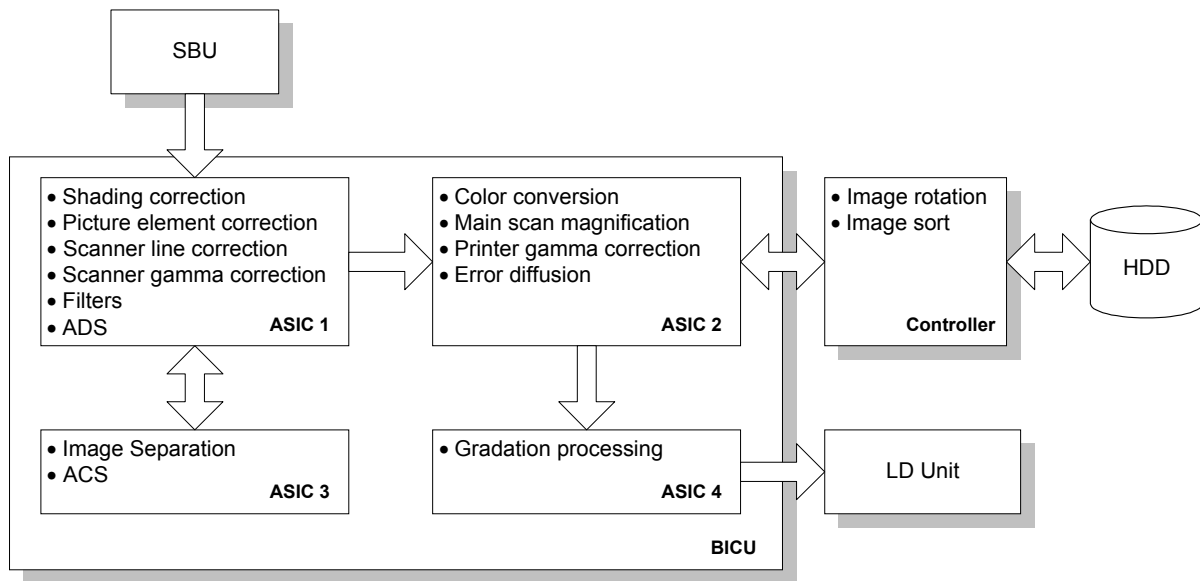
***Black Level Correction***

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

***VPU Test Mode***

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

### 6.6.3 IMAGE PROCESSING



B156D014.WMF

#### **Shading Correction**

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

#### **Picture Element (Dot Position) Correction**

Picture element correction includes

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

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

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

#### **Scan Line Correction**

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

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

### Scanner Gamma Correction (RGB Gamma Correction)

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

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

### Filtering

Appropriate software filters are applied to the RGB video signals.

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

### Background Density Control

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

Users can select a different threshold for each mode.

### ADS (Auto Image Density Selection)

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

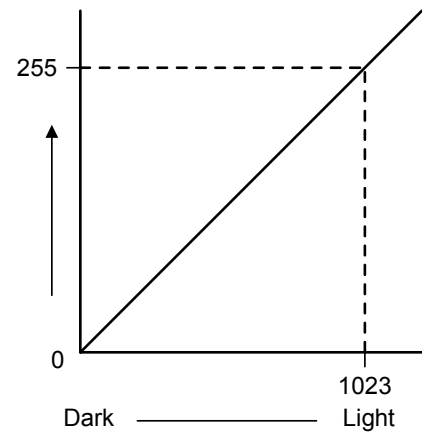


Fig. 1

B156D015.WMF

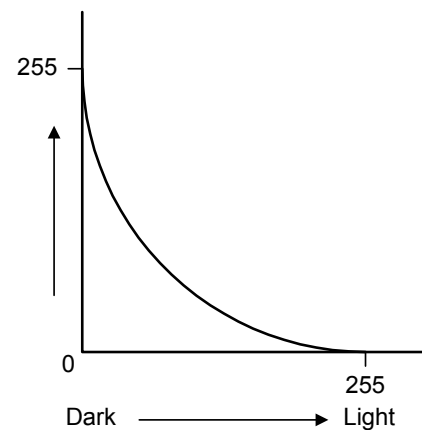


Fig. 2

B156D016.WMF

### ***Image Separation***

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

#### ***Edge Separation***

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

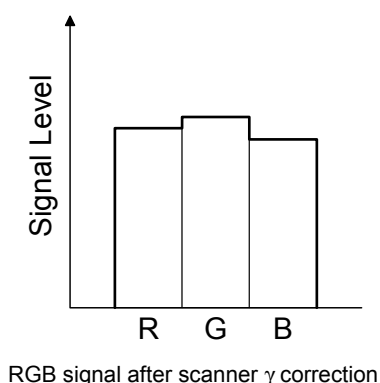
#### ***Dot Screen Separation***

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

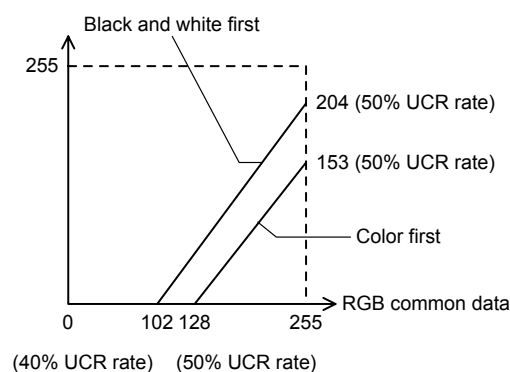
#### ***Colored Text Separation***

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

### ***ACS (Auto Color Selection)***



B156D017.WMF



B156D018.WMF

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

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

RGB video signals are compared.

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

### ***Color Conversion***

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

#### ***Conversion Matrix***

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

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

**Color Conversion Table**

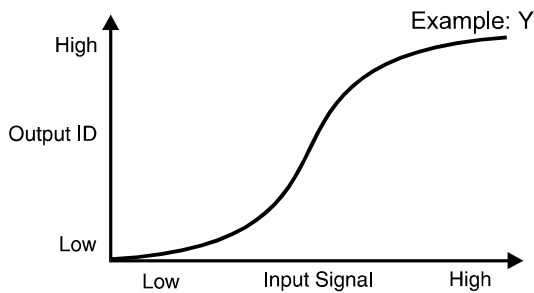
<b>Original Color Toner</b>	<b>K</b>	<b>R</b>	<b>Y</b>	<b>G</b>	<b>C</b>	<b>B</b>	<b>M</b>	<b>W</b>
Y	1	1	1	1	0	0	0	0
M	1	1	0	0	0	1	1	0
C	1	0	0	1	1	1	0	0
K	1	0	0	0	0	0	0	0

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

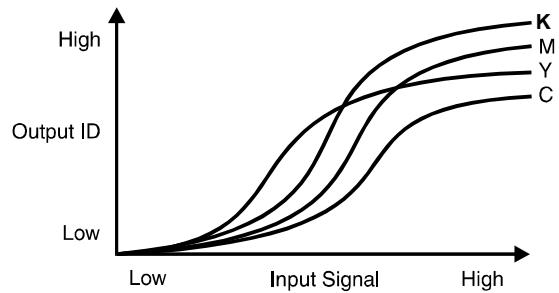
While the machine changes the scanner speed to reduce or enlarge the original in the sub-scan direction, the ASIC2 chip on the BICU board handles reduction and enlargement in the main scan direction.

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

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

**Printer Gamma Correction****Fig. 1**

B156D019.WMF

**Fig. 2**

B156D020.WMF

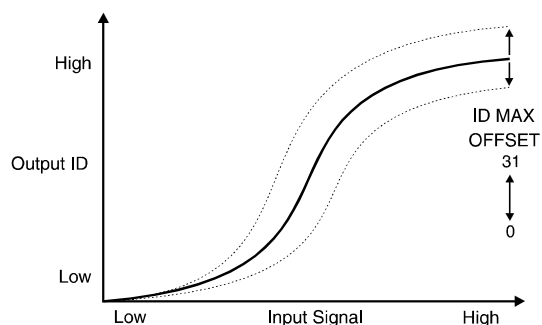
Ideally, the gamma curves for Yellow, Magenta, Cyan, and Black should be identical, as shown in figure 1. However, slight variations in the electrical components can result in varying gamma curves, as shown in figure 2.

- Printer characteristics are much more variable than the scanner. Printer gamma needs re-calibration and adjustment from time to time.
- The Auto Color Calibration (ACC) procedure compensates for any discrepancies in color reproduction.
- ACC makes new gamma curves for each color in each mode (text, photo, and black text).
- After ACC, the gamma curve for each color can be adjusted with service programs (SP4-918).
- 4 different modes:
  - 1) ID max.
  - 2) Shadow (High ID)
  - 3) Middle (Middle ID)
  - 4) Highlight (Low ID)
- If the previous gamma curve was better, it can be recalled.
- Factory settings can be loaded using SP5-610-4.
 

**NOTE:** If the factory settings have been overwritten, this will return the new values, not the actual settings made in the factory. This is deliberate, since some drift is expected. After a time, the original factory settings may no longer be suitable.
- Factory settings can be overwritten by the current gamma settings using SP5-610-5.

**ID Max.**

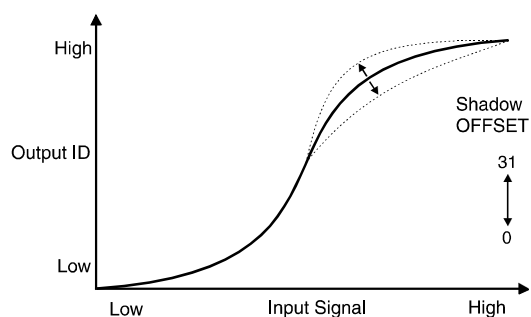
This mode adjusts the total image density as shown in figure 3.

**Fig. 3**

B156D021.WMF

**Shadow (High ID)**

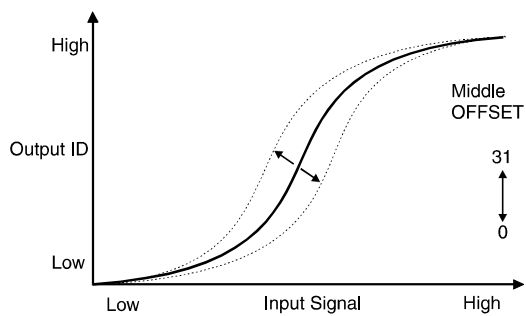
The High ID mode adjusts the image density between Level 6 and Level 9 of the color gradation scale on the C-4 test chart (figure 4).

**Fig. 4**

B156D022.WMF

**Middle (Middle ID)**

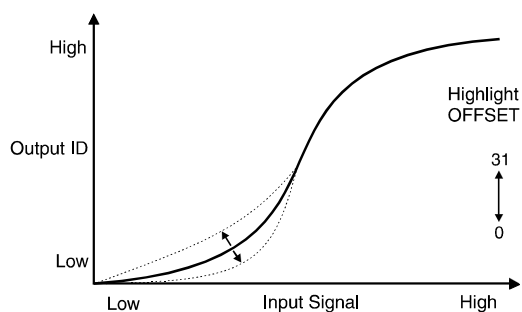
The Middle ID mode adjusts the image density between Level 3 and Level 7 of the color gradation scale on the C-4 test chart (figure 5).

**Fig. 5**

B156D023.WMF

 Detailed  
Descriptions
**Highlight (Low ID)**

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

**Fig. 6**

B156D024.WMF

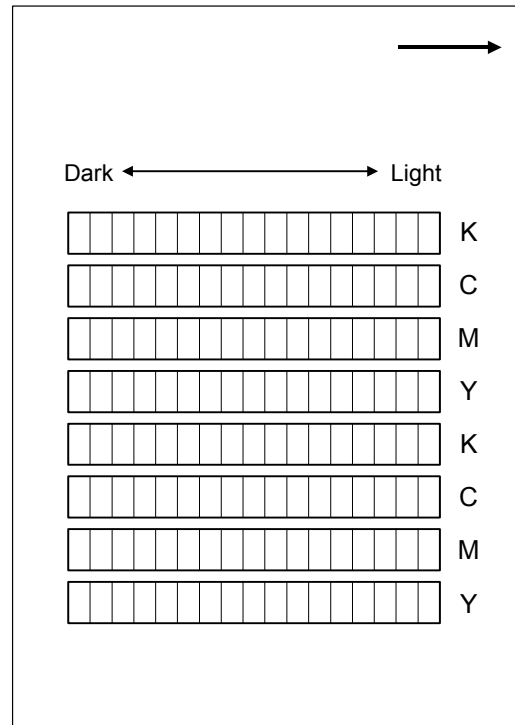


***Auto Color Calibration Test Pattern***

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

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

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



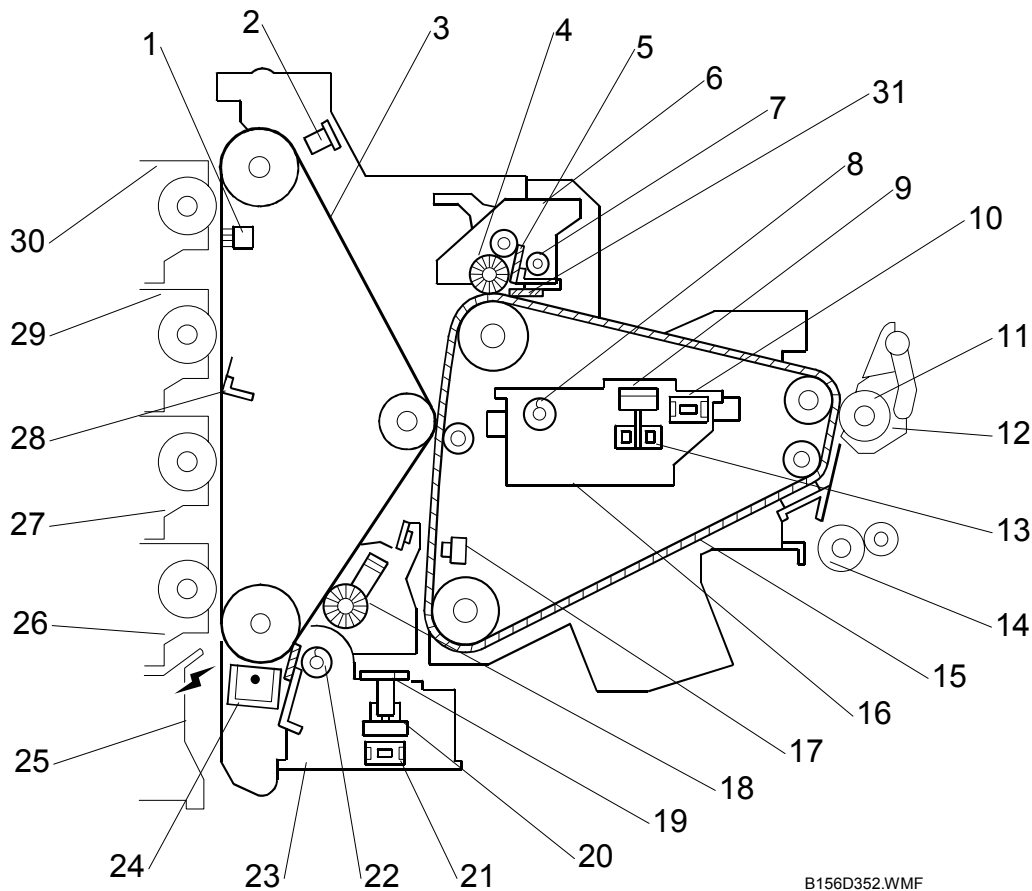
B156D025.WMF

***Error Diffusion***

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

## 6.7 PHOTOCONDUCTOR UNIT (PCU)

### 6.7.1 OVERVIEW



B156D352.WMF

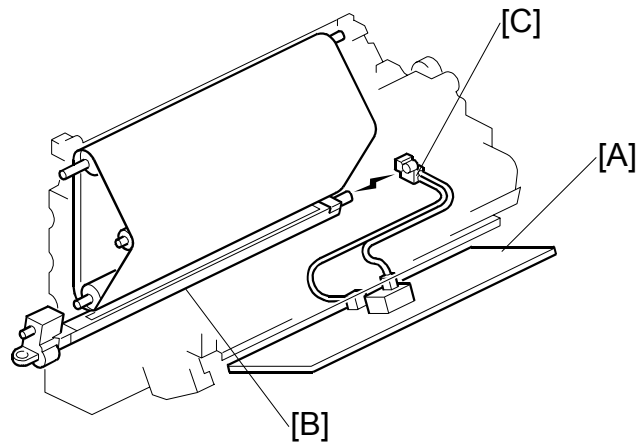
- |  |  |
|--|--|
| 1. Ground brush                        | 16. Image transfer belt cleaning unit  |
| 2. ID sensor                           | 17. Image transfer belt mark sensor    |
| 3. OPC belt                            | 18. OPC belt cleaning brush            |
| 4. Bias brush                          | 19. O/B waste toner sensor feeler      |
| 5. Image transfer belt cleaning blade  | 20. O/B waste toner bottle full sensor |
| 6. Image transfer belt cleaning unit   | 21. O/B waste toner bottle switch      |
| 7. T/B toner collection auger 1        | 22. O/B toner collection auger 1       |
| 8. T/B toner collection auger 2        | 23. OPC belt cleaning unit             |
| 9. T/B waste toner sensor feeler       | 24. Charge corona unit                 |
| 10. Waste toner bottle switch          | 25. Laser unit                         |
| 11. Paper transfer roller              | 26. M development unit                 |
| 12. Paper transfer roller unit         | 27. Y development unit                 |
| 13. T/B waste toner bottle full sensor | 28. OPC belt support                   |
| 14. Registration roller                | 29. C development unit                 |
| 15. Image transfer belt                | 30. K development unit                 |
|  | 31. T/B cleaning blade (additional)    |

 Detailed  
Descriptions


## 6.7.2 CHARGE CORONA UNIT

### Power Supply

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

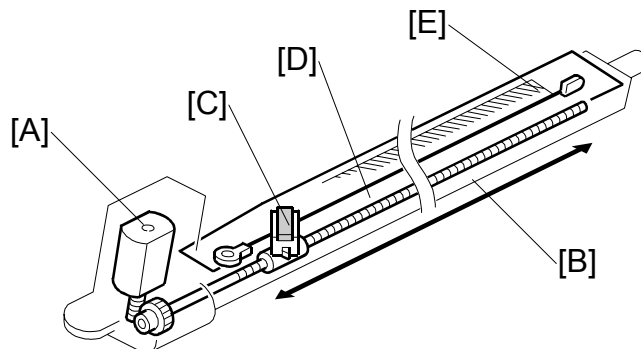


B156D026.WMF

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

### Grid and Wire Cleaning

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



B156D027.WMF

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

The wire is cleaned at these times:

- Immediately before the machine goes to low power mode, if there was between 200 and 600 development counts since the last cleaning.
- Between 600 (SP2-801-1) and 1200 (= the sum of the settings in SP2-801-1 and -3 plus 200) development counts at job end.
- If the count gets to 1200 in the middle of a job (= the sum of the settings in SP2-801-1 and -3 plus 200) development counts (stops in the middle of the job).

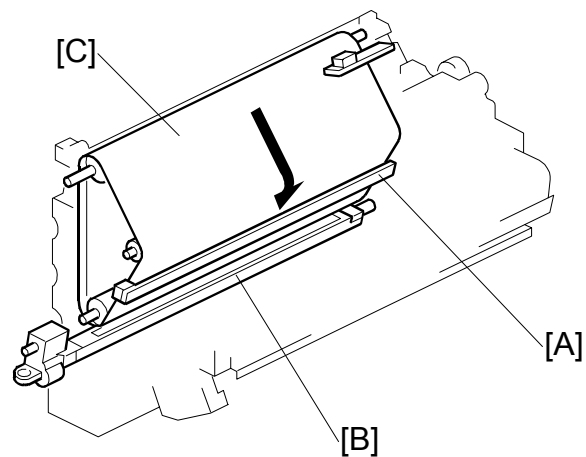
The counter for “development counts” counts up as shown in the table.

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

**NOTE:** 1) The counter always increases as shown in the table. These values are not adjustable.  
 2) To change the cleaning interval, use SP2-801 (☛ 5.1.2).

### Quenching

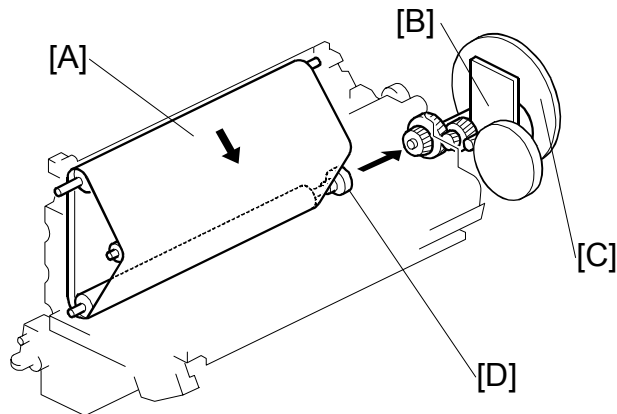
[A]: Quenching lamp  
 [B]: Charge corona unit  
 [C]: OPC belt



(☛ **CT** Photocopying Processes – Quenching)

### 6.7.3 OPC BELT DRIVE

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



B156D309.WMF

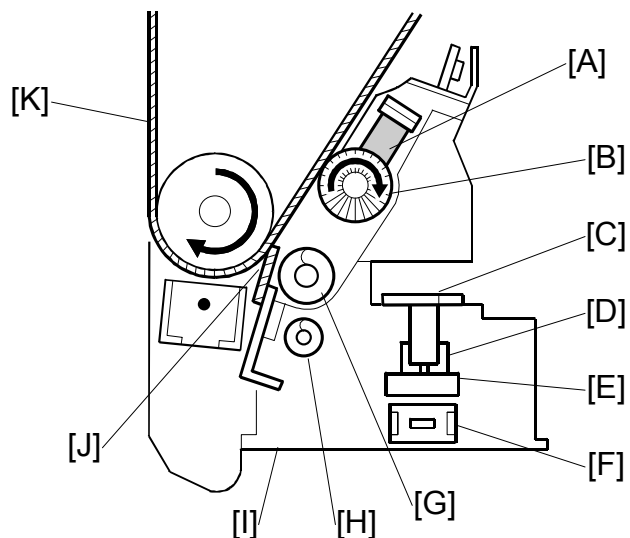
Main motor [B] → Gear → Bottom shaft [D] → OPC belt [A]

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

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

### 6.7.4 OPC BELT CLEANING UNIT

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



B156D029.WMF

#### ***Bottle Detection***

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

### Waste Toner Collection

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

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

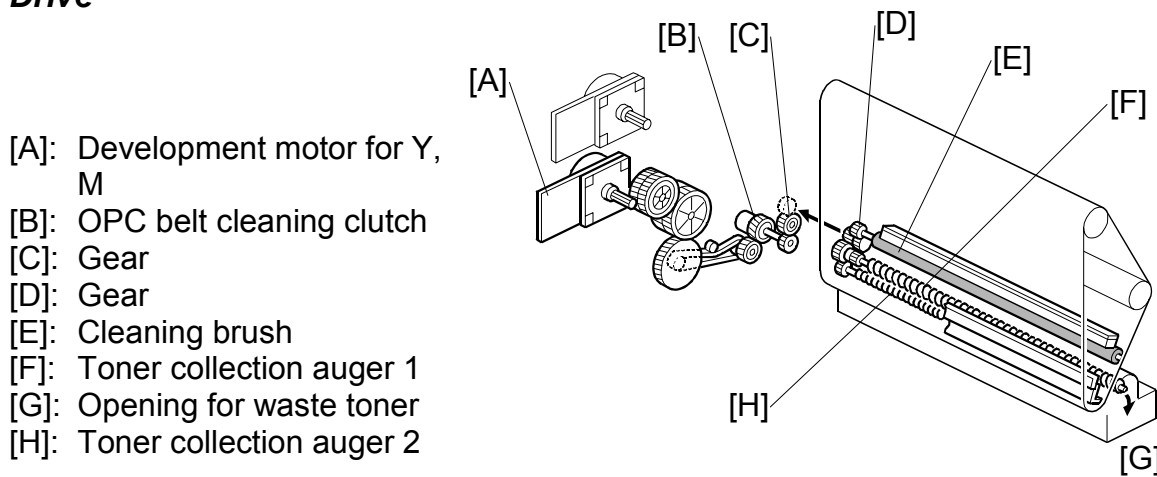
Toner collection auger 2 [H] levels the toner in the bottle.

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

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

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

### Drive



B156D312.WMF

Detailed  
Descriptions

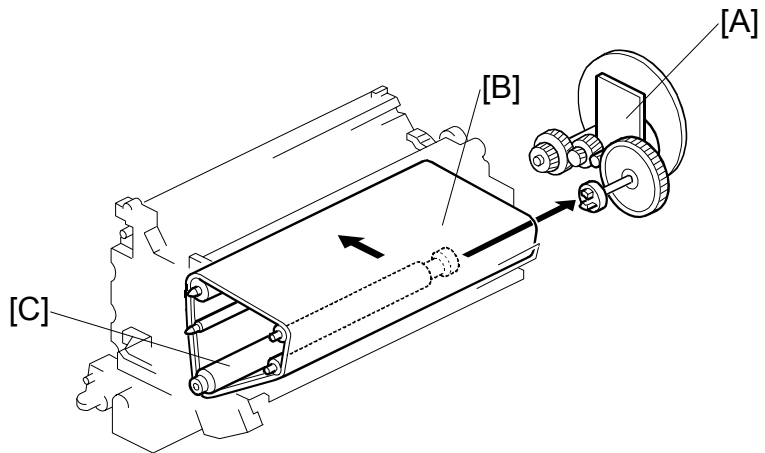
Development motor [A] → Gear → Timing belt → OPC belt cleaning clutch [B] → Gears [C, D] → OPC belt cleaning unit (including the brush and toner collection augers)

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

## 6.7.5 IMAGE TRANSFER BELT UNIT

### Drive

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



B156D314.WMF

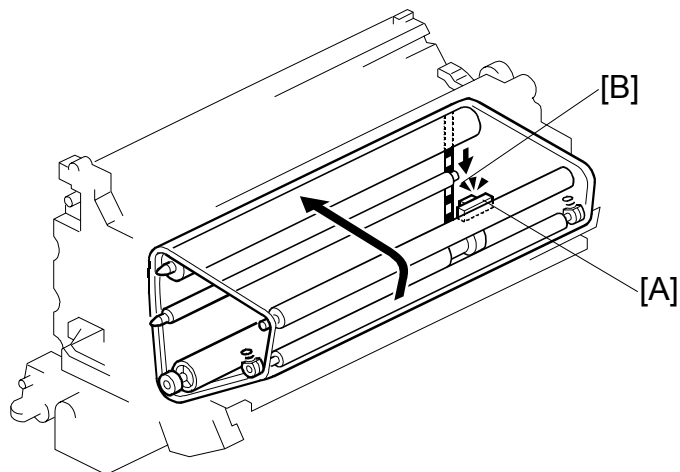
Main motor [A] → Gears → Bottom shaft [C]

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

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

### Belt Mark Detection

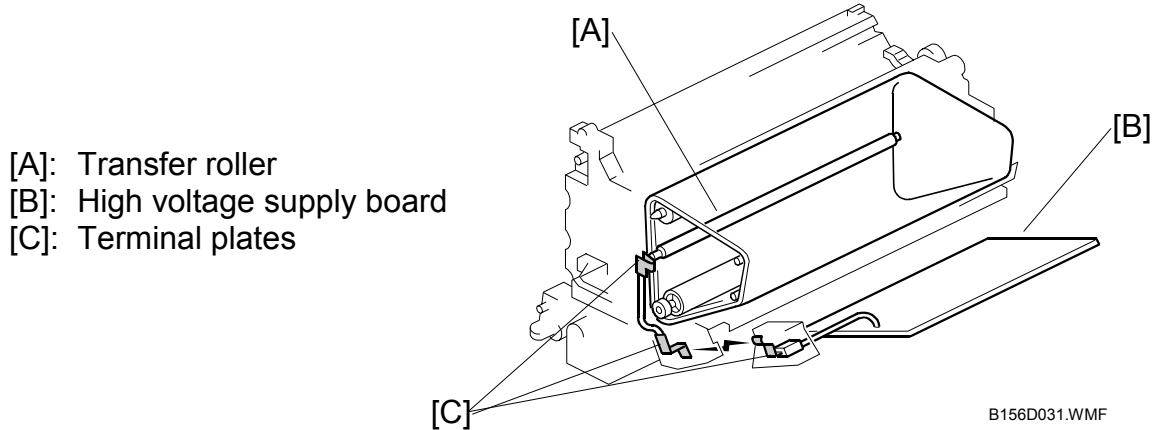
- [A]: Belt mark sensor  
 [B]: Mark



B156D030.WMF

The belt mark sensor is a reflective photosensor.

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

**Transfer Roller**

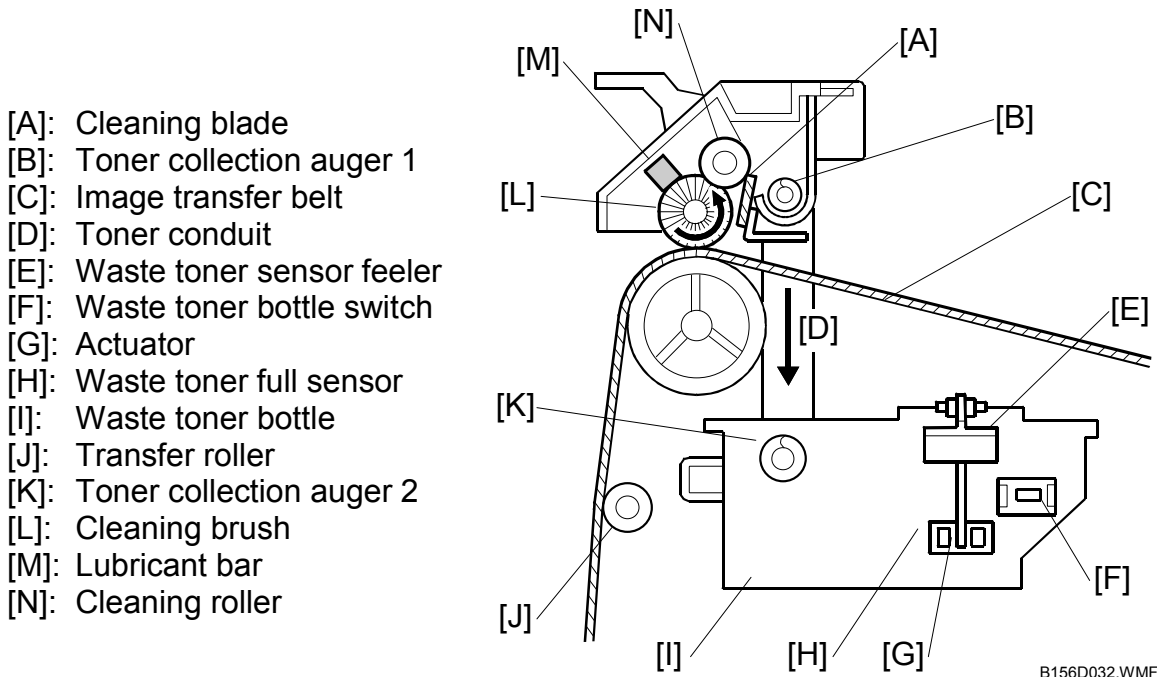
The transfer roller [A] attracts toner from the OPC belt to the image transfer belt by using a positive charge.

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

The current is adjusted based on environmental temperature and humidity.



### 6.7.6 IMAGE TRANSFER BELT CLEANING UNIT



#### ***Image Transfer Belt Cleaning***

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

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

#### ***Waste Toner Collection***

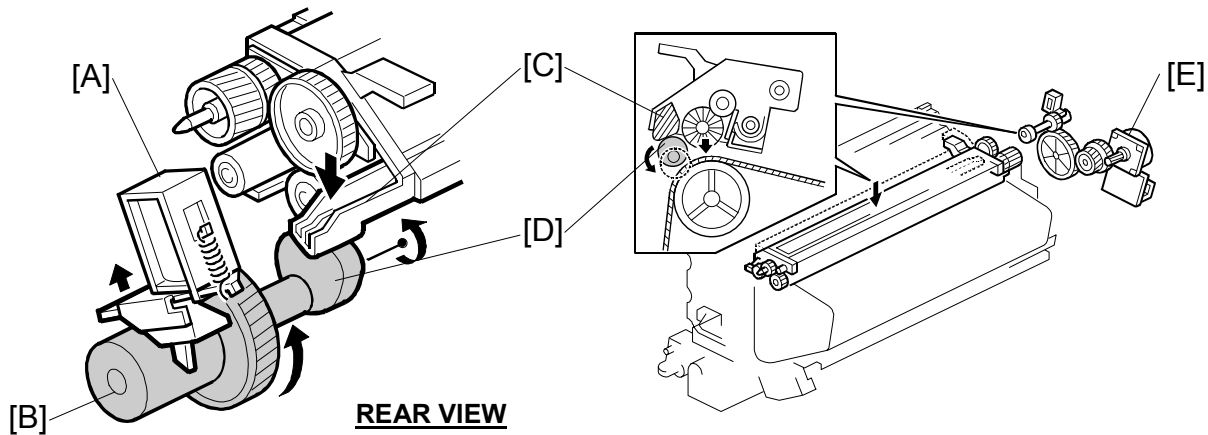
The toner removed by the cleaning blade is transported by the toner collection auger 1 [B] to the rear, where it falls into the toner bottle [I] through the toner conduit [D].

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

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

#### ***Set Switch and Full Sensor***

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

**Contact Mechanism**

B156D033.WMF

B156D034.WMF

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

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

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

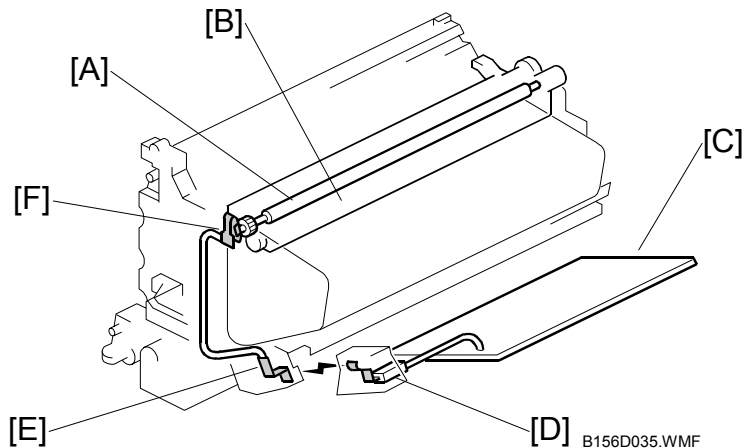
**NOTE:** During standby mode, the cleaning unit is away from the image transfer belt.

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

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

**Power Supply**

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

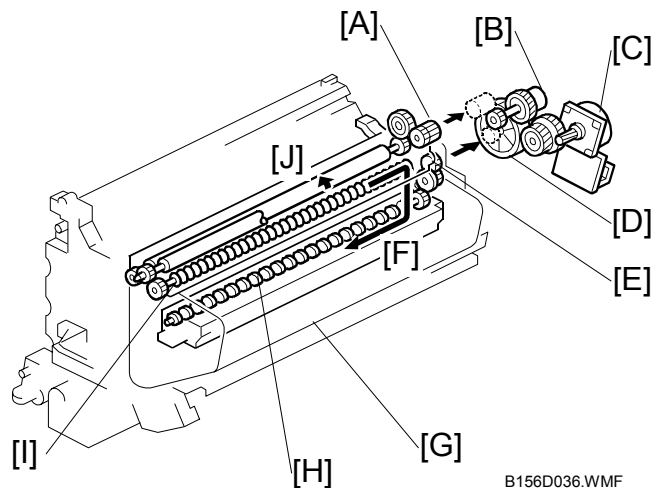


The cleaning roller [B] charges the cleaning brush, and attracts toner from it.

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

**Drive**

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

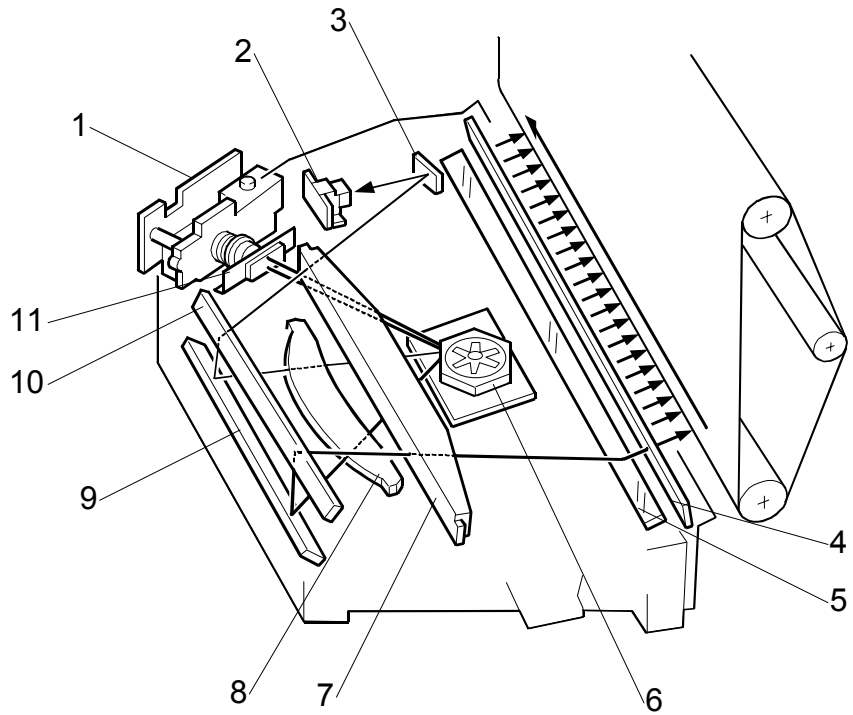


Fusing unit motor [C] → drive gear [D] → gears [A] and [E] → cleaning brush [J] and toner collection augers [H and I]

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

## 6.8 LASER EXPOSURE

### 6.8.1 OVERVIEW



B156D037.WMF

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

Detailed  
Descriptions

## **6.8.2 POLYGON MIRROR MOTOR UNIT**

### ***Speed***

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

## **6.8.3 SYNCHRONIZATION DETECTOR**

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

The synchronization detector simultaneously checks 2 laser beams.

## **6.8.4 LD UNIT**

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

The LD unit does not need any adjustment when replaced.

## 6.8.5 LD SAFETY SWITCH

### *Front Door*

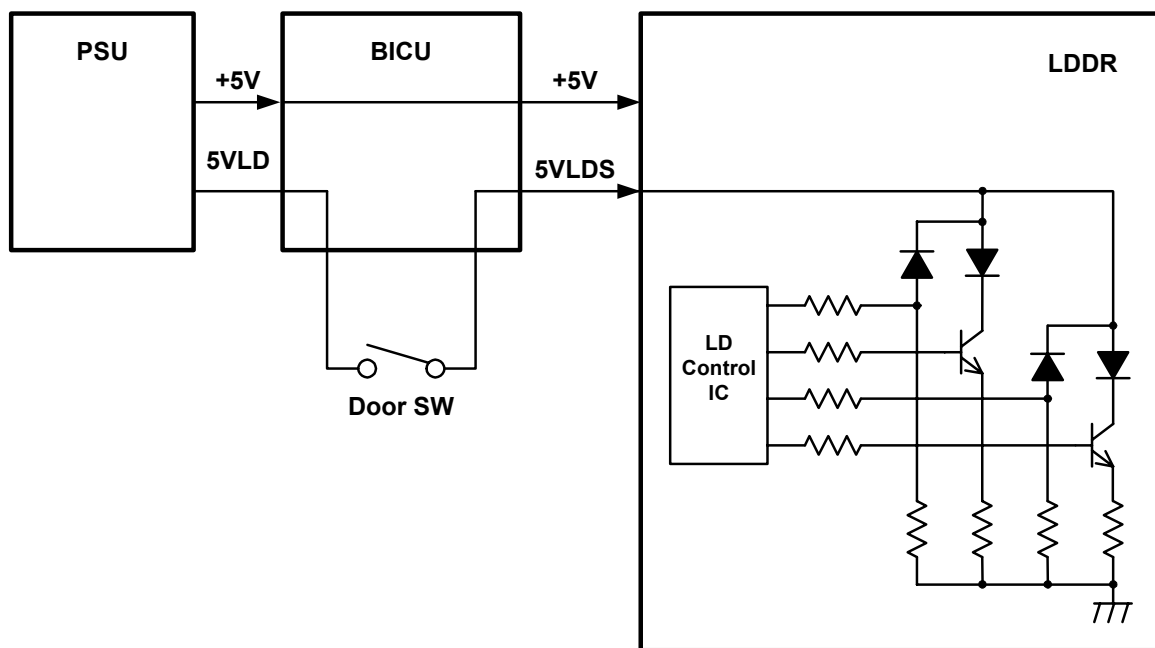
The LD safety switch is on the upper end of the front door. This switch is linked to the following covers:

- Front door
- Right cover

The switch prevents laser emission if any of the above covers is opened (when, for example, you remove jammed paper or replace a consumable).

### *Circuit*

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



B156D500A.WMF

Detailed  
Descriptions

### Operation Panel Display and Switch Mechanism

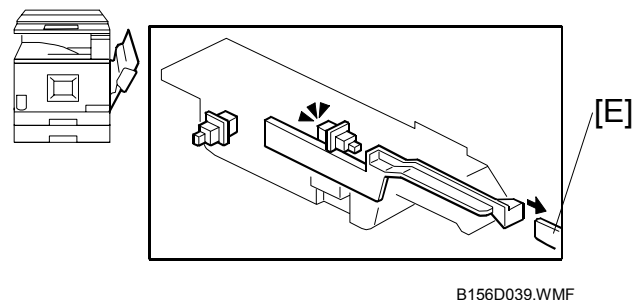
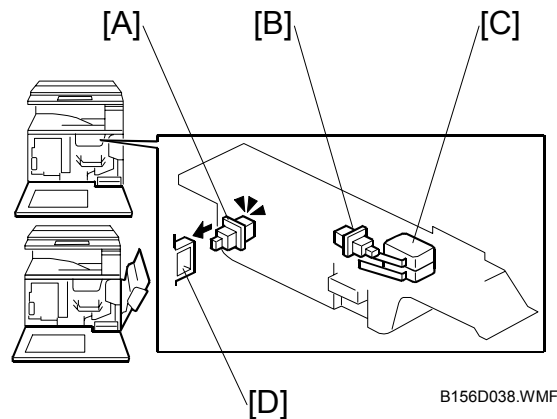
The front cover switch [A], right cover switch [B], and interlock switch [C] detect the positions of the front and right covers. When either or both covers are open, the message, "Open Cover", appears with an illustration indicating which covers are open.

The tables show the switch patterns and detected cover positions.

Front cover switch	Off
Right cover switch	On
Interlock switch	Off
<b>→ Front cover open</b>	

Front cover switch	Off
Right cover switch	Off
Interlock switch	Off
<b>→ Front and right covers open</b>	

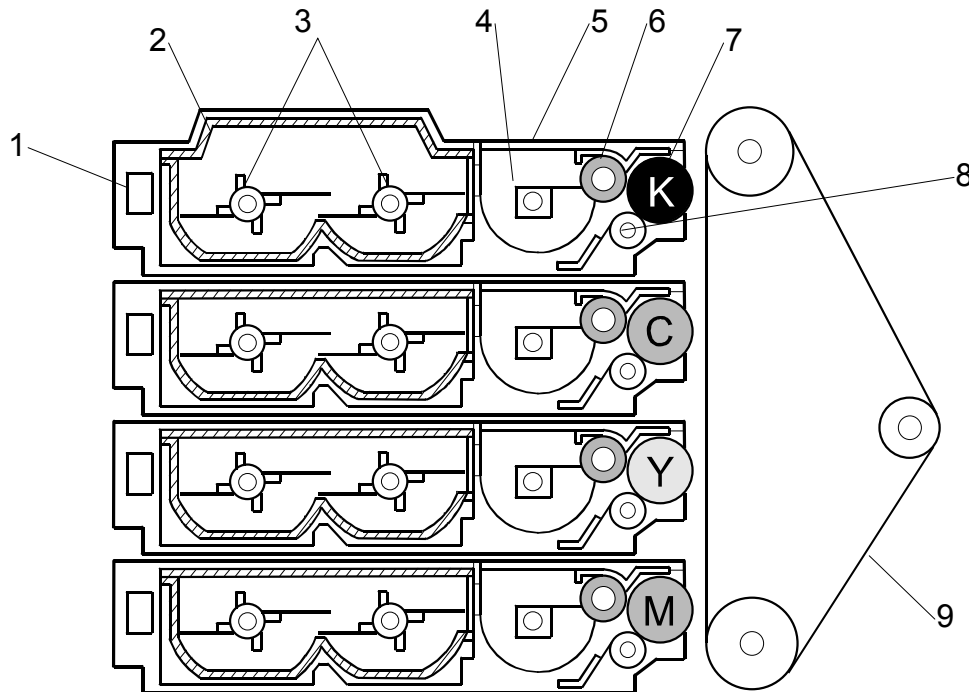
Front cover switch	On
Right cover switch	Off
Interlock switch	Off
<b>→ Right cover open</b>	



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

## 6.9 DEVELOPMENT


### 6.9.1 OVERVIEW



B156D351.WMF

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

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

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

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

Detailed  
Descriptions



## 6.9.2 DEVELOPMENT UNIT

### *Replacing Units*

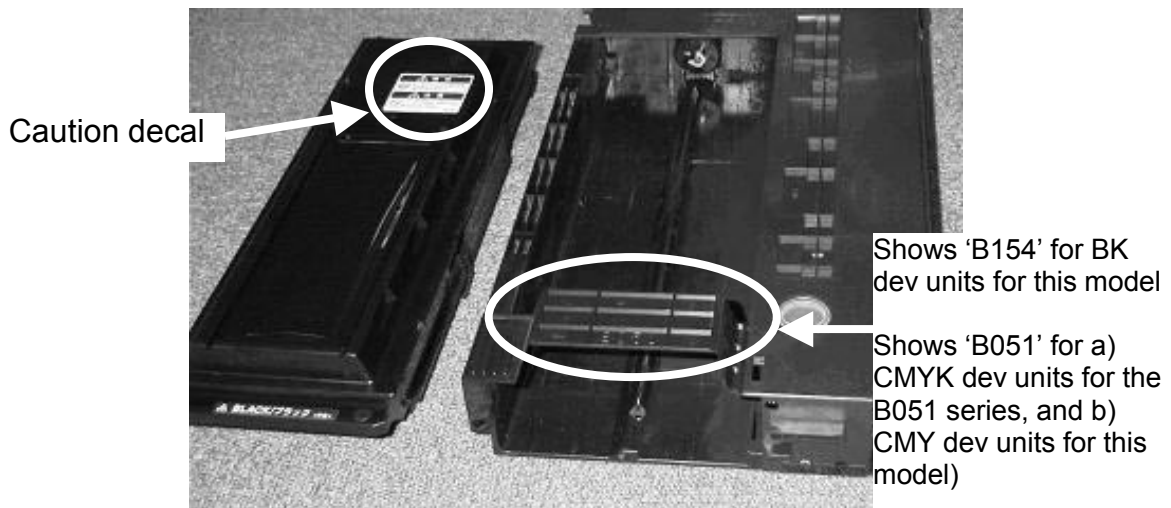
Each new development-unit spare part contains an empty dummy toner cartridge. The dummy toner cartridge does not have a memory chip.

When you replace the development unit with a new spare part development unit, the machine cannot detect the toner cartridge because the dummy toner cartridge does not contain a memory chip. But the toner cartridge in the used development unit may still be usable. Because of this, remove the dummy toner cartridge from the new development unit. Then install the toner cartridge from the old development unit.

After you install the new development unit, do the SP mode for development initialization (toner supply & process control) (SP3-929-001 to –004: Development unit Replace).

### *Distinguishing the development unit with the one for the B051 series*

	This model	B051 series
Top line of caution decal on the toner cartridge	Black words on a white background	White words on a black background
Indication on the toner cartridge holder (development unit side)	B154 (BK only) CMY development units have the same indication as the previous model (B051)	B051 (BK, C, M, and Y)



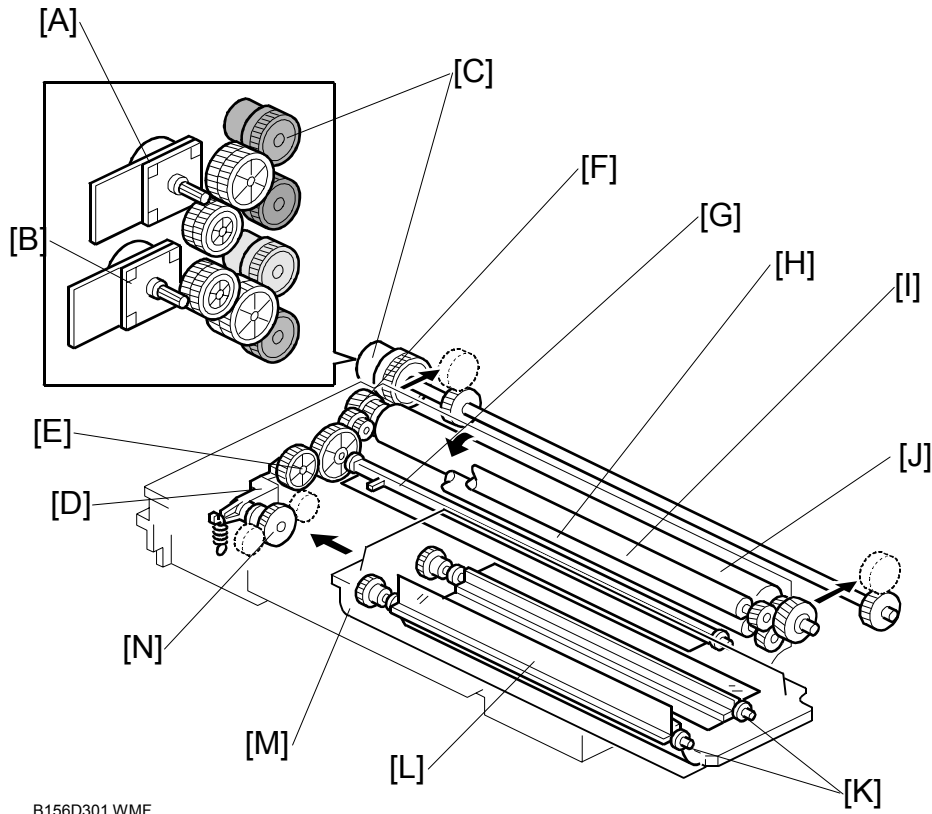
B156R301.JPG

**NOTE:** B051 is shown on CMY development units for both models. But the units are not interchangeable.

### *Memory chip*

Each toner cartridge contains a memory chip, which contains information about which machine it can be used in. If a toner cartridge for the B051 series is installed in this machine, the machine will not detect the toner cartridge.

### 6.9.3 TONER SUPPLY MECHANISM



B156D301.WMF

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

 Detailed  
Descriptions

#### **Drive**

Development motor [A, B] → development clutch [C] → development roller [F] → cam [E] → lever [D] → agitators [K].

Development motor [A, B] → development clutch [C] → development roller gear [F] → development roller [J]

***Rollers and Agitators***

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

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

***Shutter***

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

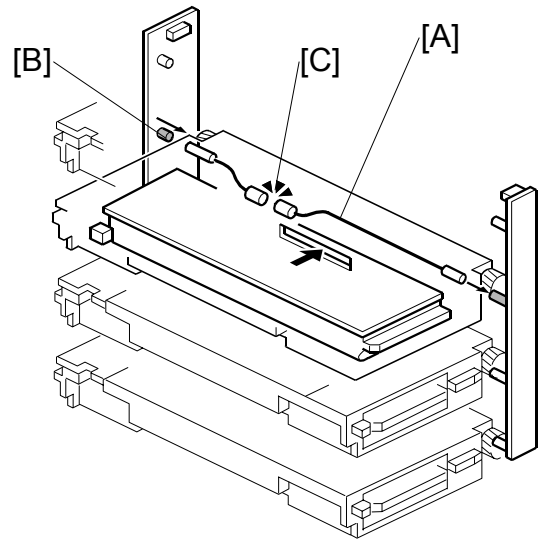
## 6.9.4 TONER END DETECTION

### ***Mechanism***

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

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

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



B156D303.WMF

### ***Toner Near-End Detection***

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

#### ***Near-End by Pixel Count (K, C, M, and Y)***

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

#### ***Near-End by Toner End Sensor (C, M, Y only)***

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

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

Toner supply mode after the job:

- The development unit with the almost-empty cartridge idles for 40 s.
- Then, it idles again for another 20 s.
- During this 20 s period, the toner end sensor is checked every 10 ms. If a low toner condition is detected twice or less during this 20 s period, the machine returns to standby mode after idling all development units for 90 s.
- However, if a low toner condition was detected third times or less during that 20 s period, the machine indicates toner near-end.

***Toner End Detection***

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

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

***Toner End Recovery******CMY***

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

During this time, the development clutch is repeatedly activated for 5 s and deactivated for 1 s.

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

***Bk***

When the machine detects a new toner cartridge, it operates the development unit as shown below. (This is the default setting. You can change it with SP 2-964.)

- The development clutch is repeatedly turned on for 5 s and off for 1 s. This is done for approximately 30 seconds.
- Then, the development clutch is repeatedly turned on for 0.8 s and off for 0.8 s. This is done for approximately 70 seconds.
- Then, again, the development clutch is repeatedly turned on for 5 s and off for 1 s. This is done for approximately 30 seconds.

The second step (0.8 s on/0.8 s off) loads toner into the hopper quickly, but it makes a lot of noise. Because of this, some customers could complain. Then, you can change SP 2-964 from 'Quick mode' (default setting) to 'Long mode (quiet)'.

SP 2-964 also has a 'Medium mode'. This loads toner into the hopper more quickly. It is also better than 'Quick Mode' and 'Long mode' to prevent dirty background that occurs immediately after toner replacement. But it is estimated that 'Quick Mode' and 'Long mode' will not cause this symptom often.

The three toner-end-recovery modes operate as shown in this table.

	<b>Toner End Recovery Procedure</b>			<b>Total Time</b>
Quick (default)	5s on/1s off, for 30s	0.8s on/0.8s off, for 70s	5s on/1s off, for 30s	Approx. 3 minutes
Long (quiet)	On/off timing same as for normal printing mode, for 360 s		5s on/1s off, for 15s	Approx. 7 minutes
Medium	0.8s on/0.8s off, for 285 s		5s on/1s off, for 50s	Approx. 6 minutes

The 'Total time' column includes process control after cartridge replacement.

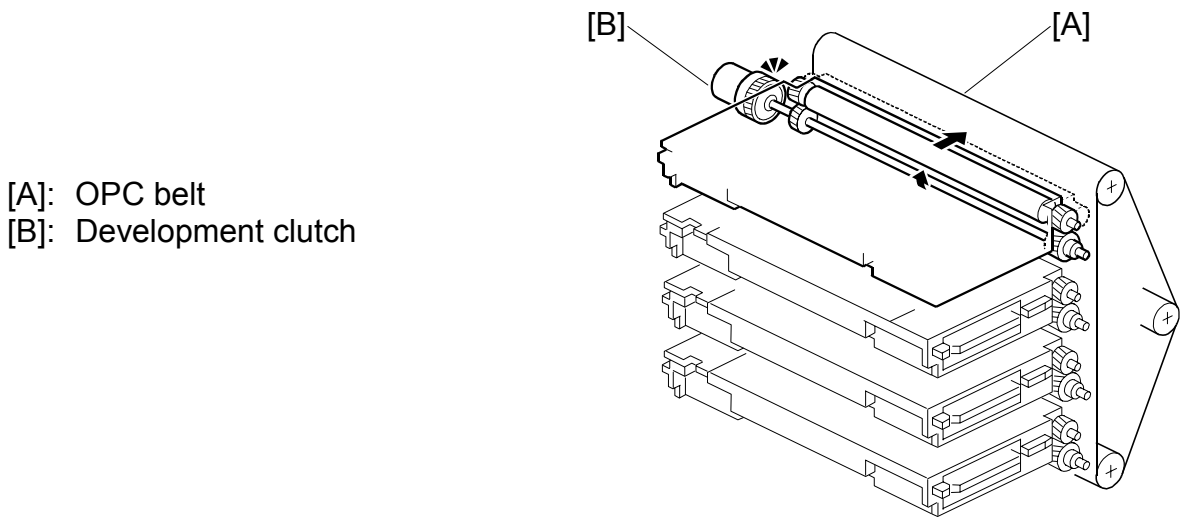
If you change SP 2-964, the settings of SP 2-960-1 to -016 will change automatically. Do not adjust SP 2-960 in the field. Only use SP 2-964.

## 6.9.5 DEVELOPMENT UNIT CONTACT MECHANISM

### *Mechanism*

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

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



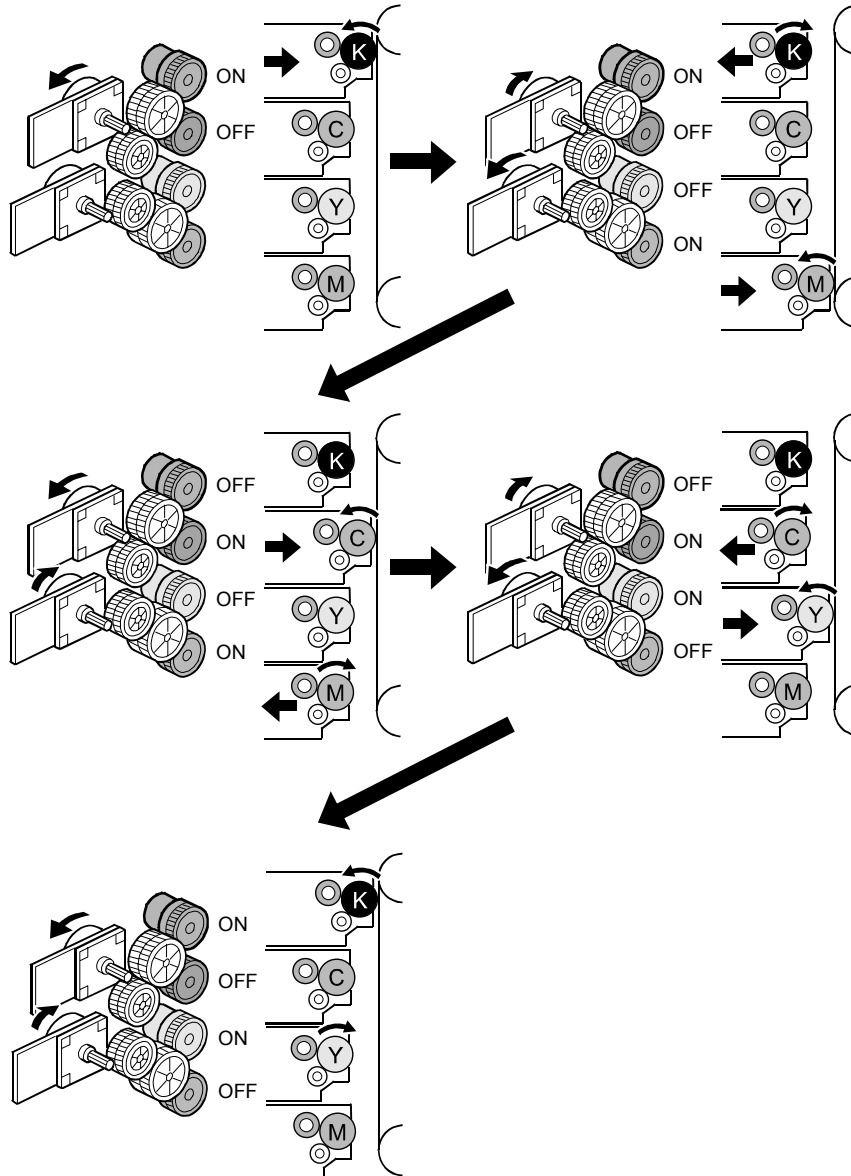
[A]: OPC belt

[B]: Development clutch

B156D040.WMF

### Reverse Rotation

The gears reverse every development to prevent toner from clumping. There are two development motors in this model. While one motor is used to develop a color, the other is used to clean another development unit. This parallel action reduces the idle time.

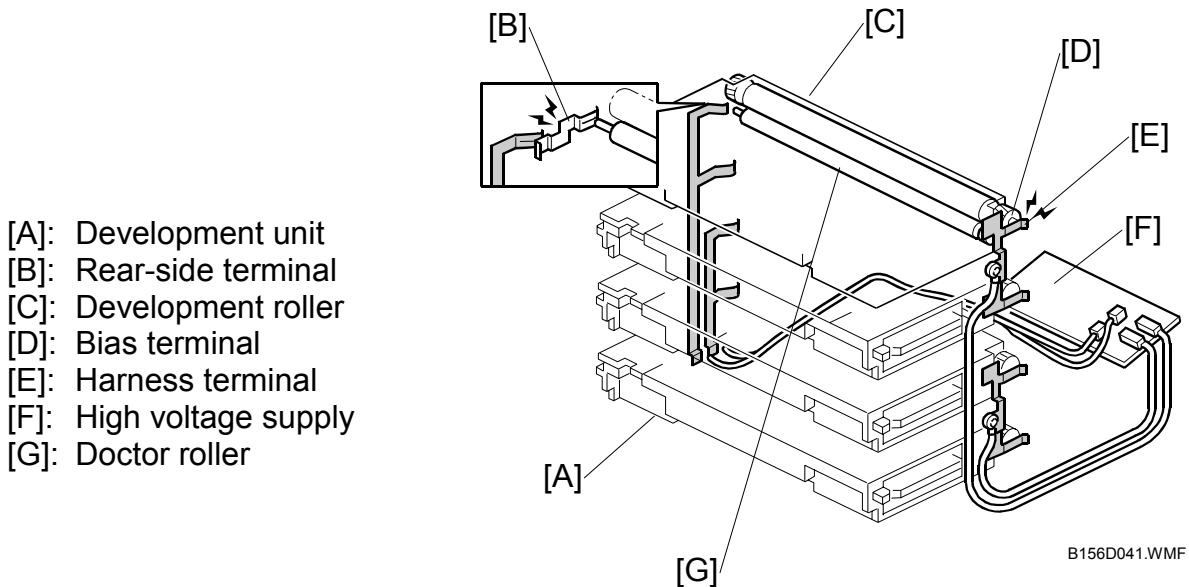


B156D300.WMF

 Detailed  
Descriptions



## 6.9.6 POWER SOURCE



### ***Development, Toner Supply, and Doctor Rollers***

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

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

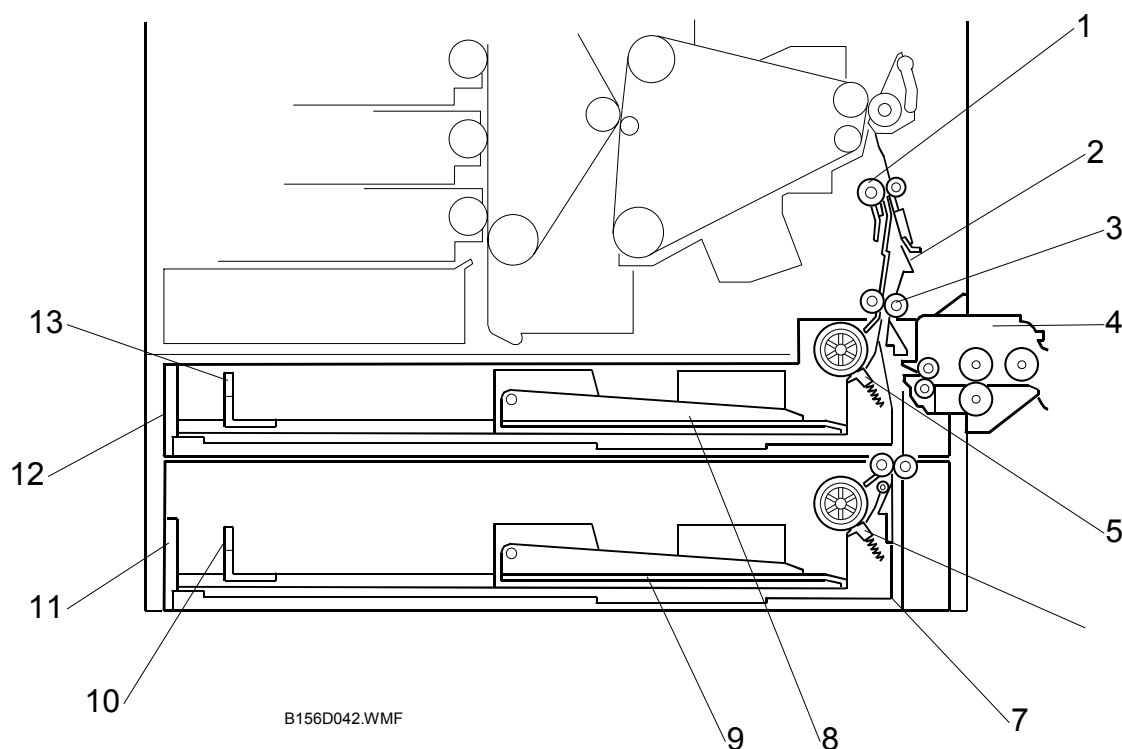
### ***Doctor Roller***

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

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

## 6.10 PAPER FEED

### 6.10.1 OVERVIEW



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

 Detailed  
Descriptions

The table lists the main and optional paper stations.

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


### Transport Speed

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

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

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

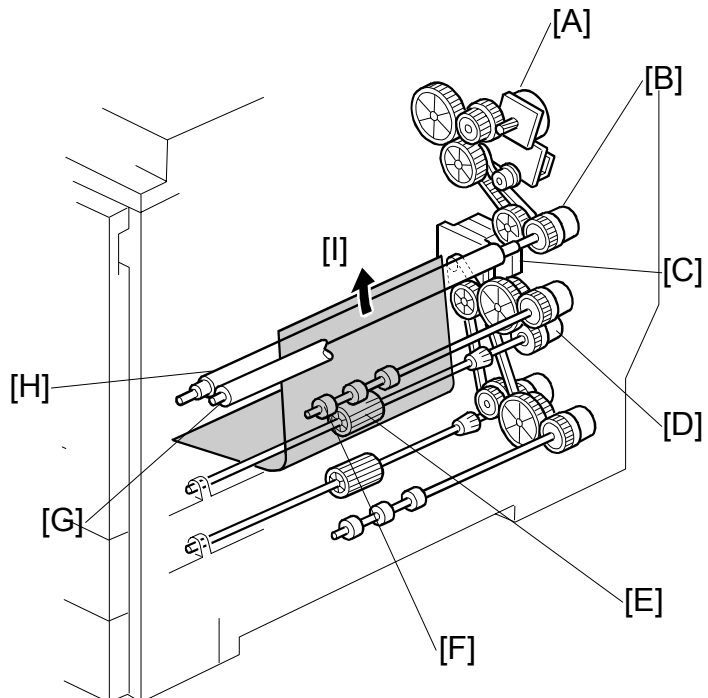
### Friction Pad

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

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

## 6.10.2 DRIVE MECHANISM

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



B156D043.WMF

### Feed and Vertical Transport

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

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

### Registration

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

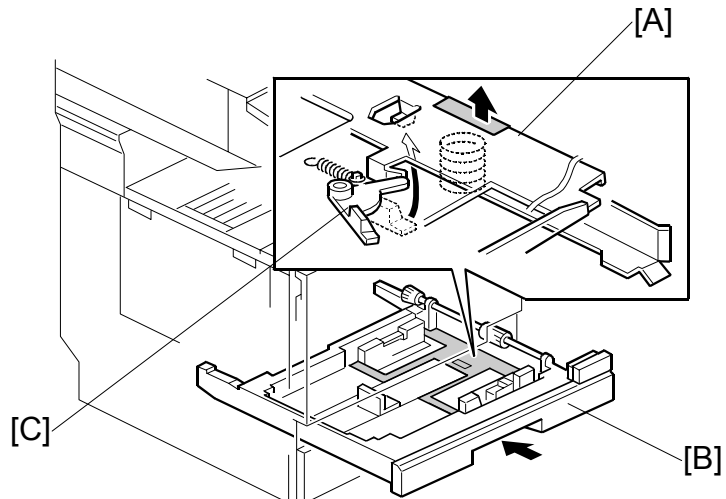
The idle roller [G] facing the registration roller does not have any drive gears. It turns with the paper [I].

### 6.10.3 PAPER LIFT

#### *Lift Mechanism*

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

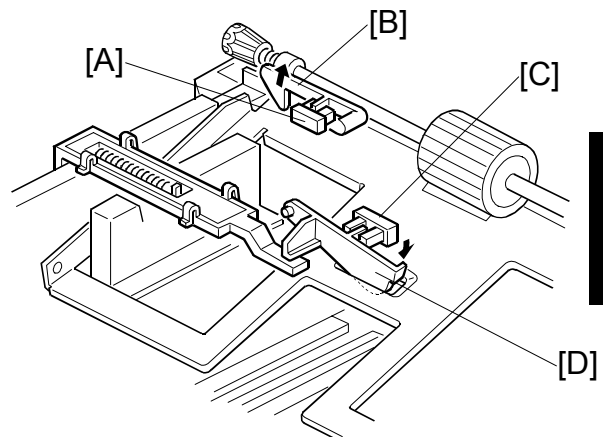
- [A]: Bottom plate
- [B]: Tray
- [C]: Lever



B156D044.WMF

#### *Paper End/Near-End Detection*

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



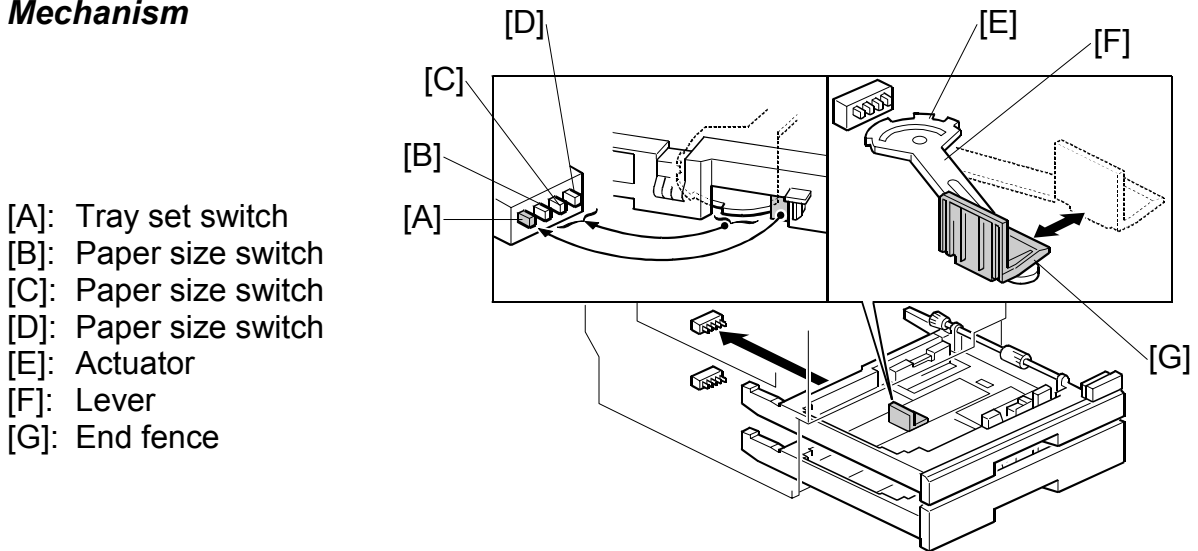
B156D045.WMF

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

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

## 6.10.4 PAPER SIZE DETECTION

### Mechanism



B156D046.WMF

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

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

### Switch Pattern

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

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

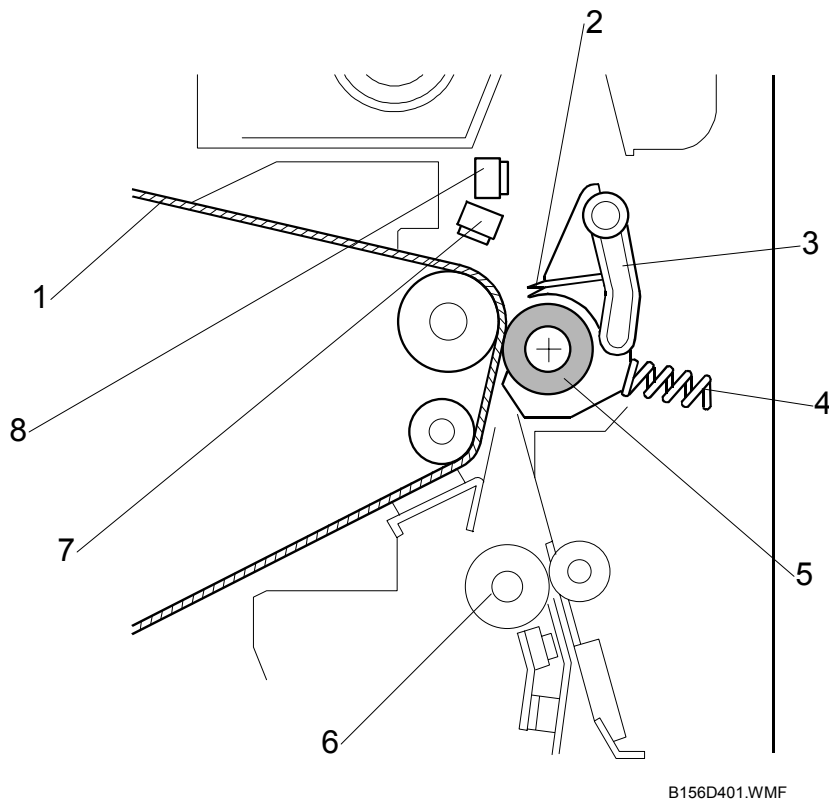
\* On: Pushed Off: Not pushed

**NOTE:** 1) For the input check table, see 5.1.4.

2) Other paper sizes are not detected. Use the System Settings - Tray Paper Settings - Tray Paper Size user tool to set paper sizes.

## 6.11 PAPER TRANSFER AND SEPARATION

### 6.11.1 OVERVIEW



- |                        |                           |
|------------------------|---------------------------|
| 1. Image transfer belt | 5. Paper transfer roller  |
| 2. Discharge plate     | 6. Registration roller    |
| 3. Separation lever    | 7. Transfer belt sensor   |
| 4. Spring              | 8. Fusing entrance sensor |

#### ***Jammed Paper Release***

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

#### ***Image Transfer and Paper Separation***

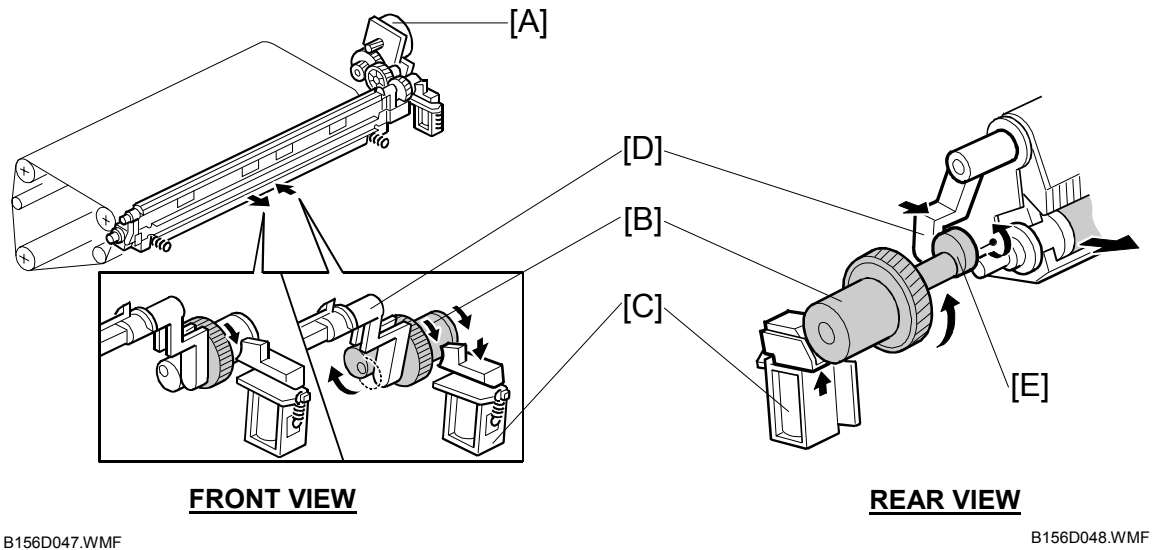
 Photocopying Processes – Image Transfer and Paper Separation – Transfer Roller + Discharger – Example 2: Models A172/A199

The current is adjusted for paper weight and environmental temperature/humidity.

A user tool (User Tools - System Settings - Tray Paper Settings - Paper Type) specifies the paper weights. If “Plain” is selected, then another user tool (User Tools - Maintenance - Plain Paper Type) defines when the paper is “normal” or “> 90 g/m<sup>2</sup>, 24lb”.

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

### 6.11.2 CONTACT/SEPARATION MECHANISM



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

#### **Timing**

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

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

#### **Mechanism**

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

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

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

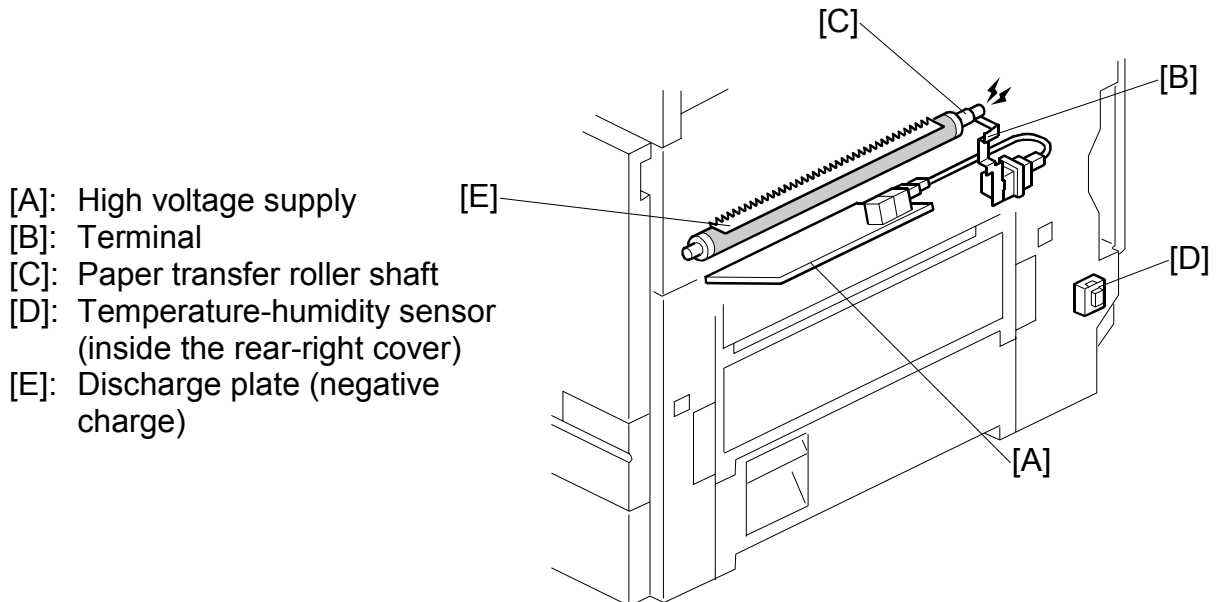
When the solenoid is off, it catches a hook on the surface of the half-turn clutch [B]. As a result, the high point of the cam pushes the contact/separation lever [D], and the paper transfer roller unit is away from the belt.

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

### 6.11.3 POWER SUPPLY

#### **Circuit**

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



B156D049.WMF

#### **Paper Transfer Roller Bias**

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

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

#### **Discharge Plate**

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

#### **Temperature/Humidity Control**

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

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



***Roller Cleaning***

The paper transfer roller is cleaned at the following times:

- After the user clears a paper jam
- After the user closes the front cover
- Just after the main power has been switched on

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

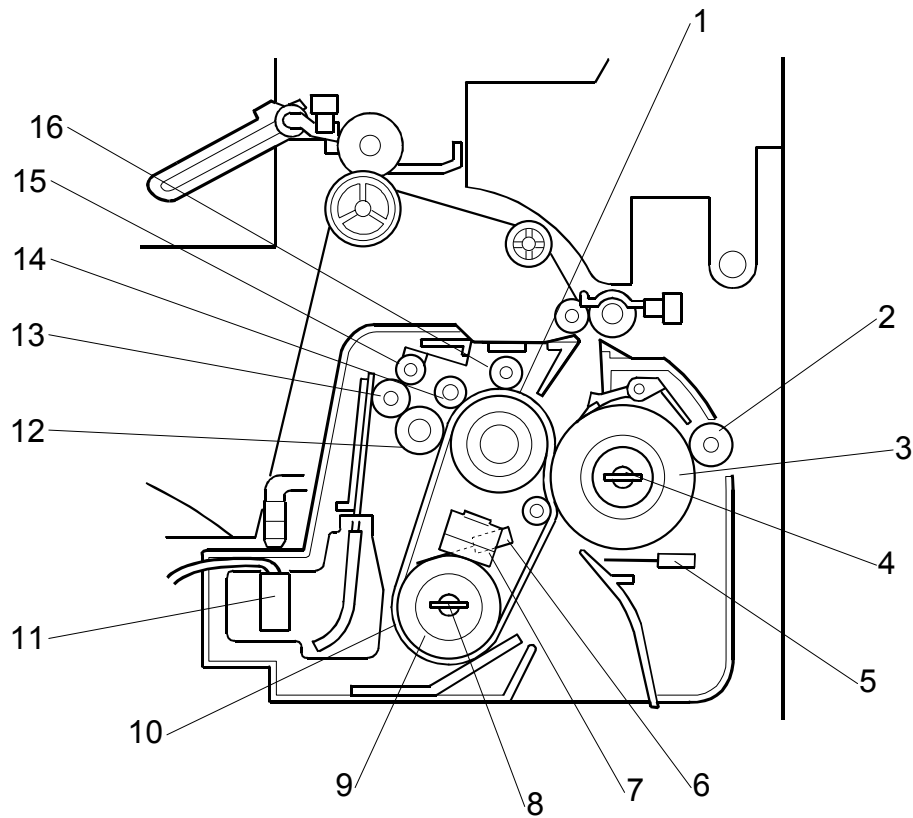
Then, a certain time after the trailing edge of the paper passes the registration sensor, the following steps occur:

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

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

## 6.12 IMAGE FUSING AND PAPER EXIT

### 6.12.1 OVERVIEW

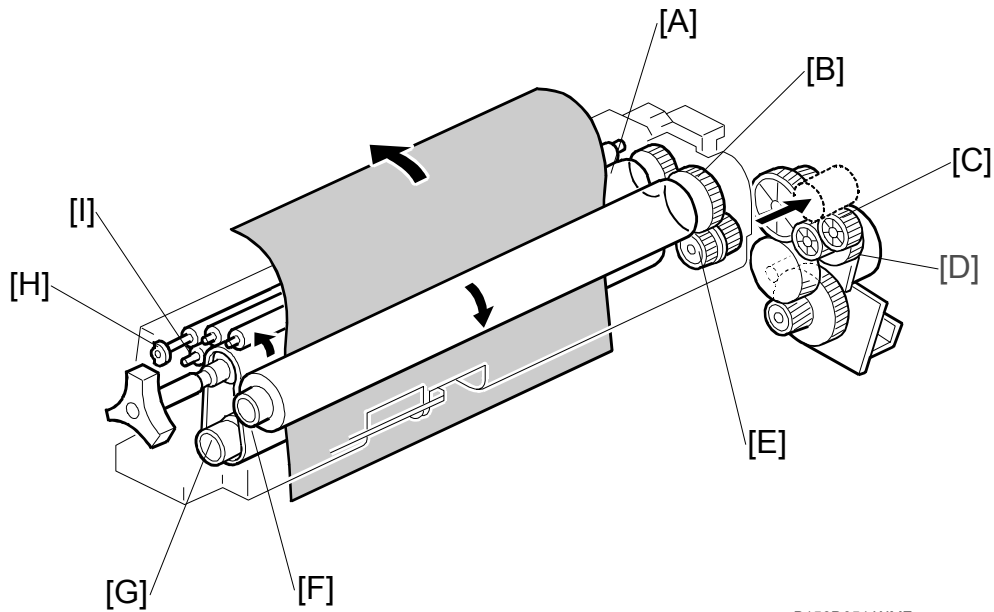


B156D050.WMF

- |                                |                           |
|--------------------------------|---------------------------|
| 1. Hot roller                  | 9. Heating roller         |
| 2. Metal cleaning roller       | 10. Fusing belt           |
| 3. Pressure roller             | 11. Oil overflow sensor   |
| 4. Pressure roller fusing lamp | 12. Oiling roller         |
| 5. Pressure roller thermistor  | 13. Oil supply roller     |
| 6. Heating roller thermistor   | 14. Fusing sponge roller  |
| 7. Thermostat                  | 15. Spring roller         |
| 8. Heating roller fusing lamp  | 16. Metal cleaning roller |

The fusing unit divides into two subunits: the fusing subunit and the oil supply subunit.

Detailed  
Descriptions

**6.12.2 DRIVE**

B156D051.WMF

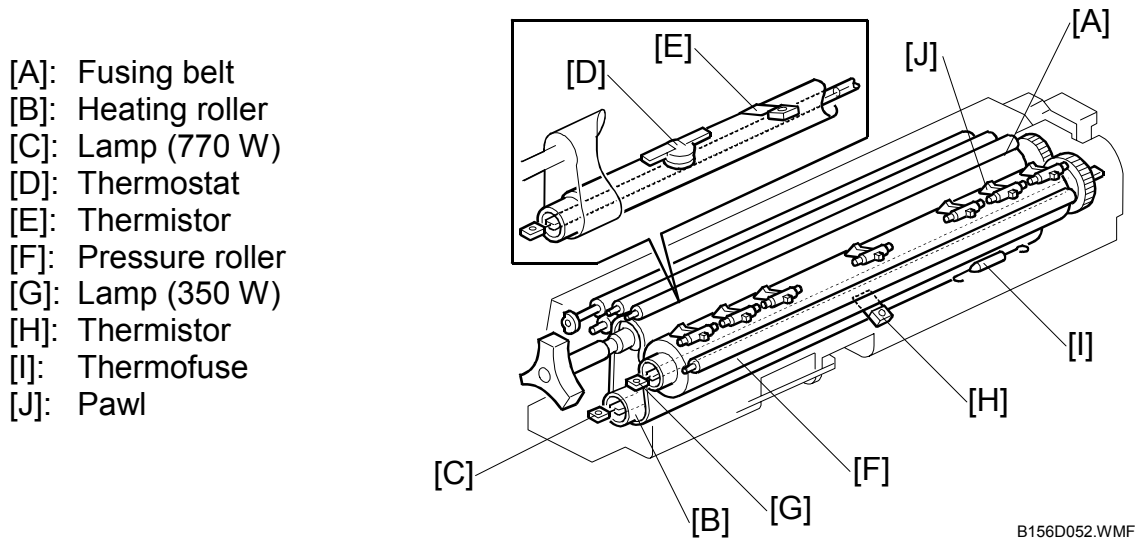
- [A]: Hot roller
- [B]: Pressure roller gear
- [C]: Cover disengagement gear
- [D]: Fusing unit motor
- [E]: Drive gear
- [F]: Fusing belt
- [G]: Heating roller
- [H]: Oil supply roller
- [I]: Oiling roller

The fusing unit motor [D] drives the fusing unit through gears [C] and [E].

The hot roller [A] turns the fusing belt [F] as a result of the friction between the two.

When the right cover is open, gear [C] moves away, which allows jammed paper to be removed from the fusing unit and exit easily.

### 6.12.3 FUSING UNIT COMPONENTS

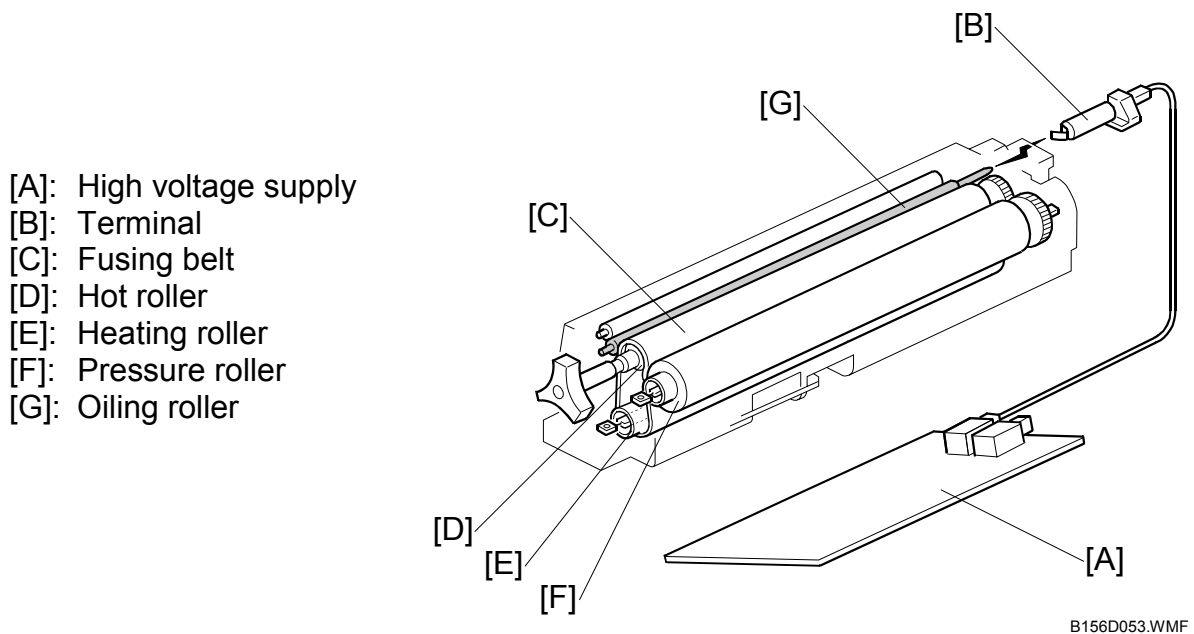


#### ***Fusing Belt***

This machine uses a fusing belt [A]. The paper goes between the fusing belt and the pressure roller [F].

#### ***Heating Roller Lamp and Pressure Roller Lamp***

The heating roller lamp (770W) [C] and pressure roller lamp (350W) [G] give more heat to the front and rear edge of the fusing belt and pressure roller. The lamps give more heat to the front edge than the rear edge. This makes fusing better for large paper (larger than B4). If the lamp is installed in the orientation, unsatisfactory fusing and/or paper creasing can occur.



### ***Fusing Bias***

The high voltage supply [A] provides the fusing bias in a new fusing unit until 2K prints are made. The fusing bias is a negative voltage that quenches static electricity created on the belt [C] and rollers [D]~[F] in a new fusing unit by the paper. This prevents the belt and rollers from attracting dust and dirt, which can cause offset image in black areas and/or white spots in half tone images because of toner attracted to the fusing belt.

After 2K prints, the static electricity is not very high. If the bias is applied to the oiling roller, this can attract dust and dirt to the oil supply felt area. Because of this, the bias is turned off after 2K prints.

With SP2-503, you can select the status of bias control (Always off, Always on, or Auto [turns off after 2k prints]). After a new fusing unit is installed, fusing bias must be applied during the first 2K prints. To do this, you must reset the PM counter of the fusing unit with SP7-804-7, and fusing bias control will automatically switch on (the machine uses the Auto setting).

SP2-501 shows the current status of fusing bias control. The setting is changed from 1 (ON) to 0 (OFF) when 2K prints from the new unit are made or when SC420 is detected. At this time, the fusing bias is stopped.

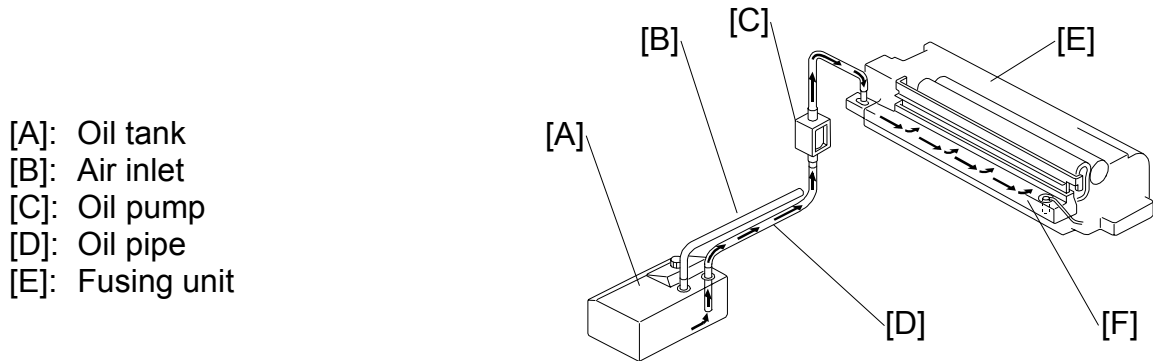
### ***Fusing Unit SCs***

If a thermistor/thermostat problem occurs, a fusing unit SC may be displayed on the operation panel. Fusing unit SCs disable the machine (☛ 4.1.1). To reset fusing unit SCs, use SP5-810 (☛ 5.1.2).

## 6.12.4 OIL SUPPLY

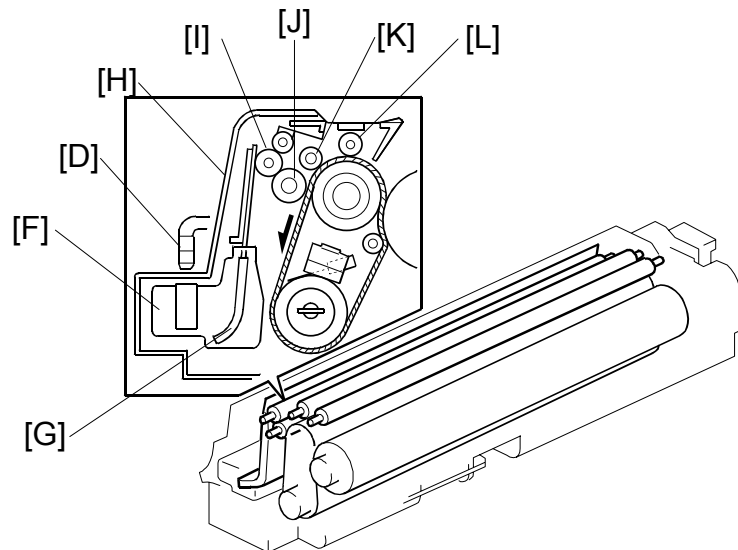
### Oil Supply

📖 **CT** Photocopying Processes – Fusing – Oil Supply



B156D054.WMF

- [F]: Oil reservoir
- [G]: Felt
- [H]: Oil supply unit
- [I]: Oil supply roller
- [J]: Oiling roller
- [K]: Fusing sponge roller
- [L]: Metal cleaning roller



B156D055.WMF

Detailed  
Descriptions

The technician adds oil to the oil tank [A] in the bottom-left corner inside the rear cover.

The oil pump [C] pumps oil along the oil pipe [D] to the oil reservoir [F] in the oil supply unit.

The air inlet [B] equalizes the pressure inside the oil tank [A].

The oil goes to the fusing belt as follows:

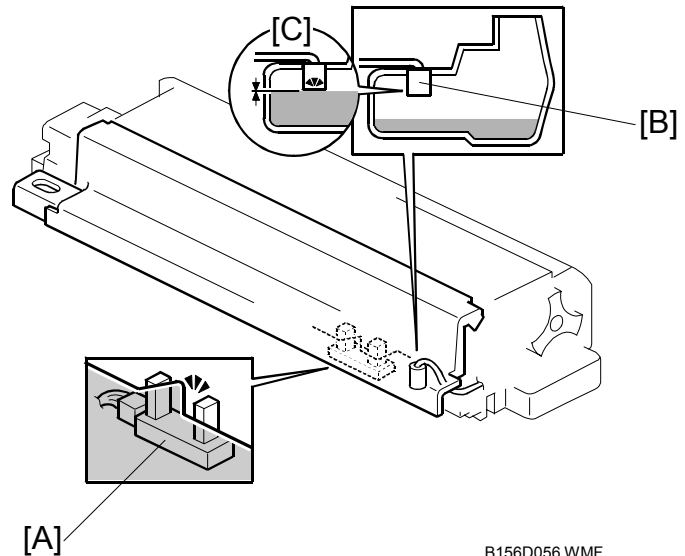
- Oil tank [A] → Oil pipe [D] (oil pump [C]) → Oil reservoir [F] → Felt [G] → Oil supply roller [I] → Oiling roller [J]

The fusing sponge roller [K] removes excess oil from the fusing belt. The metal cleaning roller [L] removes foreign substances from the belt.

**Oil Supply**

[A]: Oil end sensor

[B]: Oil overflow sensor



The oil end sensor [A] controls the supply of oil from the oil tank in the bottom of the machine, via the oil pump, to the reservoir in the oil supply unit.

The oil end sensor detects oil by emitting a beam through the protruding part of the tank bottom (the bottom is transparent).

When oil is detected, the pump does not supply oil up from the lower tank. So, the reservoir is normally less than half full (maximum capacity: 70 grams).

When oil has been used up so that the level in the reservoir falls below the sensor, the sensor detects oil end. Then, the oil pump turns on to pump oil up from the oil tank, until the oil end sensor detects oil.

- If the oil end sensor fails, the oil overflow sensor [B] detects when the reservoir is full [C], and the pump stops (SC571 will be generated, and the machine must be repaired). This failsafe measure prevents oil flooding inside the machine.

***Oil End Detection and Recovery***

If the oil tank at the bottom of the machine has no oil in it, the following occurs:

- 1) The oil pump operates for 50 milliseconds and waits for 150 milliseconds. If the oil end condition still exists, this step is repeated. If the sensor still does not detect oil, this step can be repeated up to 150 times (total maximum time taken: 30 seconds).
- 2) If oil is still not detected, the pump stops for 30 seconds.
- 3) The oil pump repeats steps 1 and 2 until oil is detected. The pump can repeat these steps up to 9 times. So, the machine can pump for up to 9 minutes if oil is not detected ( $[30 \text{ seconds} + 30 \text{ seconds}] \times 9$ ).
- 4) If oil is still not detected, the oil end counter starts. This counts the pages fed through the fusing unit. Every 100 pages, the oil pump operates again for 50 seconds to try to get oil into the fusing unit.
- 5) When the counter goes up to 50, the operation panel indicates oil near end (the counter is not reset).
- 6) When the counter goes up to 500, the code "SC 570" appears on the display, and printing stops.
- 7) To clear the oil end condition, a technician adds some oil to the oil tank in the bottom of the machine and clears the SC code (this is a Level A code). Then, the oil pump resumes steps 1 through 3.  
**NOTE:** Do not switch the machine on with the fusing unit out of the machine if an oil end condition exists. This will clear the oil end counter, and the machine incorrectly detects oil.
- 8) If the oil end condition is cleared, the procedure ends. If not, the code "SC 570" appears again.



## 6.12.5 TEMPERATURE CONTROL

The table lists default settings and variable ranges for temperature control.

External temperature (*1)			More than 15°C ~ less than 30°C		15°C or lower		30°C or higher	
Roller			Heating	Press.	Heat.	Press.	Heat.	Press.
Fusing idling start (*2)			145	10	150	10	140	10
Print ready (*3)			155	65	<i>Heat.: +5 Adjustable with SP1-105-27 Press.: +0 Adjustable with SP1-105-28</i>		<i>Heat.: -5 Adjustable with SP1-105-29 Press.: +0 Adjustable with SP1-105-30</i>	
Ready (standby mode)			160	115				
Energy saver		Panel off 1	175	120				
		Panel off 2	165	115				
		Low power mode	140	100				
		Auto off mode	Room temp.	Room temp.				
Printing	Normal paper	Mono color	155	Lamp off				
		Full color	160	Lamp off				
	>90 g/m2, 24 lb (*4)	Mono color	165	Lamp off				
		Full color	170	Lamp off				
	Thick	Mono color	165	Lamp off				
		Full color	170	Lamp off				
	OHP	Mono color	165	Lamp off				
		Full color	175	Lamp off				
	Duplex (*5)	Mono color	150	Lamp off				
Full color		155	Lamp off					
Variable range (*6)			100 ~ 190	30 ~ 200	0 ~ +20		0 ~ -20	

\*1: External temperature is measured (temperature/humidity sensor) when the main switch is turned on and when a job start signal is received.

\*2: The pressure and heating rollers start idling.

\*3: Fusing idling stops when both roller temperatures reach the print ready condition. The printer can process jobs when the rollers reach this temperature during warm-up.

\*4: A user tool (User Tools - System Settings - Tray Paper Settings - Paper Type) specifies the paper type in each tray (plain, thick, or OHP). If "plain" is selected, then another user tool (User Tools - Maintenance - Plain Paper Type) defines whether the paper in the tray is "normal" or ">90 g/m2, 24 lb". (☛ 5.1.2). ">90 g/m2, 24 lb" means "greater than or equal to 90 g/m2, 24 lb".

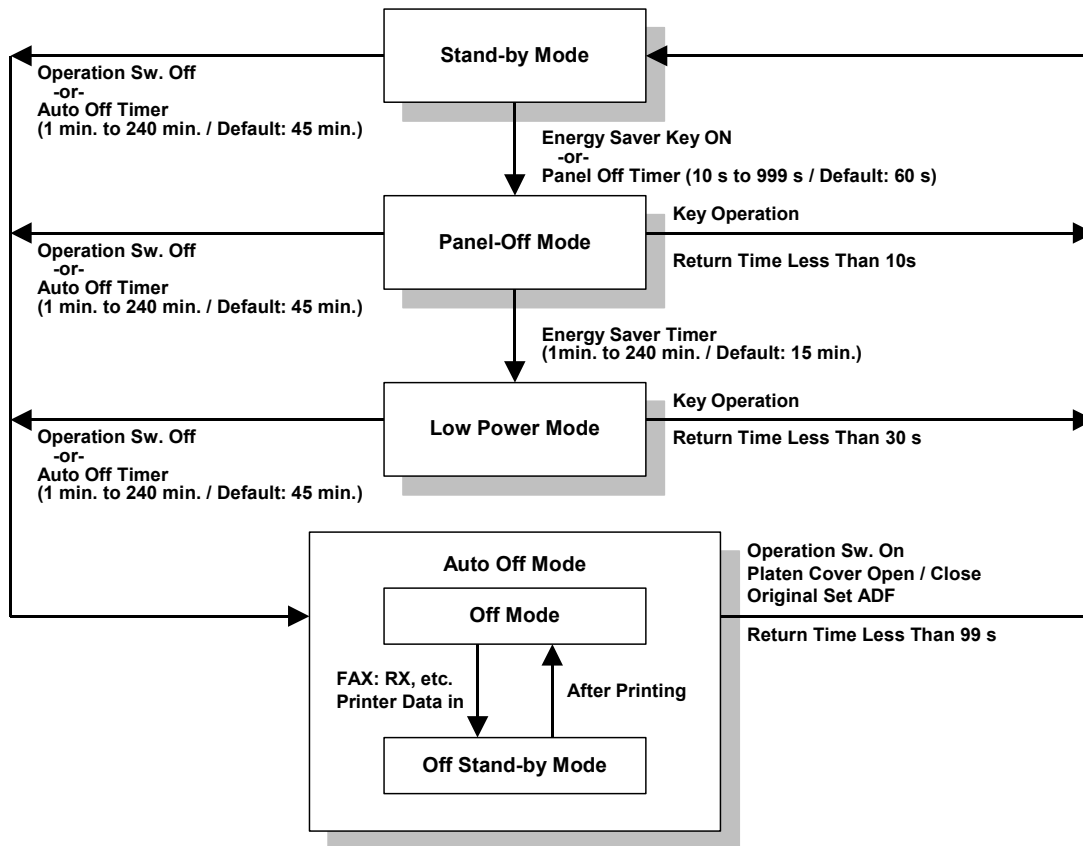
- "Thick" means paper heavier than 105 g/m<sup>2</sup> (28 lb).

\*5: Both sides of the paper are processed with the same roller temperatures.

\*6: Use SP1-105 to adjust the default fusing temperatures (☛ 5.1.2).

## 6.12.6 ENERGY SAVER MODES

### Overview



B156D903.WMF

When the machine is not being used, the energy saver function reduces power consumption by decreasing the fusing temperature.

This machine has three types of energy saver mode as follows.

- 1) Panel-off mode
- 2) Low power mode
- 3) Auto Off mode

These modes are controlled by the following UP and SP modes.

- Panel off timer: User Tools – System Settings – Timer Settings – Panel Off Timer
- Energy saver timer: User Tools – System Settings – Timer Settings – Energy Saver Timer
- Auto off timer: User Tools – System Settings – Timer Settings – Auto Off Timer

## ***Panel Off Mode***

### ***Entering the panel off mode***

The machine enters the panel off mode when one of the following is done.

- The panel off timer runs out.
- The Clear Mode/Energy Saver Key is held down for one second.

If the value specified in the panel off timer is larger than the value specified in the energy saver timer, the machine goes into the low power mode without going into the panel off mode. A similar thing happens when the value in the panel off timer is larger than that in the auto off timer. To make the panel off mode effective, specify a value smaller than the values in the energy saver timer and auto off timer.

### ***What happens in panel off mode***

When the machine is in the panel off mode, each of the fusing lamps are kept at the temperatures indicated in the table at the bottom of the page, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the controller receives an image print out command from an application program (e.g. to print incoming fax data or to print data from a PC), the temperature of each fusing lamp rises to print the data.

### ***Return to stand-by mode***

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The return time from the panel off mode is about 10 seconds.

Mode	Operation Switch	Energy Saver LED	Fusing Temperature	+24V	System +5V
Panel off	On	On	Heating roller: 165°C Pressure roller: 115°C	On	On

## **Low Power Mode**

### ***Entering the low power mode***

The machine enters the low power mode when the energy saver timer runs out.

### ***What happens in low power mode***

When the machine enters the low power mode, the fusing lamps are kept at the temperatures indicated in the table, and the operation panel indicators are turned off except for the Energy Saver LED and the Power LED.

If the controller receives an image print out command from an application program (e.g. to print incoming fax data or to print data from a PC), the temperature of each fusing lamp rises to print the data.

### ***Return to stand-by mode***

If one of the following is done, the machine returns to stand-by mode:

- The Clear Mode/Energy Saver Mode key is pressed
- Any key on the operation panel or touch panel screen is pressed
- An original is placed in the ADF
- The ADF is lifted
- A sheet of paper is placed in the by-pass feed table

The return time from the low power mode is about 30 seconds.

Mode	Operation Switch	Energy Saver LED	Fusing Temperature	+24V	System +5V
Low power	On	On	Heating roller: 140°C Pressure roller: 100°C	On	On

**Auto Off Mode**

There are two Auto Off modes: Off Stand-by mode and Off mode. The difference between Off Stand-by mode and Off mode is the machine's condition when it enters the Auto Off mode.

**Entering off stand-by and off modes**

The machine enters the Off Stand-by mode or Off Mode when one of the following is done.

- The auto off timer runs out.
- The operation switch is pressed to turn the power off.

If one or more of the following conditions exists, the machine enters Off Stand-by mode. If none of these conditions exist, the machine enters the Off Mode.

- Error or SC condition
- Image data is stored in the memory
- During memory TX or polling RX
- The handset is off hook
- An original is in the ADF
- The ADF is open

**Off Stand-by mode**

The system +5V is still supplied to all components. When the machine detects a ringing signal or receives a stream of data for a print job, the +24V supply is activated and the machine automatically prints the incoming message or executes the print job.

**Off Mode**

The system +5V supply also turns off. However, +5VE (+5V for energy saver mode) is still activated. When the machine detects a ringing signal, off-hook signal, or receives a print job, the machine returns to the Off Stand-by mode and the system +5V and +24V supplies are activated.

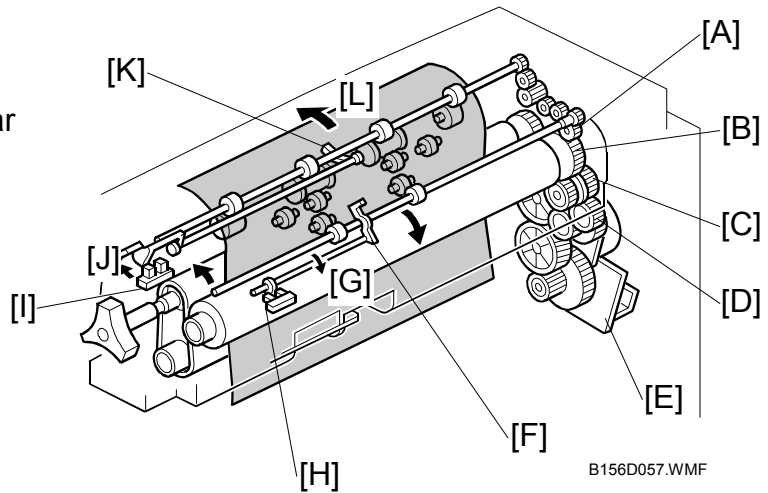
**Returning to stand-by mode**

The machine returns to stand-by mode when the operation switch is pressed. The return time is about 99 seconds.

Mode	Operation Switch	Energy Saver LED	Fusing Lamp	+24V	System +5V	Note
Off Stand-by	Off	Off	Off (On when printing)	On	On	
Off	Off	Off	Off	Off	Off	+5VE is supplied

### 6.12.7 PAPER EXIT

- [A]: Interface gear
- [B]: Pressure roller gear
- [C]: Drive gear (fusing unit)
- [D]: Cover disengagement gear
- [E]: Fusing unit motor
- [F]: Fusing exit sensor feeler
- [G]: Turning direction of the fusing exit sensor feeler
- [H]: Fusing exit sensor
- [I]: Paper exit sensor
- [J]: Turning direction of the paper exit sensor feeler
- [K]: Paper exit sensor feeler
- [L]: Paper



#### **Drive**

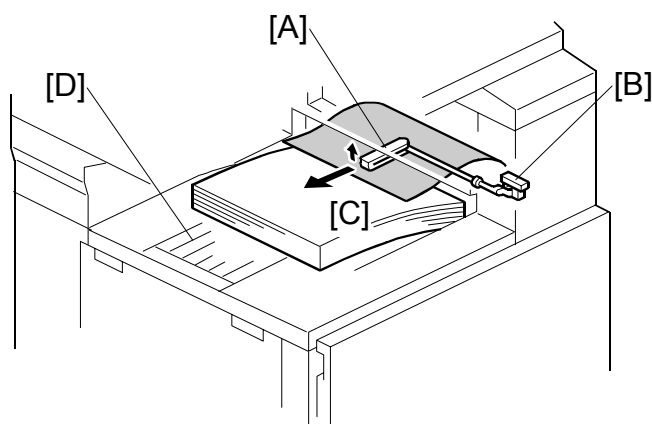
Fusing unit motor [E] → gear [D] → fusing unit drive gear [C] → pressure roller gear [B] → gear [A] → exit rollers.

#### **Paper Jam Detection**

The fusing exit sensor [H] and the paper exit sensor [I] detect paper jams.

### 6.12.8 PAPER OVERFLOW DETECTION

- [A]: Feeler
- [B]: Paper overflow sensor
- [C]: Paper
- [D]: Tray

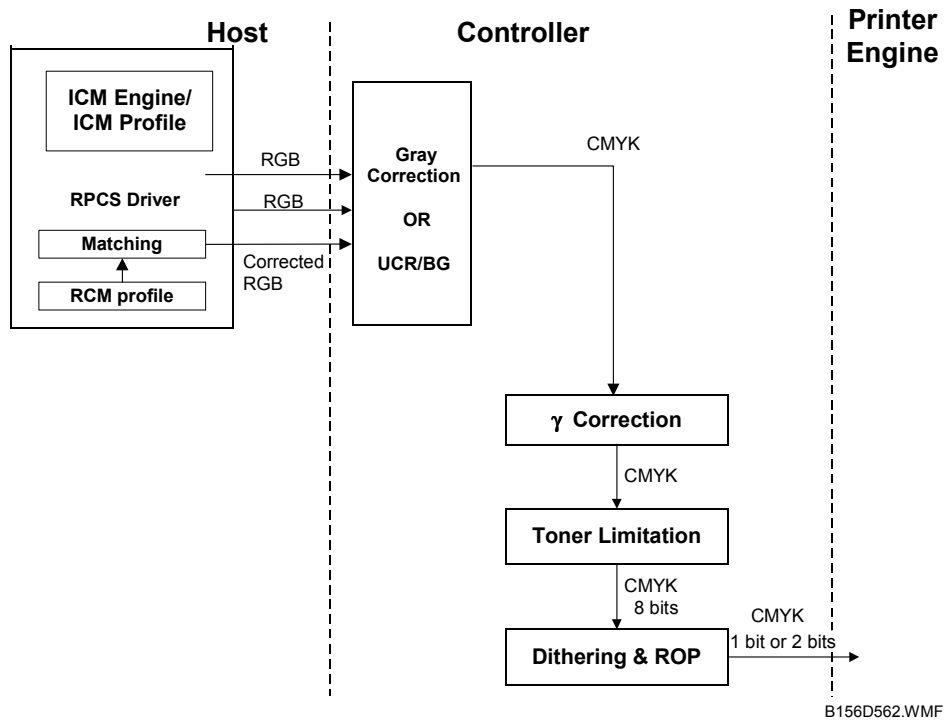


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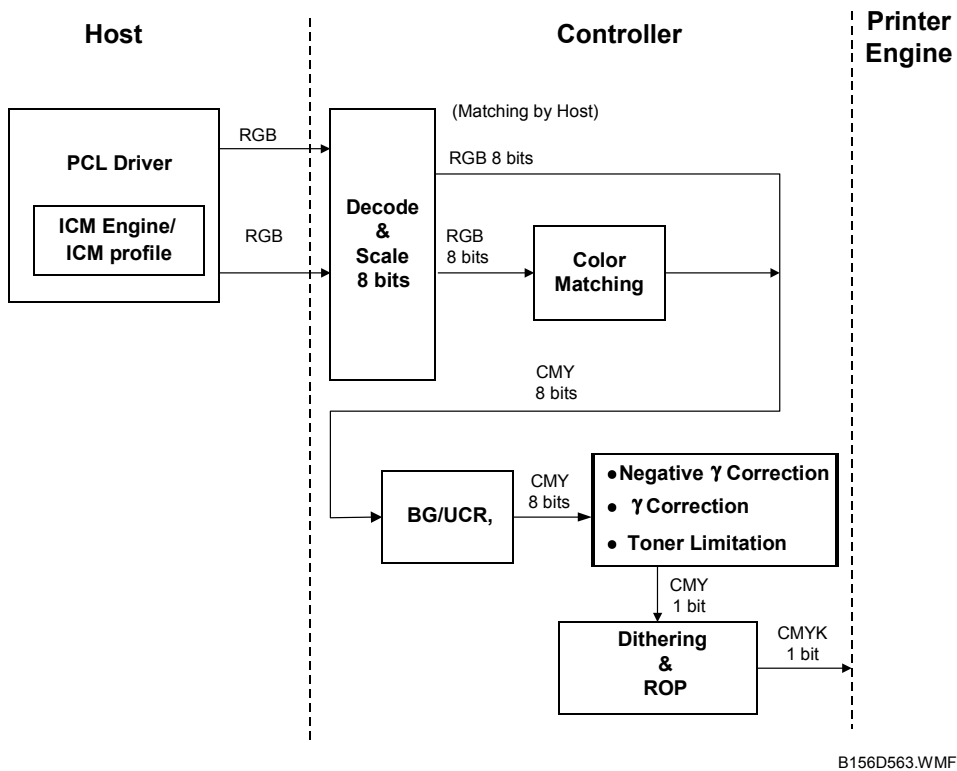
When the paper overflow sensor [B] is deactivated, the machine detects that the paper stack height exceeded the limit and stops printing.

## 6.13 PRINT DATA PROCESSING

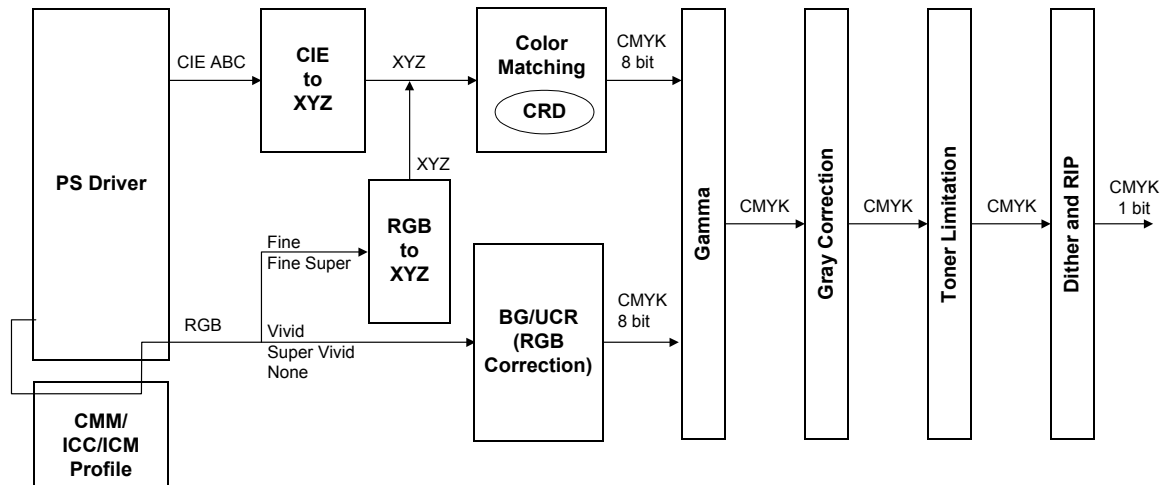
### 6.13.1 RPCS DRIVER



### 6.13.2 PCL5C DRIVER



### 6.13.3 PS3 DRIVER



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#### **CMS (Color Management System)**

CMS optimizes the color print quality using a color profile that is based on the characteristics of the printer. With RPCS, the color profile is applied by the driver. With PS3 and PCL5e, the color profile is applied in the matching/CRD module on the controller except when using CMM/ICC/ICM profiles.

CMS is not used when the color profile setting in the printer driver is set to “Off.”

#### **Gray Correction**

Gray correction processes gray with K or CMYK toner depending on the driver settings.

#### **BG/UCR (Black Generation/Under Color Removal)**

The RGB data is converted to CMYK data with BG/UCR. During CMYK conversion, some CMY data is replaced with K data by the BG/UCR algorithm.

#### **Gamma Correction**

The printer gamma can be adjusted with controller SP mode (Gamma Adj.). For CMYK, there are 15 points between 0 and 100%. The corrected gamma data is stored in NVRAM.



***Toner Limitation***

Toner limitation prevents toner from being scattered around text or printed lines.

Maximum values have been prepared independently for text and photo. They can be adjusted with controller SP mode (Toner Limit).

- Default: 180% for text, 250% for photo
- Adjustable range: 100% to 400%

***Dither Processing and ROP/RIP***

Dither patterns have been prepared for photo and text independently. Dithering converts the 8-bit data to 1-bit data. However, these dither patterns create the illusion of 256 gradations for high quality prints. The optimum dither pattern is selected depending on the selected resolution.

RIP: Raster Image Processing

ROP: Raster Operation

## 6.14 FILE FORMAT CONVERTER (MLB)

In previous models (such as A-C2, R-C2), DeskTopBinder V2 could retrieve copy and print jobs from the document server and convert them to TIFF. However, this software-based conversion was slow for many users.

So, for this machine, this conversion has been made hardware-based, using the optional File Format Converter. Without the File Format Converter, copy and print jobs cannot be downloaded to a PC (or e-Cabinet) from the document server.

Two common target formats are provided for conversion to files that can be selected by the SP modes: JPEG, and TIFF.

In scanner mode, users can select file format from TIFF, JPEG, or PDF. The time to create TIFF and JPEG files will be shortened with the File Format Converter, especially for high scanning resolution and large image size. When the customer selects PDF, the machine creates a TIFF or JPEG file from the scanned image first then converts it to PDF. Therefore, the total time to create a PDF is also shortened with the File Format Converter.

## 6.15 DATA OVERWRITE SECURITY UNIT (B735)

### 6.15.1 AUTO ERASE MEMORY

A document scanned in the copier or scanner mode, or data sent from a printer driver for printing, is stored temporarily on the hard disk of the machine. Even after the copy or print job is completed, it remains in the hard disk as temporary data. Auto Erase Memory erases the temporary data on the hard disk by writing over it.

#### ***Types of Data Overwritten and Not Overwritten***

The following table shows the types of data that can or cannot be overwritten by Auto Erase Memory.

Data overwritten by Auto Erase Memory	Copier	Copy jobs
	Printer	1) Print jobs 2) Sample Print/Locked Print jobs(*1) 3) Spool Printing jobs
	Scanner(*2)	1) Scanned files sent by e-mail 2) Files sent by Scan to Folder 3) Documents sent or retrieved by using Web Image Monitor, Desk Top Binder, Scan Router
	Fax	PC fax print jobs, Internet fax transmission jobs
	Document Server	Temporary data that still remains in the Document Server even after user erases the data in the Document Server.
Data not overwritten by Auto Erase Memory	1) Documents stored by the user in the Document Server using the Copier, Printer or Scanner functions 2) Information registered in the Address Book (*3) 3) Counters stored under each user code 4) Network setting	

**NOTE:** \*1: A Sample Print or Locked Print job can only be overwritten after it has been executed.

\*2: Temporary data via TWAIN scanner function are not originally stored in HDD, so TWAIN scanner functions can be used together with DOS unit.

\*3: Data stored in the Address Book can be encrypted for security.

#### ***Overwrite timing***

Overwriting starts automatically once a copy, print and scanner job is completed. Copier, printer and scanner functions take priority over the Data Overwrite function. If a copier, printer or scanner job comes while a previous job is being overwritten, the overwrite process is automatically interrupted until the next job is completed.

# SPECIFICATIONS

## 1. GENERAL SPECIFICATIONS (MAIN UNIT)

Configuration: Desktop  
 Print Process: 2 laser beam & dry electrostatic transfer system  
 Original Type: Sheet/Book/object  
 Original Size: Max: A3/11"x17"

Copy Paper Size:

Max:	A3/11" x 17"
Min:	A6 SEF (100 x 148 mm)/8.5" x 5.5"
Custom size:	Width: 100 ~ 297 mm (3.9" ~ 11.5") Length: 148 ~ 432 mm (5.8" ~ 17")

\*Printable area is 297 x 432 mm (11.7" x 17").

Paper Weight (excluding by-pass tray): 64 to 163 g/m<sup>2</sup>, 16 lb. to 44 lb.

Printing Speed (A4/8.5" x 11" LEF):

Model		Plain Paper	Thick	OHP
TH-C1b	Color	10 cpm	4 cpm	2 cpm
	Black & White	24 cpm	6.5 cpm	3.2 cpm
TH-C1c	Color	10 cpm	4 cpm	2 cpm
	Black & White	32 cpm	6.5 cpm	3.2 cpm

Paper Capacity:

Main	250 sheets x 2 tray
Paper tray unit (Option)	500 sheets x 2 trays
By-pass (Option)	100 sheets
LCT (Option)	1,000 sheets x 2

\*Maximum capacity is 2,600 sheets.

Copy Tray Capacity:

A4/LT or smaller:	Up to 500 sheets
B4 or larger:	Up to 250 sheets

First Copy Time (A4/8.5" x 11" LEF):

Color:	18 seconds or less
Black & White:	7.8 seconds or less

Warming-up Time: Approx. 99 seconds or less

No. of Continuous Copies: 1 to 100

Memory: 768 MB

Hard Disk: 40 GB

Reproduction Ratios: 5 Enlargement & 7 Reduction

	A4/A3 version	LT/DLT Version
Enlargement	400, 200, 141, 122, 115%	400, 200 155, 129, 121%
Full Size	100%	100%
Reduction	93, 82, 75, 71, 65, 50, 25%	93, 85, 78, 73, 65, 50, 25%

Spec.

Zoom:	25% to 400% in 1% steps (Platen mode) 25% to 200% in 1% steps (ADF mode)
Scanning System:	3-line 1-chip CCD sensor (600 dpi)
Light Source:	1 xenon lamp
Photoconductor:	OPC belt
Charging:	Corona wire with grid plate
Print System:	Two laser beam, 600 dpi
Development System:	Mono component toner
Transfer:	Image transfer: Transfer belt with bias roller Paper transfer: Roller
Separation:	Discharge pin
Fusing:	Heating rollers and fusing belt
Cleaning:	OPC belt: Blade Image transfer belt: Cleaning brush
Quenching:	Lamp
Toner Supply:	Cartridge

## Power Source:

	Voltage	Frequency	Amperage
NA	100 to 120 V	50/60 Hz	12 A
EU & Asia	220 to 240 V	50/60 Hz	8 A

## Power Consumption:

	Mainframe only	Full System
Maximum:	Less than 1.5 kW	Less than 1.5 kW
Copying:	Less than 1.2 kW	Less than 1.3 kW
Stand-by:	Less than 200 W	Less than 200 W
Auto Off:	5.7 W	15.5 W

**NOTE:** Full system: ARDF + 1 bin tray + Paper Tray Unit + Duplex Unit + Bridge Unit +1000-sheet Finisher

## Noise Emission:

	Mainframe only	Full System
Stand-by:	Less than 40 dB (A)	Less than 40 dB (A)
Copying:	Less than 65 dB (A)	Less than 70 dB (A)

**NOTE:** Full system: ARDF + 1 bin tray + Paper Tray Unit + Duplex Unit + Bridge Unit +1000-sheet Finisher

## Dimensions (W x D x H):

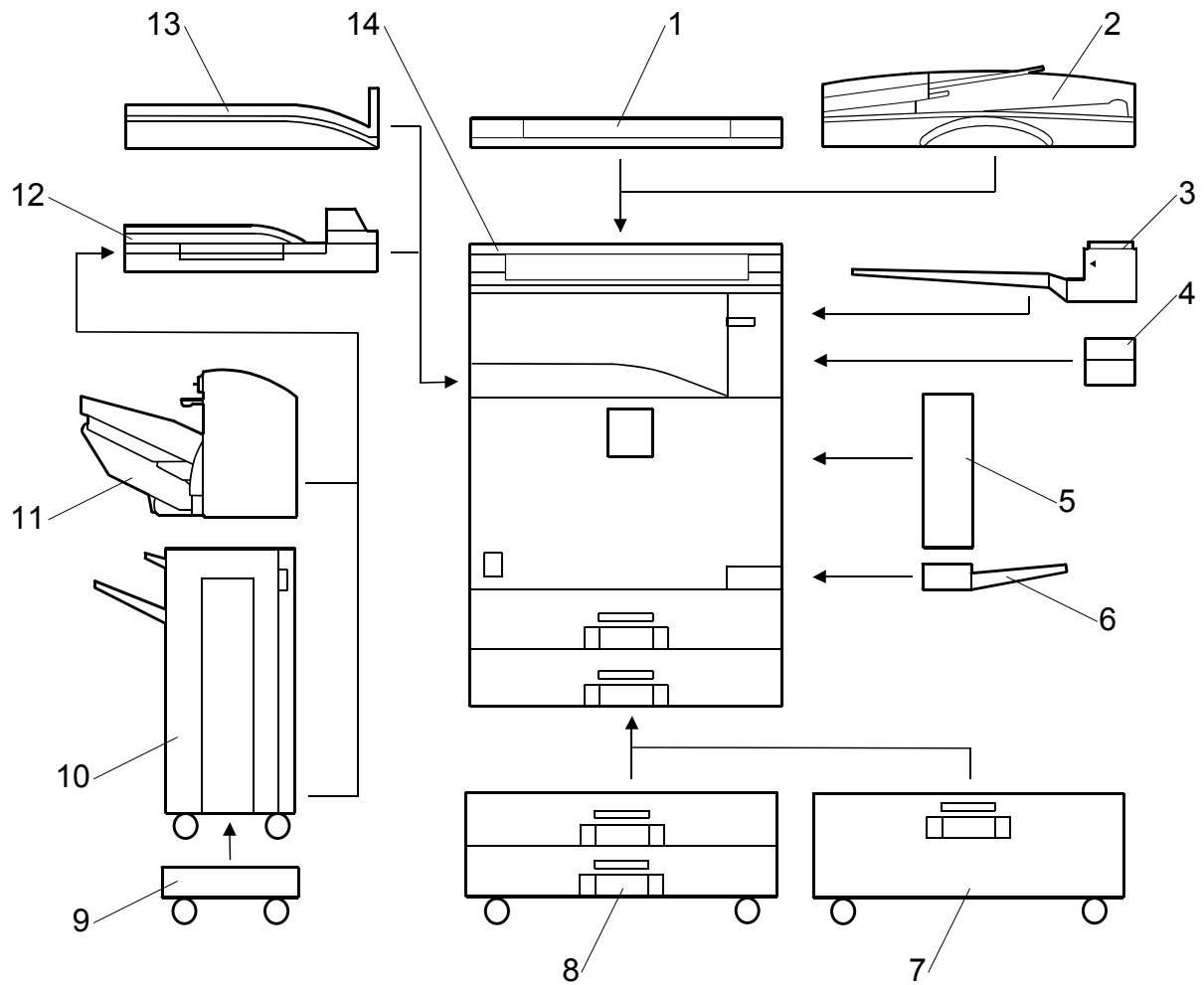
NA:	640 x 682 x 945 mm (25.2" x 26.85" x 37.2")
EU/CHN:	550 x 682 x 781 mm (21.65" x 26.85" x 30.74")
ASIA:	550 x 682 x 945 mm (21.65" x 26.85" x 37.2")

## Weight:

NA:	Less than 106 kg (234 lb)
EU/CHN:	Less than 88 kg (197 lb)
ASIA:	Less than 98 kg (220 lb)

## 2. MACHINE CONFIGURATION

### 2.1 SYSTEM COMPONENTS



B156V500.WMF

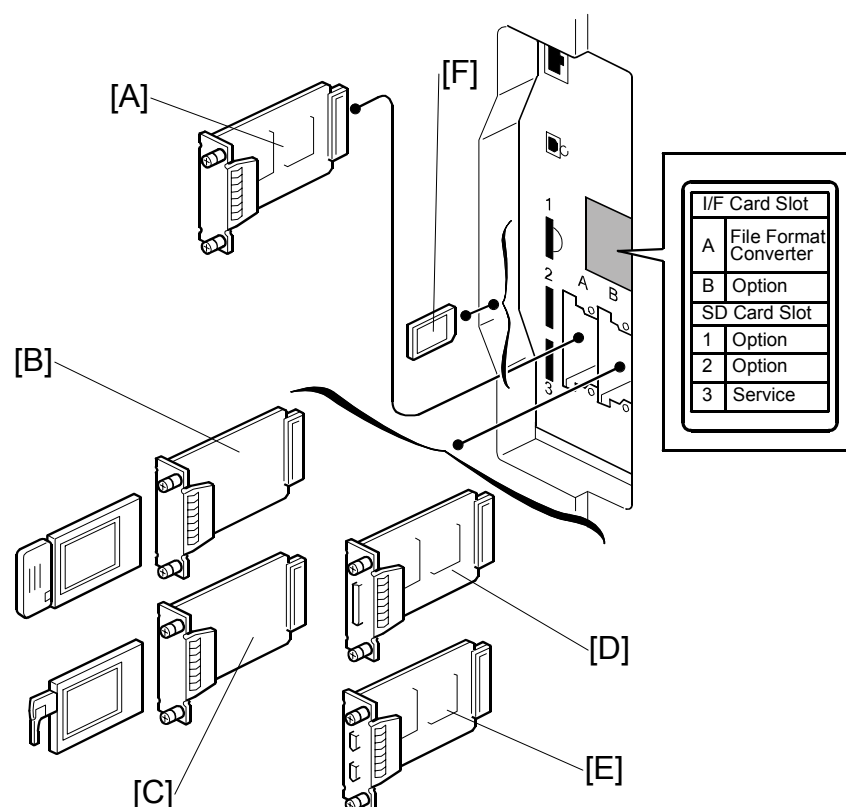
Spec.

Version	Item	Machine Code	Common with	No.
Copier	TH-C1b	B156		14
	TH-C1c	B220		14
	ARDF (Optional (NOTE 1))	B810	(NOTE 2)	2
	Platen Cover (Optional)	B484	U-C1	1
	Paper Tray Unit (Optional)	B456	U-C1	8
	LCT (Optional)	B457	U-C1	7
	1-bin Tray (Optional)	B480	(NOTE 2)	3
	Shift Tray (Optional)	B510	(NOTE 2)	13
	Duplex Unit (Optional (NOTE 1))	B509	U-C1	5
	By-pass Tray (Optional (NOTE 1))	B490	U-C1	6
	Interchange Unit (Optional (NOTE 1))	B481	U-C1	4
	Bridge Unit (Optional)	B482	(NOTE 2)	12
	1000-sheet Finisher (Optional)	B408	U-C1	10
	Adjustment Table (Optional)	B488	U-C1	9
	500-sheet Finisher (Optional)	B458	U-C1	11
	Key Counter Bracket (Optional)	B508	U-C1	
Fax	Fax Option (Optional)	B750		
	G3 Interface Unit (Optional)	B751		
	Memory Unit (Optional)	G578		
	Handset (Optional)	B433	U-C1	
Printer/ Scanner	PS3 (Optional)	B769		
	IEEE1394 (Optional)	B581		
	IEEE1284 (Optional)	B679		
	Wireless LAN (Optional)	G813		
	Bluetooth	B736		
	Media Link Board (Optional)	B609		
	Data Overwrite Security Unit (Optional)	B735		

**NOTE:** 1) N. America: ARDF, Duplex Unit, By-pass Tray and Interchange Unit are standard.

Asia (except China): ARDF is standard.

2) The color of the exterior is changed to blue.



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Item	Machine Code	Remarks
USB 2.0:	—	Standard
Ethernet:	—	Standard
File Format Converter: [A]	B609	
IEEE 802.11b: [B]	G813	You can only install one of these at the same time.
Bluetooth: [C]	B736	
IEEE 1284: [D]	B679	
IEEE 1394: [E]	B581	
Hard Disk Drive	—	Standard
PostScript 3: [F]	B769	
Data overwrite security unit: [F]	B735	



## 2.2 OPTIONAL EQUIPMENT

### ***ARDF***

Original Size:	Standard sizes Single-sided mode: A3 to A5, DLT to HLT Double-sided mode: A3 to A4, DLT to LT Non-standard sizes (Single-sided mode only) Max. width 297 mm Min. width 105 mm Max. length 1,260 mm Min. length 128 mm
Original Weight:	Single-sided mode: 52 to 128 g/m <sup>2</sup> , 14 to 34 lb Double-sided mode: 52 to 105 g/m <sup>2</sup> , 14 to 28 lb
Table Capacity:	30 sheets (80 g/m <sup>2</sup> )
Original Position:	Center
Separation:	FRR with feed belt
Original Transport:	Roller transport
Original Feed Order:	From the top original
Reproduction Range:	25 to 200 % (Sub scan direction only)
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	50 W
Dimensions (W x D x H):	550 x 470 x 110 mm
Weight:	10 kg

### ***Bridge Unit***

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m <sup>2</sup> to 135 g/m <sup>2</sup> , 16 lb to 42 lb
Power Source:	DC 24 V, 5 V (form the copier/printer)
Dimensions (W x D x H):	413 x 435 x 126 mm
Weight	3.0 kg (6.6 lbs)

***By-pass Tray Unit***

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 90 to 305 mm (3" to 12") Length: 148 to 457.2 mm (5.83" to 18")
Paper Weight:	60 g/m <sup>2</sup> to 163 g/m <sup>2</sup> , 16 lb to 43.6 lb
Dimensions (W x D x H):	310 x 380 x 275 mm
Weight:	3 kg (6.6 lbs)

***Duplex Unit***

Paper Size:	Standard sizes A5 lengthwise to A3 HLT to DLT Non-standard sizes Width: 140 to 297 mm Length: 182 to 432 mm
Paper Weight:	64 g/m <sup>2</sup> to 105 g/m <sup>2</sup> , 20 lb to 28 lb
Tray Capacity:	1 sheet
Power Consumption:	40 W
Power Source:	DC 24 V, 5 V
Dimensions (W x D x H):	90 x 495 x 452 mm
Weight:	6 kg

***Interchange Unit***

Paper Size:	Standard sizes A6 lengthwise to A3 HLT to DLT Non-standard sizes Width: 100 to 305 mm Length: 148 to 432 mm
Paper Weight:	52 g/m <sup>2</sup> to 135 g/m <sup>2</sup> , 16 lb to 36 lb
Power Consumption:	10 W
Dimensions (W x D x H):	117 x 447 x 92 mm
Weight:	1.6 kg

***LCT***

Paper Size:	A4 sideways/LT sideways
Paper Weight:	60 g/m <sup>2</sup> to 128 g/m <sup>2</sup> , 16 lb to 34 lb
Tray Capacity:	2,000 sheets (80 g/m <sup>2</sup> , 20lb)
Remaining Paper Detection:	5 steps (100%, 75%, 50%, 25%, Near end)
Power Source:	DC 24 V, 5 V (from copier/printer)
Power Consumption:	30 W (Max.)/25 W (Ave.)
Weight:	25 kg (55 lbs)
Size (W x D x H):	540 x 600 x 270 mm

***Paper Tray Unit***

Paper Feed System:	FRR
Paper Height Detection:	4 steps (100%, 50%, Near End, and Empty)
Capacity:	500 sheets x 2 trays
Paper Weight:	60 to 128 g/m <sup>2</sup> (16 to 34 lb.)
Paper Size:	A3 SEF to A5, DLT SEF to HLT
Power Source:	DC 24V, 5V (from the main frame)
Power Consumption:	Less than 30 W
Dimensions (W x D x H):	540 x 600 x 270 mm
Weight:	25 kg (33 lb.)

***Shift Tray Unit***

Paper Size:	Standard Size: A5 lengthwise to A3 HLT lengthwise to DLT Non-standard Size: Paper Width: 90 to 297 mm Paper Length: 148 to 432 mm
Paper Weight:	60 to 105 g/m <sup>2</sup> , 16 to 28 lbs.
Tray Capacity:	125 sheets (80 g/m <sup>2</sup> , 20 lbs.): B4 or larger 250 sheets (80 g/m <sup>2</sup> , 20 lbs.): A4 or smaller
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	17 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 410 mm x 120 mm

**1-Bin Tray Unit**

Paper Size:	Standard Size: A5 Lengthwise to A3 HLT Lengthwise to DLT Non-standard Size: Paper Width: 90 to 297 mm Paper Length: 148 to 432 mm
Paper Weight:	60 ~ 105 g/m <sup>2</sup> , 16 ~ 28 lbs.
Tray Capacity:	125 sheets (80 g/m <sup>2</sup> , 20 lbs.)
Power Source:	DC 24 V, 5 V (from the copier)
Power Consumption:	0.5 W
Weight:	1.1 kg
Size (W x D x H):	530 mm x 435 mm x 120 mm

**500-Sheet Finisher**

Paper Size:	A3, B4, A4, B5 sideways (Metric) DLT, LG, LT (Inch)
Paper Weight	52 to 128 g/m <sup>2</sup> , 14 to 34 lb.
Staple Capacity:	30 sheets (80 g/m <sup>2</sup> , 20 lb)
Stack Capacity (Maximum):	500 sheets (A4/LT or smaller: 80 g/m <sup>2</sup> , 20 lb.) 250 sheets (A3, B4, DLT and LG: 80 g/m <sup>2</sup> , 20 lb.)
Stapling Positions:	1
Staple Replenishment:	Cartridge (3,000 staples/cartridge)
Power Source:	DC 24 V, 5 V (from the copier/printer)
Power Consumption:	40 W
Weight:	8.3 kg (18.4 lbs.)
Dimensions (W x D x H):	350 x 490 x 230 mm

**1000-sheet Finisher*****Upper Tray***

Paper Size:	A3 to A6 DLT to HLT
Paper Weight:	60 to 157 g/m <sup>2</sup> (16 to 42 lb)
Paper Capacity:	250 sheets (A4 sideways/LT sideways or smaller: 80 g/m <sup>2</sup> , 20lb) 50 sheets (A3, B4, DLT, LG: 80 g/m <sup>2</sup> , 20 lb)

***Lower Tray***

Paper Size:	No staple mode: A3 to B5 DLT to HLT Staple mode: A3, B4, A4, B5 DLT to LT
Paper Weight:	No staple mode: 60 to 157 g/m <sup>2</sup> (16 ~ 42 lb) Staple mode: 64 to 90 g/m <sup>2</sup> (17 ~ 24 lb)
Stapler Capacity:	30 sheets (A3, B4, DLT, LG) 50 sheets (A4, B5 sideways, LT)
Paper Capacity:	No staple mode: 1,000 sheets (A4/LT or smaller: 80 g/m <sup>2</sup> , 20 lb) 500 sheets (A3, B4, DLT, LG: 80 g/m <sup>2</sup> , 20 lb) Staple mode: (80 g/m <sup>2</sup> , 20 lb, number of sets)

Set Size	2 to 9	10 to 50	
Size		10 to 30	31 to 50
A4/LT sideways B5 sideways	100	100 to 20	100 to 20
A4/LT Lengthwise	100	50 to 10	50 to 10
A3, B4, DLT, LG	50	50 to 10	—

Staple positions:	1 Staple: 2 positions (Front, Rear) 2 Staples: 2 positions (Upper, Left)
Staple Replenishment:	Cartridge (5,000 staples/cartridge)
Power Source:	DC 24 V, 5 V (from the copier/printer)
Power Consumption:	50 W
Weight:	25 kg (55.2 lbs)
Dimensions (W x D x H):	527 x 520 x 790 mm (20.8" x 20.5" x 31.1")